

# 2013 Photonics West<sup>®</sup>

2–7 February 2013

**Technical Program**  
[www.spie.org/pw](http://www.spie.org/pw)

#### **Conferences & Courses**

2–7 February 2013

#### **Exhibitions**

BiOS Expo: 2–3 February 2013

Photonics West: 5–7 February 2013

#### **Location**

The Moscone Center  
San Francisco, California, USA

#### **Technologies**

- BiOS–Biomedical Optics
- OPTO–Integrated Optoelectronics
- LASE–Lasers and Applications
- MOEMS–MEMS–Micro & Nanofabrication
- Green Photonics



# ImageMaster<sup>®</sup> HR

The Worldwide Leading MTF System for Ultra Precision Measurement in Laboratories and Research

It can be configured for testing optical systems with:

- Object at infinity and finite distance
- On-axis and off-axis (up to  $\pm 120^\circ$ )
- Clear aperture up to 80 mm
- VIS spectral range optional NIR
- NEW: also in LWIR available



Visit us at  
Booth #1608



**TRIOPTICS**

[www.trioptics.com](http://www.trioptics.com)

# 2013 PhotonicsWest®

SPIE

The Moscone Center, San Francisco, California, USA

## Conferences & Courses

2-7 February 2013

## Exhibitions

BiOS EXPO: 2-3 February 2013

Photonics West: 5-7 February 2013

BiOS

LASE

MOEMS-  
MEMS

OPTO



Facility Maps .....2-4

## Special Events

Daily Schedule .....16-17

### Plenary Sessions and Special Events

BiOS .....18-20

LASE .....22-23

MOEMS-MEMS .....24-25

OPTO .....26-27

Industry Events .....28-33

### Executive Sessions | Panels | Workshops

Professional Development .....34-36

### Speaker Series | Workshops | Women in Optics | Job Fair | Panels

Social and Networking Events .....38-40

### Receptions | Student and Early Career Events

Exhibition Overviews .....42-52

### SPIE Photonics West | SPIE BiOS EXPO | Product Demonstrations | Sponsors

## Professional Development

Course Index .....12-15

## Technical Conferences

Conference Index .....5-10

GREEN PHOTONICS .....63-66

BiOS .....67-183

LASE .....185-227

MOEMS-MEMS .....229-247

OPTO .....249-344

### Index of Authors, Chairs, and

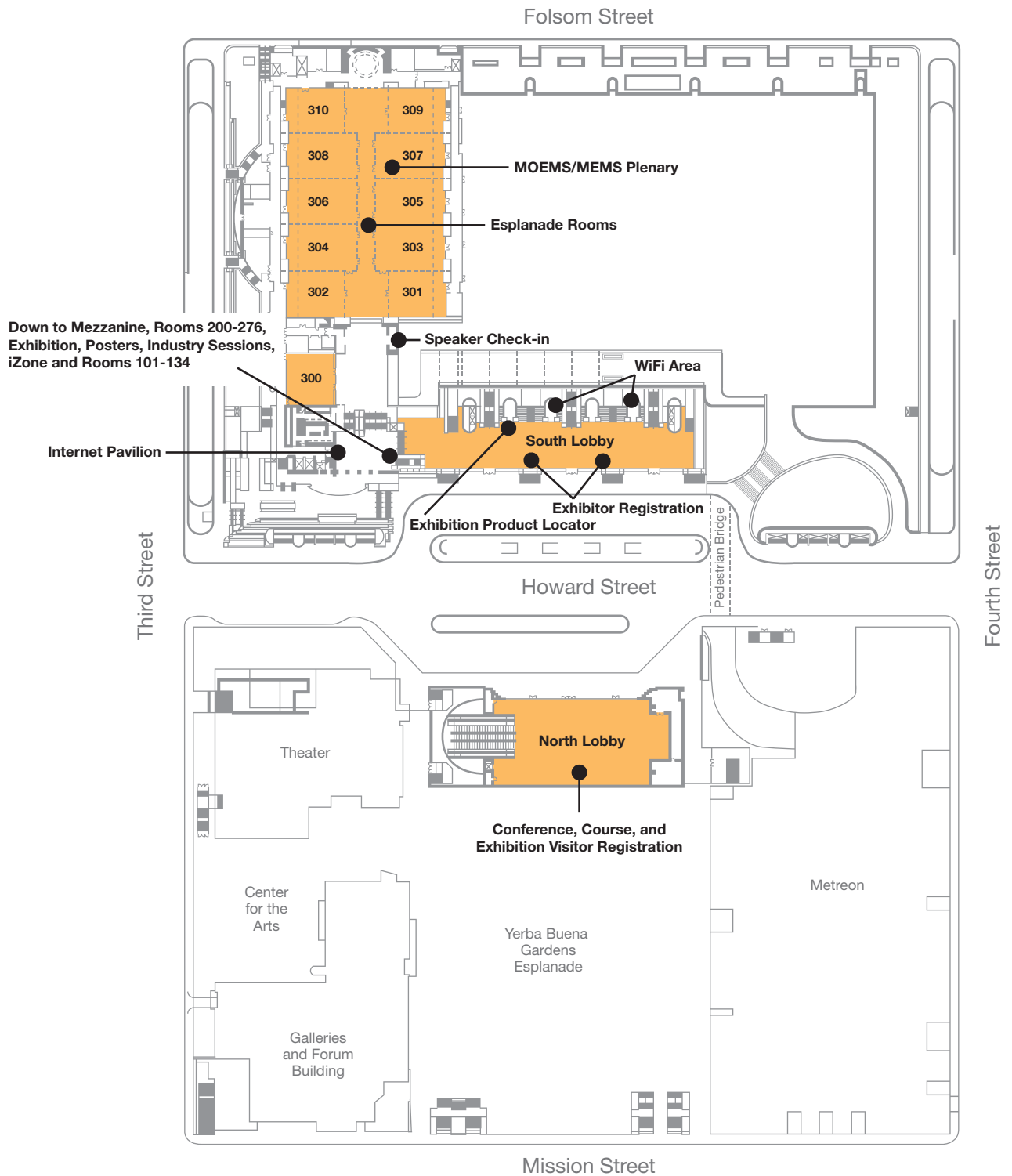
Committee Members .....345-408

General Information .....409-413

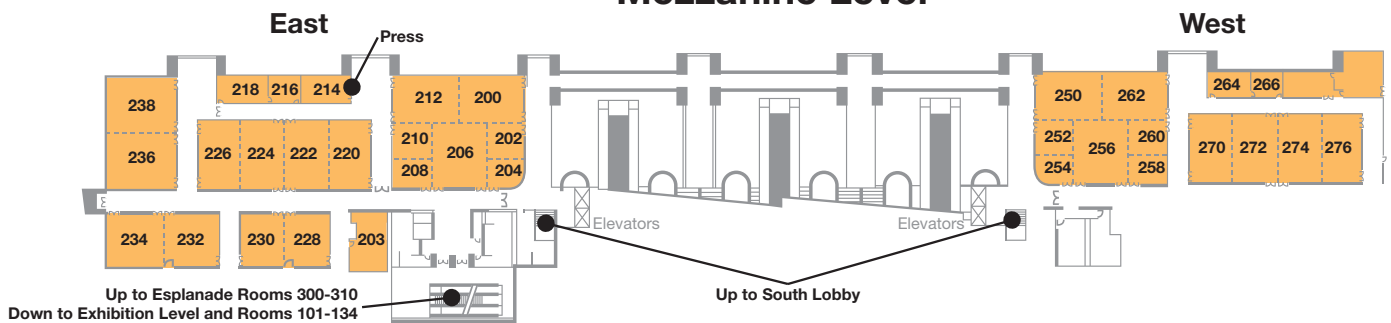
Proceedings of SPIE .....414-415



SPIE is the international society for optics and photonics, a not-for-profit organization founded in 1955 to advanced light-based technologies. The Society serves nearly 225,000 constituents from approximately 150 countries, offering conferences, continuing education, books, journals, and a digital library in support of interdisciplinary information exchange, professional growth, and patent precedent. SPIE provided over \$3.3 million in support of education and outreach programs in 2012.



Mezzanine Level





# Designed for Excellence SHIMADZU LASER PRODUCTS

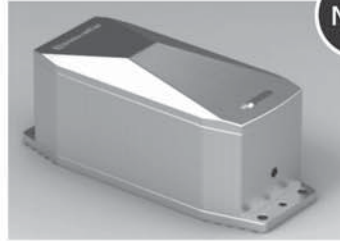
## BEAM MATE Series

Compact Green Laser Module  
Compact Low Noise Green Laser Module



Low optical noise : < 0.1% rms  
Wide operating temperature range  
Low operating voltage : 2.7-3.3 V

LD Module With Stabilized Wavelength



NEW

Wavelength : 405-635 nm  
Wavelength accuracy : <  $\pm 1$  nm  
Ellipticity : < 1.2

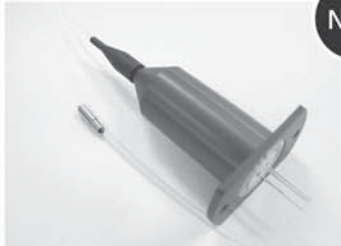


Applications

- Biomedical
- DNA sequencers
- Flow cytometry
- Inspection
- Microscopy
- Raman spectrometer
- Spectroscopy
- Marking

## BEAM IMPACT Series

External Cavity Short Pulse Laser Diode  
For Fiber Laser



NEW

Wavelength : 920-1070 nm  
Spectral width : < 0.1 nm  
High wavelength stability

355 nm UV Pulse Laser



NEW

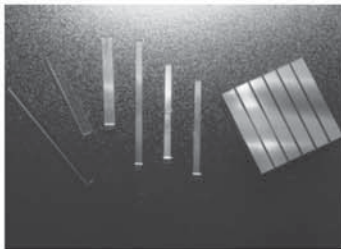
Pulse energy : > 100  $\mu$ J  
Pulse width : < 7 nsec  
Compact body



Applications

- Material processing
- Micromachining
- Welding
- Mass spectrometry
- Solar cell ablation
- Silicon wafer scribing

## PPMgSLT Crystal



Wide transparent range : 270-4,500nm  
High thermal conductivity  
High conversion efficiency with large aperture

Applications

- SHG / Frequency doubling
- Laser processing / machining (High power wavelength conversion)
- Optical parametric oscillation

### CONTACT

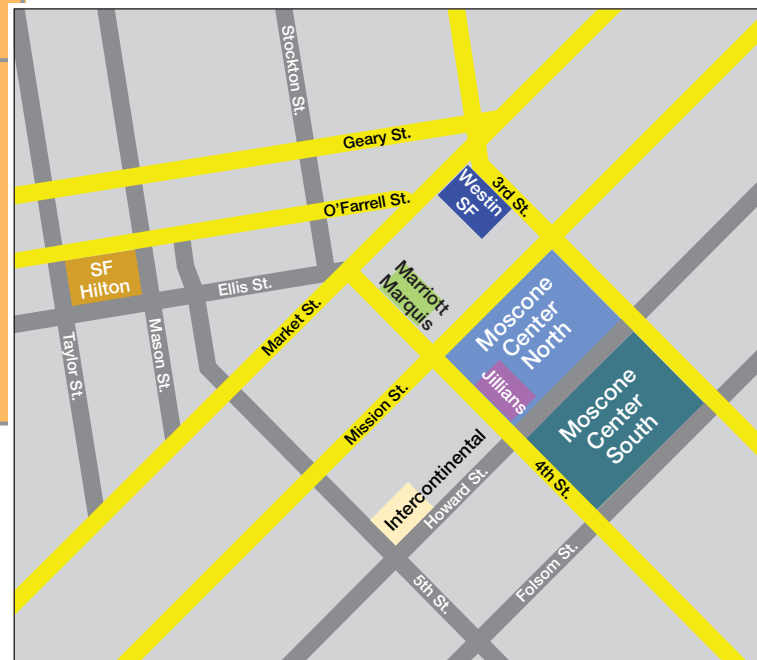
SHIMADZU CORPORATION  
3, Kanda-Nishikicho 1-Chome, Chiyoda-ku, Tokyo 101-8448, JAPAN  
Phone : +81(3)3219-5797 FAX : +81(3)3219-5567  
E-mail : sensor@group.shimadzu.co.jp

SHIMADZU PRECISION INSTRUMENTS, INC.  
2340-C Walsh Avenue, Santa Clara, CA 95051 U.S.A.  
Phone : +1(408)566-0967 FAX : +1(408)566-0961  
E-mail : gdriskell@shimadzuvacuum.com

# The Moscone Center

## EXHIBIT LEVEL

FOLSOM STREET



## Symposium Chairs



**James Fujimoto**  
Massachusetts Institute of Technology (USA)



**R. Rox Anderson M.D.**  
Wellman Ctr. for Photomedicine, Massachusetts General Hospital (USA) and Harvard School of Medicine (USA)

## Photonic Therapeutics and Diagnostics

Program Chair: **Brian Jet-Fei Wong**, Beckman Laser Institute and Medical Clinic, Univ. of California, Irvine (USA)

- 8565A **Photonics in Dermatology and Plastic Surgery** (Nikiforos Kollias; Bernard Choi, Haishan Zeng) . . . . . 71
- 8565B **Therapeutics and Diagnostics in Urology: Lasers, Robotics, Minimally Invasive, and Advanced Biomedical Devices** (Hyun Wook Kang, Bodo E. Knudsen) . . . . . 73
- 8565C **Optical Imaging, Therapeutics, and Advanced Technology in Head and Neck Surgery and Otolaryngology** (Brian Jet-Fei Wong, Justus F. Ilgner) . . . . . 75
- 8565D **Optical Techniques in Pulmonary Medicine** (Melissa J. Suter, Stephen Lam, Matthew Brenner) . . . . . 78
- 8565E **Diagnostic and Therapeutic Applications of Light in Cardiology** (Kenton W. Gregory, Guillermo J. Tearney, Laura Marcu) . . . . . 80
- 8565F **Optical Techniques in Neurosurgery, Brain Imaging, and Neurobiology** (Henry Hirschberg, Steen J. Madsen) . . . . . 83
- 8565G **Neurophotonics** (Anita Mahadevan-Jansen, E. Duco Jansen) . . . . . 85
- 8565H **Optics in Bone Surgery and Diagnostics** (Andreas Mandelis) . . . . . 87
- 8566 **Lasers in Dentistry XIX** (Peter Rechmann; Daniel Fried) . . . . . 89
- 8567 **Ophthalmic Technologies XXIII** (Fabrice Manns; Per G. Söderberg; Arthur Ho) . . . . . 91
- 8568 **Optical Methods for Tumor Treatment and Detection: Mechanisms and Techniques in Photodynamic Therapy XXII** (David H. Kessel; Tayyaba Hasan) . . . . . 96
- 8569 **Mechanisms for Low-Light Therapy VIII** (Michael R. Hamblin; Juanita Anders; James D. Carroll) . . . . . 99
- 8570 **Frontiers in Biological Detection: From Nanosensors to Systems** (Benjamin L. Miller; Philippe M. Fauchet) . . . . . 101

## Clinical Technologies and Systems

Program Chairs: **Tuan Vo Dinh**, Duke Univ. (USA); **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA)

- 8571 **Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XVII** (James G. Fujimoto; Joseph A. Izatt; Valery V. Tuchin) . . . . . 103
- 8572 **Advanced Biomedical and Clinical Diagnostic Systems XI** (Anita Mahadevan-Jansen; Tuan Vo-Dinh; Warren S. Grundfest) 109
- 8573 **Design and Quality for Biomedical Technologies V** (Ramesh Raghavachari; Rongguang Liang) . . . . . 112
- 8574 **Multimodal Biomedical Imaging VIII** (Fred S. Azar; Xavier Intes) . . . . . 114
- 8575 **Endoscopic Microscopy VIII** (Guillermo J. Tearney; Thomas D. Wang) . . . . . 116
- 8576 **Optical Fibers and Sensors for Medical Diagnostics and Treatment Applications XIII** (Israel Gannot) . . . . . 118
- 8577 **Optical Biopsy X** (Robert R. Alfano; Stavros G. Demos) . . . . . 120

- 8578 **Optical Tomography and Spectroscopy of Tissue X** (Bruce J. Tromberg; Arjun G. Yodh; Eva M. Sevick-Muraca) . . . . . 122
- 8611 **Frontiers in Ultrafast Optics: Biomedical, Scientific, and Industrial Applications XIII** (Alexander Heisterkamp; Peter R. Herman; Michel Meunier; Stefan Nolte) . . . . . 223
- 8615 **Microfluidics, BioMEMS, and Medical Microsystems XI** (Holger Becker) . . . . . 239

## Tissue Optics, Laser-Tissue Interaction, and Tissue Engineering

Program Chairs: **Steven L. Jacques**, Oregon Health & Science Univ. (USA); **William P. Roach**, U.S. Air Force (USA)

- 8579 **Optical Interactions with Tissue and Cells XXIV** (E. Duco Jansen; Robert J. Thomas) . . . . . 127
- 8580 **Dynamics and Fluctuations in Biomedical Photonics VIII** (Valery V. Tuchin; Donald D. Duncan; Kirill V. Larin; Martin J. Leahy; Ruikang K. Wang) . . . . . 129
- 8581 **Photons Plus Ultrasound: Imaging and Sensing 2013** (Alexander A. Oraevsky; Lihong V. Wang) . . . . . 132
- 8582 **Biophotonics and Immune Responses VIII** (Wei R. Chen) . . . . . 139
- 8583 **Design and Performance Validation of Phantoms Used in Conjunction with Optical Measurement of Tissue V** (Robert J. Nordstrom) . . . . . 141
- 8584 **Energy-Based Treatment of Tissue and Assessment VII** (Thomas P. Ryan) . . . . . 143
- 8585 **NEW Terahertz and Ultrashort Electromagnetic Pulses for Biomedical Applications** (Gerald J. Wilmink; Bennett L. Ibey) . . . . . 145
- 8586 **NEW Optogenetics and Hybrid-Optical Control of Cells** (Samarendra K. Mohanty; Nitish V. Thakor) . . . . . 147

## Biomedical Spectroscopy, Microscopy, and Imaging

Program Chairs: **Ammasi Periasamy**, Univ. of Virginia (USA); **Daniel L. Farkas**, Univ. of Southern California (USA)

- 8587 **Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues XI** (Daniel L. Farkas; Dan V. Nicolau; Robert C. Leif) . . . . . 149
- 8588 **Multiphoton Microscopy in the Biomedical Sciences XIII** (Ammasi Periasamy; Karsten König; Peter T. C. So) . . . . . 153
- 8589 **Three-Dimensional and Multidimensional Microscopy: Image Acquisition and Processing XX** (Carol J. Cogswell; Thomas G. Brown; Jose-Angel Conchello; Tony Wilson) . . . . . 158
- 8590 **Single Molecule Spectroscopy and Superresolution Imaging VI** (Jörg Enderlein; Ingo Gregor; Zygmunt K. Gryczynski; Rainer Erdmann; Felix Koberling) . . . . . 161
- 8591 **Optical Diagnostics and Sensing XIII: Toward Point-of-Care Diagnostics** (Gerard L. Coté) . . . . . 164
- 8592 **Biomedical Applications of Light Scattering VIII** (Adam P. Wax; Vadim Backman) . . . . . 166
- 8593 **NEW Optical Methods in Developmental Biology** (Andrew M. Rollins; Cecilia Lo; Scott E. Fraser) . . . . . 169

## Nano/Biophotonics

Program Chairs: **Paras Prasad**, SUNY/Buffalo (USA); **Dan V. Nicolau**, The Univ. of Liverpool (United Kingdom)

- 8594 **Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications IX** (Alexander N. Cartwright; Dan V. Nicolau) . . . . . 171
- 8595 **Colloidal Nanoparticles for Biomedical Applications VIII** (Wolfgang J. Parak; Marek Osirński; Kenji Yamamoto) . . . . . 173
- 8596 **Reporters, Markers, Dyes, Nanoparticles, and Molecular Probes for Biomedical Applications** (Samuel Achilefu; Ramesh Raghavachari) . . . . . 177
- 8597 **Plasmonics in Biology and Medicine X** (Tuan Vo-Dinh; Joseph R. Lakowicz) . . . . . 180
- 8598 **NEW Bioinspired, Biointegrated, Bioengineered Photonic Devices** (Luke P. Lee; John A. Rogers; Seok-Hyun Yun) . . . . . 182

## LASE

SPIE Photonics West

### Symposium Chairs



**Bo Gu**  
Bos Photonics (USA)



**Andreas Tünnermann,**  
Friedrich-Schiller-Univ. Jena (Germany)

### Symposium Cochairs



**Friedhelm Dorsch**  
TRUMPF Werkzeugmaschinen GmbH  
+ Co. KG (Germany)



**Alberto Piqué**  
U.S. Naval Research Lab. (USA)

## Laser Source Engineering

Program Chair: **Gregory J. Quarles**, B.E. Meyers & Co., Inc. (USA)

8599	<b>Solid State Lasers XXII: Technology and Devices</b> (W. Andrew Clarkson; Ramesh Shori) . . . . .	188
8600	<b>Laser Resonators, Microresonators, and Beam Control XV</b> (Alexis V. Kudryashov; Alan H. Paxton; Vladimir S. Ilchenko) . . . . .	192
8601	<b>Fiber Lasers X: Technology, Systems, and Applications</b> (Sami T. Hendow) . . . . .	196
8602	<b>High-Power Lasers for Fusion Research II</b> (Abdul A. S. Awwal) . . . . .	202
8603	<b>High-Power Laser Materials Processing: Lasers, Beam Delivery, Diagnostics, and Applications II</b> (Friedhelm Dorsch) . . . . .	204

## Nonlinear Optics

8604	<b>Nonlinear Frequency Generation and Conversion: Materials, Devices, and Applications XII</b> (Konstantin L. Vodopyanov) . . . . .	206
8622	<b>Organic Photonic Materials and Devices XV</b> (Christopher E. Tabor, François Kajzar, Toshikuni Kaino, Yasuhiro Koike) . . . . .	264
8623	<b>Ultrafast Phenomena and Nanophotonics XVII</b> (Markus Betz, Abdulhakem Y. Elezzabi, Jin-Joo Song, Kong-Thon Tsen) . . . . .	267

## Semiconductor Lasers and LEDs

Program Chair: **Klaus P. Streubel**, OSRAM AG (Germany)

8605	<b>High-Power Diode Laser Technology and Applications XI</b> (Mark S. Zediker) . . . . .	209
8606	<b>Vertical-External-Cavity Surface-Emitting Lasers (VECSELs) III</b> (Jennifer E. Hastie) . . . . .	211
8619	<b>Physics and Simulation of Optoelectronic Devices XXI</b> (Bernd Witzigmann; Marek Osinski; Fritz Henneberger; Yasuhiko Arakawa) . . . . .	252
8625	<b>Gallium Nitride Materials and Devices VIII</b> (Jen-Inn Chyi; Yasushi Nanishi; Hadis Morkoç) . . . . .	274
8639	<b>Vertical-Cavity Surface-Emitting Lasers XVII</b> (Kent D. Choquette, James K. Guenter) . . . . .	319
8640	<b>Novel In-Plane Semiconductor Lasers XII</b> (Alexey A. Belyanin, Peter M. Smowton) . . . . .	321
8641	<b>Light-Emitting Diodes: Materials, Devices, and Applications for Solid State Lighting XVII</b> (Klaus P. Streubel, Heonsu Jeon) . . . . .	325

## Laser Micro-/Nanoengineering

Program Chairs: **Henry Helvajian**, The Aerospace Corp. (USA); **James S. Horwitz**, U.S. Dept. of Energy (USA)

8607	<b>Laser Applications in Microelectronic and Optoelectronic Manufacturing (LAMOM) XVIII</b> (Xianfan Xu; Guido Hennig; Yoshiki Nakata; Stephan W. Roth) . . . . .	213
8608	<b>Laser-based Micro- and Nanopackaging and Assembly VII</b> (Udo Klotzbach; Yongfeng Lu; Kunihiko Washio) . . . . .	217
8609	<b>Synthesis and Photonics of Nanoscale Materials X</b> (Jan J. Dubowski; David B. Geohegan; Frank Träger) . . . . .	219
8612	<b>Micromachining and Microfabrication Process Technology XVIII</b> (Mary Ann Maher; Paul J. Resnick) . . . . .	232
8613	<b>Advanced Fabrication Technologies for Micro/Nano Optics and Photonics VI</b> (Georg von Freymann; Winston V. Schoenfeld; Raymond C. Rumpf) . . . . .	234
8614	<b>Reliability, Packaging, Testing, and Characterization of MOEMS/MEMS and Nanodevices XII</b> (Rajeshuni Ramesham; Herbert R. Shea) . . . . .	237

## Laser Applications

8607	<b>Laser Applications in Microelectronic and Optoelectronic Manufacturing (LAMOM) XVIII</b> (Xianfan Xu; Guido Hennig; Yoshiki Nakata; Stephan W. Roth) . . . . .	213
8610	<b>Free-Space Laser Communication and Atmospheric Propagation XXV</b> (Hamid Hemmati; Don M. Boroson) . . . . .	221
8611	<b>Frontiers in Ultrafast Optics: Biomedical, Scientific, and Industrial Applications XIII</b> (Alexander Heisterkamp; Peter R. Herman; Michel Meunier; Stefan Nolte) . . . . .	223
8637	<b>Complex Light and Optical Forces VII</b> (Jesper Glückstad; David L. Andrews; Enrique J. Galvez) . . . . .	315
8638	<b>Laser Refrigeration of Solids VI</b> (Richard I. Epstein; Denis V. Seletskiy; Mansoor Sheik-Bahae) . . . . .	318



Download the  
SPIE Conference App







OPTICS & PHOTONICS International Congress 2013

# OPIC2013

<http://opicon.jp/>

Co-located with OPTICS & PHOTONICS International Exhibition 2013

Sponsored by OPTICS & PHOTONICS International Council

**Date: April 23 (Tue.) – 26 (Fri.), 2013**

**Place: Pacifico Yokohama, Japan**

## Conferences & Sponsors

- **The 2nd Advanced Lasers and Photon Sources Conference (ALPS '13)**  
The Laser Society of Japan
- **Laser Display Conference '13 (LDC '13)**  
The Japan Society of Applied Physics
- **Conference on Laser Surgery and Medicine 2013 (CLSM 2013)**  
Japan Society for Laser Surgery and Medicine
- **International Conference on High-Energy Density Science 2013 (HEDS 2013)**  
The Laser Society of Japan
- **Conference on Laser and accelerator neutron sources and applications 2013 (LANSA '13)**
- **International Symposium on Laser Processing for CFRP and Composite Materials 2013 (LPCC2013)**
- **Conference on Laser Application to Nuclear Engineering '13 (LANE '13)**  
The Laser Society of Japan, Atomic Energy Society of Japan, Japan Laser Processing Society
- **The 1st. Laser Ignition Conference 2013 (LIC '13)**
- **Conference on LED and its industrial application '13 (LEDIA '13)**  
Akasaki Research Center(ARC), Nagoya University
- **The 1st International Conference on Sensing Technologies for Biomaterial, Food and Agriculture 2013 (SeTBio '13)**  
SPIE

OPTICS & PHOTONICS International Exhibition

**OPIE '13**

24-26 April, 2013  
Pacifico Yokohama, Japan

**LASER EXPO**

**POSITIONING EXPO**

**LENS EXPO**

**Medical & Imaging EXPO** NEW

**IR + UV EXPO**

**Space & Astronomical Optics EXPO** NEW



First-time exhibitors receive a **20% discount!**

For further information

**The Optronics Co., Ltd. International Dept.**

E-mail: [intl@optronics.co.jp](mailto:intl@optronics.co.jp) <http://www.opie.jp/en/>

## MOEMS- MEMS

SPIE Photonics West

### Symposium Chair



**Harald Schenk**  
Fraunhofer Institute for Photonic  
Microsystems (Germany)

### Symposium Cochair



**David L. Dickensheets**  
Montana State Univ. (USA)

### Steering Committee Chair



**Rajeshuni Ramesham**  
Jet Propulsion Lab. (USA)

### Founding Chair



**M. Edward Motamedi**  
Revoltech Microsystems (USA)

## Micro/Nanofabrication

- 8607 **Laser Applications in Microelectronic and Optoelectronic Manufacturing (LAMOM) XVIII** (Xianfan Xu; Guido Hennig; Yoshiki Nakata; Stephan W. Roth) . . . . .213
- 8608 **Laser-based Micro- and Nanopackaging and Assembly VII** (Udo Klotzbach; Yongfeng Lu; Kunihiro Washio) . . . . .217
- 8612 **Micromachining and Microfabrication Process Technology XVIII** (Mary Ann Maher; Paul J. Resnick) . . . . .232
- 8613 **Advanced Fabrication Technologies for Micro/Nano Optics and Photonics VI** (Georg von Freymann; Winston V. Schoenfeld; Raymond C. Rumpf) . . . . .234

## Devices/Applications/Reliability

- 8614 **Reliability, Packaging, Testing, and Characterization of MOEMS/MEMS and Nanodevices XII** (Rajeshuni Ramesham; Herbert R. Shea) . . . . .237
- 8615 **Microfluidics, BioMEMS, and Medical Microsystems XI** (Holger Becker) . . . . .239
- 8616 **MOEMS and Miniaturized Systems XII** (Wibool Piyawattanametha; Yong-Hwa Park) . . . . .242
- 8617 **MEMS Adaptive Optics VII** (Scot S. Olivier; Thomas G. Bifano; Joel Kubby) . . . . .245
- 8618 **Emerging Digital Micromirror Device Based Systems and Applications V** (Michael R. Douglass; Patrick I. Oden) .246

**Connecting Peers.  
Advancing the Conversation.**

Connect with colleagues, join the discussions, and follow optics and photonics news and activities via SPIE social media channels.

[spie.org/connect](http://spie.org/connect)

**SPIE**



# WHERE THE FUTURE OF PHOTONICS IS FOUND



Photonic Online is the leading online community and industry resource for optics and photonics professionals.

- **Find Solutions** For Your Projects.
- Stay Current With **Industry Headlines**.
- **Top Ten** - What Are Your Colleagues And Competitors Reading?
- **Engage** With Industry Thought Leaders.
- Register For Our **Free Newsletter**.

Visit us at [www.photonicsonline.com](http://www.photonicsonline.com).



Visit Photonic West Booth 2404 for a free copy of our *Photonic West 2013 Product Showcase* and a chance to **WIN** an **iPad 4**.



## Photonic Online

# OPTO

SPIE Photonics West

## Symposium Chair



**David L. Andrews**  
Univ. of East Anglia Norwich  
(United Kingdom)

## Symposium Cochairs



**Alexei L. Glebov**  
OptiGrate Corp. (United States)



**Klaus P. Streubel**  
OSRAM AG (Germany)

## Optoelectronic Materials and Devices

Program Chair: **James G. Grote**, Air Force Research Lab. (USA)

- 8619 **Physics and Simulation of Optoelectronic Devices XXI** (Bernd Witzigmann; Marek Osinski; Fritz Henneberger; Yasuhiko Arakawa) . . . 252
- 8620 **Physics, Simulation, and Photonic Engineering of Photovoltaic Devices II** (Alexandre Freundlich; Jean-Francois Guillemoles). . . . . 256
- 8621 **Optical Components and Materials X** (Michel J. F. Digonnet; Shubin Jiang; J. Christopher Dries) . . . . . 261
- 8622 **Organic Photonic Materials and Devices XV** (Christopher E. Tabor; Francois Kajzar; Toshikuni Kaino; Yasuhiro Koike) . . . . . 264
- 8623 **Ultrafast Phenomena and Nanophotonics XVII** (Markus Betz; Abdulhakem Y. Elezzabi; Jin-Joo Song; Kong-Thon Tsen). . . . . 267
- 8624 **Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications VI** (Laurence P. Sadwick; Créidhe M. O'Sullivan) . . 271
- 8625 **Gallium Nitride Materials and Devices VIII** (Jen-Inn Chyi; Yasushi Nanishi; Hadis Morkoç) . . . . . 274
- 8626 **Oxide-based Materials and Devices IV** (Ferechteh H. Teherani; David C. Look; David J. Rogers) . . . . . 279

## Photonic Integration

Program Chair: **Yakov Sidorin**, Quarles & Brady LLP (USA)

- 8627 **Integrated Optics: Devices, Materials, and Technologies XVII** (Jean Emmanuel Broquin; Gualtiero Nunzi Conti) . . . . . 271
- 8628 **Optoelectronic Integrated Circuits XV** (Louay A. Eldada; El-Hang Lee) 283
- 8629 **Silicon Photonics VIII** (Joel Kubby; Graham T. Reed) . . . . . 286
- 8630 **Optoelectronic Interconnects XIII** (Alexei L. Glebov; Ray T. Chen) . . . . . 288
- 8624 **Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications VI** (Laurence P. Sadwick; Créidhe M. O'Sullivan) . . 291

## Nanotechnologies in Photonics

Program Chair: **Ali Adibi**, Georgia Institute of Technology (USA)

- 8631 **Quantum Sensing and Nanophotonic Devices X** (Manijeh Razeghi) 294
- 8632 **Photonic and Phononic Properties of Engineered Nanostructures III** (Ali Adibi; Shawn-Yu Lin; Axel Scherer) . . . . . 300
- 8633 **High Contrast Metastructures II** (Connie J. Chang-Hasnain; Fumio Koyama; Alan E. Willner; Weimin Zhou) . . . . . 304

- 8634 **Quantum Dots and Nanostructures: Synthesis, Characterization, and Modeling X** (Kurt G. Eyink; Diana L. Huffaker; Frank Szmulowicz) . . . . . 306
- 8613 **Advanced Fabrication Technologies for Micro/Nano Optics and Photonics VI** (Georg von Freymann; Winston V. Schoenfeld; Raymond C. Rumpf) . . . . . 234

## Advanced Quantum and Optoelectronic Applications

Program Chair: **Zameer U. Hasan**, Temple Univ. (USA)

- 8635 **Advances in Photonics of Quantum Computing, Memory, and Communication VI** (Zameer U. Hasan; Philip R. Hemmer; Hwang Lee; Charles M. Santori) . . . . . 308
- 8636 **Advances in Slow and Fast Light VI** (Selim Shahriar; Frank A. Narducci) . . . . . 312
- 8637 **Complex Light and Optical Forces VII** (Jesper Glückstad; David L. Andrews; Enrique J. Galvez) . . . . . 315
- 8638 **Laser Refrigeration of Solids VI** (Richard I. Epstein; Denis V. Seletskiy; Mansoor Sheik-Bahae) . . . . . 318
- 8631 **Quantum Sensing and Nanophotonic Devices X** (Manijeh Razeghi) 294
- 8634 **Quantum Dots and Nanostructures: Synthesis, Characterization, and Modeling X** (Kurt G. Eyink; Diana L. Huffaker; Frank Szmulowicz) . . . . . 306

## Semiconductor Lasers and LEDs

Program Chair: **Klaus P. Streubel**, OSRAM AG (Germany)

- 8639 **Vertical-Cavity Surface-Emitting Lasers XVII** (Kent D. Choquette; James K. Guenter) . . . . . 209
- 8640 **Novel In-Plane Semiconductor Lasers XII** (Alexey A. Belyanin; Peter M. Smowton) . . . . . 211
- 8641 **Light-Emitting Diodes: Materials, Devices, and Applications for Solid State Lighting XVII** (Klaus P. Streubel; Heonsu Jeon; Li-Wei Tu) . . . . . 252
- 8605 **High-Power Diode Laser Technology and Applications XI** (Mark S. Zediker) . . . . . 274
- 8606 **Vertical-External-Cavity Surface-Emitting Lasers (VECSELs) III** (Jennifer E. Hastie) . . . . . 319
- 8619 **Physics and Simulation of Optoelectronic Devices XXI** (Bernd Witzigmann; Marek Osinski; Fritz Henneberger; Yasuhiko Arakawa) . . . . . 321
- 8625 **Gallium Nitride Materials and Devices VIII** (Jen-Inn Chyi; Yasushi Nanishi; Hadis Morkoç) . . . . . 325

## Displays and Holography

Program Chair: **Liang-Chy Chien**, Kent State Univ. (USA)

- 8642 **Emerging Liquid Crystal Technologies VIII** (Liang-Chy Chien) . . . . 329
- 8643 **Advances in Display Technologies III** (Liang-Chy Chien; Sin-Doo Lee; Ming Hsien Wu) . . . . . 331
- 8644 **Practical Holography XXVII: Materials and Applications** (Hans I. Bjelkhagen; V. Michael Bove, Jr.) . . . . . 333

## Optical Communications: Devices to Systems

Program Chair: **Benjamin Dingel**, Nasfine Photonics, Inc. (USA)

- 8645 **Broadband Access Communication Technologies VII** (Benjamin B. Dingel; Raj Jain; Katsutoshi Tsukamoto) . . . . . 221
- 8646 **Optical Metro Networks and Short-Haul Systems V** (Werner Weiershausen; Benjamin B. Dingel; Achyut K. Dutta; Atul K. Srivastava) . . . . . 271
- 8647 **Next-Generation Optical Communication: Components, Sub-Systems, and Systems II** (Guifang Li) . . . . . 288
- 8610 **Free-Space Laser Communication and Atmospheric Propagation XXV** (Hamid Hemmati; Don M. Boroson) . . . . . 291
- 8624 **Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications VI** (Laurence P. Sadwick; Créidhe M. O'Sullivan) . . 336
- 8629 **Silicon Photonics VIII** (Joel Kubby; Graham T. Reed) . . . . . 339
- 8630 **Optoelectronic Interconnects XIII** (Alexei L. Glebov; Ray T. Chen) . 342



# My Photonics Media TO-DO LIST

Booth #8600 BiOS and 600 & 601 Photonics West

## Play Light Masters



Are you good at guessing company logos?

Current on industry news and events?

Can you tell Snell's law of refraction from Abbe's law?

Do you know a confocal microscopy image from one acquired by epifluorescence?



Are you the next Light Master? There's only one way to find out! Play Light Masters at the Photonics Media booth at both BiOS and Photonics West. You could take your place at the top of the Photonics Trivia Pantheon AND be entered into a random drawing for a Google Nexus 7 tablet!

Drawings will be held at 3 p.m. on Sunday 2/3/13, Tuesday 2/5/13, Wednesday 2/6/13 and Thursday 2/7/13

## Scan Badge, Enter to Win

Have your badge scanned when you're at the Photonics Media booth, and you are entered to win a \$300 gift card from Amazon.

## Appear on Camera Light Matters Weekly Newscast

Stop by the Photonics Media booth between 10 a.m. and 2 p.m. on Tuesday, February 5, and you could appear on an upcoming edition of Light Matters Weekly Newscast at Photonics.com, the industry's original weekly newscast.

Be prepared to answer this question on camera:

**"How do you explain photonics to the general public?"**

We'll give you your very own Light Matters T-shirt for participating.



## Subscribe or Renew

Take a moment to subscribe to the industry's leading magazines. Pick up a copy of the current issues of *Photonics Spectra*, *BioPhotonics* and *EuroPhotonics*. Fill out a subscription form and pick up a small token of our appreciation.



## Get Smart with Courses at Photonics West

- 70 courses and workshops to choose from
- SPIE Student Members get 50% off courses
- All-new courses including nanobioengineering & nanomedicine, optomechanical systems engineering, and hands-on multiphoton tomography
- Learn from the best instructors in the industry

### Advanced Quantum and Optoelectronic Applications

SC1080 **Modeling and Simulation with Computational Fourier Optics**  
**NEW** (Voelz) 8:30 am to 5:30 pm, \$625 / \$735  
 Tue

### Biomedical Spectroscopy, Microscopy, and Imaging

SC1072 **Statistics for Imaging and Sensor Data** (Bajorski)  
 Sat 8:30 am to 5:30 pm, \$645 / \$755

SC1054 **Bio-Interferometry: Fundamentals and Applications to Biosensors, Drug Discovery, Microscopy and Biomedical Imaging** (Nolte) 8:30 am to 12:30 pm, \$350 / \$405

SC1051 **Fundamentals of Microscope Design** (Seward)  
 Sun 8:30 am to 12:30 pm, \$350 / \$405

SC981 **Biomedical Fiber Optic Sensors and Applications**  
 (Mendez, McLaughlin) 1:30 pm to 5:30 pm, \$350 / \$405

SC868 **Optical Design for Biomedical Imaging** (Liang)  
 Mon 8:30 am to 12:30 pm, \$425 / \$480

SC309 **Fluorescent Markers: Usage and Optical System Optimization** (Levi) 1:30 pm to 5:30 pm, \$350 / \$405

SC746 **Introduction to Ultrafast Optics** (Trebino)  
 Tue 1:30 pm to 5:30 pm, \$350 / \$405

SC1092 **Hands-on Multiphoton Tomography: From the Lab into the Clinics** (König) 8:30 am to 5:30 pm,  
**NEW** \$575 / \$685  
 Wed

SC1053 **Ultrafast Laser Pulse Shaping and Adaptive Pulse Compression** (Dantus) 1:30 pm to 5:30 pm, \$350 / \$405  
 Wed

### Clinical Technologies and Systems

SC1072 **Statistics for Imaging and Sensor Data** (Bajorski)  
 Sat 8:30 am to 5:30 pm, \$645 / \$755

SC1054 **Bio-Interferometry: Fundamentals and Applications to Biosensors, Drug Discovery, Microscopy and Biomedical Imaging** (Nolte) 8:30 am to 12:30 pm, \$350 / \$405

SC1087 **Fiber Bragg Gratings: Production, Modeling and Applications** (Thomas) 8:30 am to 12:30 pm,  
**NEW** \$350 / \$405  
 Sun

SC981 **Biomedical Fiber Optic Sensors and Applications**  
 (Mendez, McLaughlin) 1:30 pm to 5:30 pm, \$350 / \$405  
 Sun

SC312 **Principles and Applications of Optical Coherence Tomography** (Fujimoto) 1:30 pm to 5:30 pm, \$350 / \$405  
 Sun

SC868 **Optical Design for Biomedical Imaging** (Liang)  
 Mon 8:30 am to 12:30 pm, \$425 / \$480

SC1092 **Hands-on Multiphoton Tomography: From the Lab into the Clinics** (König) 8:30 am to 5:30 pm,  
**NEW** \$575 / \$685  
 Wed

### Displays and Holography

SC011 **Design of Efficient Illumination Systems** (Cassarly)  
 Mon 8:30 am to 12:30 pm, \$350 / \$405

SC790 **Liquid Crystals: From Fundamentals to Applications**  
 (Smalyukh) 8:30 am to 5:30 pm, \$575 / \$685  
 Mon

### Laser Applications

SC188 **Laser Beam Propagation for Applications in Laser Communications, Laser Radar, and Active Imaging**  
 (Phillips, Andrews) 8:30 am to 5:30 pm, \$695 / \$805  
 Mon

SC1089 **Laser Safety for Engineers** (Lieb) 8:30 am to 12:30 pm,  
**NEW** \$350 / \$405  
 Tue

SC746 **Introduction to Ultrafast Optics** (Trebino)  
 Tue 1:30 pm to 5:30 pm, \$350 / \$405

### Laser Micro-/Nanoengineering

SC743 **Micromachining with Femtosecond Lasers** (Nolte)  
 Mon 1:30 pm to 5:30 pm, \$350 / \$405

SC689 **Precision Laser Micromachining** (Schaeffer)  
 Mon 1:30 pm to 5:30 pm, \$350 / \$405

SC1089 **Laser Safety for Engineers** (Lieb) 8:30 am to 12:30 pm,  
**NEW** \$350 / \$405  
 Tue

SC746 **Introduction to Ultrafast Optics** (Trebino)  
 Tue 1:30 pm to 5:30 pm, \$350 / \$405

### Laser Source Engineering

SC752 **Solid State Laser Technology** (Hodgson)  
 Sat 8:30 am to 5:30 pm, \$575 / \$685

SC1087 **Fiber Bragg Gratings: Production, Modeling and Applications** (Thomas) 8:30 am to 12:30 pm,  
**NEW** \$350 / \$405  
 Sun

SC748 **High-Power Fiber Sources** (Nilsson) 8:30 am to 5:30 pm,  
 \$575 / \$685  
 Sun

SC012 **Miniature Optics for Diode Lasers and Beam Shaping**  
 (Tkaczyk) 8:30 am to 5:30 pm, \$575 / \$685  
 Sun

SC860 **Resonator Design for Solid State Lasers** (Paschotta)  
 Sun 8:30 am to 5:30 pm, \$575 / \$685

SC1020 **Splicing of Specialty Fibers and Glass Processing of Fused Fiber Components for Fiber Lasers** (Wang)  
 Sun 8:30 am to 12:30 pm, \$350 / \$405

SC1012 **Coherent Mid-Infrared Sources and Applications**  
 (Vodopyanov) 1:30 pm to 5:30 pm, \$350 / \$405  
 Sun

SC974 **Interconnection and Splicing of High-Power Optical Fibers**  
 (Yablon) 8:30 am to 12:30 pm, \$350 / \$405  
 Mon



- SC818 **Laser Beam Quality** (*Paschotta*) 8:30 am to 12:30 pm, Tue \$350 / \$405
- SC1089 **Laser Safety for Engineers** (*Lieb*) 8:30 am to 12:30 pm, **NEW** Tue \$350 / \$405
- SC977 **Fundamentals of Laser Beam Profile Measurements** (*Rypma*) Tue 1:30 pm to 5:30 pm, \$350 / \$405
- SC746 **Introduction to Ultrafast Optics** (*Trebino*) Tue 1:30 pm to 5:30 pm, \$350 / \$405
- SC744 **Ultrafast Fiber Lasers** (*Fermann*) Wed 1:30 pm to 5:30 pm, \$350 / \$405
- SC1053 **Ultrafast Laser Pulse Shaping and Adaptive Pulse Compression** (*Dantus*) Wed 1:30 pm to 5:30 pm, \$350 / \$405
- WS972 **Basic Laser Technology** (*Sukuta*) Wed 8:30 am to 12:30 pm, \$350 / \$405

## Metrology & Standards

- SC212 **Modern Optical Testing** (*Wyant*) Sun 8:30 am to 12:30 pm, \$380 / \$435
- SC958 **LED & Solid-State Lighting Standards and Metrology** (*Jiao*) Sun 1:30 pm to 5:30 pm, \$350 / \$405
- SC211 **Practical Interferometry and Fringe Analysis** (*Creath*) Mon 8:30 am to 5:30 pm, \$575 / \$685
- SC1089 **Laser Safety for Engineers** (*Lieb*) Tue 8:30 am to 12:30 pm, **NEW** \$350 / \$405
- SC700 **Understanding Scratch and Dig Specifications** (*Aikens*) Wed 8:30 am to 12:30 pm, \$420 / \$475
- SC1017 **Optics Surface Inspection Workshop** (*Aikens*) Wed 1:30 pm to 5:30 pm, \$430 / \$485

## Micro/Nanofabrication

- SC1087 **Fiber Bragg Gratings: Production, Modeling and Applications** (*Thomas*) Sun 8:30 am to 12:30 pm, **NEW** \$350 / \$405
- SC012 **Miniature Optics for Diode Lasers and Beam Shaping** (*Tkaczyk*) Sun 8:30 am to 5:30 pm, \$5725 / \$685
- SC743 **Micromachining with Femtosecond Lasers** (*Nolte*) Mon 1:30 pm to 5:30 pm, \$350 / \$405
- SC689 **Precision Laser Micromachining** (*Schaeffer*) Mon 1:30 pm to 5:30 pm, \$350 / \$405
- SC454 **Fabrication Technologies for Micro- and Nano-Optics** (*Suleski*) Tue 8:30 am to 12:30 pm, \$350 / \$405

## Nano/Biophotonics

- SC1090 **Biophotonics, Nanobioengineering and Nanomedicine** (*Prasad*) Sun 8:30 am to 5:30 pm, **NEW** \$735 / \$845
- SC727 **Nanoplasmonics** (*Stockman*) Tue 8:30 am to 5:30 pm, \$575 / \$685
- SC309 **Fluorescent Markers: Usage and Optical System Optimization** (*Levi*) Tue 1:30 pm to 5:30 pm, \$350 / \$405

## Nanotechnologies in Photonics

- SC608 **Photonic Crystals: A Crash Course, from Bandgaps to Fibers** (*Johnson*) Sun 8:30 am to 12:30 pm, \$395 / \$450

## Nonlinear Optics

- SC1087 **Fiber Bragg Gratings: Production, Modeling and Applications** (*Thomas*) Sun 8:30 am to 12:30 pm, **NEW** \$350 / \$405
- SC1020 **Splicing of Specialty Fibers and Glass Processing of Fused Fiber Components for Fiber Lasers** (*Wang*) Sun 8:30 am to 12:30 pm, \$350 / \$405
- SC1012 **Coherent Mid-Infrared Sources and Applications** (*Vodopyanov*) Sun 1:30 pm to 5:30 pm, \$350 / \$405
- SC1060 **Fundamentals of Nonlinear Optics** (*Powers*) Sun 1:30 pm to 5:30 pm, \$350 / \$405
- SC974 **Interconnection and Splicing of High-Power Optical Fibers** (*Yablon*) Mon 8:30 am to 12:30 pm, \$350 / \$405
- SC1053 **Ultrafast Laser Pulse Shaping and Adaptive Pulse Compression** (*Dantus*) Wed 1:30 pm to 5:30 pm, \$350 / \$405

## Optical Communications: Devices to Systems

- SC188 **Laser Beam Propagation for Applications in Laser Communications, Laser Radar, and Active Imaging** (*Phillips, Andrews*) Mon 8:30 am to 5:30 pm, \$695 / \$805


## Optical Engineering & Fabrication

- SC1060 **Fundamentals of Nonlinear Optics** (*Powers*) Sun 1:30 pm to 5:30 pm, \$350 / \$405
- SC1071 **Understanding Diffractive Optics** (*Soskind*) Sun 1:30 pm to 5:30 pm, \$350 / \$405
- SC017 **Principles of Fourier Optics and Diffraction** (*Gaskill*) Mon 8:30 am to 5:30 pm, \$680 / \$790
- SC321 **Thin Film Optical Coatings** (*Macleod*) Mon 8:30 am to 5:30 pm, \$575 / \$685
- SC1080 **Modeling and Simulation with Computational Fourier Optics** (*Voelz*) Tue 8:30 am to 5:30 pm, **NEW** \$625 / \$735
- SC1039 **Evaluating Aspheres for Manufacturability** (*Hall*) Wed 8:30 am to 12:30 pm, \$350 / \$405
- SC700 **Understanding Scratch and Dig Specifications** (*Aikens*) Wed 8:30 am to 12:30 pm, \$420 / \$475
- SC1086 **Optical Materials, Fabrication and Testing for the Optical Engineer** (*DeGroot Nelson*) Wed 1:30 pm to 5:30 pm, **NEW** \$350 / \$405
- SC1017 **Optics Surface Inspection Workshop** (*Aikens*) Wed 1:30 pm to 5:30 pm, \$430 / \$485
- WS972 **Basic Laser Technology** (*Sukuta*) Wed 8:30 am to 12:30 pm, \$350 / \$405


## Plan Your Week

### Visit the iZone

Located Exhibition Level, North end




Use the free SPIE Conference App and Exhibitor Directory to search, browse, schedule, print.



ZONE

Courtesy of



# Course Index

## Optical Systems & Lens Design

- SC690 **Optical System Design: Layout Principles and Practice** (Greivenkamp) 8:30 am to 5:30 pm, \$680 / \$790  
Sun
- SC011 **Design of Efficient Illumination Systems** (Cassarly)  
Mon 8:30 am to 12:30 pm, \$350 / \$405
- SC835 **Infrared Systems - Technology & Design** (Daniels)  
Mon-Tue 8:30 am to 5:30 pm, \$1,190 / \$1,445
- SC935 **Introduction to Lens Design** (Bentley) 8:30 am to 5:30 pm,  
Mon \$575 / \$685
- SC156 **Basic Optics for Engineers** (Boreman) 8:30 am to 5:30 pm,  
Tue \$615 / \$725
- SC1039 **Evaluating Aspheres for Manufacturability** (Hall)  
Wed 8:30 am to 12:30 pm, \$350 / \$405
- SC1052 **Optical Systems Engineering** (Kasunic)  
Wed 8:30 am to 5:30 pm, \$575 / \$685
- SC003 **Practical Optical System Design** (Youngworth)  
Wed 8:30 am to 5:30 pm, \$660 / \$770
- WS609 **Basic Optics for Non-Optics Personnel** (Harding)  
Mon 1:30 pm to 4:00 pm, \$150 / \$200

## Optoelectronic Materials and Devices

- SC1087 **Fiber Bragg Gratings: Production, Modeling and**  
**NEW Applications** (Thomas) 8:30 am to 12:30 pm,  
Sun \$350 / \$405
- SC1060 **Fundamentals of Nonlinear Optics** (Powers)  
Sun 1:30 pm to 5:30 pm, \$350 / \$405
- SC817 **Silicon Photonics** (Michel, Saini) 1:30 pm to 5:30 pm,  
Sun \$350 / \$405
- SC747 **Semiconductor Photonic Device Fundamentals** (Linden)  
Mon 8:30 am to 5:30 pm, \$575 / \$685
- SC547 **Terahertz Wave Technology and Applications** (Zhang)  
Mon 1:30 pm to 5:30 pm, \$350 / \$405
- SC1091 **Fundamentals of Reliability Engineering for**  
**NEW Optoelectronic Devices** (Leisher) 8:30 am to 12:30 pm,  
Tue \$350 / \$405
- SC1080 **Modeling and Simulation with Computational Fourier**  
**NEW Optics** (Voelz) 8:30 am to 5:30 pm, \$625 / \$735  
Tue

## Optomechanics

- SC014 **Introduction to Optomechanical Design** (Vukobratovich)  
Sun-Mon 8:30 am to 5:30 pm, \$1,050 / \$1,305
- SC1085 **Optomechanical Systems Engineering** (Kasunic)  
**NEW** 8:30 am to 5:30 pm, \$575 / \$685  
Mon
- SC781 **Optomechanical Analysis** (Hatheway) 8:30 am to 5:30 pm,  
Tue \$575 / \$685
- SC015 **Structural Adhesives for Optical Bonding** (Daly)  
Tue 8:30 am to 12:30 pm, \$350 / \$405

## Photonic Integration

- SC1087 **Fiber Bragg Gratings: Production, Modeling and**  
**NEW Applications** (Thomas) 8:30 am to 12:30 pm,  
Sun \$350 / \$405
- SC608 **Photonic Crystals: A Crash Course, from Bandgaps**  
**to Fibers** (Johnson) 8:30 am to 12:30 pm, \$395 / \$450  
Sun
- SC817 **Silicon Photonics** (Michel, Saini) 1:30 pm to 5:30 pm,  
Sun \$350 / \$405
- SC747 **Semiconductor Photonic Device Fundamentals** (Linden)  
Mon 8:30 am to 5:30 pm, \$575 / \$685
- SC1091 **Fundamentals of Reliability Engineering for**  
**NEW Optoelectronic Devices** (Leisher) 8:30 am to 12:30 pm,  
Tue \$350 / \$405
- SC1080 **Modeling and Simulation with Computational Fourier**  
**NEW Optics** (Voelz) 8:30 am to 5:30 pm, \$625 / \$735  
Tue

## Photonic Therapeutics and Diagnostics

- SC1072 **Statistics for Imaging and Sensor Data** (Bajorski)  
Sat 8:30 am to 5:30 pm, \$645 / \$755
- SC1090 **Biophotonics, Nanobioengineering and Nanomedicine**  
**NEW** (Prasad) 8:30 am to 5:30 pm, \$735 / \$845  
Sun
- SC702 **Optics and Optical Quality of the Human Eye** (Roorda)  
Mon 8:30 am to 12:30 pm, \$350 / \$405
- SC1092 **Hands-on Multiphoton Tomography:**  
**NEW From the Lab into the Clinics** (König) 8:30 am to 5:30 pm,  
Wed \$575 / \$685

## Semiconductor Lasers and LEDs

- SC052 **Light-Emitting Diodes** (Schubert) 8:30 am to 12:30 pm,  
Sun \$420 / \$475
- SC012 **Miniature Optics for Diode Lasers and Beam Shaping**  
Sun (Tkaczyk) 8:30 am to 5:30 pm, \$575 / \$685
- SC1020 **Splicing of Specialty Fibers and Glass Processing of**  
**Fused Fiber Components for Fiber Lasers** (Wang)  
Sun 8:30 am to 12:30 pm, \$350 / \$405
- SC1012 **Coherent Mid-Infrared Sources and Applications**  
Sun (Vodopyanov) 1:30 pm to 5:30 pm, \$350 / \$405
- SC958 **LED & Solid-State Lighting Standards and Metrology**  
Sun (Jiao) 1:30 pm to 5:30 pm, \$350 / \$405
- SC011 **Design of Efficient Illumination Systems** (Cassarly)  
Mon 8:30 am to 12:30 pm, \$350 / \$405
- SC974 **Interconnection and Splicing of High-Power Optical Fibers**  
Mon (Yablon) 8:30 am to 12:30 pm, \$350 / \$405
- SC747 **Semiconductor Photonic Device Fundamentals** (Linden)  
Mon 8:30 am to 5:30 pm, \$575 / \$685
- SC1089 **Laser Safety for Engineers** (Lieb) 8:30 am to 12:30 pm,  
**NEW** \$350 / \$405  
Tue
- SC977 **Fundamentals of Laser Beam Profile Measurements**  
Tue (Rypma) 1:30 pm to 5:30 pm, \$350 / \$405

## Registration Required

See SPIE Cashier, North Lobby



## Tissue Optics, Laser-Tissue Interaction, and Tissue Engineering

- SC1072 **Statistics for Imaging and Sensor Data** (*Bajorski*)  
Sat 8:30 am to 5:30 pm, \$645 / \$755
- SC312 **Principles and Applications of Optical Coherence Tomography** (*Fujimoto*) 1:30 pm to 5:30 pm, \$350 / \$405
- SC029 **Tissue Optics** (*Jacques*) 1:30 pm to 5:30 pm,  
Sun \$350 / \$405
- SC868 **Optical Design for Biomedical Imaging** (*Liang*)  
Mon 8:30 am to 12:30 pm, \$425 / \$480
- SC1092 **Hands-on Multiphoton Tomography: From the Lab into the Clinics** (*König*) 8:30 am to 5:30 pm,  
**NEW** Wed \$575 / \$685
- SC1088 **Image-guided Tissue Spectroscopy and Image Reconstruction using NIRFAST: A hands-on course**  
**NEW** Thu (*Dehghani, Pogue, Davis*) 8:30 am to 5:30 pm, \$575 / \$685

## Industry Workshops

### Business & Intellectual Property

- WS1058 **Critical Skills for Compelling Research Proposals**  
Sun (*Diehl*) 8:30 am to 12:30 pm, \$100 / \$150
- WS1057 **Magnifying Your IP IQ: Topics for the Savvy Intellectual Property Manager** (*Gallagher, Yamato, Jankowski, Bayles*)  
Tue 8:30 am to 12:30 pm, \$350 / \$405
- WS1056 **Commercialization of Photonics Technology** (*Krohn*)  
Tue 1:30 pm to 5:30 pm, \$350 / \$405
- WS1093 **Going Pro - Marketing Essentials for Sustainable Business** (*Gleber*) 1:30 pm to 5:30 pm,  
**NEW** Wed \$350 / \$405

### Fundamental Optics

- WS609 **Basic Optics for Non-Optics Personnel** (*Harding*)  
Mon 1:30 pm to 4:00 pm, \$150 / \$200
- WS972 **Basic Laser Technology** (*Sukuta*) 8:30 am to 12:30 pm,  
Wed \$350 / \$405

## Professional Development Workshops

- WS1058 **Critical Skills for Compelling Research Proposals**  
Sun (*Diehl*) 8:30 am to 12:30 pm, \$100 / \$150
- WS1059 **Resumes to Interviews: Strategies for a Successful Job Search** (*Lawson, Krinsky*) 1:30 pm to 4:00 pm, \$100 / \$150
- WS667 **The Craft of Scientific Presentations: A Workshop on Technical Presentations** (*Alley*) 8:30 am to 12:30 pm,  
Tue \$125 / \$175
- WS668 **The Craft of Scientific Writing: A Workshop on Technical Writing** (*Alley*) 1:30 pm to 5:30 pm, \$125 / \$175



Members  
Receive  
— ONE FREE —  
Online Course  
Annually  
SELECT COURSES ONLY

# SPIE Online Courses

At Your Pace · On Your Schedule · At Your Desk

**SPIE Online Courses are available in subjects for engineers, researchers, and sales and marketing staff alike.**

### Courses feature

- Full video of instructor
- Synchronized PowerPoint slides
- Quizzes to test retention
- Specific learning outcomes
- CEU Credits
- No added travel time and expense

[www.spie.org/onlinecourses](http://www.spie.org/onlinecourses)

**SPIE**

# Special Events Daily Schedule

<b>Saturday</b> 2 February	<b>Sunday</b> 3 February	<b>Monday</b> 4 February
	<h2 style="margin: 0;">SPIE BiOS EXPO</h2> <p style="margin: 0;"><b>The world's largest biophotonics and biomedical optics show</b></p> <p style="margin: 0;"><b>Exhibition Dates and Hours:</b> Saturday 2 February . 12:00 pm to 5:00 pm Sunday 3 February . . 10:00 am to 5:00 pm</p>	<p><b>MOEMS-MEMS Plenary Session</b> 9:00 am to 12:00 pm Welcome and Announcement of MOEMS-MEMS Best Paper and Best Student Paper Awards (<i>Schenk, Dickensheets</i>) Towards Future Systems with Nano-optics Contributions (<i>Kaminska</i>) MOEMS Pressure Sensors for Geothermal Well Monitoring (<i>Challener, Palit, Jones, Airey, Craddock, Knobloch</i> (speaker)) Superaligned Carbon Nanotubes: A Road toward Real Applications (<i>Jiang</i> (speaker), <i>Wang, Li, Liu, Liu, Fan</i>)</p>
<p><b>BiOS Hot Topics</b> · 7:00 to 9:00 pm <b>Welcome and Announcement of SPIE Award Winners</b> Hot Topics Moderator (<i>Fantini</i>) Optogenetics and Hybrid-Optical Control of Cells (<i>Bamberg</i>) MEMs Tunable VCSEL Technology for Ultrahigh-Speed OCT (<i>Potsaid</i>) Patterned Multiphoton Photoactivation in Scattering Tissue by Temporal Focusing (<i>Oron</i>) Clinical Requirements for Optical Imaging in Medical Robotics (<i>Sorger</i>) Camera-Based Functional Imaging of Tissue Hemodynamics (<i>Choi</i>) Multiwave Approach to Elasticity Imaging for Cancer Detection (<i>Fink</i>) Functional Optical Imaging of the Brain (<i>Culver</i>) Photoacoustic Flow Cytometry: Journey in the Blood (<i>Zharov</i>)</p>	<p><b>FDA Policies and Procedures: What Academic Investigators and Small Business Should Know</b> · 5:00 to 7:00 pm <i>Moderators</i> (Grundfest, Raghavachari) Featured presentations: Where do I begin? How to develop regulatory strategies for medical devices (<i>Walker</i>) Engaging FDA to implement changes to drug delivery devices used in approved perscription products (<i>Shafiel</i>) FDA regulation of in vitro diagnostic devices (<i>Hu</i>) Small business' third pary experience (<i>Mulvihill</i>)</p> <p><b>Lunch with the Experts: A BiOS Student Networking Event</b> · 12:30 to 1:30 pm</p>	<p><b>SPIE Fellows Luncheon</b> · 12:00 to 1:30 pm</p> <p><b>Women in Optics Panel and Roundtable—What works for you: a mentoring panel for women in science and technology</b> (<i>Xu</i>) · 4:30 to 6:00 pm</p> <p><b>BiOS Interactive Poster Sessions</b> 3:00 to 4:00 pm; 5:30 to 7:30 pm</p> <p><b>PANEL DISCUSSION: Prospects and Future of Microfluidics</b> · 5:40 to 7:00 pm</p>
<p><b>BiOS Interactive Poster Sessions</b> 3:00 to 4:00 pm (with BiOS EXPO)</p>	<p><b>PROFESSIONAL DEVELOPMENT</b> 2:00 to 5:00 pm <b>From the Bench to the Marketplace</b> Technology Entrepreneur: The Good, the Bad, and the Ugly (<i>Parker</i>) Opportunity Recognition: Identifying Promising Paths for Your Career and Your Start-up (<i>Fiske</i>) Using 21st Century Methods for Find Funding (<i>Eichenholz</i>) Entrepreneur Networking Social</p> <p><b>BiOS Interactive Poster Sessions</b> 3:00 to 4:00 pm (with BiOS EXPO) 5:30 to 7:30 pm</p> <p><b>Student Chapter Leadership Meeting</b> 6:00 to 9:00 pm</p>	<p><b>Photonics West Welcome Reception</b> 7:00 to 8:30 pm</p>
	<h2 style="margin: 0;">Photonics West Welcome Reception</h2> <p style="margin: 0;"><b>Photonics in Motion</b> Monday 4 February 7:00 to 8:30 pm Marriott Marquis Hotel <i>See p. 39 for details.</i></p>	

# Special Events Daily Schedule

Tuesday 5 February	Wednesday 6 February	Thursday 7 February
-----------------------	-------------------------	------------------------



## SPIE Photonics West Exhibition

Walk the floor of the world's premier lasers and photonics marketplace

### Exhibition Dates and Hours:

Tuesday 5 February . . . . . 10:00 am to 5:00 pm  
 Wednesday 6 February . . . . . 10:00 am to 5:00 pm  
 Thursday 7 February . . . . . 10:00 am to 4:00 pm



South Exhibition Hall C  
 Tuesday 5 February · 10:00 am to 5:00 pm  
 Wednesday 6 February · 10:00 am to 5:00 pm

SPIE Career Center

# JOB FAIR

at PhotonicsWest

**OPTO Plenary Session** · 8:00 to 10:10 am  
 Welcome and Opening Remarks (*Andrews*)  
 Announcement of the Green Photonics Awards (*Eglash*)  
 Quantum Optomechanics (*Aspelmeyer*)  
 Group IV Photonics for the Mid Infrared (*Soref*)  
 Light in a Twist: Optical Angular Momentum (*Padgett*)

**Lunch with the Experts: Student Networking Event** · 12:30 to 1:30 pm

**Student Chapter Info Session**  
 1:45 to 2:30 pm

INDUSTRY EVENT: **Silicon Photonics and Photonic Integrated Circuits** (*Hallett*)  
 2:00 to 3:00 pm

INDUSTRY EVENT: **Emerging Growth Opportunities in Sustainable Technology** (*Eglash*) · 3:30 to 4:30 pm

PANEL DISCUSSION: **Getting Hired in 2013 and Beyond** · 3:30 to 4:30 pm

**Speed Networking Social**  
 4:30 to 6:00 pm

**MOEMS-MEMS Interactive Poster Session** · 6:00 to 8:00 pm

**LASE Interactive Poster Session**  
 6:00 to 8:00 pm

**IBOS—International Biomedical Optics Society** · 7:30 to 9:00 pm  
 Featured presentation:  
 New optical treatments: examples from recent research (*Anderson*)

TECHNICAL EVENT: **Laser Communications** · 7:30 to 9:00 pm

WORKSHOP: **The Nature of Light: What Are Photons?** · 7:30 to 9:00 pm

TECHNICAL EVENT: **Holography**  
 7:30 to 9:00 pm

**SPIE Member Reception**  
 (For SPIE Members Only)  
 8:00 to 9:30 pm

**LASE Plenary Session** · 10:20 am to 12:30 pm  
 Announcement of the Green Photonics Award (*Eglash*)  
 Laser-based Particle Acceleration and the Path to TeV Physics and Compact x-ray and Gamma Ray Sources (*Leemans*)  
 Three-dimensional Metamaterials Made By Direct Laser Writing (*Wegener*)  
 Remote Laser Welding for Automotive Seat Production (*Verhaeghe*)

**Career Advancement through SPIE Involvement** · 11:30 am to 12:30 pm

INDUSTRY EVENT: **Executive Perspectives on the World of Optics and Photonics** (*Anderson*) · 2:00 to 3:00 pm

**STARTUP**  
 challenge

See and hear new entrepreneurs pitch their new photonics business and compete for \$10,000  
 3:30 to 6:00 pm

**BiOS Interactive Poster Session**  
 6:00 to 8:00 pm

**OPTO Interactive Poster Session**  
 6:00 to 8:00 pm



**PRISM20 AWARDS13**  
**Prism Awards Ceremony and Banquet**  
 6:00 to 10:00 pm

**"No Ties" Student Social**  
 8:00 to 10:00 pm

INDUSTRY EVENT: **Global Photonics Industry Outlook: Government Initiatives and Opportunities for Growth** (*Arthurs*)  
 8:45 to 9:30 am

# Photonics West

## Visit the Bookstore



- ▶ Books
  - ▶ Professional Development
  - ▶ Membership
  - ▶ Souvenirs
  - ▶ Gifts
  - ▶ Information
-





## BiOS

SPIE Photonics West

## HOT TOPICS

Saturday 2 February · 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to the BiOS Hot Topics included with your conference registration.

7:00 to 7:10 pm

### Welcome and Introduction



**James Fujimoto**  
Massachusetts Institute of  
Technology (USA)  
BiOS 2013 Symposium Chair



**R. Rox Anderson**  
Wellman Ctr. for Photomedicine,  
Massachusetts General Hospital  
(USA) and Harvard School of  
Medicine (USA)  
BiOS 2013 Symposium Chair

7:10 to 7:10 pm

### PRESENTATION OF SPIE AWARDS

**2013 Britton Chance Biomedical  
Optics Award**

**2013 Biophotonics Technology  
Innovator Award**  
(Inaugural Presentation)

**2012 Director's Award**

7:25 to 7:30 pm

### Hot Topics Moderator



**Sergio Fantini**  
Tufts Univ. (USA)

7:30 to 7:40 pm

### Optogenetics and Hybrid- Optical Control of Cells



**Ernst Bamberg**  
Max Planck Insitute (Germany)

7:40 to 7:50 pm

### MEMs Tunable VCSEL Technology for Ultrahigh-Speed OCT



**Ben Potsaid**  
Massachusetts Institute of  
Technology (USA)

7:50 to 8:00 pm

### Patterned Multiphoton Photoactivation in Scattering Tissue by Temporal Focusing



**Dan Oron**  
Weizmann Institute of Science  
(Israel)

8:00 to 8:10 pm

### Clinical Requirements for Optical Imaging in Medical Robotics



**Jonathan Sorger**  
Intuitive Surgical, Inc. (USA)

8:10 to 8:20 pm

### Camera-Based Functional Imaging of Tissue Hemodynamics



**Bernard Choi**  
Beckman Laser Institute (USA)

8:20 to 8:30 pm

### Multiwave Approach to Elasticity Imaging for Cancer Detection



**Mathias Fink**  
Institute ESPCI, CNRS (France)

8:30 to 8:40 pm

### Functional Optical Imaging of the Brain



**Joe Culver**  
Washington Univ. in St. Louis  
(USA)

8:40 to 8:50 pm

### Photoacoustic Flow Cytometry: Journey in the Blood



**Vladimir Zharov**  
Univ. of Arkansas for Medical  
Sciences (USA)



## FDA Policies and Procedures: What Academic Investigators and Small Business Should Know

Sunday 3 February · 5:00 to 7:00 pm · Room 250

5:00 to 5:10 pm

### Welcome and Introduction

Chairs: **Warren Grundfest**, Univ. of California, Los Angeles and **Ramesh Raghavachari**, U.S. Food and Drug Administration

5:10 to 5:35 pm

### Where do I begin? How to develop regulatory strategies for medical devices

**Kim Walker**, Global RA & QA Consultant

Understanding how FDA works and is structured is the key to success for any medical product company. In addition, developing a functional and knowledgeable team capable of guiding you through the regulatory hurdles is ultimately the only way you will obtain approval for your medical product. During this presentation, you will learn a basic overview of FDA's history, structure, mission, and device regulations. Additionally, the presentation will address best practices in developing a robust regulatory strategy and hiring the right regulatory resources.

5:35 to 6:00 pm

### Engaging FDA to implement changes to drug delivery devices used in approved prescription products

**Brenda Shafie**, GlaxoSmithKline

Devices such as metered-dose inhaler actuators and valves, metered-dose dry powder inhalers, and syringes are commonly used to deliver medicines to patients. The fabrication of these devices is complex and encompasses aspects related to both material composition as well as physical dimensions of device components. Pharmaceutical manufacturers typically purchase complete devices or device components from commercial suppliers and are frequently faced with managing changes in this external supply. Changes made to device manufacture often require regulatory action to maintain FDA approval. An overview of the relationship of Drug Master Files and New Drug Applications for registration of drug delivery devices and management of changes to approved applications will be presented

6:00 to 6:25 pm

### FDA regulation of in vitro diagnostic devices

**Yun-Fu Hu**, Associate Director, OIVD, CDRH US-FDA

The Food and Drug Administration (FDA) regulates the sale and distribution of medical devices under a statutory and regulatory framework. This presentation will provide an overview of federal regulations of medical devices, including risk-based classifications of medical devices, and basic regulatory requirements that manufacturers, repackagers, relabelers, and/or importers of medical devices distributed in the United States must comply with. The basic elements that device manufacturers must include in any marketing applications to FDA for clearance or approval of in vitro diagnostic devices and the criteria that FDA uses to assess the safety and effectiveness of in vitro diagnostic devices will be described. Some examples of the issues and challenges that are discovered in the FDA review processes will be provided to help device manufacturers to better understand quality system requirements, and to design and conduct appropriate validation studies for a quicker premarket review. The mechanisms that the FDA uses to ensure the safety and effectiveness of in vitro diagnostic devices in the marketplace will also be briefly discussed.

6:25 to 6:50 pm

### A Small business' third party experience

**Maureen Mulvihill**, Actuated Medical, Inc.

Actuated Medical utilized a third party review of our Class II device in 2011. The thought was that the third party would be much quicker than going directly to the FDA. The process took 12 months due to several reasons. The greatest reason was our lack of experience with the system and the third party process. Given the ability to work with our reviewers prior to official FDA review, our final submission was more concisely written and all scientific data was well supported. This led to recommendation for clearance by the third party and subsequent FDA clearance. Our first device received FDA 510(k) Clearance June 2012. Based on our understanding of the process, we plan to submit a follow on device via the third party regulatory route in early 2013.

6:50 to 7:00 pm

### Final Discussion

## IBOS—International Biomedical Optics Society

Tuesday 5 February · 7:30 to 9:00 pm  
InterContinental Hotel, Ballroom C

*All registered conference participants are encouraged to attend this evening session. Attendees are required to wear their conference badges.*

Chairs:

**Jennifer Barton**, The Univ. of Arizona (USA)

**Lihong Wang**, Washington Univ. in St. Louis (USA)

Biomedical optics is a major growth area in modern medicine. The International Biomedical Optics Society is a nonprofit interdisciplinary group that provides a unique channel for communications among physicians and clinicians employing optics in medicine and the scientists and engineers who provide foundations for advancements in this field.

The BiOS symposium, where IBOS meets, is the premier annual international forum for discussions and announcements of technical/clinical and educational/pedagogical developments in the use of lasers, optical fibers, spectroscopic diagnostic techniques, and related areas of optical medicine.

The 2013 program will include the following presentation:

### New optical treatments: examples from recent research



**R. Rox Anderson**

Wellman Ctr. for Photomedicine,  
Massachusetts General Hospital (USA) and  
Harvard School of Medicine (USA)

# BiOS Special Events

## BiOS Interactive Poster Sessions

South Hall A (with BiOS EXPO)

Saturday 2 February . . . . . 3:00 to 4:00 pm

Sunday 3 February . . . . . 3:00 to 4:00 pm

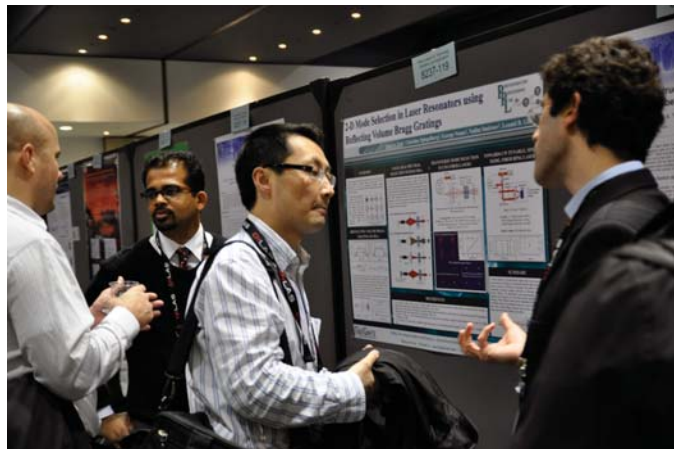
Room 103 (Exhibit Level)

Sunday 3 February . . . . . 5:30 to 7:30 pm

Monday 4 February . . . . . 5:30 to 7:30 pm

Wednesday 6 February (with OPTO) . . . . . 6:00 to 8:00 pm

Conference attendees are invited to attend the BiOS poster sessions throughout the week. Come view the posters, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Please see individual conference programs for poster session timing. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>



## BiOS 2013 Best Paper Awards

### PicoQuant Young Investigator Award

Part of: Single Molecule Spectroscopy and Imaging V (Conf. 8590)

Sunday 3 February · 3:20 to 3:30 pm · Room 307

We are pleased to announce that a prize will be awarded to the best oral presentation by a presenter under the age of 35 within Conference 8590: Single Molecule Spectroscopy and Imaging V. Participants must be both the primary author and presenter of an accepted abstract to be eligible.

Prize donated by **PicoQuant GmbH Berlin (Germany)**

### Pascal Rol Award 2013

Part of: Ophthalmic Technologies XXII (Conf. 8567)

Sunday 3 February · 5:00 to 5:30 pm · Room 305

Outstanding extended abstracts submitted to the Ophthalmic Technologies XXII conference will be nominated for the Pascal Rol Award for Best Paper in Ophthalmic Technologies. The award and prize will be presented after the last scientific session of the conference to recognize the best paper and presentation. The 2012 recipient of the Pascal Rol Award was Dr. Clemens Alt from Wellman Ctr. for Photomedicine (see [www.pascalrolfoundation.org](http://www.pascalrolfoundation.org)).

Prize donated by **Brien Holden Vision Institute (Australia)**

### JenLab Young Investigator Award

Part of: Multiphoton Microscopy in the Biomedical Sciences XIII (Conf. 8588)

Monday 4 February · 2:45 to 3:00 pm · Room 308

We encourage graduate students, postdocs, or scientists who are not more than 32 years old to apply for the Jen Lab Young Investigator Award. To receive this \$2000 cash award, participants must 1) be both the primary author and presenter of an accepted abstract, and 2) the associated proceedings paper must be submitted at least 2 weeks prior to the meeting start dates for review by the selection committee.

Prize donated by **Jen Lab GmbH (Germany)**

### Student Poster Session Competition

Part of: Multiphoton Microscopy in the Biomedical Sciences XIII (Conf. 8588)

Monday 4 February · 2:45 to 3:00 pm · Room 308

Graduate Students and postdoctoral fellows with accepted posters can participate in the poster session competition of the conference on Multiphoton Microscopy in the Biomedical Sciences. There is a cash award for the winner(s). The participants should mention that their submission is for the "Students Poster Session Competition (SPSCMP)." The participants should follow the rules and regulations of SPIE for submission of their abstract and manuscript.

### Ocean Optics Young Investigator Award

Part of: Colloidal Nanocrystals for Biomedical Applications VIII (Conf. 8595)

Monday 4 February · 6:15 to 6:30 pm · Room 238

Ocean Optics Young Investigator Award will be given for the best paper presented by a leading author who is either a graduate student or has graduated within less than five years of the paper submission date. The award consists of a \$1,000 cash prize to the Young Investigator and \$2,000 Ocean Optics equipment credit to the laboratory where the work was performed.

Prize donated by **Ocean Optics (USA)**

### Seno Medical Best Paper Awards

Part of: Photons Plus Ultrasound: Imaging and Sensing 2013 (Conf. 8581)

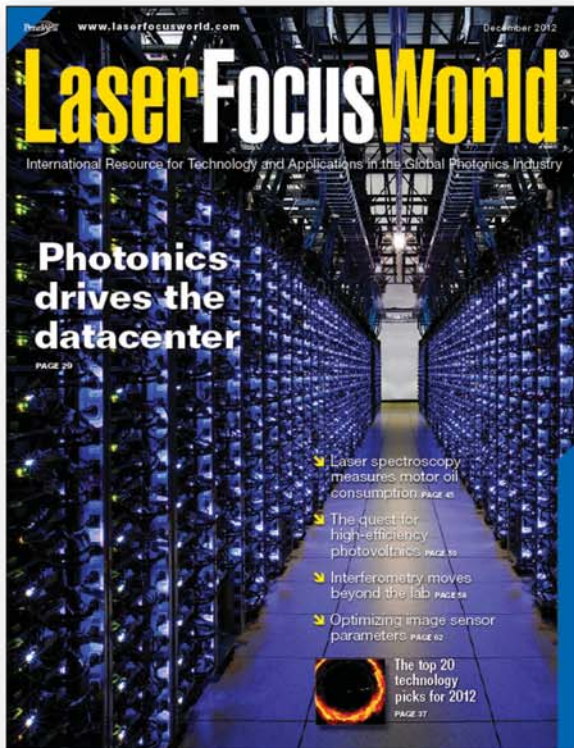
Tuesday 5 February · 5:30 to 6:00 pm · Room 309

Seno Medical will sponsor two awards for this conference: best paper and best poster presented. Authors: to compete for these awards, please e-mail a 3-page summary of your accepted paper, along with the abstract, to the conference Chairs by 16 January 2013 (Alexander Oraevsky: [aao@tomowave.com](mailto:aao@tomowave.com) and Lihong Wang: [lhwang@wustl.edu](mailto:lhwang@wustl.edu))

Prize donated by **Seno Medical (USA)**



# Photonics' BEST!



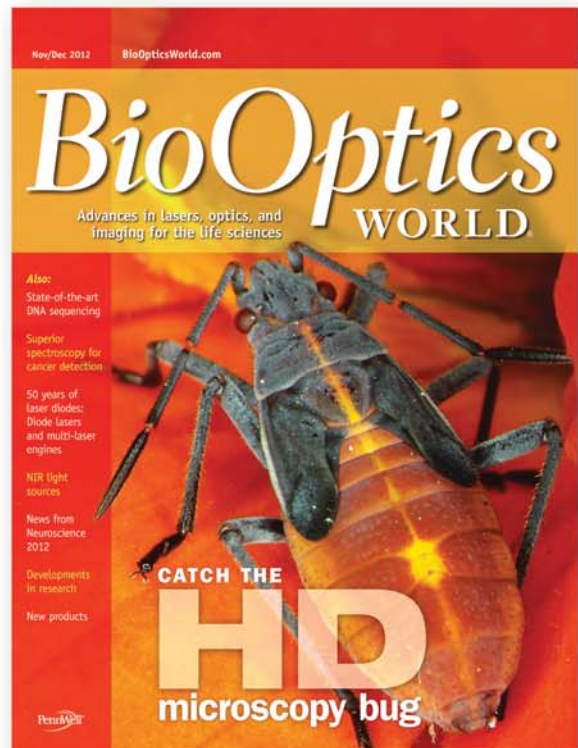
## International resource for technology and applications in the global photonics industry

- ◀ Published since 1965, *Laser Focus World* is a global resource for engineers, researchers, scientists, and technical professionals providing comprehensive global coverage of optoelectronics technologies, applications and markets.

Each month, *Laser Focus World* reports on and analyzes the latest developments and significant trends in both technology and business in the worldwide optoelectronics and photonics industry. *Laser Focus World* offers greater technical depth than any other publication in the field.

## Advances in lasers, optics, and imaging for the life sciences ▶

*BioOptics World* is a global franchise that tracks technology, applications, and business trends related to the use of optical technologies and instrumentation in the life sciences. Comprising an eMagazine, eNewsletters, and website, *BioOptics World* is primarily intended for researchers and engineers involved in the design, development, and utilization of optical technologies for the study, diagnosis, and treatment of disease and disease processes.



**SUBSCRIBE TODAY!** Stop by **Booth #800** to pick up your **FREE** issues or log on to [www.lfw-subscribe.com](http://www.lfw-subscribe.com) or [www.bow-subscribe.com](http://www.bow-subscribe.com)







## LASE

SPIE Photonics West

## PLENARY SESSION

Wednesday 6 February · 10:20 am to 12:30 pm · Room 134

Attend the plenary session and hear the latest from worldwide experts. Access to the plenary session is included with your registration.

### Welcome and Opening Remarks



**Bo Gu**  
Bos Photonics  
(USA)



**Andreas Tünnermann**  
Fraunhofer-Institut für  
Angewandte Optik und  
Feinmechanik (Germany) and  
Friedrich-Schiller-Univ. Jena  
(Germany)

### Announcement of the Green Photonics Award



**Stephen J. Eglash**  
Precourt Institute for Energy,  
Stanford Univ. (USA)

### Laser-based Particle Acceleration and the Path to TeV Physics and Compact X-Ray and Gamma Ray Sources



**Wim Leemans**  
Lawrence Berkeley National Lab. (USA)

We will discuss acceleration of electrons using intense laser pulses that excite multi-gigavolt fields in plasmas and the path forward to practical machines. This will include experiments with the new high-repetition-rate (1Hz) Petawatt BELLA laser aimed at reaching 10 GeV in less than a meter-long accelerator. The potential impact of this work ranges from providing the capability of producing high energy, ultrashort electron bunches and associated radiation pulses for forefront science in a small laboratory setting, to medical and homeland security applications, to the development of high-energy particle colliders for fundamental science into the origin of matter and energy.

**Dr. Wim Leemans** obtained his PhD from UCLA in 1991 and received the 1992 APS-DPP Simon Ramo for his dissertation on plasma beat-wave acceleration related physics. He has been at LBNL since 1991 and is currently a senior scientist and Head of the LOASIS Program at LBNL and Director of the BELLA Project which provides a Petawatt laser operating at 1 Hz. His research interests have been and are on laser plasma accelerator science and hyperspectral radiation sources.

### Three-dimensional Metamaterials Made By Direct Laser Writing



**Martin Wegener**  
Karlsruhe Institute of Technology (Germany)

Three-dimensional (3D) direct laser writing (DLW) has become a commercially available workhorse and can be seen as the 3D counterpart of planar electron-beam lithography. However, DLW was previously subject to seemingly fundamental limitations regarding (i) spatial resolution due to the Abbe diffraction barrier, (ii) accessible sample heights due to finite microscope-lens working distances, and (iii) writing speed. This talk gives an introduction and presents the state-of-the-art. (i) Stimulated-emission-depletion (STED) 3D DLW has recently broken the diffraction barrier. For example, this has enabled the first 3D visible-frequency polarization-independent invisibility cloak and the first visible-frequency 3D complete-photon-band-gap material. (ii) 3D “dip-in” DLW has enabled the first 3D pentamode mechanical metamaterial.

**Martin Wegener** obtained his Physics Diploma and PhD from Universität Frankfurt in 1986 and 1987 respectively. After a postdoc at AT&T Bell Laboratories from 1988-1990, he became tenured physics professor at Universität Dortmund in 1990. In 1995 he moved to the Karlsruhe Institute of Technology (KIT). In 2007, he co-founded the start-up company Nanoscribe GmbH.

### Remote Laser Welding for Automotive Seat Production



**Geert Verhaeghe**  
Faurecia Autositze GmbH (Germany)

Continuing pressure to produce lighter automotive seat structures at a lower cost is pushing conventional manufacturing processes to the limits. Even for a relatively new process such as laser welding, the heat is on to deliver quality reproducibly and faster. This is why, within the seating division of automotive supplier Faurecia, focus has shifted within the last few years to laser processing using remote scanning optics, giving both flexibility and productivity in an environment where thinner and increasingly higher-strength steels are included in seat designs. This article takes a look back at this journey and explores the opportunities that lie ahead.

**Dr. Geert Verhaeghe** has been working as Master Welding Expert at Faurecia Autositze GmbH since January 2011. Based in Stadthagen (Germany), he is responsible for the coordination of welding technology innovation and continuous improvement activities. Prior to this, Geert worked at TWI Ltd (Cambridge, England) for 15 years, where he held several functions in both the Arc Welding section and the Laser and Sheet Processing group. At the start of his career, he worked two years on the automotive ULSAB program for ArcelorMittal's research division OCAS, in Gent (Belgium).



## LASE Interactive Poster Session

Tuesday 5 February · 6:00 to 8:00 pm · Room 103

Conference attendees are invited to attend the LASE poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>

### TECHNICAL EVENT

## Laser Communications

Tuesday 5 February · 7:30 to 9:00 pm  
InterContinental Hotel, Fremont Room

Session Chairs:

**Hamid Hemmati**, Jet Propulsion Lab. (USA)

**Don Boroson**, MIT Lincoln Lab (USA)

This technical event on Laser Communications will hold its informal annual meeting in conjunction with the Free-Space Laser Communication and Atmospheric Propagation XXV conferences. All professionals involved in theory and applications of free-space laser communications, remote sensing, and supporting technologies are invited to participate in an open discussion on a variety of topics related to the challenges and advancement of the field. Attendees are invited to bring suggestions for discussion topics.

## Photonics West Maps:

Moscone Center Maps pp. 2–4

Walking Map p. 4

## LASE 2013 Best Paper Awards

### Best Student Presentation Award

Vertical External Cavity Surface Emitting Lasers (VECSELs) III (Conf. 8606)

Monday 4 February · Room 123

**Award Ceremony** · 4:00 to 5:00 pm

Throughout the conference, qualifying student oral presentations will be evaluated. Student presentations will be judged based on scientific merit, impact, and clarity of the presentation (not the manuscript). While the award is not judged by the manuscript, a manuscript must be submitted.

Award Sponsor: **Coherent**

### Best Student Paper Competition

Frontiers in Ultrafast Optics: Biomedical, Scientific, and Industrial Applications XIII (Conf. 8611)

Wednesday 6 February · Room 130

**Competition** · 8:00 to 9:00 am

**Award Ceremony** · 9:40 to 10:00 am

For conference 8611: Frontiers in Ultrafast Optics: Biomedical, Scientific, and Industrial Applications XIII, we are pleased to announce that a cash prize will be awarded to the best student presentation in this conference (both poster and oral papers considered).

Papers submitted by graduate and undergraduate students are eligible. In order to ensure a fair evaluation, the conference chairs and the program committee will judge the students during a special student competition session held during the conference. Here the students present a brief 5-minute summary of their original talk or poster presented at the conference.

Following the student competition, the judges will meet and decide on the winner. The winner and runner-up will be announced during the award ceremony and awarded a cash prize.

Award Sponsors: **Amplitude Systems**  
**APE**

### Best Student Oral Paper Competition

Fiber Lasers X: Technology, Systems, and Applications (Conf. 8601)

Thursday 7 February · Room 131

**Award Ceremony** · 4:50 to 5:10 pm

For conference 8601: Fiber Lasers X: Technology, Systems, and Applications, we are pleased to announce that a cash prize will be awarded to the best student oral presentation in the conference.

Throughout the conference, qualifying student oral presentations will be evaluated by a conference steering committee, led by the 2012 winner, Florian Jansen. Student presentations will be judged based on scientific merit, impact, and clarity of the presentation (not the manuscript). While the award is not judged by the manuscript, a manuscript must be submitted.

To be eligible for consideration, a student must be listed as an author on an accepted paper, must have conducted the majority of the work being presented, and must make the oral presentation.

The winner of the Best Student Oral Presentation Award will be announced during the Student Award Ceremony on Thursday afternoon.

Award Sponsors: **NKT-Photonics**  
**Fianium**  
**PolarOnyx**

# MOEMS-MEMS Special Events



## MOEMS- MEMS

SPIE Photonics West

## PLENARY SESSION

Monday 4 February · 9:00 am to 12:00 pm · Room 307

Hear the latest insights from worldwide experts in the field at the Plenary Session.



### Welcome and Announcement of MOEMS-MEMS Best Paper and Best Student Paper Awards



**Harald Schenk**  
Fraunhofer Institute  
for Photonic  
Microsystems  
(Germany)



**David L. Dickensheets**  
Montana State Univ.  
(USA)

We are pleased to announce that a cash prize will be awarded to the best paper and best student paper in MOEMS-MEMS.

Best Paper Award Sponsors: **Vuzix**

Best Student Paper Award Supporter: **Fraunhofer IPMS**

### Towards Future Systems with Nano-optics Contributions



**Bozena Kaminska**  
Simon Fraser Univ. (Canada)

The long-anticipated deployment of nano-optics and nanotechnologies that enable ubiquitous computing has now encountered several practical impediments that delay adoption for demanding business processes. However, the global market in nano-enabled products is expected to grow to over \$80B within the next 3 years. In response, the research community is creating enabling solutions to overcome such challenging issues as reliability and cost-effective fabrication. New approaches for sensing, continuous uptime powering, and post silicon manufacturing will maximize overall performance and allow unprecedented business applications. This presentation reviews present limitations of nano-optics and then considers the new generation of devices and their manufacturing that will be able to turn the envisioned promises into reality. It will highlight several recent innovations: high sensitivity/selectivity sensing nano-optical devices; sustainable power from photo polymer energy harvesting and storage; permanent color-mark signatures embedded in trustworthy documents for visible authentication; and master nano-hole templates for high-volume manufacture.

The shared roots of these enabling technologies are nano-optics: surface plasmonic 3D devices, nano-particle polymers, and fabrication of nano-scale holes and pillars to create custom iridescent signatures.

**Dr. Bozena Kaminska** is currently Professor of Engineering Science and Canada Research Chair in Wireless Sensor Networks at Simon Fraser University, focusing on the research and development of innovative micro and nano devices. She chairs the Board of Directors for CMC Microsystems in Canada and is a director of NanoTech Security Corporation.

### MOEMS Pressure Sensors for Geothermal Well Monitoring



**Bill Challener, Sabarni Palit, Roger Jones, Li Airey, Russell Craddock, Aaron Knobloch (speaker)**  
GE Global Research (USA)

The technology for enhanced geothermal systems (EGS), in which fractures connecting deep underground wells are deliberately formed through high pressure stimulation for energy generation, is projected to enormously expand the available reserves of geothermal energy in the U.S. EGS could provide up to 100,000 MWe within the U.S. by the next 50 years. Nevertheless, there are still many challenges to understand and develop this resource for low cost energy production. In particular, there are a variety of parameters that one would like to measure within the geothermal well, both during stimulation and for long term monitoring, including temperature, acoustic strain, flow, pH, and pressure. Pressure measurements, in particular, are important for determining the state of the fluid, i.e., liquid or steam, the fluid flow, and the effectiveness of the well stimulation. However, it has been especially difficult to accurately measure pressure at temperatures above ~200 C. MEMS technology has been employed for many years for extremely accurate pressure measurements through electronic readout means. By substituting optical readout of a sensor at the end of a fiber optical cable, it is possible to employ these highly accurate sensors within the harsh environment of geothermal wells.

A two year, DOE-funded project has developed MEMS-based sensors specifically for this purpose. A multidisciplinary team of researchers from GE, QOREX LLC, AFL Telecommunications and Sandia National Labs developed the MEMS optical sensor and readback electronics, fabricated a fiber optic cable for downhole testing, and has scheduled a field test of the sensor in a geothermal well.

**Dr. Aaron Knobloch** is a Senior Scientist in the Photonics Laboratory at General Electric's Global Research Center. He received his B.S. in Mechanical Engineering from Bucknell University in 1998 with honors and his M.S. and Ph.D. in the same discipline in 2002 and 2003 respectively from the University of California at Berkeley.

**MOEMS-MEMS Plenary continued next page** ➔



## Superaligned Carbon Nanotubes: A Road toward Real Applications



**Kaili Jiang** (speaker),  
**Jiaping Wang, Qunqing Li, Liang Liu,**  
**Changhong Liu, Shoushan Fan**  
Tsinghua Univ. (China)

Superaligned carbon nanotube (CNT) array is a special kind of vertically aligned CNT array with the capability of being converted into continuous films and yarns. The as-produced CNT films are ultrathin, transparent, flexible, stretchable, and highly conductive, with aligned CNTs parallel to the drawing direction. After passing through volatile solutions or being twisted, CNT films can be further condensed into shrunk yarns. These shrunk yarns possess high tensile strengths and Young's moduli, and are good conductors. Tremendous achievements have been made in this direction, from basic discovery of superaligned CNT arrays to controllable batch growth, to modification of physical properties and applications, and finally to real products. In this talk, we will show that superaligned CNTs can bridge the gap between nano-world and macro-world, leading to a road toward real applications of nanotubes.

Many real applications, such as field and thermionic emission electron sources, high strength CNT yarns, electrodes for batteries and supercapacitors, loudspeakers, incandescence displays, SERS substrates, IR detectors, etc., have been demonstrated.

Kaili Jiang obtained Bachelor's, Master's, and PhD degrees in Physics from Tsinghua University. He was employed as Assistant Professor at Physics Department of Tsinghua University since 1998, and became a full professor in 2008. His current research interests include growth mechanisms, controlled synthesis, physical properties and applications of carbon nanotubes.

## PANEL DISCUSSION

### Prospects and Future of Microfluidics

Monday 4 February · 5:40 to 7:00 pm · Room 270

Moderator: **Holger Becker**, microfluidic ChipShop GmbH (Germany)

The commercialization of microfluidic devices and systems is rapidly progressing. However not all promising approaches have become an economic success and investor's payback often has not met initial expectations. The discussion will look upon experiences made in the product development and market introduction phase of microfluidics enabled devices and will present lessons learned from various perspectives, from device performance to commercial organization. It tries to identify trends and will present case studies from different applications.

## MOEMS-MEMS Interactive Poster Session

Tuesday 5 February · 6:00 to 8:00 pm · Room 103

Conference attendees are invited to attend the MOEMS-MEMS poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>

# KTP Pockels cells <sup>new</sup>

Visit us  
Booth #1039

For Q-switching and pulse picking applications  
with high repetition rate lasers



## FEATURES

- More than twice smaller HV requirement comparing to double BBO Pockels cells
- Suits for long HV pulses
- Very low piezo-electric resonances
- High damage threshold
- Standard apertures from 3×3 up to 8×8 mm



Distributor in North America & Canada  
[www.altosphotronics.com](http://www.altosphotronics.com)  
[sales@altosphotronics.com](mailto:sales@altosphotronics.com)



[info@eksmaoptics.com](mailto:info@eksmaoptics.com) · [www.eksmaoptics.com](http://www.eksmaoptics.com)



# OPTO

SPIE Photonics West

## PLENARY SESSION

Tuesday 5 February · 8:00 to 10:10 am · Room 134

Hear the latest insights from worldwide experts in the field.

### Welcome and Opening Remarks



Session Chair:  
**David L. Andrews**  
Univ. of East Anglia Norwich  
(United Kingdom)

### Announcement of the Green Photonics Awards



**Stephen J. Eglash**  
Precourt Institute for Energy,  
Stanford Univ. (USA)

### Quantum Optomechanics



**Markus Aspelmeyer**  
Vienna Ctr. for Quantum Science and Technology, Univ. of  
Vienna (Austria)

Massive mechanical objects are now becoming available as new systems for quantum science. Quantum optics provides a powerful toolbox to generate, manipulate and detect quantum states of motion of such mechanical devices – from nanomechanical waveguides of some picogram to macroscopic, kilogram-weight mirrors of gravitational wave detectors. Recent experiments, including laser-cooling of micro- and nanomechanical resonators into their quantum ground state of motion, and demonstrations of the strong coupling regime provide the primary building blocks for full quantum optical control of mechanics, i.e. quantum optomechanics. This new frontier opens fascinating perspectives both for various applications and for unique tests of the foundations of quantum physics.

**Markus Aspelmeyer** is professor of physics at the University of Vienna, and speaker of the Vienna Center for Quantum Science and Technology (VCQ). He is regarded as one of the pioneers of the field of cavity optomechanics. His research combines the development of new quantum technologies with fundamental quantum experiments.

### Group IV Photonics for the Mid-Infrared



**Richard Soref**  
Univ. of Massachusetts Boston (United States)

This talk outlines the challenges and benefits of applying silicon-based photonic techniques in the 2 to 5  $\mu\text{m}$  mid-infrared (MIR) wavelength range for chem-bio sensing, medical diagnostics, process control, environmental monitoring, secure communications, signal processing, and more. On-chip passive and active components, mostly waveguided, will enable opto-electronic CMOS and photonic integrated circuits for MIR system-on-a-chip applications such as spectroscopy and lab-on-a-chip.

Active heterostructures employing Si, Ge, SiGe, GeSn and SiGeSn are key for laser diodes, photodetectors, LEDs, switches, amplifiers, and modulators that provide totally monolithic foundry integration, while a variety of III-V semiconductor MIR devices offer practical hybrid integration on Si PICs.

**Richard Soref** received the Ph.D. in E.E. from Stanford University in 1963 and is currently Research Professor of Physics at the University of Massachusetts at Boston. For the past 50 years, he has engaged in basic and applied research, mainly in photonics and semiconductors. In 2006, he received the Lifetime Achievement Award from the IEEE Group IV Photonics Conference. He is a Fellow of IEEE, OSA, IOP and AFRL.

### Light in a Twist: Optical Angular Momentum



**Miles J. Padgett**  
Univ. of Glasgow (United Kingdom)

In 1992 Allen et al. recognized that light beams could carry an orbital angular momentum in addition to the photon spin. This twist can be created using lenses, or holograms encoded onto liquid crystal displays. Both whole beams and single photons can carry this twist, or transfer it to particles causing them to spin. I will introduce the underlying properties and discuss a number of manifestations of orbital angular momentum. These will highlight how optics still contains surprises and opportunities for manipulation, imaging and communication in both the classical and quantum worlds.

**Miles Padgett** holds the Kelvin Chair of Natural Philosophy at the University of Glasgow in Scotland. His group's has pioneered the understanding of light's momentum, including conversion of optical tweezers to optical spanners, the opportunity for angular momentum in optical communication, and demonstrating an angular form of the quantum EPR paradox.

## TECHNICAL EVENT

### Holography

Tuesday 5 February · 7:30 to 9:00 pm  
InterContinental Hotel, Ballroom B

Session Chair: **Hans I. Bjelkhagen**, Glyndŵr Univ. (United Kingdom) and Hansholo Consulting Ltd. (United Kingdom)

The Holography Technical Group is involved with the whole record of research, engineering, recording materials, and applications of holography. The main fields of interest are display holograms, commercial and artistic, holographic optical elements (HOEs), holographic interferometry and holographic non-destructive testing (HNDT), computer-generated holography (CGH), electro and digital holography, holographic microscopy, and holographic data storage (HDS). This meeting will focus on recent developments and directions, in particular, in regard to new materials, color display holography, digital holography, CGHs and HOEs.

## WORKSHOP

### The Nature of Light: What Are Photons?

Tuesday 5 February · 7:30 to 9:00 pm  
InterContinental Hotel, Ballroom A

Session Chair: **Narasimha S. Prasad**, NASA Langley Research Ctr. (USA)

The purpose of this workshop is to stimulate engineers to explore the nature of light through superposition effects so the new knowledge can open up new fountains of engineering innovations guided by our capacity to emulate light-matter interaction processes, hitherto not explored. The new knowledge here refers to the generic property, Non-Interaction of Waves (NIW) in the linear domain, or the NIW-property, which we have been neglecting based on the ad hoc hypothesis by Dirac, "Each photon then interferes with itself." In the real world, superposition effect becomes manifest through transformation experienced by detecting dipoles based on their (i) intrinsic quantum properties and (ii) the device time constant. In a two beam interferometer, two superposed coherent light beams help generate fringes of visibility unity when polarizations are parallel; but they give zero visibility when one of the beams is rotated to become orthogonal. Only a slow detector system can carry out Michelson's Fourier transform spectrometry; a fast detector will produce confusing heterodyne current. Thus, detectors determine the superposition effects. Light beams do not interact or interfere by themselves.

A presentation will be given by Prof. Chandrasekhar (Chandra) Roychoudhuri of the Univ. of Connecticut. He will present the basic optical phenomena (interference, diffraction, polarization, spectrometry, mode locking, and basic photon counting) in view of the hitherto neglected NIW-property.

## Photonics West Maps:

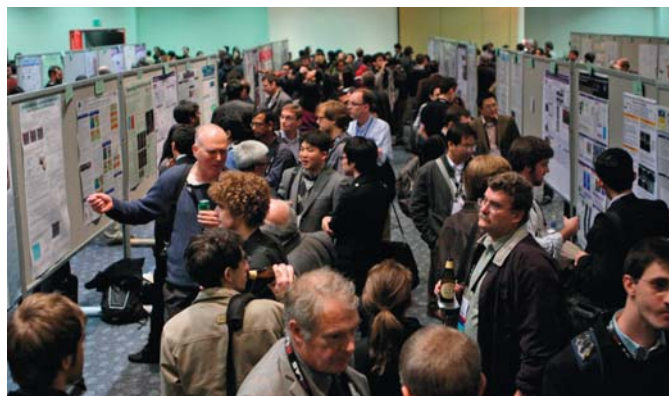
Moscone Center Maps pp. 2-4  
Walking Map p. 4




**Photonics West Booth 4933**

<p>Opto-diode 10kV &amp; 15kV</p> 	<p>2.5kV Opto-coupler</p> 
<p>10kV &amp; 15kV Opto-coupler</p> 	<p>25kV Opto-coupler</p> 

www.VoltageMultipliers.com  
559.651.1402



## OPTO Interactive Poster Session

Wednesday 6 February · 6:00 to 8:00 pm · Room 103

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors: view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>





# Industry Events

Hear from industry leaders on some of the biggest challenges and most promising areas of the optics and photonics marketplace. Understand market trends and lessons learned.

**Open to All Attendees**

EXHIBITION VISITORS, EXHIBITORS, AND TECHNICAL CONFERENCE ATTENDEES

## Silicon Photonics and Photonic Integrated Circuits

Tuesday 5 February · 2:00 to 3:00 pm · Room 101

Panel Moderator:



**SPIE**  
**Peter Hallett**  
Director of Marketing and Industry Relations

Invited Panel Members:



**LUXTERA**  
**Peter De Dobbelaere**  
Vice President of Engineering



**INTEL CORP.**  
**Mario J. Paniccia**  
Intel Fellow, General Manager Silicon Photonics Operation



**ONE CHIP PHOTONICS**  
**Andy Weirich**  
VP Product Line Management



**ORACLE**  
**Ashok Krishnamoorthy**  
Architect & Chief Technologist, Photonics



**INFINERA**  
**Radha Nagarajan**  
Director of Engineering in the Photonic Integrated Circuits Group, Infinera Fellow

Demand for smaller and cheaper optical interconnections inside computers is a main driver for silicon photonics, which will create a new market of miniaturized, low-cost photonic components that can leverage the scale of CMOS manufacturing. Learn what industry leaders have discovered at the frontier of silicon photonics and hear how this will revolutionize industries from computing and communication, to biomedicine, and imaging.

## Emerging Growth Opportunities in Sustainable Technology

Tuesday 5 February · 3:30 to 4:30 pm · Room 101

Panel Moderator:



PRECOURT INSTITUTE FOR ENERGY, STANFORD UNIV.  
**Stephen J. Eglash**  
Director

Panel Members:



ARSENAL VENTURE PARTNERS  
**Patricia Glaza**  
Principal



PHILIPS LIGHTING LUMILEDS  
**Jyoti Bhardwaj**  
VP R&D



STANFORD PHOTONICS RESEARCH CTR.  
**Thomas Baer**  
Executive Director



PICARRO INC.  
**Eric Crosson**  
Chief Technology Officer



GE GLOBAL RESEARCH  
**Aaron Knobloch**  
Senior Scientist

This panel examines technologies, applications, and markets that are good for the planet as well as robust and resilient. This year's panelists include entrepreneurs providing solar-powered LED lighting to the developing world, sophisticated spectroscopy for environmental monitoring, solid-state lighting, a venture capitalist, and a leading university researcher with particular interest in optics and photonics. These high-growth markets are attracting capital investment, driving product development, and creating new revenue for people who understand the potential.

Topics to be discussed include the following:

- **Solid State Lighting and Displays**
- **Laser-assisted Manufacturing and Micro/Nano Fabrication**
- **Renewable Energy Generation and Photovoltaics**

## Government Initiatives and Opportunities for Growth in Photonics

Thursday 7 February · 8:45 to 9:30 am · Room 134

Speaker:



SPIE  
**Eugene Arthurs**  
CEO

There are opportunities in a number of sectors, many driven by government initiatives to stimulate economies and create jobs. Learn about national priorities and funding trends that impact the optics and photonics industry.

Eugene Arthurs joined SPIE as CEO in November 1999. Prior to that he was President and CEO of Cleveland Crystals Inc. and President of Oriel Corporation. He is a globally recognized leader in the photonics community and a leading expert on the photonics industry. Dr. Arthurs is member of the Photonics21 Board of Stakeholders in addition to serving on a number of advisory boards.

## Executive Perspectives on the World of Optics and Photonics

Wednesday 6 February · 2:00 to 3:00 pm · Room 101

Panel Moderator:



SPIE  
**Stephen G. Anderson**  
Industry and Market Strategist

Panel Members:



CERES TECHNOLOGY ADVISORS, INC.  
**Linda Smith**  
President



QIOPTIQ PHOTONICS LTD.  
**David Marks**  
CEO



EDMUND OPTICS INC.  
**Robert Edmund**  
CEO and Chairman of the Board



TRUMPF INC.  
**Christof Lehner**  
General Manager



JENOPTIK OPTICAL SYSTEMS GmbH  
**Dirk Rothweiler**  
Executive Vice President



NEWPORT CORP.  
**Dennis Werth**  
Vice President



IDEX OPTICS & PHOTONICS  
**Turan Erdogan**  
Vice President

Top executives, representing different aspects of the marketplace, will share their insight and hard-fought lessons regarding trends and opportunities in optics and photonics. Weathering 2011 and 2012 has required extraordinary skills and experience to successfully reset goals and allocate resources. Listening to and questioning these executives will help you understand the current environment better and to set priorities for your business.

## STARTUP challenge

Wednesday 6 February · 3:30 to 6:00 pm  
Room 101

**See and hear new entrepreneurs pitch their new photonics business and compete for \$10,000**

This pitch competition is a lively, interactive event showcasing the power of entrepreneurs to move photonics technology to the global marketplace. Join fellow business development, investment, and product managers to scout new talent and see what the future of entrepreneurship in photonics looks like.

The event will conclude with a networking reception where you can meet the presenters and fellow attendees involved in photonics entrepreneurship.

See p. 28 for details.



# PRISM AWARDS

Winners Announced  
at Photonics West

---

## Award Ceremony

Wednesday 6 February  
6:00 pm

Formal or business attire

For ticket information,  
go to the SPIE Cashier,  
or for more information:

[www.prismawards.org](http://www.prismawards.org)

---

PRESENTED BY  
SPIE & PHOTONICS MEDIA



# The Prism Awards is celebrating its 5th anniversary.

Congratulations to the 2009-2012 winners.

<b>2009</b>	<b>2010</b>
Aragon Photonics Labs Coherent Daylight Solutions JPK Instruments Luxtera NoblePeak Vision Princetel Sensor Electronic Technology Tessera	Agilent Technologies Hamamatsu Corporation InfraTec infrared IRphotonics Laser Operations / QPC Lasers Lehightron Electronics LightLab Imaging Linden Photonics National Semiconductor Swamp Optics
<b>2011</b>	<b>2012</b>
Block Engineering Edmund Optics EKSPLA Energetiq Technology General Electric IPG Photonics JenLab Lumen Dynamics PHOTONIS	89 North Amplitude Systèmes MERMEC nanoplus OEwaves Optotune PD-LD Physical Optics Corporation (POC) WITec

Who will be the winner in 2013?

## Industry Workshops

Registration required for the workshops below. See SPIE Cashier North Lobby.

### Fundamental Optics

#### Basic Optics for Non-Optics Personnel

**WS609 · Course Level: Introductory**  
**CEU: 0.2 \$150 SPIE Member / \$200 Non-member USD**  
**Monday 1:30 pm to 4:00 pm**

This course will provide the technical manager, sales engineering, marketing staff, or other non-optics personnel with a basic, non-mathematical introduction to the terms, specifications, and concepts used in optical technology to facilitate effective communication with optics professionals on a functional level. Topics to be covered include basic concepts such as imaging, interference, diffraction, polarization and aberrations, definitions relating to color and optical quality, and an overview of the basic measures of optical performance such as MTF and wavefront error. The material will be presented with a minimal amount of math, rather emphasizing working concepts, definitions, rules of thumb, and visual interpretation of specifications. Specific applications will include defining basic imaging needs such as magnification, depth-of-field, and MTF as well as the definitions of radiometric terms.

**Kevin Harding** has been active in the optics industry for over 30 years, and has taught machine vision and optical methods for over 25 years in over 70 workshops and tutorials, including engineering workshops on machine vision, metrology, NDT, and interferometry used by vendors and system houses to train their own engineers. He has been recognized for his leadership in optics and machine vision by the Society of Manufacturing Engineers, Automated Imaging Association, and Engineering Society of Detroit. Kevin is a Fellow of SPIE and was the 2008 President of the Society.

#### Basic Laser Technology

**WS972 · Course Level: Introductory**  
**CEU: 0.35 \$350 SPIE Member / \$405 Non-member USD**  
**Wednesday 8:30 am to 12:30 pm**

If you are uncomfortable working with lasers as “black boxes” and would like to have a basic understanding of their inner workings, this introductory course will be of benefit to you. The workshop will cover the basic principles common to the operation of any laser/laser system. Next, we will discuss laser components and their functionality. Components covered will include laser pumps/energy sources, mirrors, active media, nonlinear crystals, and Q-switches. The properties of laser beams will be described in terms of some of their common performance specifications such as longitudinal modes and monochromaticity, transverse electromagnetic (TEM) modes and focusability, continuous wave (CW) power, peak power and power stability. Laser slope and wall-plug efficiencies will also be discussed.

**Sydney Sukuta** is currently a Laser Technology professor at San Jose City College. He also has industry experience working for the some of the world’s leading laser manufacturers in Silicon Valley where he saw first-hand the issues they encounter on a daily basis. In response, Dr. Sukuta developed prescriptive short courses to help absolve most of these issues.



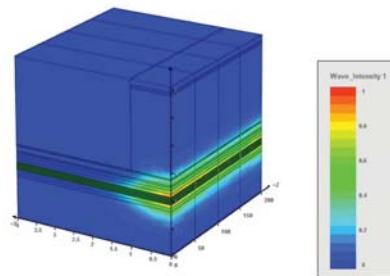
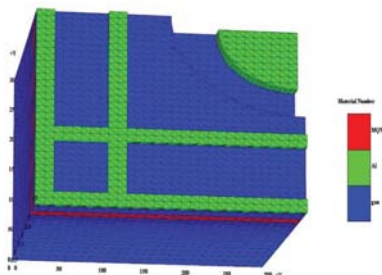
#### Free hands-on tutorial on Optoelectronic Device Simulation

Wednesday, February 6 1:30-5:30 PM  
 Marriott Marquis Hotel, room Sierra K  
 Pre-registration required: [piprek@nusod.org](mailto:piprek@nusod.org)  
 Participants are encouraged to bring a Windows laptop PC  
 Free trial software will be provided in advance  
 More details at <http://www.nusod.org/crosslight13pw.html>

**APSYS:** General-purpose device simulator for silicon and compound solar cells, GaN HEMTs and LEDs, OLEDs, power transistors, etc...

**LASTIP/PICS3D:** Specialized modeling tools for Fabry-Perot laser diodes, DFB/DBR lasers, VCSELs, SOAs, tuners and integrated modulators.

- ▶ State-of-the-art physical models
- ▶ Quantum Tunneling
- ▶ Non-local transport with quantum capture & escape
- ▶ Self-consistent MQW calculations
- ▶ k.p modeling of zincblende and wurtzite semiconductors
- ▶ Quantum Dots
- ▶ Built-in thermal and optical mode solvers
- ▶ Large user-editable material database (100+ compounds)



Booth #4514  
 North Hall  
 Canada Cluster   
<http://www.crosslight.com>

Creators of award-winning 2D/3D TCAD software for semiconductor devices



## Industry Workshops

Registration required for the workshops below. See SPIE Cashier North Lobby.

### Business, Patents + IP

#### Critical Skills for Compelling Research Proposals

**WS1058 · Course Level: Introductory**  
**CEU: 0.35 \$100 SPIE Member / \$150 Non-member USD**  
**Sunday 8:30 am to 12:30 pm**

Research costs money. The good news is that there are thousands of avenues of financial support. The bad news is that hundreds of thousands of proposals are competing for those funds. This class will teach you to craft high-quality proposals that stand out from the masses. We will focus on five fundamental skills that will bolster the substance, structure, and appearance of your proposals. Adhering to these practices will dramatically increase your odds of winning funding for your research.

**Damon Diehl** is Assistant Professor and Coordinator for the Optical Systems Technology program at Monroe Community College in Rochester, NY and also the founder and owner of Diehl Research Grant Services. He has a Ph.D. in optical engineering from the University of Rochester Institute of Optics and a B.A. in physics from the University of Chicago. His class is based on fifteen years of academic and industrial research experience.

#### Magnifying Your IP IQ: Topics for the Savvy Intellectual Property Manager

**WS1057 · Course Level: Intermediate**  
**CEU: 0.35 \$350 SPIE Member / \$405 Non-member USD**  
**Tuesday 8:30 am to 12:30 pm**

This course covers a variety of topics of interest to those with responsibilities for overseeing an intellectual property portfolio. The topics include the key provisions of non-disclosure and licensing agreements, what to know when dealing with venture capitalists and other prospective investors, methods of accelerating the passage of applications through the U.S. Patent and Trademark Office, selection and protection of trademarks, and how to prepare for offensive or defensive patent litigation.

**Mark Gallagher** is a partner at Knobbe Martens, an intellectual property law firm. Mr. Gallagher specializes in assisting clients in the optical sciences with preparation and prosecution of patents before the U.S. Patent Office. Mr. Gallagher also represents clients through phases of IP due diligence by prospective investors. Mr. Gallagher holds a J.D. degree and a Ph.D. in optical sciences, both from the University of Arizona.

**Lori Yamato** is also a partner at the Knobbe Martens law firm and specializes in representing clients in intellectual property deals, including preparation and negotiation of license agreements. Ms. Yamato's practice also includes trademark clearance, prosecution and enforcement. Ms. Yamato holds a J.D. degree from the University of Michigan and a B.S. degree in electrical engineering from the University of Southern California.

**David Jankowski** is a partner at the Knobbe Martens law firm who specializes in patent infringement litigation, representing both plaintiffs and defendants in federal district court and proceedings before the International Trade Commission. Mr. Jankowski holds a J.D. degree from Stanford University and a Ph.D. in Astronomy from Cornell University.

**Derek Bayles** is an associate at the Knobbe Martens law firm and specializes in assisting clients in the optical sciences with preparation and prosecution of patents before the U.S. Patent Office. Mr. Bayles holds a J.D. degree and a B.S. degree in electrical engineering, both from Brigham Young University.



#### Commercialization of Photonics Technology

**WS1056 · Course Level: Introductory**  
**CEU: 0.35 \$350 SPIE Member / \$405 Non-member USD**  
**Tuesday 1:30 pm to 5:30 pm**

The course outlines the approach to move advanced technology into successful commercial products. The elements of commercialization will be defined including: Identification of market opportunities and potential; competitive environment related to both technology and companies; manufacturing encompassing discussion of source, quality, cost, cost reduction, and standards; barriers to entry; value proposition including product differentiation; strategy and funding.

The course price will include an updated edited version of the high technology commercialization course taught at Yale University.

**David Krohn** is Managing Partner of Light Wave Venture LLC. He has been in photonics development and commercialization for over 40 years. He has now assisted over 100 companies and organizations in developing photonic-based opportunities.

#### Going Pro - Marketing Essentials for Sustainable Business

**NEW**

**WS1093 · Course Level: Intermediate**  
**CEU: 0.35 \$350 SPIE Member / \$405 Non-member USD**  
**Wednesday 1:30 pm to 5:30 pm**

This course is about long term business success. Going Pro is about establishing the processes and systems that ensure profitable, sustainable growth for best-in-class tech companies. It's also about attracting the right customers for the right reasons and continuously and quickly responding to changes in customers' needs and wants. For many in our industry, sales and marketing are homegrown. Industry demand may have driven your sales through the roof, but this also causes concerns about predictability and revenue mix.

A primary goal of this course is to engineer a product development strategy and marketing process that is effective, modern, consistent, and measurable, and that will allow you to compete against the larger players in your industry. Examples are taken from optics, imaging and instrument companies ranging from \$1M to \$150M in revenue which are experiencing year-over-year growth upwards of 100%. Anyone who wants to answer questions such as, "how do I attract the right customers?" and "how do I know what I'm doing is working?" will benefit from taking this course.

**Michele Gleber** helps optics and technology companies grow profits. As President of PLS Launch Solutions, a 25-year old company that works with companies like Corning, Sydor Optics, Optimax and ASE Optics, Michele leads a team of marketing and IP development professionals who help bring cool technologies to market, from ballistics imaging systems to instrumentation for conformal optics metrology.



# Professional Development

## From the Bench to the Marketplace

PROFESSIONAL DEVELOPMENT SPEAKER SERIES

Sunday 3 February · 2:00 to 5:00 pm · Room 125

Have an idea for a technical business?

Engaging in career exploration?

Need to make your current work more relevant?

Join us for this series of talks and discussions that explore topics in innovation and entrepreneurship. Get inspired to create the next big thing and learn how to make it happen. These talks are designed for students and early career professionals, but all are welcome.

2:00 pm

### Technology Entrepreneur: The Good, the Bad and the Ugly



**William (Bill) Parker**  
CEO Creative Microsystems Corp.

Bill Parker is an entrepreneur and inventor specializing in finding or developing near-term applications for advanced technologies. In the last forty years he has founded or partnered in a dozen companies that have attracted over \$100M in investment capital. Originally trained as a plasma physicist (and inventor of the plasma ball), he has extensive background in lasers, electro-optics, and integrated nano/micro systems.

2:45 pm

### Opportunity Recognition: Identifying Promising Paths for Your Career and Your Start-Up



**Peter Fiske**  
RAPT Industries

Peter S. Fiske, Ph.D. is the co-founder and former VP for Business Development of RAPT Industries, a spin-out from Lawrence Livermore National Laboratory and presently the CEO of PAX Water Technologies, Inc. Fiske is the author of the book *To Boldly Go: A Practical Career Guide for Scientists*, ([www.agu.org/careerguide](http://www.agu.org/careerguide)) published by AGU and the upcoming second edition *Put Your Science to WORK: The Take-Charge Career Guide for Scientists and Engineers*.



3:30 pm

### Using 21st Century Methods to Find Funding



**Jason Eichenholz**  
CEO Open Photonics

Jason has been actively involved in laser and photonics research and product development for more than 20 years, with more than 50 papers and 6 US Patents in the areas of fiber optics, photonics, and solid state, ultrafast, and frequency-agile lasers. He has recently launched Open Photonics, which delivers a unique and prioritized access to a “global photonics skunkworks” for clients.

4:15 pm

### Entrepreneur Networking Social

Join the speakers and other entrepreneurial experts for refreshments and a moderated roundtable discussion on career development and pathways to success in the photonics industry.

PANEL DISCUSSION

**Getting Hired in 2013 and Beyond**

Tuesday 5 February · 3:30 to 4:30 pm  
South Exhibition Hall A, Demonstration Area 1

Join us for a panel discussion on careers in optics and photonics outside the academic world. Learn about getting hired at tech-based companies and non-academic jobs directly from human resource professionals in the optics and photonics sector.

**Career Advancement through SPIE Involvement**

Wednesday 6 February · 11:30 am to 12:30 pm · Room 272

Get plugged in to the SPIE community! SPIE has volunteer opportunities at all levels of the organization. Come to this informal session to learn what opportunities best match your interests and career plans.



South Exhibition Hall C

Tuesday 5 February · 10:00 am to 5:00 pm  
Wednesday 6 February · 10:00 am to 5:00 pm

Please join SPIE as we celebrate our 15th annual Job Fair at Photonics West. Whether you're looking for a better job, re-entering the workforce or just starting out, plan to visit the Job Fair at Photonics West - come prepared to discuss your skills and talents with our industry's leaders.

- Discuss career options with employers
- Build your network
- Gain visibility with hiring companies

See page 37 for details.

**SPIE Startup Challenge**

Wednesday 6 February · 3:30 to 6:00 pm  
Room 101

**STARTUP challenge**

**See and hear new entrepreneurs pitch their new photonics business and compete for \$10,000**

This pitch competition is a lively, interactive event showcasing the power of entrepreneurs to move photonics technology to the global marketplace. Join fellow business development, investment, and product managers to scout new talent and see what the future of entrepreneurship in photonics looks like.

2013 Prizes are:

- First place: \$10,000**
- Second place: \$5,000**
- Third place: \$2,500**

**Plus:** Top ten finalists will receive sponsorship to attend the Entrepreneurship Academies organized by UC-Davis.

SPIE Startup Challenge Judges:

- Jason Eichenholz**, Open Photonics, Inc.
- Patricia Glaza**, Arsenal Venture Partners
- Bruce Itchkawitz**, Knobbe Martens
- Jay Kumler**, JENOPTIK Optical Systems, Inc.
- Adam Wax**, Duke University

The event will conclude with a networking reception where you can meet the presenters and fellow attendees involved in photonics entrepreneurship. See page 41 for details.

**Some events open to all attendees; some require registration and payment. See individual event descriptions for details.**

**LaserFocusWorld**

# Lasers & Photonics Marketplace

**25 YEARS** SEMINAR®

Analyzing the Business of Photonics

Held in conjunction with

**FEBRUARY 4, 2013 • SAN FRANCISCO, CA • THE W SAN FRANCISCO**

For more information about the global photonics marketplace, attend the 2013 Lasers & Photonics Marketplace Seminar.

**FIND OUT MORE!**

Visit our website at [www.marketplaceseminar.com](http://www.marketplaceseminar.com)

REGISTER BEFORE  
DECEMBER 15, 2012  
AND SAVE \$200!

Owned and Produced by

**Based on the Laser Focus World Annual Market Review and Forecast,** the Lasers & Photonics Marketplace Seminar provides business leaders, investors, and technology analysts with a detailed review of worldwide laser markets, coupled with discussions of key business and technology trends for the laser and optoelectronics markets.

**The Lasers & Photonics Marketplace Seminar** is the only event anywhere in the world that focuses on the entire laser marketplace and presents information and analysis of market trends segmented by applications and laser technology. It provides investors, photonics manufacturers, and their suppliers with a comprehensive market perspective that is unobtainable elsewhere.

Register Today and SAVE \$200!

Register Now

## Workshops

Spend some time focusing on your career development while you're at Photonics West. Workshops and presentations will help you hone valuable job skills.

**Registration required for the workshops below. See SPIE Cashier.**

### Critical Skills for Compelling Research Proposals

**WS1058 · Course Level: Introductory**  
**CEU: 0.35 \$100 SPIE Member / \$150 Non-member USD**  
**Sunday 8:30 am to 12:30 pm**

This course is free to SPIE Student Members, but you must register to attend.

Research costs money. The good news is that there are thousands of avenues of financial support. The bad news is that hundreds of thousands of proposals are competing for those funds. This class will teach you to craft high-quality proposals that stand out from the masses. We will focus on five fundamental skills that will bolster the substance, structure, and appearance of your proposals. Adhering to these practices will dramatically increase your odds of winning funding for your research.

**Damon Diehl** is Assistant Professor and Coordinator for the Optical Systems Technology program at Monroe Community College in Rochester, NY and also the founder and owner of Diehl Research Grant Services. He has a Ph.D. in optical engineering from the University of Rochester Institute of Optics and a B.A. in physics from the University of Chicago. His class is based on fifteen years of academic and industrial research experience.

### The Craft of Scientific Presentations: A Workshop on Technical Presentations

**WS667 · Course Level: Introductory**  
**CEU: 0.35 \$125 SPIE Member / \$175 Non-member USD**  
**Tuesday 8:30 am to 12:30 pm**

This course is free to SPIE Student Members, but you must register to attend.

This course provides attendees with an overview of what distinguishes the best scientific presentations. The course introduces a new design for presentation slides that is both more memorable and persuasive from what is typically shown at conferences.

**Michael Alley** teaches writing and speaking to engineering students at Penn State. Alley has taught this workshop to researchers at the Army Research Laboratory, Lawrence Livermore National Laboratory, United Technologies, the University of Illinois, the University of Oslo, and Virginia Tech.

### Resumes to Interviews: Strategies for a Successful Job Search

**WS1059 · Course Level: Introductory**  
**CEU: 0.25 \$100 SPIE Member / \$150 Non-member USD**  
**Monday 1:30 pm to 4:00 pm**

This course is free to SPIE Student Members, but you must register to attend.

This course reviews effective strategies and techniques for a successful job search such as: compiling resumes, writing cover letters, and interviewing tips. The primary goal of the course is to provide creative and proven techniques for new college graduates and professionals to plan and conduct their job search and secure a job.

Creative and comprehensive job search techniques will be discussed as well as actual resume and interviewing examples and tips. Anyone who is getting ready to enter the work force who wants to answer questions such as, "when and how do I start my job search?," "what kind of cover letter and resume gets noticed?" or "how do I sell myself in an interview?" will benefit from taking this course.

**Paige Lawson** has been in professional recruiting for more than 20 years. She has extensive experience with both in-house corporate environments as well as outside agency/consulting environments. Paige is currently the Executive Recruiter for Exotic Electro Optics in Murrieta, CA, and a member of the local networking group Professionals in Human Resources (PHIRA).

**Suzanne Krinsky** has been in human resources and corporate recruiting for more than 15 years. She has extensive experience with both in-house corporate environments as well as outside agency/consulting environments. Suzanne is currently the Human Resource Director for Daylight Solutions in San Diego, and also a long-time Board member for the Biotech Human Resource Development Coalition (BEDC) and Human Resource Roundtable member.

### The Craft of Scientific Writing: A Workshop on Technical Writing

**WS668 · Course Level: Introductory**  
**CEU: 0.35 \$125 SPIE Member / \$175 Non-member USD**  
**Tuesday 1:30 pm to 5:30 pm**

This course is free to SPIE Student Members, but you must register to attend.

This course provides an overview on writing a scientific paper. The course focuses on the structure, language, and illustration of scientific papers.

**Michael Alley** teaches writing and speaking to engineering students at Penn State. Alley has taught this workshop to researchers at the Army Research Laboratory, Lawrence Livermore National Laboratory, United Technologies, the University of Illinois, the University of Oslo, and Virginia Tech.



SPIE Career Center

# JOB FAIR

at Photonics West

Meet.  
Discuss.  
Impress.

Visit us in the South  
Exhibition Hall

Moscone Center, San Francisco, USA

Tuesday 5 February, 10:00 am to 5:00 pm

Wednesday 6 February, 10:00 am to 5:00 pm

[spie.org/pwjobfair](http://spie.org/pwjobfair)

Exhibiting at the Job Fair:



**BAE SYSTEMS**



DAYLIGHT  
SOLUTIONS<sup>®</sup>



**DSI** Deposition Sciences  
INCORPORATED  
Bringing Technology to Light<sup>™</sup>

**Exotic**  
Electro-Optics

**GENERAL ATOMICS**  
AERONAUTICAL

HALMA



**JDSU**

**KLA Tencor**  
Accelerating Yield



**Microsoft**

**LINCOLN LABORATORY**  
MASSACHUSETTS INSTITUTE OF TECHNOLOGY



**NORTHROP GRUMMAN**

**Raytheon**

**QUARTUS**  
ENGINEERING

**TELEDYNE**  
SCIENTIFIC & IMAGING, LLC  
A Teledyne Technologies Company



**UTC Aerospace Systems**

**zygo**

## GAME CHALLENGE · Wednesday 6 February

Visit the SPIE Career Center, Booth #923, Wednesday, 6 February, to participate in the Optikos Game Challenge.

By participating in the game challenge, your name will be entered into a drawing to win an **Amazon Kindle!**

Stop by and talk with representatives about job opportunities and hiring resources.

Do what you  
**LOVE**  
what you do

SPIE Career Center

# Network

Networking Receptions · Student Social Events · SPIE Member Events

Join your colleagues and develop new relationships at these relaxed-atmosphere networking events.



## Student Chapter Leadership Meeting

Sunday 3 February · 6:00 to 9:00 pm  
InterContinental Hotel, Sutter Room  
Open to All Student Chapter Members

All student chapter officers and members are invited to participate in a professional development talk, presentations on successful student events, and a round table chapter discussion. Come network and enjoy a casual dinner with other student chapter members and SPIE Student Services staff!

## Lunch with the Experts -

A BIOS STUDENT NETWORKING EVENT

Sunday 3 February · 12:30 to 1:30 pm · Room 131  
Open to BIOS Student Attendees. Seating is limited and will be granted on a first-come, first-served basis.

Enjoy a casual meal with colleagues at this engaging networking opportunity, hosted by SPIE Student Services. This event features experts willing to share their experience and wisdom on career paths in biomedical optics and an award presentation for SPIE scholarships.

## Photonics West maps:

Moscone Center Maps pp. 2-4  
Walking Map p. 4

## SPIE Fellows Luncheon

Monday 4 February · 12:00 to 1:30 pm  
InterContinental Hotel Ballroom, 5th Floor

All Fellows of SPIE are invited to join your colleagues for an SPIE-hosted lunch. The new SPIE Fellows attending Photonics West will be introduced and recognized. Please join us for this informal gathering and a chance to interact with other Fellows.



FELLOWS LUNCHEON PRESENTATION:  
**How to Deliver Vision Correction to the World:  
A Disruptive Approach**

**Prof. Joshua Silver**

CEO, Centre for Vision in the Developing World

If we assume that everyone should have clear enough vision to perform everyday tasks such as reading or driving, then there are several billion people in the world today who need but do not have correction for their refractive error. One way to deal with this problem could be to create eyewear with lenses whose power can be simply changed by the wearer to as to effectively create their own "prescription" eyewear. It turns out that this is now possible, and Prof. Silver will describe some research which has studied the accuracy and effectiveness of such a procedure. He will also try to point the way to what remains to be done to establish this "self-refraction" approach as the procedure of choice to deliver vision correction to very large underserved populations in the developing world.

**Joshua Silver** is a professor of atomic physics from the University of Oxford who started looking - in 1985 and out of curiosity - at whether self-refraction with suitable adaptive lens eyeglasses might be able to bring vision correction to very large under-served populations in the developing world. He has researched self-refraction to see how well it works for adults and for teenagers, and also created several companies to make self-refraction eyewear. One of those companies has to date delivered over 50,000 pairs of inexpensive adaptive eyeglasses in over 20 countries. He is currently chief executive of the non-profit Centre for Vision in the Developing World in Oxford. One of the aims of the Centre is to develop and apply "next-generation" adaptive eyeglasses as an educational intervention for 100 million plus myopic teenagers.



# Social and Networking Events

## Women in Optics Panel and Roundtable

Monday 4 February · 4:30 to 6:00 pm  
InterContinental Hotel, Ballroom B/C  
Open to all conference attendees.

### What Works for You: A Mentoring Panel for Women in Science and Technology

Moderator: **Michelle Xu**, UC Berkeley  
Panelists: **Jennifer Ellsworth**, Lawrence Livermore National Laboratory; **Mona Jarrahi**, University of Michigan; **Kristen Maitland**, Texas A&M University; **Desiré Whitmore**, UC Berkeley

Join us for a panel discussion featuring women pursuing diverse paths to balance career and family. The panel will be followed by a roundtable session with one panelist per table leading the discussion. The goal of this event is to begin to build mentoring relationships for female graduate students and recent graduates in STEM (science, technology, engineering, and mathematics) through hearing about and interacting with those already establishing their careers. Contact June@SPIE.org to reserve your seat at the roundtable discussion.

Light refreshments will be served.



## Photonics West Welcome Reception

Monday 4 February · 7:00 to 8:30 pm  
Marriott Marquis Hotel, Yerba Buena Ballroom, B2 Level

### Photonics in Motion!

Come and celebrate the technologies that drive innovations throughout the world. All attendees are invited to relax, socialize, and enjoy refreshments. Please remember to wear your conference badge. Dress is casual.

## SPIE Senior Member Breakfast

Tuesday 5 February · 8:00 to 9:00 am  
InterContinental Hotel, Ballroom C

All SPIE Senior Members are invited to join your colleagues for this first annual SPIE-hosted buffet breakfast. Please join us for this informal gathering and a chance to interact with other Senior Members. Please plan to wear your yellow Senior Member ribbon for entry into this event.

## Lunch with the Experts -

A STUDENT NETWORKING EVENT

Tuesday 5 February · 12:30 to 1:30 pm  
InterContinental Hotel, Ballroom A/B

Open to Student Attendees. Seating is limited and will be granted on a first-come, first-served basis.

Enjoy a casual meal with colleagues at this engaging networking opportunity. This event features experts willing to share their experience and wisdom on career paths in optics and photonics and an awards presentation for Newport travel grant winners and SPIE scholarships.

Sponsored by:  **Newport**  
Experience | Solutions

## Newport Research Excellence Travel Awards

The Newport Research Excellence Travel Awards Program provides financial support for university students to attend the two largest SPIE meetings in order to present their research. These travel grants are open to any student who has an accepted paper for presentation at Photonics West or Optics + Photonics. Recipients will be selected based on both the quality of the original research described in the submitted paper(s) and financial need.

For application information for this and other SPIE travel grants visit Scholarships and Grants online at [www.spie.org/scholarships](http://www.spie.org/scholarships)

## Student Chapter Info Session

Tuesday 5 February · 1:45 to 2:30 pm  
InterContinental Hotel, Jackson Room  
Open to All Attendees

Interested in starting a Student Chapter or just want to learn more about the program and its benefits? Get your questions answered at this informal information session hosted by SPIE Student Services.

## Speed Networking Social

Tuesday 5 February · 4:30 to 6:00 pm  
ThirstyBear Brewing Co.  
Open to All Attendees

Join us for the next generation of networking. Add a new contact to your network every three minutes while enjoying appetizers at an off-site venue. Bring plenty of business cards, practice your pitch, and prepare to expand your network.

**ThirstyBear Brewing Co.**  
661 Howard Street

**From The Moscone Center:**  
Head Northwest on 3rd Street  
Turn right on Howard Street  
ThirstyBear is just up the block  
on your right

## SPIE Member Reception

Tuesday 5 February · 8:00 to 9:30 pm  
For SPIE Members Only

### Hilton San Francisco Union Square Hotel

333 O'Farrell Street  
Cityscape (46th Floor)

SPIE Members are invited to the Cityscape Room at the top of the Hilton for an after dinner reception in their honor. Come relax and talk with your colleagues while enjoying dessert, coffee, and unparalleled views of downtown San Francisco. Please note: this reception is limited to SPIE Members only. Membership cards or invitations will be requested at the entrance. If you join SPIE on-site, please bring your registration receipt. Dress is casual or business attire.



# Social and Networking Events

## “No Ties” Student Social

Wednesday 6 February · 8:00 to 10:00 pm · Jillian’s Billiards Club  
Student Conference Attendees Only.

Relax and hang out with new friends and peers while enjoying the atmosphere of a great off-site venue. No ties required but please bring photo ID.

**Jillian’s Billiards Club**  
101 4th Street

**From The Moscone Center:**  
Head Southwest on Howard St  
toward 4th St  
Turn right on 4th St  
Jillian’s is on the right



## Prism Awards Ceremony and Banquet

Wednesday 6 February · 6:00 to 10:00 pm  
Marriott Marquis Hotel

Seating Limited. Tickets Required in Advance.

Join this gala event in which SPIE and Photonics Media recognize the most innovative new photonic products on the market. Network with industry leaders at this VIP event. The evening begins with a reception, followed by an elegant dinner and award ceremony. Please bring tickets to the door. Dress is business and formal attire.

Go to SPIE Cashier for ticket information.

Sponsors:



**SPIE** Connecting minds.  
Advancing light.

**PHOTONICS** MEDIA

LAURIN PUBLISHING



SPIE Membership

## A long-term investment that pays off

**Join or renew your SPIE Membership**

1 year \$105 | 3 years \$297 | Lifetime \$995

Discounts for students and early career professionals

- ▶ 10 SPIE Digital Library downloads
- ▶ Complimentary online SPIE Journal
- ▶ 1 Complimentary online course
- ▶ Networking and access to information
- ▶ Discounts on events, courses, and publications
- ▶ Career advancement and peer recognition

Make SPIE your resource.  
Join or renew online today.

[spie.org/membership](http://spie.org/membership)

help@spie.org  
+1 360 676 3290





**10 FINALISTS, 3 MINUTES**

**\$10,000**

**WEDNESDAY**

**3:30 TO 5PM**



**CONVENTION CTR.**

**ROOM 101**

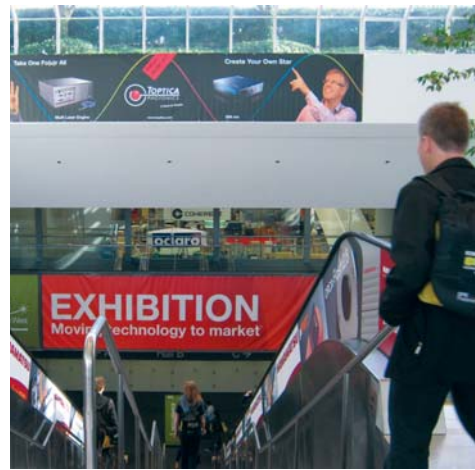
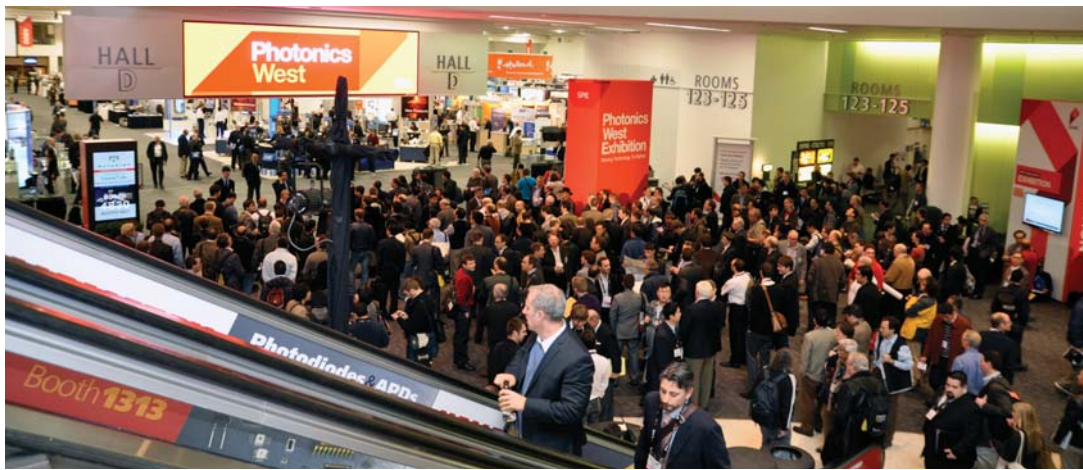
TEN PRE-REVENUE PHOTONICS ENTREPRENEURS HAVE 3 MINUTES  
TO PITCH THEIR BUSINESS IDEAS AND A CHANCE TO WIN \$10,000

[WWW.SPIE.ORG/STARTUP](http://WWW.SPIE.ORG/STARTUP)

ADDITIONAL SUPPORT PROVIDED BY

LEAD SPONSOR





## Discover new possibilities at SPIE Photonics West Walk the floor of two technology-packed free exhibitions

# Photonics West

**5–7 February 2013**  
 South Hall A,B,C and North Hall D  
 Tuesday · 10:00 am to 5:00 pm  
 Wednesday · 10:00 am to 5:00 pm  
 Thursday · 10:00 am to 4:00 pm

### The multi-billion-dollar global marketplace of light-driven technologies

There is absolutely no other photonics and laser exhibition in North America with the size and prestige of SPIE Photonics West. This 1,200-company exhibition is the place to see the latest products, tools, applications, and innovations from top companies and industry leaders worldwide.

### Exhibition Technologies

- Laser sources and systems
- Optical components and materials
- IR sources and detectors
- Cameras and sensors
- Electronic imaging components
- Fiber optic systems
- Optical coatings
- Lenses and filters
- Positioning and mounts
- Metrology

Photonics West – 1,200 Companies





## If you work in biomedical optics you can't afford to miss the BIOS EXPO

# BIOS EXPO

**2-3 February 2013**  
South Hall A

Saturday · 12:00 pm to 5:00 pm  
Sunday · 10:00 am to 5:00 pm

Take advantage of this 235-company exhibition that kicks off the Photonics West week. Come and see all the latest products and technologies in the thriving biomedical optics and photonics industries.

### Exhibition Technologies

- Biomedical optics components, products, instrumentation, and applications
- Lasers
- Molecular imaging
- Therapeutic lasers
- Nano/biophotonics
- Biosensors
- Spectroscopic/microscopic imaging

BIOS EXPO — 235 Companies

# Product Demonstrations

Don't miss these  
**FREE Demonstrations**

Product Demonstrations are open to all attendees. Exhibiting companies will be showcasing products in half-hour demonstrations.

	Saturday, 2 February	Sunday, 3 February
	South Hall A	South Hall A
10:30 am	EXHIBITION CLOSED	<b>New 200 kHz All-semiconductor Akinetic OCT Laser Engine</b> Dr. Jason Ensher, Ph.D., Insight Photonic Solutions, Inc.
11:30 am	EXHIBITION CLOSED	<b>Optical Materials for Microscopy Design</b> Dr. Ralf Jedamzik, SCHOTT Advanced Optics
12:30 pm	<b>All Fiber Probes for Medical Imaging and Delivery Applications</b> Dr. Sam Ghalmi, Vytran LLC	
1:30 pm	<b>Linear Variable Filters for Applications in Spectroscopy and Fluorescence Diagnostics</b> Poul Svensgaard, DELTA Optical Thin Film	<b>Chromatis - The Dispersion Measurement Instrument for Optics and Components</b> Chris Wood, Kapteyn-Murnane Laboratories (KM Labs)
2:30 pm	<b>High resolution InGaAs Sensor Pushing Biomedical IR OCT</b> Stuart Cohen, Xenics	<b>Optics Balzers coatings for Biophotonics</b> Pawel Szeliga, Optics Balzers
3:30 pm	<b>Why Multispectral? Multi-band Sensing and Imaging Applications</b> Steve Smith, Ph.D., PIXELTEQ by Ocean Thin Films	

## Tuesday, 5 February

	South Hall A	North Hall D
10:30 am	<b>New High-speed, All-semiconductor, Akinetic Swept Laser for Sensing, Spectroscopy and Imaging</b> Dr. Jason Ensher, Ph.D., Insight Photonic Solutions, Inc.	<b>Putting the World in a Spin - Spun Fibers for Faraday Effect Current Sensors</b> Dr. Andy Gillooly, Fibercore Ltd.
11:30 am	<b>Chromatis - The Dispersion Measurement Instrument for Optics and Components</b> Chris Wood, Kapteyn-Murnane Laboratories (KM Labs)	<b>FPSensor – an ultra-compact, non-invasive, fiber based interferometric displacement sensor system from attocube</b> Florian Ponnath, attocube
12:30 pm	<b>2 Micron Broadband Fiber Light Source</b> Shibin Jiang, AdValue Photonics	<b>M3 modules - small, precise and smart motion for OEM systems</b> David Henderson, New Scale Technologies
1:30 pm	<b>OG 1100/1200- Software Update</b> Roy Youman, Optikos	<b>Advancements in Low Light Scientific Cameras</b> Marc Neglia, PHOTONIS USA
2:30 pm	<b>Got ideas? How the OPI Photonics Horizons program is transforming Photonics R&amp;D and the product development process</b> Jason M. Eichenholz, Open Photonics Inc.	<b>Photoluminescence testing makes better solar cells at lower costs</b> Stuart Cohen, Xenics
3:30 pm	<b>Getting Hired in 2013 and Beyond</b> SPIE Career Center	<b>Fujikura's LaserMaster LZM-100 CO<sub>2</sub> Laser Based Fusion Splicing, Tapering, and Component Fabrication System</b> Douglas Duke, AFL
4:30 pm		<b>Laser gain module TARANIS for high power amplification</b> Julien Didierjean, Fibercryst

## Wednesday, 6 February

	South Hall A	North Hall D
10:30 am	<b>What's New in BRO's ASAP Optical Software?</b> Dr. Jon Herlocker, Breault Research Organization, Inc.	<b>Liquid lenses and Auto Focus lens modules for industrial and medical applications</b> Olivier Jacques-Sermet, Varioptic, a BU of Parrot SA
11:30 am	<b>What's New in BRO's APEX Optical Software?</b> Dr. Mary Turner, Breault Research Organization, Inc.	<b>Circular Variable Filters</b> Fred Tzafrir, CI Systems, Inc.
12:30 pm	<b>Linear Variable Filters for Applications in Spectroscopy and Fluorescence Diagnostics</b> Poul Svensgaard, DELTA Optical Thin Film	<b>Wafer chucks for inspection and other applications</b> Marcel Ziemann, Berliner Glas KGaA Herbert Kubatz GmbH & Co.
1:30 pm	<b>FormCheck™</b> John Boulé and Stephen D. Fantone, Ph.D., Optikos	<b>DLP Non-Display Application</b> Dylan Thomas, Texas Instruments DLP
2:30 pm	<b>Scalable High Power and Highly Homogeneous Line Lasers</b> Maja Thies, LIMO Lissotschenko Mikrooptik GmbH	<b>Features of DSI's new ø 200 mm photolithography line include increased capacity for complex optical filters &amp; enhanced precision</b> Michael Newell, Deposition Sciences, Inc. (DSI)
3:30 pm	<b>ZERODUR® goes Extreme</b> Dr. Ralf Jedamzik, SCHOTT Advanced Optics	<b>Meet the Micro &amp; the Mini!</b> Damon Lenski, Avantes
4:30 pm	<b>Structural &amp; Chemical Nanocharacterization: Integrated AFM &amp; Raman</b> Aaron Lewis, Nanonics Imaging Ltd.	<b>VirtualLab™ 5 – Field Tracing Simulations of Coherence, Interference and Polarization Effects in Laser Systems</b> Christian Hellmann, LightTrans GmbH, JENOPTIK Optical Systems, Inc.

## Thursday, 7 February

	South Hall A	North Hall D
10:30 am	<b>Micro-optics in beam shaping: State of the art and vision for optimized laser processes</b> Dr. Oliver Homburg, LIMO Lissotschenko Mikrooptik GmbH	<b>High-power, diode-pumped 3 um laser technology</b> Bernhard Nussbaumer, Pantec Engineering AG
11:30 am	<b>Perfect filters and designs for demanding customized applications</b> Dr. Ralf Biertuempfel, SCHOTT North America Inc.	<b>E-splice™ a novel technology for embedding splicing equipment in the modern integrated manufacturing line</b> Dr. Giorgio Giaretta, Vytran LLC
12:30 pm	<b>Measuring Sharp Spectral Edges to High Optical Density</b> Gary Carver, PhD., Omega Optical, Inc.	<b>MicroLED technology: High intensity, collimated light directly from the chip</b> William Henry, InfiniLED
1:30 pm	<b>Why Multispectral? Multi-band Sensing and Imaging Applications</b> Steve Smith, PhD., PIXELTEQ by Ocean Thin Films	<b>Improving Inspection and Research Process with Opto-Digital Technology</b> David Rideout, Olympus America Inc.
2:30 pm	<b>Laser Damage Threshold of Optical components</b> Dr. Todd Jaeger, SCHOTT North America Inc.	<b>Mini-Diff: new portable and affordable optical scatterometer</b> Yan Cornil, Light Tec



Thanks to the following sponsors for their generous support

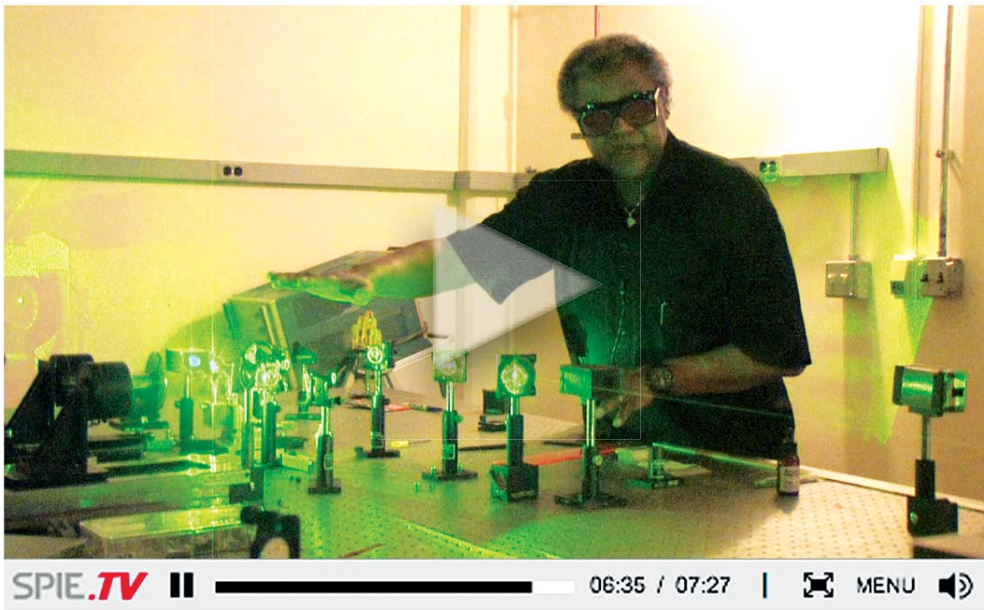
Coffee/Dessert Break	Meter Board		
<p>SCHNECK &amp; SCHNECK INTELLECTUAL PROPERTY LAW</p> <p>www.patentvalley.com</p>	 <p>Booth #8930 www.bwt-bj.com</p>	 <p>Booth #8500 www.frlaserco.com</p>	 <p>Booth #8931 www.opticsbalzers.com</p>
General Refreshment		Promotional Partners	
<p>IMT North America, Inc. Booth #8424</p>		<p>BioOptics World IOP Publishing Ltd. optics.org</p>	<p>Photonics Online Photonics Media/ Laurin Publishing</p>

# Tune in to the optics and photonics community

AWARD  
WINNING

# SPIE.TV

View more than 250 videos from SPIE.



[www.spie.org/spietv](http://www.spie.org/spietv)



Thanks the following sponsors for their generous support

Banner			
 <p><b>DRS</b> TECHNOLOGIES A Finmeccanica Company</p> <p>Booth #5427 www.drsinfrared.com</p>	<p><b>Heraeus</b></p> <p>Booth #1008 www.optics.heraeus-quarzglas.com</p>	 <p><b>KEOPSYS</b> The Light Touch</p> <p>Booth #4544 www.keopsys.com</p>	 <p><b>laservision</b> WE PROTECT YOUR EYES</p> <p>Booth #4206 www.lasersafety.com</p>
 <p><b>LIGHT CONVERSION</b></p> <p>Booth #1039 www.lightcon.com</p>	 <p><b>LightPath</b> TECHNOLOGIES™</p> <p>Booth #2211 www.lightpath.com</p>	 <p><b>modulight</b> on your wavelength</p> <p>Booth #1139 www.modulight.com</p>	 <p><b>PIXELTEQ</b></p> <p>Booth #1831 www.pixelteq.com</p>
 <p><b>Shanghai</b> optics</p> <p>Booth #1537 www.shanghai-optics.com</p>			
Conference Bag Pen		Conference Bag	
 <p><b>ACCESS LASER</b> where innovation never stops</p> <p>Booth #4831 www.accesslaser.com</p>	 <p><b>modulight</b> on your wavelength</p> <p>Booth #1139 www.modulight.com</p>	 <p><b>OPTO DIODE CORP.</b></p> <p>Booth #5212 www.optodiode.com</p>	 <p><b>BERLINER GLAS</b> <b>swissoptic</b> Solutions in Optics.</p> <p>Booth #2228 www.berlinerglas.com</p>
Conference Bag Insert			
 <p><b>AMERICAN ELEMENTS</b></p> <p>www.americanelements.com</p>	 <p><b>BWT</b> BEIJING</p> <p>Booth #930 www.bwt-bj.com</p>	<p><b>HAMAMATSU</b></p> <p>Booth #1313 www.sales.hamamatsu.com</p>	 <p><b>IDEX</b> OPTICS &amp; PHOTONICS</p> <p>Booth #4801, 4809 www.idexcorp.com</p>
 <p><b>Optofluidics</b></p> <p>Booth #4232 www.optofluidicscorp.com</p>	 <p><b>Photonics Online</b></p> <p>Booth #2404 www.photonicsonline.com</p>	 <p><b>SmarAct</b> GmbH</p> <p>Booth #214 www.smaract.de</p>	 <p><b>DLP</b> TEXAS INSTRUMENTS</p> <p>Booth #1331 www.ti.com</p>

# SPIE Photonics West Sponsors

## Digital Signage



Booth #5427  
www.drsinfrared.com



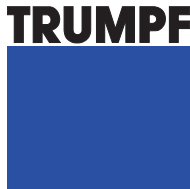
Booth #5235  
www.emcohighvoltage.com



Booth #5512  
www.nuphoton.com



Booth #4332  
www.pgo.com



Booth #1337  
www.us.trumpf.com



Booth #4801, 4809  
www.idexcorp.com



Booth #2500  
www.l-3com.com/aoc



Booth #517  
www.laser-components.com



Rochester Precision Optics

Booth #637  
www.rpoptics.com

## Entry Graphic



Booth #1039  
www.lightcon.com



Booth #406  
www.lumencor.com



Booth #1530  
www.phototech.com



Booth #1936  
www.thales-laser.com

## Escalator Panels



Booth #1313  
www.sales.hamamatsu.com



Booth #504  
www.imra.com



Rochester Precision Optics

Booth #637  
www.rpoptics.com



Booth #4316  
www.lwoptics.com



A Furukawa Company





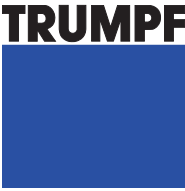







Booth #917  
www.specialtyphotonics.com






















# SPIE Photonics West Sponsors

Exhibition Coffee Break			Conference Coffee Break
 <p>Booth #1313 www.sales.hamamatsu.com</p>	 <p>Booth #2417 www.nufer.com</p>	 <p>Booth #811 www.sensorsinc.com</p>	 <p>Booth #5226 www.onefive.com</p>
Exhibition Map/Restaurant Guide			
 <p>Booth #822 www.4dtechnology.com</p>	 <p>Booth #930 www.bwt-bj.com</p>	 <p>Booth #223 www.castech.com</p>	 <p>Booth #4110 www.cda-microworld.de</p>
 <p>Booth #2619 www.cobolt.se</p>	 <p>Booth #4837 www.dilas.com</p>	 <p>Booth #5427 www.drsinfrared.com</p>	 <p>Booth #4410 www.exciton.com</p>
 <p>Booth #500 www.frlaserco.com</p>	 <p>Booth #1313 www.sales.hamamatsu.com</p>	 <p>Booth #4801, 4809 www.idexcorp.com</p>	 <p>Booth #2141 www.iivinfrared.com</p>
 <p>Booth #4206 www.lasersafety.com</p>	 <p>Booth #816 www.limo.de</p>	 <p>Booth #1500, 4406 www.markettechinc.net</p>	 <p>Booth #1133 www.mpbcommunications.com</p>
 <p>Booth #1301 www.newport.com</p>	 <p>Booth #1831, 1923, 1930, 1931 www.oceanoptics.com</p>	 <p>Booth #1101 www.oclaro.com</p>	 <p>Booth #931 www.opticsbalzers.com</p>
 <p>Booth #1608 www.trioptics.com</p>			

# SPIE Photonics West Sponsors

Exhibitor Reception			
 <p><b>SPIE</b>® Connecting minds Advancing light. www.spie.org</p>		 <p>Booth #800 www.laserfocusworld.com</p>  <p>Booth #800 www.bioopticsworld.com</p>	 <p>Booth #800 www.industrial-lasers.com</p>  <p>Booth #800 www.vision-systems.com</p>
Exhibition Map/Restaurant Guide Back Cover	Hotel Key Cards	Internet Pavilion	Lanyards
 <p>Booth #4310 www.alazartech.com</p>	 <p>Booth #1337 www.us.trumpf.com</p>	 <p>Booth #2117 www.princetoninstruments.com</p>	 <p>Booth #4837 www.dilas.com</p>
Floor Graphic			
 <p>Booth #5427 www.drsinfrared.com</p>	 <p>Booth #4801, 4809 www.idexcorp.com</p>	 <p>Booth #1000 www.incomusa.com</p>	 <p>Booth #5226 www.onefive.com</p>
 <p>Booth #1039 www.lightcon.com</p>	 <p>Booth #2301 www.unitedlens.com</p>		

Meter Board			
 <p>Booth #930 www.bwt-bj.com</p>	 <p>Booth #2619 www.cobolt.se</p>	 <p>Booth #410 www.depsci.com</p>	 <p>Booth #500 www.frlaserco.com</p>
 <p>Booth #5503 www.innolume.com</p>	 <p>Booth #2033 www.inradoptics.com</p>	 <p>Booth #2529 www.kmlabs.com</p>	 <p>Booth #305 www.mtinstruments.com</p>
 <p>Booth #1009 www.northropgrumman.com</p>	 <p>Booth #1831, 1923, 1930, 1931 www.oceanoptics.com</p>	 <p>Booth #1101 www.oclaro.com</p>	 <p>Booth #931 www.opticsbalzers.com</p>
 <p>Booth #101 www.photonengr.com</p>	 <p>Booth #125 http://en.real-light.com</p>		
SPIE Conference App		Wi-Fi	
 <p>Booth #910 www.chroma.com</p>	 <p>Booth #917 www.specialtyphotonics.com</p>	 <p>Booth #939 www.ldgi-XCite.com</p>	
Stairway Strips		General Refreshment	
 <p>Booth #1600 www.us.schott.com</p>	 <p>Booth #823 www.lasertel.com</p>	<p><b>Heraeus Quartz Amercia LLC</b> Booth #1008</p> <p><b>Honeywell Safety Products</b> Booth #643</p>	<p><b>Photonics Tech Briefs</b> Booth #1937</p> <p><b>Swift Glass, Company</b> Booth #136</p> <p><b>Optofluidics</b> Booth #4232</p>



# SPIE Photonics West Sponsors

Promotional Partners		
<b>AT-Fachverlag GmbH</b> Booth #4112 <a href="http://www.photonik.de">www.photonik.de</a>	<b>Laser Institute of America</b> Booth #1641 <a href="http://www.lia.org">www.lia.org</a>	<b>Photonics Online</b> Booth #2404 <a href="http://www.photonicsonline.com">www.photonicsonline.com</a>
<b>Cambridge University Press</b> Booth #4430 <a href="http://www.cambridge.org">www.cambridge.org</a>	<b>MEMS and Nanotechnology Exchange</b> Booth #4412 <a href="http://www.mems-exchange.org">www.mems-exchange.org</a>	<b>Photonics Tech Briefs</b> Booth #1937 <a href="http://www.physicstoday.org">www.physicstoday.org</a>
<b>Carl Hanser Verlag GmbH &amp; Co. KG</b> Booth #4730 <a href="http://www.hanser.de">www.hanser.de</a>	<b>optics.org</b> Booth #923 <a href="http://www.optics.org">www.optics.org</a>	<b>Physics Today</b> Booth #2206 <a href="http://www.techbriefs.com">www.techbriefs.com</a>
<b>China Optoelectronics</b> Booth #226 <a href="http://www.cioe.cn">www.cioe.cn</a>	<b>OptoIndex</b> Booth #3026, 6052 <a href="http://www.opto-index.de/ot">www.opto-index.de/ot</a>	<b>Society of Vacuum Coaters</b> Booth #4931 <a href="http://www.svc.org">www.svc.org</a>
<b>Electro Optics Magazine</b> Booth #2307 <a href="http://www.electrooptics.com">www.electrooptics.com</a>	<b>The Optronics Co., Ltd.</b> Booth #4911 <a href="http://www.optronics.co.jp">www.optronics.co.jp</a>	<b>Spectroscopy Magazine</b> Booth #3088 <a href="http://www.spectroscopyonline.com">www.spectroscopyonline.com</a>
<b>IOP Publishing Ltd.</b> Booth #3034 <a href="http://iopublishing.org">http://iopublishing.org</a>	<b>Photonics Industry &amp; Technology Development Association</b> Booth #107 <a href="http://www.pida.org.tw">www.pida.org.tw</a>	
<b>Laser Focus World</b> Booth #800 <a href="http://www.laserfocusworld.com">www.laserfocusworld.com</a>	<b>Photonics Media/Laurin Publishing</b> Booth #600, 601 <a href="http://www.photonics.com">www.photonics.com</a>	

## SPIE provided over \$3.3 million in support of education and outreach programs in 2012

- ▶ SPIE Scholarships
- ▶ Education Outreach Grants
- ▶ Student Chapters
- ▶ Student Activities
- ▶ Best Student Paper Prizes
- ▶ Free Posters
- ▶ Free Educational CDs, DVDs, and Videos
- ▶ Women in Optics
- ▶ Education and Training in Optics and Photonics Conference (ETOP)
- ▶ Student Outreach
- ▶ Science Fairs
- ▶ Optics Education Directory
- ▶ Free SPIE Journal Access in developing nations
- ▶ Active Learning in Optics and Photonics (ALOP): Teacher Training
- ▶ International Centre for Theoretical Physics (ICTP) Winter College
- ▶ Visiting Lecturers Program

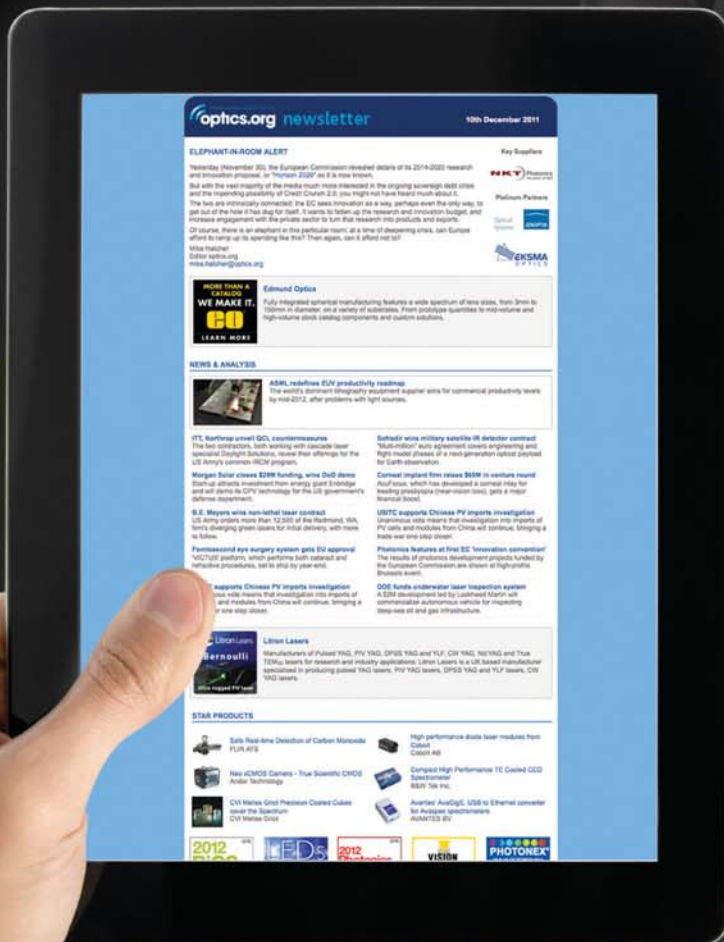
[www.spie.org/giving](http://www.spie.org/giving)



view it all in  
**a different light**

for the latest news, analysis, market intelligence and insight direct to your desktop or mobile device

sign up to our html newsletter  
 simply go to [optics.org/register](http://optics.org/register)  
 or visit us at booth #8923



**sign up today**  
 to receive our free weekly  
**html newsletter**



# Get Smart with Courses at Photonics West

Relevant training · Proven instructors  
Education you need to stay competitive in today's job market.

- More than 70 courses and workshops on fundamental and current topics on optics, biophotonics, lasers, and more
- All-new courses including nanobioengineering & nanomedicine, optomechanical systems engineering, and hands-on multiphoton tomography
- Browse course offerings in North Lobby, Registration Area
- Course attendees receive CEUs to fulfill continuing education requirements

**50% OFF ALL COURSES FOR SPIE STUDENT MEMBERS**  
SPIE Student Members can take a course for 50% off the listed price. Student Membership is only \$20 and provides a wealth of benefits beyond the price discounts – learn more at [www.spie.org/students](http://www.spie.org/students).

**STUDENTS** – don't miss the valuable skill-building workshops on research proposals, job search strategies, and technical presentations.

## Money-back Guarantee

We are confident that once you experience an SPIE course for yourself you will look to us for your future education needs. However, if for any reason you are dissatisfied, we will gladly refund your money. We just ask that you tell us what you did not like; suggestions for improvement are always welcome.



## Continuing Education Units

SPIE has been approved as an authorized provider of CEUs by IACET, The International Association for Continuing Education and Training (Provider #1002091). In obtaining this approval, SPIE has demonstrated that it complies with the ANSI/IACET Standards which are widely recognized as standards of good practice.

**SPIE reserves the right to cancel a course due to insufficient advance registration.**



**SPIE** Connecting minds.  
Advancing light.



Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
----------	--------	--------	---------	-----------	----------

## Advanced Quantum and Optoelectronic Applications

			SC1080 <b>Modeling and Simulation with Computational Fourier Optics</b> (Voelz) 8:30 am to 5:30 pm		
--	--	--	--	--	--

## Biomedical Spectroscopy, Microscopy, and Imaging

SC1072 <b>Statistics for Imaging and Sensor Data</b> (Bajorski) 8:30 am to 5:30 pm	SC1054 <b>Bio-Interferometry: Fundamentals and Applications to Biosensors, Drug Discovery, Microscopy and Biomedical Imaging</b> (Nolte) 8:30 am to 12:30 pm	SC868 <b>Optical Design for Biomedical Imaging</b> (Liang) 8:30 am to 12:30 pm	SC309 <b>Fluorescent Markers: Usage and Optical System Optimization</b> (Levi) 1:30 pm to 5:30 pm	SC1092 <b>Hands-on Multiphoton Tomography: From the Lab into the Clinics</b> (König) 8:30 am to 5:30 pm	
	SC1051 <b>Fundamentals of Microscope Design</b> (Seward) 8:30 am to 12:30 pm		SC746 <b>Introduction to Ultrafast Optics</b> (Trebino) 1:30 pm to 5:30 pm	SC1053 <b>Ultrafast Laser Pulse Shaping and Adaptive Pulse Compression</b> (Dantus) 1:30 pm to 5:30 pm	
	SC981 <b>Biomedical Fiber Optic Sensors and Applications</b> (Mendez, McLaughlin) 1:30 pm to 5:30 pm				

## Clinical Technologies and Systems

SC1072 <b>Statistics for Imaging and Sensor Data</b> (Bajorski) 8:30 am to 5:30 pm	SC1054 <b>Bio-Interferometry: Fundamentals and Applications to Biosensors, Drug Discovery, Microscopy and Biomedical Imaging</b> (Nolte) 8:30 am to 12:30 pm	SC868 <b>Optical Design for Biomedical Imaging</b> (Liang) 8:30 am to 12:30 pm		SC1092 <b>Hands-on Multiphoton Tomography: From the Lab into the Clinics</b> (König) 8:30 am to 5:30 pm	
	SC1087 <b>Fiber Bragg Gratings: Production, Modeling and Applications</b> (Thomas) 8:30 am to 12:30 pm				
	SC981 <b>Biomedical Fiber Optic Sensors and Applications</b> (Mendez, McLaughlin) 1:30 pm to 5:30 pm				
	SC312 <b>Principles and Applications of Optical Coherence Tomography</b> (Fujimoto) 1:30 pm to 5:30 pm				

## Displays and Holography

		SC011 <b>Design of Efficient Illumination Systems</b> (Cassarly) 8:30 am to 12:30 pm			
		SC790 <b>Liquid Crystals: From Fundamentals to Applications</b> (Smalyukh) 8:30 am to 5:30 pm			

**Registration Required**

See SPIE Cashier, North Lobby

# Course Daily Schedule

Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
<b>Laser Applications</b>					
		SC188 <b>Laser Beam Propagation for Applications in Laser Communications, Laser Radar, and Active Imaging</b> (Phillips, Andrews) 8:30 am to 5:30 pm	SC1089 <b>Laser Safety for Engineers</b> (Lieb) 8:30 am to 12:30 pm <b>NEW</b>		
			SC746 <b>Introduction to Ultrafast Optics</b> (Trebino) 1:30 pm to 5:30 pm		
<b>Laser Micro-/Nanoengineering</b>					
		SC743 <b>Micromachining with Femtosecond Lasers</b> (Nolte) 1:30 pm to 5:30 pm	SC1089 <b>Laser Safety for Engineers</b> (Lieb) 8:30 am to 12:30 pm <b>NEW</b>		
		SC689 <b>Precision Laser Micromachining</b> (Schaeffer) 1:30 pm to 5:30 pm	SC746 <b>Introduction to Ultrafast Optics</b> (Trebino) 1:30 pm to 5:30 pm		
<b>Laser Source Engineering</b>					
SC752 <b>Solid State Laser Technology</b> (Hodgson) 8:30 am to 5:30 pm	SC1087 <b>Fiber Bragg Gratings: Production, Modeling and Applications</b> (Thomas) 8:30 am to 12:30 pm <b>NEW</b>	SC974 <b>Interconnection and Splicing of High-Power Optical Fibers</b> (Yablon) 8:30 am to 12:30 pm	SC818 <b>Laser Beam Quality</b> (Paschotta) 8:30 am to 12:30 pm	SC744 <b>Ultrafast Fiber Lasers</b> (Fermann) 1:30 pm to 5:30 pm	
	SC748 <b>High-Power Fiber Sources</b> (Nilsson) 8:30 am to 5:30 pm, \$525 / \$635, p.317		SC1089 <b>Laser Safety for Engineers</b> (Lieb) 8:30 am to 12:30 pm <b>NEW</b>	SC1053 <b>Ultrafast Laser Pulse Shaping and Adaptive Pulse Compression</b> (Dantus) 1:30 pm to 5:30 pm	
	SC012 <b>Miniature Optics for Diode Lasers and Beam Shaping</b> (Tkaczyk) 8:30 am to 5:30 pm		SC977 <b>Fundamentals of Laser Beam Profile Measurements</b> (Rypma) 1:30 pm to 5:30 pm	WS972 <b>Basic Laser Technology</b> (Sukuta) 8:30 am to 12:30 pm	
	SC860 <b>Resonator Design for Solid State Lasers</b> (Paschotta) 8:30 am to 5:30 pm		SC746 <b>Introduction to Ultrafast Optics</b> (Trebino) 1:30 pm to 5:30 pm		
	SC1020 <b>Splicing of Specialty Fibers and Glass Processing of Fused Fiber Components for Fiber Lasers</b> (Wang) 8:30 am to 12:30 pm				
	SC1012 <b>Coherent Mid-Infrared Sources and Applications</b> (Vodopyanov) 1:30 pm to 5:30 pm				
<b>Optical Communications: Devices to Systems</b>					
		SC188 <b>Laser Beam Propagation for Applications in Laser Communications, Laser Radar, and Active Imaging</b> (Phillips, Andrews) 8:30 am to 5:30 pm			

Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
<b>Metrology &amp; Standards</b>					
	SC212 <b>Modern Optical Testing</b> ( <i>Wyant</i> ) 8:30 am to 12:30 pm	SC211 <b>Practical Interferometry and Fringe Analysis</b> ( <i>Creath</i> ) 8:30 am to 5:30 pm	SC1089 <b>Laser Safety for Engineers</b> ( <i>Lieb</i> ) 8:30 am to 12:30 pm	SC700 <b>Understanding Scratch and Dig Specifications</b> ( <i>Aikens</i> ) 8:30 am to 12:30 pm	
	SC958 <b>LED &amp; Solid-State Lighting Standards and Metrology</b> ( <i>Jiao</i> ) 1:30 pm to 5:30 pm			SC1017 <b>Optics Surface Inspection Workshop</b> ( <i>Aikens</i> ) 1:30 pm to 5:30 pm	
<b>Micro/Nanofabrication</b>					
	SC1087 <b>Fiber Bragg Gratings: Production, Modeling and Applications</b> ( <i>Thomas</i> ) 8:30 am to 12:30 pm	SC743 <b>Micromachining with Femtosecond Lasers</b> ( <i>Nolte</i> ) 1:30 pm to 5:30 pm	SC454 <b>Fabrication Technologies for Micro- and Nano-Optics</b> ( <i>Suleski</i> ) 8:30 am to 12:30 pm		
	SC012 <b>Miniature Optics for Diode Lasers and Beam Shaping</b> ( <i>Tkaczyk</i> ) 8:30 am to 5:30 pm	SC689 <b>Precision Laser Micromachining</b> ( <i>Schaeffer</i> ) 1:30 pm to 5:30 pm			
<b>Nano/Biophotonics</b>					
	SC1090 <b>Bio-photonics, Nanobio-engineering and Nanomedicine</b> ( <i>Prasad</i> ) 8:30 am to 5:30 pm <b>NEW</b>		SC727 <b>Nanoplasmonics</b> ( <i>Stockman</i> ) 8:30 am to 5:30 pm		
			SC309 <b>Fluorescent Markers: Usage and Optical System Optimization</b> ( <i>Levi</i> ) 1:30 pm to 5:30 pm		
<b>Nanotechnologies in Photonics</b>					
	SC608 <b>Photonic Crystals: A Crash Course, from Bandgaps to Fibers</b> ( <i>Johnson</i> ) 8:30 am to 12:30 pm				
<b>Nonlinear Optics</b>					
	SC1087 <b>Fiber Bragg Gratings: Production, Modeling and Applications</b> ( <i>Thomas</i> ) 8:30 am to 12:30 pm <b>NEW</b>	SC974 <b>Interconnection and Splicing of High-Power Optical Fibers</b> ( <i>Yablon</i> ) 8:30 am to 12:30 pm		SC1053 <b>Ultrafast Laser Pulse Shaping and Adaptive Pulse Compression</b> ( <i>Dantus</i> ) 1:30 pm to 5:30 pm	
	SC1020 <b>Splicing of Specialty Fibers and Glass Processing of Fused Fiber Components for Fiber Lasers</b> ( <i>Wang</i> ) 8:30 am to 12:30 pm				
	SC1012 <b>Coherent Mid-Infrared Sources and Applications</b> ( <i>Vodopyanov</i> ) 1:30 pm to 5:30 pm				
	SC1060 <b>Fundamentals of Nonlinear Optics</b> ( <i>Powers</i> ) 1:30 pm to 5:30 pm				

**Registration Required**  
 Browse course offerings in North Lobby, Registration Area  
 See SPIE Cashier, North Lobby



# Course Daily Schedule

Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
<b>Optical Engineering &amp; Fabrication</b>					
	SC1060 <b>Fundamentals of Nonlinear Optics (Powers)</b> 1:30 pm to 5:30 pm	SC017 <b>Principles of Fourier Optics and Diffraction (Gaskill)</b> 8:30 am to 5:30 pm	SC1080 <b>Modeling NEW and Simulation with Computational Fourier Optics (Voelz)</b> 8:30 am to 5:30 pm	SC1039 <b>Evaluating Aspheres for Manufacturability (Hall)</b> 8:30 am to 12:30 pm, \$300 / \$355	
	SC1071 <b>Understanding Diffractive Optics (Soskind)</b> 1:30 pm to 5:30 pm	SC321 <b>Thin Film Optical Coatings (Macleod)</b> 8:30 am to 5:30 pm		SC700 <b>Understanding Scratch and Dig Specifications (Aikens)</b> 8:30 am to 12:30 pm	
				SC1086 <b>Optical NEW Materials, Fabrication and Testing for the Optical Engineer (DeGroot Nelson)</b> 1:30 pm to 5:30 pm	
				SC1017 <b>Optics Surface Inspection Workshop (Aikens)</b> 1:30 pm to 5:30 pm	
				WS972 <b>Basic Laser Technology (Sukuta)</b> 8:30 am to 12:30 pm	
<b>Optical Systems &amp; Lens Design</b>					
	SC690 <b>Optical System Design: Layout Principles and Practice (Greivenkamp)</b> 8:30 am to 5:30 pm	SC011 <b>Design of Efficient Illumination Systems (Cassarly)</b> 8:30 am to 12:30 pm	SC156 <b>Basic Optics for Engineers (Boreman)</b> 8:30 am to 5:30 pm	SC1039 <b>Evaluating Aspheres for Manufacturability (Hall)</b> 8:30 am to 12:30 pm	
		SC835 <b>Infrared Systems - Technology &amp; Design (Daniels)</b> 8:30 am to 5:30 pm		SC1052 <b>Optical Systems Engineering (Kasunic)</b> 8:30 am to 5:30 pm	
		WS609 <b>Basic Optics for Non-Optics Personnel (Harding)</b> 1:30 pm to 4:00 pm		SC003 <b>Practical Optical System Design (Youngworth)</b> 8:30 am to 5:30 pm	
<b>Optoelectronic Materials and Devices</b>					
	SC1087 <b>Fiber NEW Bragg Gratings: Production, Modeling and Applications (Thomas)</b> 8:30 am to 12:30 pm	SC747 <b>Semiconductor Photonic Device Fundamentals (Linden)</b> 8:30 am to 5:30 pm	SC1091 <b>Funda- NEW ments of Reliability Engineering for Optoelectronic Devices (Leisher)</b> 8:30 am to 12:30 pm		
	SC1060 <b>Fundamentals of Nonlinear Optics (Powers)</b> 1:30 pm to 5:30 pm	SC547 <b>Terahertz Wave Technology and Applications (Zhang)</b> 1:30 pm to 5:30 pm	SC1080 <b>Modelin NEW and Simulation with Computational Fourier Optics (Voelz)</b> 8:30 am to 5:30 pm		
	SC817 <b>Silicon Photonics (Michel, Saini)</b> 1:30 pm to 5:30 pm				

Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
----------	--------	--------	---------	-----------	----------

## Optomechanics

	SC014 <b>Introduction to Optomechanical Design</b> ( <i>Vukobratovich</i> ) 8:30 am to 5:30 pm		SC781 <b>Optomechanical Analysis</b> ( <i>Hatheway</i> ) 8:30 am to 5:30 pm		
		SC1085 <b>Opto-<sup>NEW</sup> mechanical Systems Engineering</b> ( <i>Kasunic</i> ) 8:30 am to 5:30 pm	SC015 <b>Structural Adhesives for Optical Bonding</b> ( <i>Daly</i> ) 8:30 am to 12:30 pm		

## Photonic Integration

	SC1087 <b>Fiber Bragg Gratings: Production, Modeling and Applications</b> ( <i>Thomas</i> ) 8:30 am to 12:30 pm <sup>NEW</sup>	SC747 <b>Semiconductor Photonic Device Fundamentals</b> ( <i>Linden</i> ) 8:30 am to 5:30 pm	SC1091 <b>Fundamentals of Reliability Engineering for Optoelectronic Devices</b> ( <i>Leisher</i> ) 8:30 am to 12:30 pm <sup>NEW</sup>		
	SC608 <b>Photonic Crystals: A Crash Course, from Bandgaps to Fibers</b> ( <i>Johnson</i> ) 8:30 am to 12:30 pm		SC1080 <b>Modeling and Simulation with Computational Fourier Optics</b> ( <i>Voelz</i> ) 8:30 am to 5:30 pm <sup>NEW</sup>		
	SC817 <b>Silicon Photonics</b> ( <i>Michel, Saini</i> ) 1:30 pm to 5:30 pm				

## Photonic Therapeutics and Diagnostics

SC1072 <b>Statistics for Imaging and Sensor Data</b> ( <i>Bajorski</i> ) 8:30 am to 5:30 pm <sup>NEW</sup>	SC1090 <b>Bio-photonics, Nanobio-engineering and Nanomedicine</b> ( <i>Prasad</i> ) 8:30 am to 5:30 pm <sup>NEW</sup>	SC702 <b>Optics and Optical Quality of the Human Eye</b> ( <i>Roorda</i> ) 8:30 am to 12:30 pm	SC1092 <b>Hands-on Multiphoton Tomography: From the Lab into the Clinics</b> ( <i>König</i> ) 8:30 am to 5:30 pm <sup>NEW</sup>		
--	---	--	---	--	--

## Semiconductor Lasers and LEDs

	SC052 <b>Light-Emitting Diodes</b> ( <i>Schubert</i> ) 8:30 am to 12:30 pm	SC011 <b>Design of Efficient Illumination Systems</b> ( <i>Cassarly</i> ) 8:30 am to 12:30 pm	SC1089 <b>Laser Safety for Engineers</b> ( <i>Lieb</i> ) 8:30 am to 12:30 pm <sup>NEW</sup>		
	SC012 <b>Miniature Optics for Diode Lasers and Beam Shaping</b> ( <i>Tkaczyk</i> ) 8:30 am to 5:30 pm	SC974 <b>Interconnection and Splicing of High-Power Optical Fibers</b> ( <i>Yablon</i> ) 8:30 am to 12:30 pm	SC977 <b>Fundamentals of Laser Beam Profile Measurements</b> ( <i>Rypma</i> ) 1:30 pm to 5:30 pm		
	SC1020 <b>Splicing of Specialty Fibers and Glass Processing of Fused Fiber Components for Fiber Lasers</b> ( <i>Wang</i> ) 8:30 am to 12:30 pm	SC747 <b>Semiconductor Photonic Device Fundamentals</b> ( <i>Linden</i> ) 8:30 am to 5:30 pm			
	SC1012 <b>Coherent Mid-Infrared Sources and Applications</b> ( <i>Vodopyanov</i> ) 1:30 pm to 5:30 pm				
	SC958 <b>LED &amp; Solid-State Lighting Standards and Metrology</b> ( <i>Jiao</i> ) 1:30 pm to 5:30 pm				

### Registration Required

Browse course offerings in  
North Lobby, Registration Area  
See SPIE Cashier, North Lobby

# Course Daily Schedule

Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
----------	--------	--------	---------	-----------	----------

## Tissue Optics, Laser-Tissue Interaction, and Tissue Engineering

SC1072 <b>Statistics NEW for Imaging and Sensor Data</b> ( <i>Bajorski</i> ) 8:30 am to 5:30 pm	SC312 <b>Principles and Applications of Optical Coherence Tomography</b> ( <i>Fujimoto</i> ) 1:30 pm to 5:30 pm	SC868 <b>Optical Design for Biomedical Imaging</b> ( <i>Liang</i> ) 8:30 am to 12:30 pm		SC1092 <b>Hands-on Multiphoton Tomography: From the Lab into the Clinics</b> ( <i>König</i> ) 8:30 am to 5:30 pm	SC1088 <b>Image-guided Tissue Spectroscopy and Image Reconstruction using NIRFAST: A hands-on course</b> ( <i>Dehghani, Pogue, Davis</i> ) 8:30 am to 5:30 pm
	SC029 <b>Tissue Optics</b> ( <i>Jacques</i> ) 1:30 pm to 5:30 pm				

## Business & Intellectual Property

	WS1058 <b>Critical Skills for Compelling Research Proposals</b> ( <i>Diehl</i> ) 8:30 am to 12:30 pm		WS1057 <b>Magnifying Your IP IQ: Topics for the Savvy Intellectual Property Manager</b> ( <i>Gallagher, Yamato, Jankowski, Bayles</i> ) 8:30 am to 12:30 pm	WS1093 <b>Going Pro - Marketing Essentials for Sustainable Business</b> ( <i>Gleber</i> ) 1:30 pm to 5:30 pm	
			WS1056 <b>Commercialization of Photonics Technology</b> ( <i>Krohn</i> ) 1:30 pm to 5:30 pm		

## Fundamental Optics

		WS609 <b>Basic Optics for Non-Optics Personnel</b> ( <i>Harding</i> ) 1:30 pm to 4:00 pm		WS972 <b>Basic Laser Technology</b> ( <i>Sukuta</i> ) 8:30 am to 12:30 pm	
--	--	--	--	---	--

## PROFESSIONAL DEVELOPMENT WORKSHOPS

	WS1058 <b>Critical Skills for Compelling Research Proposals</b> ( <i>Diehl</i> ) 8:30 am to 12:30 pm	WS1059 <b>Resumes to Interviews: Strategies for a Successful Job Search</b> ( <i>Lawson, Krinsky</i> ) 1:30 pm to 4:00 pm	WS667 <b>The Craft of Scientific Presentations: A Workshop on Technical Presentations</b> ( <i>Alley</i> ) 8:30 am to 12:30 pm		
			WS668 <b>The Craft of Scientific Writing: A Workshop on Technical Writing</b> ( <i>Alley</i> ) 1:30 pm to 5:30 pm		

### Registration Required

Browse course offerings in North Lobby, Registration Area  
See SPIE Cashier, North Lobby



Download the SPIE Conference and Exhibition App







# 2014 Photonics West®

BIOS · LASE · OPTO · MOEMS-MEMS

**Mark your calendar**

[www.spie.org/aboutpw](http://www.spie.org/aboutpw)

#### **Conferences & Courses**

1–6 February 2014

#### **Exhibitions**

BiOS Expo: 1–2 February 2014

Photonics West: 4–6 February 2014

#### **Location**

The Moscone Center  
San Francisco, California, USA

#### **Technologies**

- BiOS—Biomedical Optics
- OPTO—Integrated Optoelectronics
- LASE—Lasers and Applications
- MOEMS-MEMS—Micro and Nanofabrication
- Green Photonics

Thank you to the following for their generous support of the conferences at SPIE Photonics West





**Stephen J. Eglash**  
Precourt Institute for Energy,  
Stanford Univ. (USA)

Photonics penetrates many aspects of modern life. Green photonics is similarly pervasive and is well placed to tackle the environmental and energy related challenges that we face.

More than 65 presentations at SPIE Photonics West 2013 have been recognized as having an aspect of green photonics research. These have been compiled and published below.

### Green Photonics Awards

Awards in each of the four areas will be presented at the OPTO Plenary Session on Tuesday morning, and the LASE Plenary Session on Wednesday morning.

#### Awards presented at the OPTO Plenary Session:

- Solid State Lighting and Displays
- Communications
- Renewable Energy Generation: Fusion and Photovoltaics

#### Award presented at the LASE Plenary Session:

- Laser-assisted Manufacturing and Micro/Nano Fabrication

### Solid State Lighting and Displays

(ordered chronologically by session start time)

Monday 4 February; Session Time: 8:20 to 9:50 AM · Room 125 (Exhibit Level)  
Conference 8641, Paper 8641-3

Session 1: High Current Performance and Droop Effect in LEDs

**Direct green LED development in nano-patterned epitaxy**

*(Invited Paper)*

Christian Wetzel, Theeradetch Detchprohm, Rensselaer Polytechnic Institute (USA)

Monday 4 February; Session Time: 1:15 to 3:00 PM · Room 125 (Exhibit Level)

Conference 8641, Paper 8641-11

Session 3: OLEDs and OLED Lighting

**Numerical analysis of nanostructures for enhanced light extraction from OLEDs**

Lin Zschiedrich, JCMwave GmbH (Germany); Horst J. Greiner, Philips Research (Germany); Jan Pomplun, JCMwave GmbH (Germany); Sven Burger, Frank Schmidt, Konrad-Zuse-Zentrum für Informationstechnik Berlin (Germany) and JCMwave (Germany)

Monday 4 February; Session Time: 3:25 - 6:10 PM · Room 125 (Exhibit Level)

Conference 8641, Paper 8641-63

Session 4: Nanomaterials and Nanostructures for LEDs I

**Broadband emission from an ensemble of nano-pillars with multiple diameters**

Kwai Hei Li, Hoi Wai Choi, The Univ. of Hong Kong (Hong Kong, China)

Tuesday 5 February; Session Time: 1:15 - 3:45 PM · Room 125 (Exhibit Level)

Conference 8641, Paper 8641-25

Session 6: Novel Technologies for LED Design and Fabrication I

**Proposal of coherent-structure InN/GaN QW-based photonic devices: SMART technology for achieving wavelength tunings up to infrared by novel 1-ML InN / GaN matrix MQWs** *(Invited Paper)*

Akihiko Yoshikawa, Song-Bek Che, Kazuhide Kusakabe, Chiba Univ. (Japan); Xinqiang Wang, Peking Univ. (China)

Wednesday 6 February; Session Time: 8:00 AM - 10:00 AM

Conference 8622, Paper 8622-33 · Room 234 (Mezzanine)

Session 8: OLED and OPV I

**Electroluminescence enhancement of polymer light-emitting diodes by volume grating in active layer**

Kang Li, Yongkang Gong, Jungang Huang, Juan Martinez, Nigel Copner, Univ. of Glamorgan (United Kingdom); Gene Koch, Lomox, Ltd. (United Kingdom); Antony Davies, Univ. of Glamorgan (United Kingdom); Tao Duan, Yishan Wang, Wei Zhao, Xi'an Institute of Optics and Precision Mechanics (China)

Wednesday 6 February; Session Time: 8:30 - 10:00 AM

Room 125 (Exhibit Level)

Conference 8641, Paper 8641-37

Session 8: DUV LEDs

**Improved-efficiency high-power 260-nm pseudomorphic ultraviolet light-emitting diodes** *(Invited Paper)*

Leo J. Schowalter, James R. Grandusky, Jianfeng Chen, Mark C. Mendrick, Shawn R. Gibb, Muhammad Jamil, Crystal IS, Inc. (USA)

Wednesday 6 February; Session Time: 1:30 - 3:15 PM

Room 125 (Exhibit Level)

Conference 8641, Paper 8641-44

Session 10: LED Fabrication and SSL II

**Light quality and efficiency of consumer grade solid state lighting products**

Carsten Dam-Hansen, Dennis D. Corell, Anders Thorseth, Peter B. Poulsen, Technical Univ. of Denmark (Denmark)

Thursday 7 February; Session Time: 8:00 AM - 10:00 AM

Room 111 (Exhibit Level)

Conference 8625, Paper 8625-54

Session 12: LED III

**First-principles studies of Auger recombination in InGaN**

*(Invited Paper)*

Emmanouil Kioupakis, Univ. of Michigan (USA); Daniel Steiauf, Qimin Yan, Chris G. Van de Walle, Univ. of California, Santa Barbara (USA)

Thursday 7 February; Session Time: 10:20 AM - 12:05 PM · Room 125 (Exhibit Level)

Conference 8641, Paper 8641-59

Session 13: Nanomaterials and Nanostructures for LEDs II

**Nanowire-based light-emitting diodes** *(Invited Paper)*

Lars Samuelson, Lund Univ. (Sweden) and Glo AB (Sweden)

Thursday 7 February; Session Time: 10:30 AM - 12:25 PM

Room 272 (Mezzanine)

Conference 8638, Paper 8638-6

Session 2: Laser Refrigeration in Semiconductor Systems

**Electro-luminescent cooling: light-emitting diodes above unity efficiency** *(Invited Paper)*

Rajeev J. Ram, Parthiban Santhanam, Duanni Huang, Dodd Grey, Massachusetts Institute of Technology (USA)

Thursday 7 February; Session Time: 1:40 - 3:00 PM

Room 228 (Mezzanine)

Conference 8643, Paper 8643-14

Session 3: Display Components

**A passive cooling system proposal for multifunction and high-power displays**

Ilker Tari, Middle East Technical Univ. (Turkey)



---

## Laser-assisted Manufacturing and Micro/Nano Fabrication

(ordered chronologically by session start time)

---

Sunday 3 February; Session Time: 3:40 - 5:20 PM · Room 133 (Exhibit Level)  
Conference 8605, Paper 8605-16

Session 4: High Power Laser Diode Sources II

### Novel opto-mechanical platform for line generators of high power diode lasers

Jens Meinschien, Melanie Brodner, Udo Fornahl, Dirk Hauschild, Ulrich Jentsch, LIMO Lissotschenko Mikrooptik GmbH (Germany) Thomas Mitra, Stephan Schneider, Detlef Stöhr, LIMO Lissotschenko Mikrooptik GmbH (Germany)

---

Tuesday 5 February; Session Time: 8:00 - 10:20 AM · Room 120 (Exhibit Level)  
Conference 8614, Paper 8614-13

Session 3: MOEMS/MEMS Packaging

### Wafer level vacuum packaging of scanning micro-mirrors using glass-frit and anodic bonding methods

Sergiu Langa, Christian Drabe, Christian Kunath, André Dreyhaupt, Harald Schenk, Fraunhofer-Institut für Photonische Mikrosysteme (Germany)

---

Tuesday 5 February; Session Time: 1:30 - 3:30 PM · Room 113 (Exhibit Level)  
Conference 8603, Paper 8603-1

Session 1: Beam Shaping and Phase Distortion I: Joint Session with Conferences 8600 and 8603

### Active beam controlling of high power Q-switched Nd:YAG lasers for stable fiber coupling with small numerical aperture for material processing

Mario Goehre, Clean-Lasersysteme GmbH (Germany); Christoph Becker, Betewis GmbH (Germany)

---

Tuesday 5 February; Session Time: 6:00 - 8:00 PM · Room 103 (Exhibit Level)  
Conference 8601, Paper 8601-00

Session Posters-Tuesday

### Robust 1550-nm single-frequency all-fiber ns-pulsed fiber amplifier for wind-turbine predictive control by wind Lidar

Oliver de Vries, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Christoph Bollig, Paul Gerke Hofmeister, Rainer Reuter, Carl von Ossietzky Univ. Oldenburg (Germany); Franz Beier, Thomas Schreiber, Ramona Eberhardt, Andreas Tünnermann, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany)

---

Tuesday 5 February; Session Time: 6:00 - 8:00 PM · Room 103 (Exhibit Level)  
Conference 8607, Paper 8607-44

Session Posters-Tuesday

### Reducing damage in femtosecond laser processed silicon for photovoltaics

Benjamin Franta, Harvard Univ. (USA); Clarissa Klein, Menlo School (USA); Eric Mazur, Harvard Univ. (USA)

---

Tuesday 5 February; Session Time: 6:00 - 8:00 PM · Room 103 (Exhibit Level)  
Conference 8607, Paper 8607-51

Session Posters-Tuesday

### Development of hybrid ArF laser system for lithography

Takashi Onose, Shinji Ito, Kouji Kakizaki, Takashi Matsunaga, Hakaru Mizoguchi, Gigaphoton Inc. (Japan); Shuntaro Watanabe, Chun Zhou, Tokyo Univ. of Science (Japan); C. T. Chen, X. T. Wang, Chinese Academy of Sciences (China); Teruto Kanai, Yohei Kobayashi, The Univ. of Tokyo (Japan)

---

Wednesday 6 February; Session Time: 4:00 - 5:50 PM · Room 113 (Exhibit Level)  
Conference 8603, Paper 8603-12

Session 4: Special Laser Processes

### Induction of engineered residual stresses fields and enhancement of fatigue life of high reliability metallic components by laser shock processing (*Invited Paper*)

José Luis Ocaña, Juan Antonio Porro, Marcos Díaz, Leonardo Ruiz de Lara, Carlos Correa, Andrea Gil-Santos, Univ. Politécnica de Madrid (Spain)

---

Wednesday 6 February; Session Time: 4:00 - 5:50 PM · Room 113 (Exhibit Level)  
Conference 8603, Paper 8603-16

Session 4: Special Laser Processes

### CO<sub>2</sub>-laser-assisted processing of glass fiber-reinforced thermoplastic composites

Joffrey Stimpfl, Fraunhofer-Institut für Produktionstechnologie (Germany); Christian Brecher, Michael Emonts, Fraunhofer-Institut für Produktionstechnologie (Germany)

---

Thursday 7 February; Session Time: 10:40 AM - 12:10 PM · Room 132 (Exhibit Level)  
Conference 8608, Paper 8608-19

Session 4: Direct-write Processing and Surface Modification

### Three-dimensional finite element modelling of conductive silver ink tracks thermally cured on flexible substrates by repeating irradiations of Nd:YAG laser at the wavelength of 532 nm

Liwei Fu, Shuo Shang, Eamonn Fearon, Stuart Edwardson, Geoff Dearden, Kenneth G. Watkins, Univ. of Liverpool (United Kingdom)

---

Thursday 7 February; Session Time: 1:50 - 3:10 PM · Room 130 (Exhibit Level)  
Conference 8607, Paper 8607-46

Session 12: Photovoltaics

### Luminescence down shifter effect in hydrogenated amorphous silicon modified by femtosecond laser radiation

Andrey Emelyanov, Andrey G. Kazanskii, Mark Khenkin, Pavel Forsh, Pavel Kashkarov, Lomonosov Moscow State Univ. (Russian Federation); Mindaugas Gecevicius, Martynas Beresna, Peter G. Kazansky, Univ. of Southampton (United Kingdom)

---

Thursday 7 February; Session Time: 4:00 - 5:50 PM · Room 132 (Exhibit Level)  
Conference 8608, Paper 8608-28

Session 6: Photovoltaics, Alternative Energy Sources and Advanced Energy Storage Systems: Joint Session with 8607 and 8608

### The photovoltaic potential of femtosecond laser textured amorphous silicon

Meng-Ju Sher, Benjamin Franta, Kenneth Hammond, Lysander Christakis, Eric Mazur, Harvard Univ. (USA)

---

## Communications

(ordered chronologically by session start time)

---

Sunday 3 February; Session Time: 3:50 - 5:30 PM · Room 302 (Esplanade)  
Conference 8630, Paper 8630-8

Session 2: Integration Technologies II

### Hybrid polymer optical waveguides written by two-photon processing for 3D interconnects

Sönke Steenhusen, Ruth Houbertz-Krauss, Timo Grunemann, Fraunhofer-Institut für Silicatforschung (Germany)

---

Wednesday 6 February; Session Time: 8:30 - 10:00 AM · Room 308 (Esplanade)  
Conference 8639, Paper 8639-3

Session 1: Commercial Developments

### Progress and challenges in industrial fabrication of wafer-fused VCSELs emitting in the 1310-nm band for high-speed WDM applications (*Invited Paper*)

Vladimir Iakovlev, Alexei Sirbu, Zlatko Mickovic, Dalila Ellafi, Eli Kapon, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Grigore Suruceanu, Alexandru Mereuta, Andrei Caliman, Beam Express S.A. (Switzerland)

---

Wednesday 6 February; Session Time: 1:10 - 3:15 PM · Room 202 (Mezzanine)  
Conference 8646, Paper 8646-17

Session 6: Next Generation Optical Fibers: Joint Session with Conferences 8646 and 8647

### Application-specific specialty optical fibers: A new platform for challenging fiber designs (*Invited Paper*)

Bishnu P. Pal, Indian Institute of Technology Delhi (India)

Wednesday 6 February; Session Time: 6:00 - 8:00 PM · Room 103 (Exhibit Level)  
Conference 8629, Paper 8629-50  
Session: Posters-Wednesday

## Low power consumption in silicon photonics tuning filters based on compound ring resonators

Carmen Vázquez García, Univ. Carlos III de Madrid (Spain); Salvador Vargas, Univ. Tecnológica de Panamá (Panama); Pedro Contreras Lallana, Univ. Carlos III de Madrid (Spain)

Thursday 7 February; Session Time: 3:30 - 4:50 PM · Room 308 (Esplanade)  
Conference 8639, Paper 8639-30  
Session 8: High Speed VCSELs

## Impact of the aperture diameter on the energy-efficiency of oxide-confined 850-nm high-speed VCSELs

Philip Moser, James A. Lott, Philip Wolf, Gunter Larisch, Hui Li, Technische Univ. Berlin (Germany); Nikolay N. Ledentsov, VI Systems GmbH (Germany); Dieter Bimberg, Technische Univ. Berlin (Germany)

## Renewable Energy Generation: Fusion and Photovoltaics

(ordered chronologically by session start time)

Sunday 3 February; Session Time: 1:40 - 3:30 PM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-4  
Session 1: Plasmonics Approaches to PV

## Efficiency enhancement of amorphous silicon based solar cell due to multiple surface-plasmon-polariton waves

Muhammad Faryad, Akhlesh Lakhtakia, The Pennsylvania State Univ. (USA)

Sunday 3 February; Session Time: 1:40 - 3:30 PM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-5  
Session 1: Plasmonics Approaches to PV

## On energy transfer in metallic nanomodified photocells via surface plasmons in metallic nanoparticles: inclusion of nanoparticle size-effect

Witold A. Jacak, Wroclaw Univ. of Technology (Poland)

Sunday 3 February; Session Time: 3:45 - 5:45 PM · Room 276 (Mezzanine)  
Conference 8623, Paper 8623-14  
Session 4: Ultrafast Phenomena in Semiconductors and Insulators

## Extraction of the light-driven charge-transfer kinetics at the semiconductor surface using pump-probe spectroscopy

Jin Suntivich, Yu-Ting Lin, Kasey Phillips, Eric Mazur, Harvard Univ. (USA)

Sunday 3 February; Session Time: 3:50 - 5:30 PM · Room 110 (Exhibit Level)  
Conference 8632, Paper 8632-7  
Session 2: Novel Phenomena and Devices in Photonic Crystals II

## Large area selective emitters/absorbers based on 2D tantalum photonic crystals for high-temperature energy applications

Veronika Rinnerbauer, Yi Xiang Yeng, Jay J. Senkevich, John D. Joannopoulos, Marin Soljacic, Ivan Celanovic, Massachusetts Institute of Technology (USA)

Monday 4 February; Session Time: 8:30 - 10:00 AM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-10  
Session 3: Light Management for Ultra Thin PV Devices

## Nanophotonics for solar energy harvesting from ultrathin cells (*Invited Paper*)

Mark Brongersma, Geballe Lab for Advanced Materials (GLAM) (USA)

Monday 4 February; Session Time: 8:30 - 10:00 AM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-11  
Session 3: Light Management for Ultra Thin PV Devices

## Broadband light trapping in ultra-thin nano-structured solar cells

Clément Colin, Lab. de Photonique et de Nanostructures (France) and Ecole Nationale Supérieure de Chimie de Paris (France); Inès Massiot, Andrea Cattoni, Nicolas Vandamme, Christophe Dupuis, Nathalie Bardou, Lab. de Photonique et de Nanostructures (France); Isabelle Gérard, Univ. de Versailles Saint-Quentin-en Yvelines (France); Negar Naghavi, Jean-François Guillemoles, Institut de Recherche et Développement sur l'Energie Photovoltaïque (France); Jean-Luc Pelouard, Stéphane Collin, Lab. de Photonique et de Nanostructures (France)

Monday 4 February; Session Time: 10:30 AM - 12:00 PM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-15  
Session 4: Approaches to Spectral Shaping and Light Management

## Rare-earths doped planar 2D-photonic crystals for quantum cutting in solar cells

Thierry Deschamps, Institut des Nanotechnologies de Lyon (France); Antoine Guille, Univ. Claude Bernard Lyon 1 (France); Emmanuel Drouard, Radoslaw Mazurczyk, Regis Orobthouk, Cecile Jamois, Alain Fave, Romain Peretti, Institut des Nanotechnologies de Lyon (France); Antonio Pereira, Bernard Moine, Univ. Claude Bernard Lyon 1 (France); Christian Seassal, Institut des Nanotechnologies de Lyon (France)

Monday 4 February; Session Time: 3:30 - 5:00 PM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-23  
Session 6: Antireflective Coatings and Texturing

## Towards high-efficiency triple-junction solar cells with biologically-inspired nanosurfaces (*Invited Paper*)

Peichen Yu, National Chiao Tung Univ. (Taiwan)

Monday 4 February; Session Time: 3:30 - 5:00 PM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-24  
Session 6: Antireflective Coatings and Texturing

## On coupling surface texturing and electrical characteristics for improving solar cell efficiency

Vijayakumar Venugopal, Fiat Lux Technologies (USA)

Tuesday 5 February; Session Time: 1:30 - 3:20 PM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-32  
Session 8: Radiation Effects in PV Devices

## Investigation of carrier removal from quantum dot triple junction solar cells

Christopher Kerestes, David V. Forbes, Mike Welsh, Eli Fernandez, Rochester Institute of Technology (USA); William T. Lotshaw, The Aerospace Corp. (USA); Yong Lin, Benjamin C. Richards, Paul Sharps, Seth M. Hubbard, EMCORE Corp. (USA)

Tuesday 5 February; Session Time: 3:50 - 5:50 PM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-36  
Session 9: Advances in Light Concentration

## Physics of Cu(In,Ga)Se<sub>2</sub> microcells under ultrahigh illumination intensities (*Invited Paper*)

Myriam Paire, Laurent Lombez, Frédérique Donsanti, Marie Jubault, Institut de Recherche et Développement sur l'Energie Photovoltaïque (France) and Ecole Nationale Supérieure de Chimie de Paris (France); Stéphane Collin, Jean-Luc Pelouard, Lab. de Photonique et de Nanostructures (France); Daniel Lincot, Jean-François Guillemoles, Institut de Recherche et Développement sur l'Energie Photovoltaïque (France) and Ecole Nationale Supérieure de Chimie de Paris (France)

Tuesday 5 February; Session Time: 3:50 - 5:50 PM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-39  
Session 9: Advances in Light Concentration

## Adjustable planar lightguide solar concentrators with liquid-prism structure

Jong-Woei Whang, Meng-Che Tsai, Tsung-Xian Lee, Yi-Yung Chen, National Taiwan Univ. of Science and Technology (Taiwan)

Wednesday 6 February; Session Time: 8:30 - 10:00 AM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-40  
Session 10: Emerging PV and TCO Materials

## Multiscale modeling and interface engineering accelerates efficiency enhancements in non-traditional photovoltaic materials (*Invited Paper*)

Riley Brandt, Rupak Chakraborty, Katy Hartman, Massachusetts Institute of Technology (USA); Jaeyeong Heo, Harvard Univ. (USA) and Chonnam National Univ. (Korea, Republic of); Yun Seog Lee, Jonathan Mailoa, Sin Cheng Siah, Massachusetts Institute of Technology (USA); Prasert Sinsersuksakul, Roy Gordon, Harvard Univ. (USA); Tonio Buonassisi, Massachusetts Institute of Technology (USA)

---

Wednesday 6 February; Session Time: 10:30AM - 12:10PM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-46  
Session 11: Thin Film Materials and Devices

## Lambertian back reflector in Cu(InGa)Se<sub>2</sub> solar cell: optical modeling and characterization

Nir Dahan, Univ. Paris-Sud 11 (France); Zacharie Jehl, Jean-Francois Guillemoles, Daniel Lincot, Negar Naghavi, Institut de Recherche et Développement sur l'Energie Photovoltaïque (France); Jean-Jacques Greffet, Lab. Charles Fabry (France)

---

Wednesday 6 February; Session Time: 10:30AM - 12:10PM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-47  
Session 11: Thin Film Materials and Devices

## Effect of nonhomogeneous intrinsic layer in a thin-film amorphous-silicon solar cell

Akhlesh Lakhtakia, Muhammad Faryad, Mahmoud R. Atalla, The Pennsylvania State Univ. (USA)

---

Wednesday 6 February; Session Time: 1:40 - 3:30 PM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-51  
Session 12: Quantum Well Enhanced Devices

## Thermal up-conversion in nanostructured GaAs solar cells

Daniel J. Farrell, Hassanet Sodabanlu, Yunpeng Wang, Ryo Tamaki, Masakazu Sugiyama, Yoshitaka Okada, The Univ. of Tokyo (Japan); Markus Führer, Louise C. Hirst, Nicholas J. Ekins-Daukes, Imperial College London (United Kingdom)

---

Wednesday 6 February; Session Time: 4:00 - 5:30 PM · Room 121 (Exhibit Level)  
Conference 8619, Paper 8619-43  
Session 11: Advanced Photovoltaic Device Simulation: Joint Session with Conferences 8619 and 8620

## 3D full-wave optical and electronic modeling of organic bulk-heterojunction solar cells: a predictive approach

Wee Shing Koh, Yuriy Akimov, A\*STAR Institute of High Performance Computing (Singapore); Wei Peng Goh, A\*STAR Institute of Materials Research and Engineering (Singapore) and Nanyang Technological Univ (Singapore)

---

Wednesday 6 February; Session Time: 6:00 - 8:00 PM · Room 103 (Exhibit Level)  
Conference 8620, Paper 8620-67  
Session Posters-Wednesday

## An innovative static compound parabolic concentrator with prism structure used in natural lighting illumination system

Jong-Woei Whang, Guan-Wei Chen, Yi-Yung Chen, National Taiwan Univ. of Science and Technology (Taiwan)

---

Wednesday 6 February; Session Time: 6:00 - 8:00 PM · Room 103 (Exhibit Level)  
Conference 8620, Paper 8620-68  
Session Posters-Wednesday

## The hybrid coupling element for light-correcting in Natural Light Illumination Systems (NLIS)

Jong-Woei Whang, Tsung-Xian Lee, Ya-Huei Jhang, Yi-Yung Chen, National Taiwan Univ. of Science and Technology (Taiwan)

---

Wednesday 6 February; Session Time: 6:00 - 8:00 PM · Room 103 (Exhibit Level)  
Conference 8620, Paper 8620-69  
Session Posters-Wednesday

## Modular design optical light pipe with high efficiency

Jong-Woei Whang, Yi-Hsin Yeh, Yi-Yung Chen, National Taiwan Univ. of Science and Technology (Taiwan)

---

Wednesday 6 February; Session Time: 6:00 - 8:00 PM · Room 103 (Exhibit Level)  
Conference 8620, Paper 8620-71  
Session Posters-Wednesday

## Investigation in feasibility of molybdenum as a back contact layer for silicon-based quantum dot solar cells

Ziyun Lin, Ivan Perez-Wurfl, Lingfeng Wu, Xuguang Jia, Tian Zhang, Haixiang Zhang, Binesh Puthen-Veettil, Dawei Di, Gavin J. Conibeer, The Univ. of New South Wales (Australia)

---

Wednesday 6 February; Session Time: 6:00 - 8:00 PM · Room 103 (Exhibit Level)  
Conference 8620, Paper 8620-74  
Session Posters-Wednesday

## ZnO nanowire arrays for photovoltaic and light-emitting devices

Bitu Janfeshan, Siva Sivonththaman, Univ. of Waterloo (Canada)

---

Wednesday 6 February; Session Time: 6:00 - 8:00 PM · Room 103 (Exhibit Level)  
Conference 8620, Paper 8620-75  
Session Posters-Wednesday

## Effect of grain boundary on nanoscale electronic properties of hydrogenated nanocrystalline silicon studied by Kelvin probe force microscopy

Rubana B. Priti, Sandeep Mahat, Venkat Bommisetty, South Dakota State Univ. (USA)

---

Wednesday 6 February; Session Time: 6:00 - 8:00 PM · Room 103 (Exhibit Level)  
Conference 8620, Paper 8620-76  
Session Posters-Wednesday

## Numerical investigation on the structural characteristics of GaN/InGaN solar cells

Yen-Kuang Kuo, Jih-Yuan Chang, Shih-Hsun Yen, National Changhua Univ. of Education (Taiwan)

---

Wednesday 6 February; Session Time: 6:00 - 8:00 PM · Room 103 (Exhibit Level)  
Conference 8620, Paper 8620-78  
Session Posters-Wednesday

## Use free-form reflector method in lighting coupler

Jong-Woei Whang, Shu Hao Chang, Yi-Yung Chen, National Taiwan Univ. of Science and Technology (Taiwan)

---

Wednesday 6 February; Session Time: 6:00 - 8:00 PM · Room 103 (Exhibit Level)  
Conference 8622, Paper 8622-51  
Session Posters-Wednesday

## Monolithic quasi-solid-state dye-sensitized solar cells based on graphene modified mesoscopic carbon counter electrodes

Yaoguang Rong, Xiong Li, Guanghui Liu, Heng Wang, Zhiliang Ku, Mi Xu, Linfeng Liu, Min Hu, Ying Yang, Hongwei Han, Huazhong Univ. of Science and Technology (China)

---

Thursday 7 February; Session Time: 8:30 - 10:10 AM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-56  
Session 14: III-V Tandem Materials and Devices

## Dilute phosphide nitride semiconductors as photocathodes for electrochemical solar energy conversion

Vijay Parameshwaran, Xiaoqing Xu, Yangsen Kang, James Harris, H. S. Philip Wong, Bruce Clemens, Stanford Univ. (USA)

---

Thursday 7 February; Session Time: 8:30 - 10:10 AM Room 226 (Mezzanine)  
Conference 8620, Paper 8620-57  
Session 14: III-V Tandem Materials and Devices

## Ohmic contacts to n-type GaSb grown on GaAs by the interfacial misfit dislocation technique

Nassim Rahimi, Orlando S. Romero, The Univ. of New Mexico (USA); Daniel M. Kim, Virginia Polytechnic Institute and State Univ. (USA); Nathan B. J. Traynor, SUNY Geneseo (USA); Andrew A. Aragon, Thomas J. Rotter, Ganesh Balakrishnan, Sayan D. Mukherjee, Luke F. Lester, The Univ. of New Mexico (USA)

---

Thursday 7 February; Session Time: 10:40 AM - 12:00 PM Room 226 (Mezzanine)  
Conference 8620, Paper 8620-61  
Session 15: Hybrid PV Devices

## Carbon nanotube-silicon nanowire inversion layer solar cells

Maureen K. Petterson, Andrew Rinzler, Univ. of Florida (USA)

---

Thursday 7 February; Session Time: 10:40 AM - 12:00 PM · Room 226 (Mezzanine)  
Conference 8620, Paper 8620-62  
Session 15: Hybrid PV Devices

## Cascaded energy relaxation in hybrid photovoltaic structures based on nanocrystal multilayers assembled on silicon substrates

Anton V. Malko, The Univ. of Texas at Dallas (USA)



# BIOS

SPIE Photonics West

Symposium Chairs



**James Fujimoto**

Massachusetts Institute of Technology (USA)



**R. Rox Anderson M.D.**

Wellman Ctr. for Photomedicine, Massachusetts General Hospital (USA) and Harvard School of Medicine (USA)

## Photonic Therapeutics and Diagnostics

Program Chair: **Brian Jet-Fei Wong**, Beckman Laser Institute and Medical Clinic, Univ. of California, Irvine (USA)

- 8565A **Photonics in Dermatology and Plastic Surgery** (Nikiforos Kollias; Bernard Choi, Haishan Zeng) . . . . . 71
- 8565B **Therapeutics and Diagnostics in Urology: Lasers, Robotics, Minimally Invasive, and Advanced Biomedical Devices** (Hyun Wook Kang, Bodo E. Knudsen) . . . . . 73
- 8565C **Optical Imaging, Therapeutics, and Advanced Technology in Head and Neck Surgery and Otolaryngology** (Brian Jet-Fei Wong, Justus F. Ilgner) . . . . . 75
- 8565D **Optical Techniques in Pulmonary Medicine** (Melissa J. Suter, Stephen Lam, Matthew Brenner) . . . . . 78
- 8565E **Diagnostic and Therapeutic Applications of Light in Cardiology** (Kenton W. Gregory, Guillermo J. Tearney, Laura Marcu) . . . . . 80
- 8565F **Optical Techniques in Neurosurgery, Brain Imaging, and Neurobiology** (Henry Hirschberg, Steen J. Madsen) . . . . . 83
- 8565G **Neurophotonics** (Anita Mahadevan-Jansen, E. Duco Jansen) . 85
- 8565H **Optics in Bone Surgery and Diagnostics** (Andreas Mandelis) . . 87
- 8566 **Lasers in Dentistry XIX** (Peter Rechmann; Daniel Fried) . . . . 89
- 8567 **Ophthalmic Technologies XXIII** (Fabrice Manns; Per G. Söderberg; Arthur Ho) . . . . . 91
- 8568 **Optical Methods for Tumor Treatment and Detection: Mechanisms and Techniques in Photodynamic Therapy XXII** (David H. Kessel; Tayyaba Hasan) . . . . . 96
- 8569 **Mechanisms for Low-Light Therapy VIII** (Michael R. Hamblin; Juanita Anders; James D. Carroll) . . . . . 99
- 8570 **Frontiers in Biological Detection: From Nanosensors to Systems** (Benjamin L. Miller; Philippe M. Fauchet) . . . . . 101

## Clinical Technologies and Systems

Program Chairs: **Tuan Vo Dinh**, Duke Univ. (USA); **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA)

- 8571 **Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XVII** (James G. Fujimoto; Joseph A. Izatt; Valery V. Tuchin) . . . . . 103
- 8572 **Advanced Biomedical and Clinical Diagnostic Systems XI** (Anita Mahadevan-Jansen; Tuan Vo-Dinh; Warren S. Grundfest) 109
- 8573 **Design and Quality for Biomedical Technologies V** (Ramesh Raghavachari; Rongguang Liang) . . . . . 112
- 8574 **Multimodal Biomedical Imaging VIII** (Fred S. Azar; Xavier Intes) . . . . . 114
- 8575 **Endoscopic Microscopy VIII** (Guillermo J. Tearney; Thomas D. Wang) . . . . . 116
- 8576 **Optical Fibers and Sensors for Medical Diagnostics and Treatment Applications XIII** (Israel Gannot) . . . . . 118
- 8577 **Optical Biopsy X** (Robert R. Alfano; Stavros G. Demos) . . . . 120

- 8578 **Optical Tomography and Spectroscopy of Tissue X** (Bruce J. Tromberg; Arjun G. Yodh; Eva M. Sevick-Muraca) . . 122
- 8611 **Frontiers in Ultrafast Optics: Biomedical, Scientific, and Industrial Applications XIII** (Alexander Heisterkamp; Peter R. Herman; Michel Meunier; Stefan Nolte) . . . . . 223
- 8615 **Microfluidics, BioMEMS, and Medical Microsystems XI** (Holger Becker) . . . . . 239

## Tissue Optics, Laser-Tissue Interaction, and Tissue Engineering

Program Chairs: **Steven L. Jacques**, Oregon Health & Science Univ. (USA); **William P. Roach**, U.S. Air Force (USA)

- 8579 **Optical Interactions with Tissue and Cells XXIV** (E. Duco Jansen; Robert J. Thomas) . . . . . 127
- 8580 **Dynamics and Fluctuations in Biomedical Photonics VIII** (Valery V. Tuchin; Donald D. Duncan; Kirill V. Larin; Martin J. Leahy; Ruikang K. Wang) . . . . . 129
- 8581 **Photons Plus Ultrasound: Imaging and Sensing 2013** (Alexander A. Oraevsky; Lihong V. Wang) . . . . . 132
- 8582 **Biophotonics and Immune Responses VIII** (Wei R. Chen) . . 139
- 8583 **Design and Performance Validation of Phantoms Used in Conjunction with Optical Measurement of Tissue V** (Robert J. Nordstrom) . . . . . 141
- 8584 **Energy-Based Treatment of Tissue and Assessment VII** (Thomas P. Ryan) . . . . . 143
- 8585 **Terahertz and Ultrashort Electromagnetic Pulses for Biomedical Applications** (Gerald J. Wilmink; Bennett L. Ibeay) . 145
- 8586 **Optogenetics and Hybrid-Optical Control of Cells** (Samarendra K. Mohanty; Nitish V. Thakor) . . . . . 147

## Biomedical Spectroscopy, Microscopy, and Imaging

Program Chairs: **Ammasi Periasamy**, Univ. of Virginia (USA); **Daniel L. Farkas**, Univ. of Southern California (USA)

- 8587 **Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues XI** (Daniel L. Farkas; Dan V. Nicolau; Robert C. Leif) . . . . . 149
- 8588 **Multiphoton Microscopy in the Biomedical Sciences XIII** (Ammasi Periasamy; Karsten König; Peter T. C. So) . . . . . 153
- 8589 **Three-Dimensional and Multidimensional Microscopy: Image Acquisition and Processing XX** (Carol J. Cogswell; Thomas G. Brown; Jose-Angel Conchello; Tony Wilson) . . . . 158
- 8590 **Single Molecule Spectroscopy and Superresolution Imaging VI** (Jörg Enderlein; Ingo Gregor; Zygmunt K. Gryczynski; Rainer Erdmann; Felix Koberling) . . . . . 161
- 8591 **Optical Diagnostics and Sensing XIII: Toward Point-of-Care Diagnostics** (Gerard L. Coté) . . . . . 164
- 8592 **Biomedical Applications of Light Scattering VIII** (Adam P. Wax; Vadim Backman) . . . . . 166
- 8593 **Optical Methods in Developmental Biology** (Andrew M. Rollins; Cecilia Lo; Scott E. Fraser) . . . . . 169

## Nano/Biophotonics

Program Chairs: **Paras Prasad**, SUNY/Buffalo (USA); **Dan V. Nicolau**, The Univ. of Liverpool (United Kingdom)

- 8594 **Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications IX** (Alexander N. Cartwright; Dan V. Nicolau) . . 171
- 8595 **Colloidal Nanoparticles for Biomedical Applications VIII** (Wolfgang J. Parak; Marek Osinski; Kenji Yamamoto) . . . . . 173
- 8596 **Reporters, Markers, Dyes, Nanoparticles, and Molecular Probes for Biomedical Applications** (Samuel Achillefu; Ramesh Raghavachari) . . . . . 177
- 8597 **Plasmonics in Biology and Medicine X** (Tuan Vo-Dinh; Joseph R. Lakowicz) . . . . . 180
- 8598 **Bioinspired, Biointegrated, Bioengineered Photonic Devices** (Luke P. Lee; John A. Rogers; Seok-Hyun Yun) . . . . 182

BIOS

# BiOS Daily Conference Schedule

Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
----------	--------	--------	---------	-----------	----------

## Photonic Therapeutics and Diagnostics

Program Chair: **Brian Jet-Fei Wong**, Beckman Laser Institute and Medical Clinic, Univ. of California, Irvine (USA)

8565H **Optics in Bone Surgery and Diagnostics** (Mandelis, Morris)

8565C **Optical Imaging, Therapeutics, and Advanced Technology in Head and Neck Surgery and Otolaryngology** (Wong, Ilgner)

8565G **Neurophotonics** (Mahadevan-Jansen, Jansen)

8565F **Optical Techniques in Neurosurgery, Brain Imaging, and Neurobiology** (Hirschberg, Madsen)

8565B **Therapeutics and Diagnostics in Urology: Lasers, Robotics, Minimally Invasive, and Advanced Biomedical Devices** (Kang, Knudsen)

8566 **Lasers in Dentistry XIX** (Rechmann, Fried)

8565A **Photonics in Dermatology and Plastic Surgery** (Kollias, Choi, Zeng)

8565D **Optical Techniques in Pulmonary Medicine** (Suter, Lam, Brenner)

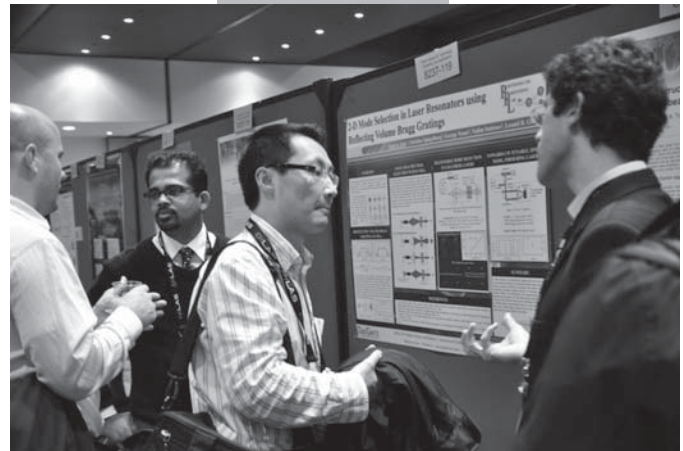
8565E **Diagnostic and Therapeutic Applications of Light in Cardiology** (Gregory, Tearney, Marcu)

8567 **Ophthalmic Technologies XXIII** (Manns, Söderberg, Ho)

8568 **Optical Methods for Tumor Treatment and Detection: Mechanisms and Techniques in Photodynamic Therapy XXII** (Kessel, Hasan)

8569 **Mechanisms for Low-Light Therapy VIII** (Hamblin, Anders, Carroll)

8570 **Frontiers in Biological Detection: From Nanosensors to Systems** (Miller, Fauchet)



### BiOS Interactive Poster Sessions

South Hall A (with BIOS EXPO)

Saturday 2 February . . . . . 3:00 to 4:00 pm

Sunday 3 February . . . . . 3:00 to 4:00 pm

Room 103 (Exhibit Level)

Sunday 3 February . . . . . 5:30 to 7:30 pm

Monday 4 February . . . . . 5:30 to 7:30 pm

Wednesday 6 February (with OPTO) . . . . . 6:00 to 8:00 pm

### BiOS Hot Topics

Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
----------	--------	--------	---------	-----------	----------

## Clinical Technologies and Systems

Program Chairs: **Tuan Vo-Dinh**, Duke Univ. (USA) and **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA)

8573 <b>Design and Quality for Biomedical Technologies V</b> ( <i>Raghavachari, Liang, Pfefer</i> )	8571 <b>Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XVII</b> ( <i>Fujimoto, Izatt, Tuchin</i> )	
8574 <b>Multimodal Biomedical Imaging VIII</b> ( <i>Azar, Intes</i> )	8575 <b>Endoscopic Microscopy VIII</b> ( <i>Tearney, Wang</i> )	8577 <b>Optical Biopsy X</b> ( <i>Alfano, Demos</i> )
8576 <b>Optical Fibers and Sensors for Medical Diagnostics and Treatment Applications XIII</b> ( <i>Gannot</i> )		
8578 <b>Optical Tomography and Spectroscopy of Tissue X</b> ( <i>Tromberg, Yodh, Sevick-Muraca, Alfano</i> )		
8611 <b>Frontiers in Ultrafast Optics: Biomedical, Scientific, and Industrial Applications XIII</b> ( <i>Heisterkamp, Herman, Meunier, Nolte</i> )		
8572 <b>Advanced Biomedical and Clinical Diagnostic Systems XI</b> ( <i>Mahadevan-Jansen, Vo-Dinh, Grundfest</i> )		
8615 <b>Microfluidics, BioMEMS, and Medical Microsystems XI</b> ( <i>Becker, Gray</i> )		

## Tissue Optics, Laser-Tissue Interaction, and Tissue Engineering

Program Chairs: **Steven L. Jacques**, Oregon Health & Science Univ. (USA); **William P. Roach**, U.S. Air Force (USA)

8583 <b>Design and Performance Validation of Phantoms Used in Conjunction with Optical Measurement of Tissue V</b> ( <i>Nordstrom</i> )	8579 <b>Optical Interactions with Tissue and Cells XXIV</b> ( <i>Jansen, Thomas</i> )	8585 <b>Terahertz and Ultrashort Electromagnetic Pulses for Biomedical Applications</b> ( <i>Wilmink, Ibey</i> )
8580 <b>Dynamics and Fluctuations in Biomedical Photonics VIII</b> ( <i>Tuchin, Duncan, Larin, Leahy, Wang</i> )		
8581 <b>Photons Plus Ultrasound: Imaging and Sensing 2013</b> ( <i>Oraevsky, Wang</i> )		
8586 <b>Optogenetics and Hybrid-Optical Control of Cells</b> ( <i>Mohanty, Thakor</i> )	8582 <b>Biophotonics and Immune Responses VIII</b> ( <i>Chen</i> )	
8584 <b>Energy-Based Treatment of Tissue and Assessment VII</b> ( <i>Ryan</i> )		

### Don't miss BIOS EXPO

See new products, top companies, potential collaborators, and the best suppliers face-to-face

**2-3 February 2013**  
**SOUTH HALL A**

Saturday · 12:00 pm to 5:00 pm  
Sunday · 10:00 am to 5:00 pm



# BIOS Daily Conference Schedule

Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
<b>Biomedical Spectroscopy, Microscopy, and Imaging</b>			Program Chairs: <b>Ammasi Periasamy</b> , Univ. of Virginia (USA); <b>Daniel L. Farkas</b> , Univ. of Southern California (USA)		
8587 <b>Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues XI</b> ( <i>Farkas, Nicolau, Leif, Leary, Tarnok</i> )					
8593 <b>Optical Methods in Developmental Biology</b> ( <i>Rollins, Lo, Fraser</i> )	8588 <b>Multiphoton Microscopy in the Biomedical Sciences XIII</b> ( <i>Periasamy, König, So</i> )				
8590 <b>Single Molecule Spectroscopy and Superresolution Imaging VI</b> ( <i>Enderlein, Gregor, Gryczynski, Erdmann, Koberling</i> )		8589 <b>Three-Dimensional and Multidimensional Microscopy: Image Acquisition and Processing XX</b> ( <i>Cogswell, Brown, Conchello, Wilson</i> )			
8592 <b>Biomedical Applications of Light Scattering VIII</b> ( <i>Wax, Backman</i> )					8591 <b>Optical Diagnostics and Sensing XIII: Toward Point-of-Care Diagnostics</b> ( <i>Coté</i> )
<b>Nano/Biophotonics</b>			Program Chairs: <b>Paras Prasad</b> , SUNY/Buffalo (USA); <b>Dan V. Nicolau</b> , The Univ. of Liverpool (United Kingdom)		
8595 <b>Colloidal Nanoparticles for Biomedical Applications VIII</b> ( <i>Parak, Osinski, Yamamoto</i> )					8594 <b>Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications IX</b> ( <i>Cartwright, Nicolau</i> )
8598 <b>Bioinspired, Biointegrated, Bioengineered Photonic Devices</b> ( <i>Lee, Rogers, Yun</i> )		8596 <b>Reporters, Markers, Dyes, Nanoparticles, and Molecular Probes for Biomedical Applications</b> ( <i>Achilefu, Raghavachari</i> )			
		8597 <b>Plasmonics in Biology and Medicine X</b> ( <i>Vo-Dinh, Lakowicz, Ray</i> )			

# Photonics in Dermatology and Plastic Surgery

Conference Chairs: **Nikiforos Kollias**, Consultant (USA); **Bernard Choi**, Beckman Laser Institute and Medical Clinic (USA); **Haishan Zeng**, The BC Cancer Agency Research Ctr. (Canada)

Program Committee: **Anthony J. Durkin**, Beckman Laser Institute and Medical Clinic (USA); **Iltefat Hamzavi M.D.**, Henry Ford Hospital (USA); **Jessica C. Ramella-Roman**, The Catholic Univ. of America (USA)



## Saturday 2 February

### SESSION 1

Room: 303 (Esplanade) ..... Sat 8:50 am to 10:20 am

#### Optical Microscopy I

Session Chair: **Haishan Zeng**,  
The BC Cancer Agency Research Ctr. (Canada)

8:50 am: **Confocal microscopy to guide laser ablation of non-melanoma skin cancers: a preliminary feasibility study**, Bjorg A. Larson, Jason C. Chen, Milind Rajadhyaksha, Memorial Sloan-Kettering Cancer Ctr. (USA). . . . [8565-1]

9:10 am: **Automated localization of wrinkles and the dermo-epidermal junction in obliquely-oriented reflectance confocal microscopic images of human skin**, Jamshid Sourati, Northeastern Univ. (USA); Milind Rajadhyaksha, Memorial Sloan-Kettering Cancer Ctr. (USA); Jennifer G. Dy, Deniz Erdogan, Dana H. Brooks, Northeastern Univ. (USA) . . . . . [8565-2]

9:30 am: **Investigating the metastatic potential and pigment chemistry of melanomas using pump-probe imaging** (*Invited Paper*), Mary Jane Simpson, Jesse W. Wilson, Francisco E. Robles, Maria A. Selim, Marshall Phipps, Duke Univ. (USA); Warren S. Warren, Duke Univ. (USA) and Duke Univ. Medical Ctr. (USA) . . . . . [8565-3]

10:00 am: **State-of-the-art clinical in vivo multiphoton tomography**, Karsten Koening, Univ. des Saarlandes (Germany) and JenLab GmbH (Germany). [8565-4]

Coffee Break ..... Sat 10:20 am to 10:50 am

### SESSION 2

Room: 303 (Esplanade) ..... Sat 10:50 am to 12:10 pm

#### Optical Microscopy II

Session Chair: **Jessica Ramella-Roman**,  
The Catholic Univ. of America (USA)

10:50 am: **Comparison of single-photon and two-photon fluorescence properties of human skin and skin fluorophores**, Jianhua Zhao, The BC Cancer Agency Research Ctr. (Canada); Mengzhe Shen, The Univ. of British Columbia (Canada); Edward Yu, The BC Cancer Agency Research Ctr. (Canada); Shuo Tang, Harvey Lui, The Univ. of British Columbia (Canada); Haishan Zeng, The BC Cancer Agency Research Ctr. (Canada) . . . . . [8565-5]

11:10 am: **Differential diagnosis of pigmented skin lesions based on harmonic generation microscopy**, Ming-Rung Tsai, National Taiwan Univ. (Taiwan); Yi-Hua Liao M.D., National Taiwan Univ. Hospital (Taiwan); Chi-Kuang Sun, National Taiwan Univ. (Taiwan). . . . . [8565-6]

11:30 am: **Video-rate in vivo human skin imaging using co-registered multiphoton and reflectance confocal microscopy**, Hequn Wang, Anthony M. Lee, Zack Frehlick, The BC Cancer Agency Research Ctr. (Canada); Harvey Lui M.D., David I. McLean M.D., The BC Cancer Agency Research Ctr. (Canada) and The Univ. of British Columbia (Canada) and Vancouver Coastal Health Research Institute (Canada); Shuo Tang, The Univ. of British Columbia (Canada); Haishan Zeng, The BC Cancer Agency Research Ctr. (Canada) and The Univ. of British Columbia (Canada) and Vancouver Coastal Health Research Institute (Canada) . . . . . [8565-7]

11:50 am: **Modeling semiconductor lasers for In vivo confocal-laser-scanning-microscopy in dermatology**, Meng-Mu Shih, Univ. of Florida (USA) . . . . . [8565-8]

Lunch/Exhibition Break ..... Sat 12:10 pm to 1:40 pm

### SESSION 3

Room: 303 (Esplanade) ..... Sat 1:40 pm to 3:10 pm

#### Optical Coherence Tomography

Session Chair: **Nikiforos Kollias**, Consultant (USA)

1:40 pm: **Investigation of fractional laser photothermolysis and visualization of microthermal zone with optical coherence tomography**, Feng-Yu Chang, Cheng-Hsing Fan, Cheng-Kuang Lee, Meng-Tsan Tsai, Chang Gung Univ. (Taiwan); Chih-Hsung Yang M.D., Chang-Gung Memorial Hospital (Taiwan) . . . . . [8565-9]

2:00 pm: **Microvasculature imaging for clinical scar assessment** (*Invited Paper*), Yih Miin Liew, Robert A. McLaughlin, Peijun Gong, The Univ. of Western Australia (Australia); Fiona M. Wood M.D., The Univ. of Western Australia (Australia) and Burns Service of Western Australia, Royal Perth Hospital (Australia); David D. Sampson, The Univ. of Western Australia (Australia). . . . . [8565-10]

2:30 pm: **Optical coherence tomography demonstrates epidermal thinning of human forearm volar skin after 2 weeks application of a topical corticosteroid.**, Stephen J. Matcher, Zenghai Lu, Michael Cork, The Univ. of Sheffield (United Kingdom) . . . . . [8565-11]

2:50 pm: **Quantitative monitoring of tissue rejuvenation using 3D OCT**, Areun Kim, Jeonghyeon Lee, Taeho Kim, Ulsan National Institute of Science and Technology (Korea, Republic of); Haekwang Lee, Sunghoon Lee, AmorePacific Corp. (Korea, Republic of); Woonggyu Jung, Ulsan National Institute of Science and Technology (Korea, Republic of) . . . . . [8565-12]

Coffee Break ..... Sat 3:10 pm to 3:40 pm

### SESSION 4

Room: 303 (Esplanade) ..... Sat 3:40 pm to 5:00 pm

#### Thermal Therapeutics and Monitoring

Session Chair: **Iltefat Hamzavi M.D.**, Henry Ford Hospital (USA)

3:40 pm: **Effective dermal heating with temporal squared millisecond Nd:YAG pulses visualized using subsurface thermo imaging**, Rudolf M. Verdaasdonk, Vrije Univ. Medical Ctr. (Netherlands) and Free Univ. Amsterdam (Netherlands); Albert Van der Veen, Divya Chandrabose, Vrije Univ. Medical Ctr. (Netherlands); Vladimir Lemberg, BonCheol L. Goo M.D., Lutronic Corp. (Korea, Republic of) . . . . . [8565-13]

4:00 pm: **Comparative analysis of the thermal distribution of a radio frequency fractional system using high speed thermo imaging techniques**, Rudolf M. Verdaasdonk, Vrije Univ. Medical Ctr. (Netherlands) and Free Univ. Amsterdam (Netherlands); Albert Van der Veen, Divya Chandrabose, Vrije Univ. Medical Ctr. (Netherlands); Vladimir Lemberg, BonCheol L. Goo M.D., Lutronic Corp. (Korea, Republic of). . . . . [8565-14]

4:20 pm: **Preclinical in vivo evaluation of combination photodynamic therapy and pulsed dye laser treatment on normal vasculature**, Wesley Moy, Justin Moy, Kristen M. Kelly M.D., Bernard Choi, Beckman Laser Institute and Medical Clinic (USA) . . . . . [8565-15]

4:40 pm: **Blue LED treatment of superficial abrasions**, Domenico Alfieri, Light4Tech Firenze S.r.l. (Italy); Stefano Bacci, Univ. degli Studi di Firenze (Italy); Riccardo Cicchi, Istituto Nazionale di Ottica (Italy) and European Lab. for Non-linear Spectroscopy (Italy); Gaetano De Siena, Univ. degli Studi di Firenze (Italy); Francesco S. Pavone, European Lab. for Non-linear Spectroscopy (Italy); Roberto Pini, Francesca Rossi, Francesca Tatini, Istituto di Fisica Applicata Nello Carrara (Italy) . . . . . [8565-16]

## BiOS Hot Topics

Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

**Sunday 3 February**

**SESSION 5**

**Room: 303 (Esplanade) . . . . .Sun 8:30 am to 10:10 am**

**Diffuse Reflectance, Fluorescence, and Raman Spectroscopy**

Session Chair: **Anthony J. Durkin**,  
Beckman Laser Institute and Medical Clinic (USA)

8:30 am: **Elimination of single-beam substitution error in diffuse reflectance measurements using an integrating sphere**, Luka Vidovic, Jožef Stefan Institute (Slovenia); Boris Majaron, Jožef Stefan Institute (Slovenia) and Univ. of Ljubljana (Slovenia) . . . . . [8565-18]

8:50 am: **Characterization of a multi-modal probe for early skin cancer detection using Raman, reflectance and fluorescence spectroscopies**, Manu Sharma, Liang Lim, The Univ. of Texas at Austin (USA); Eric Marple, EmVision, LLC (USA); William Riggs, DermDx (USA); James W. Tunnell, The Univ. of Texas at Austin (USA) . . . . . [8565-19]

9:10 am: **Quantitative assessment of response of generalized Argyria to Nd:YAG treatment using diffuse optical spectroscopy**, Rolf B. Saager, Beckman Laser Institute and Medical Clinic (USA); Khaled M. Hassan, Univ. of California, Irvine (USA); Clement Kondru, Anthony J. Durkin, Beckman Laser Institute and Medical Clinic (USA); Kristen M. Kelly, Univ. of California, Irvine School of Medicine (USA) . . . . . [8565-20]

9:30 am: **Non-invasive, in vivo fluorescence monitoring as an objective tool to examine wound healing progression following low level laser therapy**, Vijendra Prabhu, Edward M. Fernandes, Satish B. S. Rao, Krishna K. Mahato, Manipal Univ. (India) . . . . . [8565-21]

9:50 am: **Theoretical study on Raman properties of normal human skin using Monte Carlo method with a multi-layered tissue model**, Shuang Wang, Northwest Univ. (China); Jianhua Zhao, The BC Cancer Agency Research Ctr. (Canada) and The Univ. of British Columbia (Canada) and Vancouver Coastal Health Research Institute (Canada); Harvey Lui M.D., British Columbia Cancer Agency Research Ctr. (Canada) and The Univ. of British Columbia (Canada) and Vancouver Coastal Health Research Institute (Canada); Qingli He, Zhaoyu Ren, Jintao Bai, Northwest Univ. (China); Haishan Zeng, The BC Cancer Agency Research Ctr. (Canada) and The Univ. of British Columbia (Canada) and Vancouver Coastal Health Research Institute (Canada) . . . . . [8565-22]

Coffee Break . . . . . Sun 10:10 am to 10:40 am

**SESSION 6**

**Room: 303 (Esplanade) . . . . .Sun 10:40 am to 12:00 pm**

**Wide-Field Functional Imaging I**

Session Chair: **Bernard Choi**,  
Beckman Laser Institute and Medical Clinic (USA)

10:40 am: **Hyperspectral imaging as a diagnostic tool for chronic skin ulcers**, Martin Denstedt, Norwegian Univ. of Science and Technology (Norway); Brita S. Pukstad M.D., Norwegian Univ. of Science and Technology (Norway) and St.Olavs Hospital, Univ. Hospital of Trondheim (Norway); Lukasz A. Paluchowski, Norwegian Univ. of Science and Technology (Norway); Julio E. Hernandez-Palacios, Norwegian Univ. of Science and Technology (Norway) and Norsk Elektro Optikk AS (Norway); Lise L. Randeberg, Norwegian Univ. of Science and Technology (Norway) . . . . . [8565-23]

11:00 am: **Non-invasive imaging of dermal lymphatic reconstitution using near-infrared laser angiography**, Ah-Reum Jeong, Johns Hopkins Univ. School of Medicine (USA) and Keck School of Medicine, of Univ. of Southern California (USA); Gabriel A. Brat M.D., Kate J. Buretta, Joani M. Christensen, Gerald Brandacher M.D., Justin M. Sacks M.D., Johns Hopkins Univ. School of Medicine (USA) . . . . . [8565-24]

11:20 am: **Diffuse reflectance imaging system for spectral analysis of skin cancer in vivo**, Sheldon F. Bish, Youmin Wang, Manu Sharma, Nicholas Triesault, The Univ. of Texas at Austin (USA); Jason Reichenberg M.D., Univ. Medical Ctr. Brackenridge (USA); Xiaojing Zhang, James W. Tunnell, The Univ. of Texas at Austin (USA) . . . . . [8565-25]

11:40 am: **An initial development of laser speckle imaging for application in the inflammatory arthritis disease**, Taeyoon Son, Won Hyuk Jang, Jihoon Park, Byungjo Jung, Yonsei Univ. (Korea, Republic of) . . . . . [8565-26]

Lunch/Exhibition Break . . . . . Sun 12:00 pm to 1:30 pm

**SESSION 7**

**Room: 303 (Esplanade) . . . . .Sun 1:30 pm to 3:00 pm**

**Wide-Field Functional Imaging II**

Session Chair: **Bernard Choi**,  
Beckman Laser Institute and Medical Clinic (USA)

1:30 pm: **Assessment of reconstructive flap occlusion in a preclinical model: A comparison of spatial frequency domain imaging to conventional digital color imaging**, Eren Taydas, Beckman Laser Institute and Medical Clinic (USA); Adrien Ponticorvo, Beckman Laser Institute and Medical Clinic, University of California Irvine (USA); Amaan Mahzar, Modulated Imaging, Inc. (USA) and Beckman Laser Institute Photonics Incubator (USA); Thomas Scholz M.D., Jonathan Rimler M.D., Hak-Su Kim, Univ. of California, Irvine Medical Ctr. (USA); June Tong, Beckman Laser Institute and Medical Clinic (USA) and Univ. of California, Irvine (USA); Gregory R. D. Evans M.D., Univ. of California, Irvine Medical Ctr. (USA); David J. Cuccia, Modulated Imaging, Inc. (USA) and Beckman Laser Institute Photonics Incubator (USA); Anthony J. Durkin, Beckman Laser Institute and Medical Clinic (USA) and Univ. of California, Irvine (USA) . . . . . [8565-27]

1:50 pm: **Quantitative longitudinal measurement in a rat model of controlled burn severity using spatial frequency domain imaging (Invited Paper)**, John Quan M. Nguyen, Tuan Mai, Christian Crouzet, Beckman Laser Institute and Medical Clinic (USA); Nicole Bernal, Univ. of California, Irvine (USA); Bernard Choi, Anthony J. Durkin, Beckman Laser Institute and Medical Clinic (USA) . . . . . [8565-28]

2:20 pm: **Development of a wide-field fluorescence imaging system for evaluation of wound re-epithelialization**, Walfre Franco, Enoch Gutierrez-Herrera, Martin Purschke, Ying Wang, Joshua Tam, R. Rox Anderson M.D., Apostolos G. Doukas, Massachusetts General Hospital (USA) . . . . . [8565-29]

2:40 pm: **A novel spectral imaging system for quantitative analysis of hypertrophic scar**, Pejhman Ghassemi, The Catholic Univ. of America (USA); Jeffrey W. Shupp M.D., Lauren T. Moffatt, Washington Hospital Ctr. (USA) and MedStar Health Research Institute (USA); Jessica C. Ramella-Roman, The Catholic Univ. of America (USA) . . . . . [8565-30]

**POSTER SESSION AND COFFEE BREAK**

**Room: Hall A, BiOS Expo . . . . .Sun 3:00 pm to 4:00 pm**

Attendees are invited to view the conference posters, which will be available on Saturday and Sunday. The poster session, with authors present, will be held from 3:00 to 4:00 PM on Sunday afternoon, in conjunction with the coffee break.

**POSTER AUTHORS:** Poster setup is scheduled from 10:00 to 11:30 AM on Saturday and Sunday in South Hall A. Please plan to stand with your poster during the poster session on Sunday from 3:00 to 4:00 PM. Posters may remain on the boards both Saturday and Sunday but must be removed following the Sunday afternoon poster session/coffee break. Posters left on the boards after this time will be discarded.

**Fiber 1.56-1.9 μm lasers in treatment of vascular malformations in children and adults**, Ivan A. Abushkin, Valeriy A. Privalov, Chelyabinsk State Medical Academy (Russian Federation); Alexander V. Lappa, Chelyabinsk State Univ. (Russian Federation); Vladimir P. Minaev, IRE-Polus Co. (Russian Federation) . . . . . [8565-17]

**Treatment of toe nail fungus infection using an AO Q-switched eye-safe erbium glass laser at 1534 nm**, Michael J. Myers, Jeffrey A. Myers, Baoping Guo, Christopher R. Hardy, Sean Myers, Angelo Carrabba, Kigre, Inc. (USA); Carmen Trywick, May River Dermatology, LLC (USA); Stewart Bryant, Clemson Univ. (USA); John Robert Griswold, Ave Maria Univ. (USA); Aggie Mazzochi, Beauty & the Beach (USA); Franziska Roth, Kigre, Inc. (USA) . . . . . [8565-31]

**Phenylalanine gas phase and solvated models applied to skin NMF simulation by DFT calculations**, Bruna G. Carvalho, Leandro Raniero, Ailton A. Martin, Priscila P. Favero, Univ. do Vale do Paraíba (Brazil) . . . . . [8565-32]

**Discriminating model for skin cancer diagnosis in vivo through Raman spectroscopy**, Fabrício L. Silveira, Univ. Camilo Castelo Branco (Brazil); Landulfo Silveira Jr., Camilo Castelo Branco Univ. (Brazil); Benito Bodanese M.D., Univ. Comunitária da Região de Chapecó (Brazil); Renato A. Zângaro M.D., Marcos T. T. Pacheco, Univ. Camilo Castelo Branco (Brazil) . . . . . [8565-33]



# Therapeutics and Diagnostics in Urology: Lasers, Robotics, Minimally Invasive, and Advanced Biomedical Devices

Conference Chairs: **Hyun Wook Kang**, Pukyong National Univ. (Korea, Republic of); **Bodo E. Knudsen M.D.**, The Ohio State Univ. (USA)

Program Committee: **Geoffrey N. Box M.D.**, The Ohio State Univ. (USA); **Kin Foong Chan**, Dermira, Inc. (USA); **Nathaniel M. Fried**, The Univ. of North Carolina at Charlotte (USA); **Ronald Sroka**, Ludwig-Maximilians-Univ. München (Germany); **Joel M. Teichman M.D.**, Univ. British Columbia (Canada), St. Paul's Hospital (Canada); **Rudolf M. Verdaasdonk**, Vrije Univ. Medical Ctr. (Netherlands)



## Saturday 2 February

### SESSION 1

Room: 222 (Mezzanine) ..... Sat 9:00 am to 10:20 am

#### Imaging and Diagnosis

Session Chairs: **Rudolf M. Verdaasdonk**, Vrije Univ. Medical Ctr. (Netherlands); **Nathaniel M. Fried**, Univ. of North Carolina at Charlotte (USA)

9:00 am: **Optical diagnosis of painful bladder syndrome/ interstitial cystitis**, Babak Shadgan M.D., Andrew J. Macnab M.D., Lynn Stothers M.D., The Univ. of British Columbia (Canada) ..... [8565-34]

9:20 am: **Using OCT to predict post-transplant renal function**, Peter M. Andrews, Georgetown Univ. Medical Ctr. (USA); Yu Chen, Jeremiah Wierwille, Univ. of Maryland, College Park (USA); Daniel Joh, Peter Alexandrov, Derek Rogalsky, Patrick Moody, Georgetown Univ. Medical Ctr. (USA); Wei Gong, Univ. of Maryland, Baltimore (USA) and Fujian Normal Univ. (China); Hsing-Wen Wang, Univ. of Maryland, Baltimore (USA) ..... [8565-35]

9:40 am: **ex vivo OCT study on encrustation of urologic double pigtail catheters**, Ronald Sroka, Michaela Puels, Laser-Forschungslabor (Germany); Herbert Stepp, Katja Zilinger, Markus Bader, Patrick Weidlich, Ludwig-Maximilians-Univ. München (Germany) ..... [8565-36]

10:00 am: **Full-field OCT can distinguish tumor from benign in human kidney and bladder tissue and assess kidney fibrosis in a rat model**, Jonathan Caron, INSERM (France) and Univ. Paris VI (France); Sushmita Mukherjee, Manu Jain, Bekheit Salomoon, Maria M. Shevchuk, Douglas S. Scherr, Weill Cornell Medical College (USA); Isabelle Brocheriou, Hôpital Tenon (France); Jean-Jacques Boffa, INSERM (France) and Univ. Paris VI (France) and Hôpital Tenon (France); Katharine Grieve, Institut Langevin (France); Fabrice Harms, Bertrand Le Conte de Poly, LLTECH SAS (France); Albert C. Boccara, Institut Langevin (France) and LLTECH SAS (France) ..... [8565-37]

Coffee Break ..... Sat 10:20 am to 10:50 am

### SESSION 2

Room: 222 (Mezzanine) ..... Sat 10:50 am to 12:10 pm

#### Urology Miscellaneous

Session Chairs: **Kin Foong Chan**, Dermira, Inc. (USA); **Hyun Wook Kang**, Pukyong National Univ. (Korea, Republic of)

10:50 am: **in vivo photoacoustic imaging of urinary bladders with dye-enhanced carbon nanotubes**, Jasung Koo, Hyun Wook Kang, Pukyong National Univ. (Korea, Republic of); Jeehyun Kim, Kyungpook National Univ. (Korea, Republic of); Chulhong Kim, Univ. at Buffalo (USA); Junghwan Oh, Pukyong National Univ. (Korea, Republic of) ..... [8565-38]

11:10 am: **Subsurface optical stimulation of rat prostate cavernous nerves using a continuous wave, single mode, 1490 nm diode laser**, Serhat Tozburun, Charlotte D. Stahl, Thomas C. Hutchens, The Univ. of North Carolina at Charlotte (USA); Gwen A. Lagoda, Arthur L. Burnett M.D., Johns Hopkins Medical Institutions (USA); Nathaniel M. Fried, The Univ. of North Carolina at Charlotte (USA) ..... [8565-39]

11:30 am: **Temperature-controlled optical stimulation of the rat prostate cavernous nerves**, Serhat Tozburun, The Univ. of North Carolina at Charlotte (USA); Gwen A. Lagoda, Johns Hopkins Medical Institutions (USA); Michael A. McLain, The Univ. of North Carolina at Charlotte (USA); Arthur L. Burnett M.D., Johns Hopkins Medical Institutions (USA); Nathaniel M. Fried, The Univ. of North Carolina at Charlotte (USA) ..... [8565-40]

11:50 am: **A new optical method enables fluorescence guided diagnosis of bladder tumours in the outpatient department and reveals significant photo bleaching problems in established inpatients photo dynamic diagnostics (PDD) techniques.**, Lars R. Lindvold, Risø National Lab. (Denmark); Gregers G. Hermann, Frederiksberg Hospital (Denmark) ..... [8565-41]

Lunch Break ..... Sat 12:10 pm to 1:20 pm

### SESSION 3

Room: 222 (Mezzanine) ..... Sat 1:20 pm to 3:00 pm

#### Laser Lithotripsy

Session Chairs: **Joel M. Teichman M.D.**, St. Paul's Hospital (Canada); **Hyun Wook Kang**, Pukyong National Univ. (Korea, Republic of)

1:20 pm: **Fiber optic suctioning of urinary stone phantoms during laser lithotripsy**, Richard L. Blackmon, The Univ. of North Carolina at Charlotte (USA); Jason Case, Susan Trammell, Univ. of North Carolina at Charlotte (USA); Pierce B. Irby M.D., Carolinas Medical Ctr. (USA); Nathaniel M. Fried, The Univ. of North Carolina at Charlotte (USA) ..... [8565-42]

1:40 pm: **Dependence of laser-induced bubble collapse shockwave and fluence during Q-switched Tm:YAG laser lithotripsy**, Danop Rajabhandharaks, Jian J. Zhang, Hui Wang, Jason R. Xuan, Ray Chia, Thomas Hasenberg, American Medical Systems (USA); Hyun Wook Kang, Pukyong National Univ. (Korea, Republic of) ..... [8565-43]

2:00 pm: **Comparison of detachable and tapered fiber optic tips for use in thulium fiber laser lithotripsy**, Thomas C. Hutchens, Richard L. Blackmon, The Univ. of North Carolina at Charlotte (USA); Pierce B. Irby M.D., Carolinas Medical Ctr. (USA); Nathaniel M. Fried, Univ. of North Carolina at Charlotte (USA) ..... [8565-44]

2:20 pm: **Laser lithotripsy retropulsion varies with stone mass**, Joel M. Teichman M.D., St. Paul's Hospital (Canada); Michael E. Robinson, The Univ. of British Columbia (Canada) ..... [8565-45]

2:40 pm: **in vitro assessment of fragmentation and repulsion of handheld lithotripsy devices**, Ronald Sroka, Thomas Pongratz, Giovanni Cramer, Laser-Forschungslabor (Germany); Nicolas Haseke, Univ. Hospital Munich (Germany); Markus Bader, Ludwig-Maximilians-Univ. München (Germany) ..... [8565-46]

### POSTER SESSION AND COFFEE BREAK

Room: Hall A, BiOS Expo ..... Sat 3:00 pm to 4:00 pm

Attendees are invited to view the conference posters, which will be available on Saturday and Sunday. The poster session, with authors present, will be held from 3:00 to 4:00 PM on Saturday afternoon, in conjunction with the coffee break.

**POSTER AUTHORS:** Poster setup is scheduled from 10:00 to 11:30 AM on Saturday and Sunday in South Hall A. Please plan to stand with your poster during the poster session on Sunday from 3:00 to 4:00 PM. Posters may remain on the boards both Saturday and Sunday but must be removed following the Sunday afternoon poster session/coffee break. Posters left on the boards after this time will be discarded.

**Near infrared spectral polarized imaging using Cybesin: a receptor-targeted contrast agent of prostate cancer**, Yang Pu, Wubao Wang, Guichen Tang, The City College of New York (USA); Samuel Achilefu, Washington Univ. School of Medicine in St. Louis (USA); Robert R. Alfano, The City College of New York (USA) ..... [8565-50]

**Magnetic nanoparticles-assisted cellular imaging for cervical cancer: preliminary study**, Jasung Koo, Hyun Wook Kang, Pukyong National Univ. (Korea, Republic of); Jeehyun Kim, Kyungpook National Univ. (Korea, Republic of); Junghwan Oh, Pukyong National Univ. (Korea, Republic of) ..... [8565-51]

**Could the differences in the biochemistry of prostate carcinoma compared to benign prostate tissue biopsy fragments be evaluated through Raman spectroscopy?**, Landulfo Silveira Jr., Camilo Castelo Branco Univ. (Brazil); Kátia R. M. Leite M.D., Miguel Srougi M.D., Univ. de São Paulo (Brazil); Fabrício L. Silveira, Marcos T. T. Pacheco, Univ. Camilo Castelo Branco (Brazil); Carlos A. Pasqualucci M.D., Univ. de São Paulo (Brazil) ..... [8565-52]

**in vivo laser ablation study with 150 W diode laser: preclinical study**, Malte Rieken, Basel Univ. Hospital (Switzerland); Hyun Wook Kang, Pukyong National Univ. (Korea, Republic of); Ed Koullick, Bayer Healthcare (USA); Alexander Bachmann, Basel Univ. Hospital (Switzerland) ..... [8565-53]

**SESSION 4**

**Room: 222 (Mezzanine) . . . . . Sat 4:00 pm to 5:00 pm**

**Prostate Disease**

Session Chairs: **Ronald Sroka**, Laser-Forschungslabor (Germany);  
**Geoffrey N. Box M.D.**, The Ohio State Univ. (USA)

4:00 pm: **Shining light on prostate cancer: image guided optical biopsy of the prostate**, Daniel M. de Bruin, Berrend G. Muller, Academisch Medisch Ctr. (Netherlands); Arjen Amelink, Erasmus MC (Netherlands); Ton G. van Leeuwen, Jean J. de la Rosette, Dirk J. Faber, Academisch Medisch Ctr. (Netherlands) . . . . . [8565-47]

4:20 pm: **Noninvasive imaging of prostate cancer progression in nude mice using iRFP gene reporter**, Banghe Zhu, The Univ. of Texas Health Science Ctr. at Houston (USA); Grace Wu, The Univ. of Texas School of Health Information Sciences at Houston (USA); Holly Robinson, Nathaniel Wilganowski, Eva M. Sevick-Muraca, The Univ. of Texas Health Science Ctr. at Houston (USA) . . . . . [8565-48]

4:40 pm: **Influence of tissue treatment onto the Raman spectra obtained from prostate histopathological slides for diagnostics purposes**, Sinisa Vukelic, Bucknell Univ. (USA) . . . . . [8565-49]

**BiOS Hot Topics**  
Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.



Download the  
SPIE Conference App



# Optical Imaging, Therapeutics, and Advanced Technology in Head and Neck Surgery and Otolaryngology

*Conference Chairs:* **Brian Jet-Fei Wong**, Beckman Laser Institute and Medical Clinic (USA); **Justus F. Ilgner M.D.**, Univ. Hospital Aachen (Germany)

*Program Committee:* **James A. Burns**, Massachusetts General Hospital (USA); **Waseem K. Jerjes**, Univ. College London (United Kingdom); **Alfred Nuttall**, Oregon Health & Science Univ. (USA); **Milind Rajadhyaksha**, Memorial Sloan-Kettering Cancer Ctr. (USA); **Chung-Ku Rhee M.D.**, Dankook Univ. Hospital (Korea, Republic of); **Henricus J. Sterenberg**, Erasmus MC (Netherlands); **Yuling Yan**, Santa Clara Univ. (USA)



## Saturday 2 February

### SESSION 1

Room: 232 (Mezzanine) ..... Sat 8:30 am to 10:30 am

#### OCT and LDV in Middle Ear Imaging and Functional Diagnostics

Session Chairs: **Justus F. Ilgner M.D.**, Univ. Hospital Aachen (Germany); **Brian J. F. Wong M.D.**, Beckman Laser Institute and Medical Clinic (USA)

8:30 am: **Large field of view OCT-otoscope for diagnosing middle-ear infection**, Kibeom Park, Kyungpook National Univ. (Korea, Republic of); Areum Kim, Ulsan National Institute of Science and Technology (Korea, Republic of); Nam Hyun Cho, Jeong Hun Jang, Sang Heun Lee, Kyungpook National Univ. (Korea, Republic of); Stephen A. Boppart, Univ. of Illinois at Urbana-Champaign (USA); Jeehyun Kim, Kyungpook National Univ. (Korea, Republic of); Woonggyu Jung, Ulsan National Institute of Science and Technology (Korea, Republic of) .. [8565-54]

8:50 am: **Noninvasive in vivo detection of human middle-ear biofilms in otitis media using an OCT-based primary care imaging system**, Stephen A. Boppart M.D., Univ. of Illinois at Urbana-Champaign (USA) ..... [8565-55]

9:10 am: **Monitoring structural vibrations of mouse middle and inner ear by swept-source optical coherence tomography**, Jesung Park, Esteban F. Carbajal, Texas A&M Univ. (USA); Simon S. Gao, Patrick Raphael, Anping Xia, John S. Oghalai M.D., Stanford Univ. School of Medicine (USA); Brian E. Applegate, Texas A&M Univ. (USA) ..... [8565-56]

9:30 am: **A miniaturized laser-Doppler-system in the ear canal**, Tobias Schmidt, Technische Univ. Ilmenau (Germany) ..... [8565-57]

9:50 am: **OCT otoscope for assessment of conductive hearing loss**, Tracy C. Petrie, Sripriya Ramamoorthy, Hrebesh M. Subhash, Oregon Health & Science Univ. (USA); Ruikang K. Wang, Univ. of Washington (USA); Alfred L. Nuttall, Steven L. Jacques, Oregon Health & Science Univ. (USA) ..... [8565-58]

10:10 am: **Moments of inertia and alternative lever arms for mobile and fused ossicular chains in several land mammals**, Ryan P. Jackson, Stanford Univ. (USA) ..... [8565-59]

Coffee Break ..... Sat 10:30 am to 11:00 am

### SESSION 2

Room: 232 (Mezzanine) ..... Sat 11:00 am to 12:00 pm

#### Advanced Laser Technology in Surgical and Non-Invasive Ear Applications

Session Chairs: **Justus F. Ilgner M.D.**, Univ. Hospital Aachen (Germany); **Alfred L. Nuttall**, Oregon Health & Science Univ. (USA)

11:00 am: **Laser assisted implantation of nitibond prosthesis**, Ronald Sroka, Thomas Pongratz, Laser-Forschungslabor (Germany); Florian Schroetzelmair, Univ. Hospital Munich (Germany); Fabian Suchan, Laser-Forschungslabor (Germany); Joachim D. Mueller, Univ. Hospital Munich (Germany); David Saal, Detlef Russ, Univ. Ulm (Germany) ..... [8565-60]

11:20 am: **Functional outcome after Er:YAG versus CO<sub>2</sub> laser assisted stapedotomy**, Justus F. Ilgner M.D., Univ. Hospital Aachen (Germany) [8565-61]

11:40 am: **Effect of LLLT on vestibular system**, Chung-Ku Rhee M.D., Dankook Univ. Hospital (Korea, Republic of) ..... [8565-62]

Lunch/Exhibition Break ..... Sat 12:00 pm to 1:20 pm

### SESSION 3

Room: 232 (Mezzanine) ..... Sat 1:20 pm to 3:00 pm

#### Imaging for Middle and Inner Ear Structures: Micro-Endoscopy, Micro-CT and OCT

Session Chairs: **Alfred L. Nuttall**, Oregon Health & Science Univ. (USA); **Chung-Ku Rhee M.D.**, Dankook Univ. Hospital (Korea, Republic of)

1:20 pm: **In vivo visualization of endolymphatic hydrops using optical coherence tomography (OCT)**, Tatsunori Sakamoto, Yosuke Tona, Takayuki Nakagawa, Juichi Ito, Kyoto Univ. Graduate School of Medicine (Japan) ..... [8565-63]

1:40 pm: **Sensing and three-dimensional OCT imaging of the cochlea and temporal bone: image-guided cochlear implantation**, Mingtao Zhao, Jin U. Kang, John Niparko, Russell H. Taylor, Johns Hopkins Univ. (USA) ... [8565-64]

2:00 pm: **Measurement of in vivo basal-turn vibrations of the organ of Corti using phase-sensitive Fourier domain optical coherence tomography**, Sripriya Ramamoorthy, Fangyi Chen, Tracy C. Petrie, Yuan Zhang, Oregon Health & Science Univ. (USA); Hrebesh M. Subhash, National Univ. of Ireland, Galway (Ireland); Niloy Choudhury, Michigan Technological Univ. (USA); Ruikang K. Wang, Univ. of Washington (USA); Steven L. Jacques, Alfred L. Nuttall, Oregon Health & Science Univ. (USA) ..... [8565-65]

2:20 pm: **Comparison of high-resolution microendoscope images and histopathological sections in ex vivo middle ear cholesteatomas and surrounding tissue**, James A. Bradley, Lauren Levy, Andrew Sikora M.D., Mount Sinai School of Medicine (USA); Rebecca Richards-Kortum, Rice Univ. (USA); Eric Smouha, Mount Sinai School of Medicine (USA) ..... [8565-66]

2:40 pm: **Nonlinear optical imaging of the mammalian cochlea**, Shelly Batts, Stanford Univ. (USA) ..... [8565-67]

Coffee Break ..... Sat 3:00 pm to 3:30 pm

### SESSION 4

Room: 232 (Mezzanine) ..... Sat 3:30 pm to 4:10 pm

#### Optical Neurostimulation of Inner Ear and Retrocochlear Pathways

Session Chair: **Chung-Ku Rhee M.D.**, Dankook Univ. Hospital (Korea, Republic of)

3:30 pm: **Infrared neural stimulation in the cochlea**, Ken Zhao, Suhrud M. Rajguru, Claus-Peter Richter, Northwestern Univ. (USA) ..... [8565-68]

3:50 pm: **Pulse shaping effects on optical induced auditory brainstem responses**, Marc Kannengießer, Dietmar J. Hecker, Univ. des Saarlandes (Germany); Martin Sängler, Technische Univ. Kaiserslautern (Germany); Cathleen Schreiter, Univ. des Saarlandes (Germany); Hans-Jochen Foth, Technische Univ. Kaiserslautern (Germany); Achim Langenbacher, Bernhard Schick, Gentiana I. Wenzel, Univ. des Saarlandes (Germany) ..... [8565-69]



**SESSION 5**

**Room: 232 (Mezzanine) . . . . . Sat 4:10 pm to 5:50 pm**

**Functional Imaging and Advanced Surgical Technology for Upper Airways I**

Session Chair: **Yuling Yan**, Santa Clara Univ. (USA)

4:10 pm: **Software for automatic analysis of image and sound data simultaneously acquired from high-speed videoendoscopy**, Tao Jiang, Santa Clara Univ. (USA); Shouhua Luo, Southeast Univ. (China); Yuling Yan, Santa Clara Univ. (USA). . . . . [8565-70]

4:30 pm: **Analysis of long-range OCT of subglottic stenosis in a rabbit model**, Ashley Hamamoto, Univ. of California Irvine (USA) . . . . . [8565-71]

4:50 pm: **In vivo imaging of subglottic stenosis using long-range OCT: preliminary results in adults and children**, . . . . . [8565-72]

5:10 pm: **Compact divided-pupil line-scanning confocal microscope for investigation of human tissues**, Christopher Glazowski, Gary Peterson, Milind Rajadhyaksha, Memorial Sloan-Kettering Cancer Ctr. (USA) . . . . . [8565-73]

5:30 pm: **Remote image guided laser for endoscopic surgery**, Ricardo Toledo-Crow, Stefan Kirov, Yongbiao Li, Snehal Patel, Milind Rajadhyaksha, Memorial Sloan-Kettering Cancer Ctr. (USA) . . . . . [8565-74]

11:10 am: **Study of vocal fold development using optical coherence tomography**, Fouzi Benboujja, Ecole Polytechnique de Montréal (Canada); Shilpa Ojha M.D., Harvard Medical School (USA); Mathias Strupler, Ecole Polytechnique de Montréal (Canada); Stephen Maturu M.D., Scott Infusino, Christopher J. Hartnick, Harvard Medical School (USA); Caroline Boudoux, Ecole Polytechnique de Montréal (Canada) . . . . . [8565-80]

11:30 am: **A concise algorithm for detection of vibration from Fourier domain OCT**, Steven L. Jacques, Sripriya Ramamoorthy, Tracy C. Petrie, Alfred L. Nuttall, Oregon Health & Science Univ. (USA) . . . . . [8565-81]

11:50 am: **Viability of porcine trachea post electromechanical reshaping**, Syed F. Hussain, Beckman Laser Institute and Medical Clinic (USA). . . [8565-82]

12:10 pm: **Near-infrared imaging for diagnosis of maxillary sinusitis**, Joon S. You, Cyrus Manuel, Andrew E. Heidari, Praxis BioSciences, LLC (USA); Naveen Bhandarkar M.D., Univ. of California, Irvine School of Medicine (USA); Brian Wong M.D., Albert E. Cerussi, Beckman Laser Institute and Medical Clinic (USA) . . . . . [8565-83]

12:30 pm: **High speed in vivo upper airway imaging using long range optical coherence tomography**, Joseph Jing, Univ. of California, Irvine (USA); Jun Zhang, Univ. of California, Irvine (USA) and Beckman Laser Institute (USA); Anthony Chin Loy, Univ. of California Irvine (USA); Brian Wong M.D., Univ. of California, Irvine (USA) and Beckman Laser Institute (USA); Zhongping Chen, Univ. of California, Irvine (USA) and Beckman Laser Institute (USA) . . . [8565-84]

**BiOS Hot Topics**  
 Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

**Sunday 3 February**

**SESSION 6**

**Room: 232 (Mezzanine) . . . . . Sun 9:00 am to 10:00 am**

**Photo-Optical Detection and Monitoring of Head and Neck Malignancies I**

Session Chair: **Milind Rajadhyaksha**, Memorial Sloan-Kettering Cancer Ctr. (USA)

9:00 am: **Optical coherence tomography for monitoring late oral radiation toxicity**, Bahar Davoudi, Univ. of Toronto (Canada); Melanie Morrison, Univ. of Toronto (Canada); Beau A. Standish, Ryerson Univ. (Canada); Kostadinka Bizheva, Univ. of Waterloo (Canada); Victor Yang, Ryerson Univ. (Canada); Wilfred Levin, Univ. of Toronto (Canada); Alex I. Vitkin, Ontario Cancer Institute (Canada) . . . . . [8565-75]

9:20 am: **Miniaturization does not impair the ability of ESS to assess malignancy in human thyroid nodules**, Jennifer E. Rosen, Irving J. Bigio, Boston Univ. (USA); Ousama M. A' Amar, Boston Univ. (USA); Stephanie L. Lee, Boston Univ. (USA); Faris Azar, Boston Univ. (USA) . . . . . [8565-76]

9:40 am: **Characterization of oral precancerous lesions based on higher-harmonic generation microscopy**, Chen-Yu Lin, National Taiwan Univ. (Taiwan); Chih-Feng Lin, National Taiwan Univ. (Taiwan) and National Taiwan Univ. Hospital and College of Medicine (Taiwan); Chi-Kuang Sun, National Taiwan Univ. (Taiwan) and Molecular Imaging Ctr. National Taiwan Univ. (Taiwan) and Academia Sinica (Taiwan) . . . . . [8565-77]

Coffee Break . . . . . Sun 10:00 am to 10:30 am

10:30 am: **Simultaneous two-photon fluorescence (2PEF), second harmonic generation (SHG) and confocal large field imaging of vocal folds**, Romain Deterre, Ecole Polytechnique de Montréal (Canada); Mathias Strupler, Sainte-Justine Mother and Child Univ. Hospital Ctr. (Canada) and Ecole Polytechnique de Montreal (Canada); Nadir Goulamhousen, Etienne De Montigny, Ecole Polytechnique de Montréal (Canada); Shilpa Ojha M.D., Harvard Medical School (USA); Christopher J. Hartnick M.D., Massachusetts Eye and Ear Infirmary (USA); Caroline Boudoux, Ecole Polytechnique de Montréal (Canada) and Sainte-Justine Mother and Child Univ. Hospital Ctr. (Canada). . . . . [8565-78]

10:50 am: **Comparison of porcine vocal fold ultrafast laser ablation parameters using 780-nm vs. 1550-nm excitation wavelengths**, Murat Yildirim, Onur Ferhanoglu, The Univ. of Texas at Austin (USA); James B. Kobler, Steven M. Zeitels, Massachusetts General Hospital (USA); Adela Ben-Yakar, The Univ. of Texas at Austin (USA) and Massachusetts General Hospital (USA) . . . . . [8565-79]

**SESSION 8**

**Room: 232 (Mezzanine) . . . . . Sun 2:00 pm to 3:20 pm**

**Photo-Optical Detection and Monitoring of Head and Neck Malignancies II**

Session Chair: **Waseem K. Jerjes**, Univ. College London (United Kingdom)

2:00 pm: **Development of real-time automated image analysis algorithms for multi-modal optical imaging of oral neoplasia**, Timothy Quang, Noah Bedard, Mark C. Pierce, Richard A. Schwarz, Rice Univ. (USA); Vijayashree S. Bhattar, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Sharon Mondrik, Rice Univ. (USA); Jana Howe, Michelle D. Williams, Ann M. Gillenwater, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Rebecca Richards-Kortum, Rice Univ. (USA) . . . . . [8565-85]

2:20 pm: **Validation of an ESS signature to predict benign from malignant human thyroid nodules**, Jennifer E. Rosen, Irving J. Bigio, Boston Univ. (USA); Ousama M. A' Amar, Boston Univ. (USA); Stephanie L. Lee, Boston Univ. (USA); Faris Azar, Boston Univ. (USA); Eladio Rodriguez-Diaz, Boston Univ. (USA) . . . . . [8565-86]

2:40 pm: **In vivo detection of circulating tumor cells during tumor manipulation**, Mazen A. Juratli M.D., Ekaterina I. Galanzha, Mustafa Sarimollaoglu, Dmitry A. Nedosekin, James Y. Suen M.D., Vladimir P. Zharov, Univ. of Arkansas for Medical Sciences (USA) . . . . . [8565-87]

3:00 pm: **Reflectance confocal microscopy to distinguish thyroid, parathyroid and lymph node: a feasibility study**, Frank Palmer, Bjorg A. Larson, Andre Moreira, Safina Ali, Milind Rajadhyaksha, Snehal Patel, Memorial Sloan-Kettering Cancer Ctr. (USA) . . . . . [8565-88]

**SESSION 9**

**Room: 232 (Mezzanine) . . . . . Sun 3:20 pm to 6:00 pm**

**Advanced Technology in Photo-Optical Treatment of Head and Neck Lesions**

Session Chair: **Brian J. F. Wong M.D.**, Beckman Laser Institute and Medical Clinic (USA)

3:20 pm: **Phase I clinical trial of TPCS2a induced photochemical internalization of bleomycin**, Waseem K. Jerjes, Univ. College London (United Kingdom) . . . . . [8565-89]

3:40 pm: **Photothermal treatment of head and neck squamous cell carcinoma using macrophage as vector for gold nanoshells**, Seung-Kuk Baek M.D., Korea Univ. College of Medicine (Korea, Republic of); Taeseok D. Yang, Korea Univ. (Korea, Republic of); Wonshik Choi, Korea Univ. College of Medicine (Korea, Republic of); Tai Hyun Yoon, Korea Univ. (Korea, Republic of); Kyoung Jin Lee, Jae-Seung Lee, Korea Univ. (Korea, Republic of); Min-Goo Lee M.D., Min Woo Park M.D., Kwang-Yoon Jung M.D., Korea Univ. College of Medicine (Korea, Republic of); Sangyong Park, Beckman Laser Institute and Medical Clinic (USA) . . . . . [8565-90]

4:00 pm: **Treatment planning and control for laser therapy of head and neck cancer**, Gal Shafirstein, Roswell Park Cancer Institute (USA) . . . . . [8565-91]

4:20 pm: **Electromechanical reshaping device**, Joon S. You, Cyrus Manuel, Crystal Bong, Richard Staebler, Chao Shen, Praxis BioSciences, LLC (USA); Brian Wong, Praxis BioSciences, LLC (USA) and Beckman Laser Institute (USA) . . . . . [8565-92]

4:40 pm: **Skin photosensitivity in a phase I clinical trial of Amphinex® induced photochemical internalization of Bleomycin**, Waseem K. Jerjes, Univ. College London (United Kingdom) . . . . . [8565-93]

5:00 pm: **Comparison of 1470-nm diode laser vs CO<sub>2</sub>-laser for tonsillotomy and a clinical feasibility trial on the use of 1940 nm**, Ronald Sroka, Thomas Pongratz, Laser-Forschungslabor (Germany); Miriam Havel, Elsa Englert, Univ. Hospital Munich (Germany); Thomas Kremser, StarMedTec GmbH (Germany); Christain S. Betz, Univ. Hospital Munich (Germany); Andreas Leunig, HNO-Praxis (Germany) . . . . . [8565-94]

5:20 pm: **3- $\mu$ m CW lasers for myringotomy and microsurgery**, Kurt J. Linden, Spire Corp. (USA); Christian P. Pfeffer, Children's Hospital Boston (USA); John G. Sousa, Nicholas D'Alleva, Sheumann Laser, Inc. (USA); Arash Aslani, Spire Corp. (USA); Grzegorz Gorski, Margaret Kenna, Dennis S. Poe, Children's Hospital Boston (USA) . . . . . [8565-95]

5:40 pm: **iPDT and chemotherapy for recurrent HNSCC**, Nestor Rigual, Roswell Park Cancer Institute (USA) . . . . . [8565-239]

# Optical Techniques in Pulmonary Medicine

Conference Chairs: **Melissa J. Suter**, Massachusetts General Hospital (USA); **Stephen Lam**, The BC Cancer Agency Research Ctr. (Canada); **Matthew Brenner**, Univ. of California, Irvine (USA)

Program Committee: **Johannes F. de Boer**, Vrije Univ. Amsterdam (Netherlands); **Edmund Koch**, Universitätsklinikum Carl Gustav Carus Dresden (Germany); **David D. Sampson**, The Univ. of Western Australia (Australia); **Luc Thiberville**, Rouen Univ. Hospital (France); **Victor X. Yang M.D.**, Ryerson Univ. (Canada)

## Saturday 2 February

### SESSION 1

Room: 226 (Mezzanine) ..... Sat 8:30 am to 10:20 am

#### Clinical Imaging

Session Chair: **Stephen Lam M.D.**,  
The BC Cancer Agency Research Ctr. (Canada)

8:30 am: **Optical imaging in the clinic** (*Invited Paper*), Septimiu D. Murgu M.D., Univ. of California, Irvine (USA) ..... [8565-96]

9:00 am: **Co-registered optical coherence tomography and autofluorescence imaging methods**, Hamid Pahlevaninezhad, Anthony M. Lee, Daryl Chulho Hyun, Calum E. MacAulay, Stephen Lam, Pierre M. Lane, The BC Cancer Agency Research Ctr. (Canada) ..... [8565-97]

9:20 am: **OCT imaging in chronic obstructive pulmonary disease**, Keishi Ohtani M.D., Rosa Lopez-Lisbona M.D., Anthony M. Lee, Daryl Chulho Hyun, Tawimas Shaipanich M.D., Annette M. McWilliams M.D., Pierre M. Lane, The BC Cancer Agency Research Ctr. (Canada); Harvey O. Coxson, Vancouver General Hospital (Canada); Calum E. MacAulay, Stephen Lam M.D., The BC Cancer Agency Research Ctr. (Canada) ..... [8565-98]

9:40 am: **Characterization of pre-neoplastic and neoplastic bronchial lesions using laser Raman spectroscopy**, Hanna C. Pawluk, Michael A. Short, Stephen Lam M.D., Annette M. McWilliams M.D., Tawimas Shaipanich M.D., The BC Cancer Agency Research Ctr. (Canada); Diana N. Ionescu, The Univ. of British Columbia (Canada); Haishan Zeng, The BC Cancer Agency Research Ctr. (Canada) ..... [8565-99]

10:00 am: **Monitoring the response to segmental allergen challenge in allergic asthmatics**, Melissa J. Suter, Matthew B. Applegate, Alyssa J. Miller, Daniel Hamilos M.D., Josalyn L. Cho, R. Scott Harris, Alex C. Chee, Khay M. Tan, Andrew D. Luster, Benjamin D. Medoff, Massachusetts General Hospital (USA) and Harvard Medical School (USA) ..... [8565-100]

Coffee Break ..... Sat 10:20 am to 10:50 am

### SESSION 2

Room: 226 (Mezzanine) ..... Sat 10:50 am to 12:10 pm

#### Animal Models

Session Chair: **Matthew Brenner**, Univ. of California, Irvine (USA)

10:50 am: **Flexible transbronchial optical frequency domain imaging smart needle for biopsy guidance**, Khay M. Tan, Alex C. Chee M.D., Milen Shishkov, Lida P. Hariiri, Matthew B. Applegate, Brett E. Bouma, Melissa J. Suter, Massachusetts General Hospital (USA) ..... [8565-101]

11:10 am: **Endoscopic fluorescence-guidance system for lung cancer surgery: monitoring ICG with or without human serum albumin premixing**, Yujin Oh, Korea Univ. (Korea, Republic of); Yuhua Quan, Hyun Koo Kim, Korea Univ. College of Medicine (Korea, Republic of); Beop-Min Kim, Korea Univ. (Korea, Republic of) ..... [8565-102]

11:30 am: **Diffuse optical spectroscopy monitoring of pulmonary physiological and metabolic effects of combined smoke-cyanide exposure**, Jangwoon Lee, Beckman Laser Institute and Medical Clinic (USA); Sasan Sain, Univ. of California, Irvine School of Medicine (USA); David Mukai, David Yoon, Sari Mahon, Beckman Laser Institute and Medical Clinic (USA); Gerry R. Boss, Univ. of California, San Diego (USA); Matthew Brenner, Univ. of California, Irvine (USA) and Pulmonary and Critical Care Medicine Div., Univ. of California, Irvine Medical Ctr. (USA) ..... [8565-103]

11:50 am: **High speed three dimensional endoscopic optical frequency domain imaging for lung cancer diagnosis**, Jianan Li, Jianhua Mo, Frank Helderman, Mattijs de Groot, Johannes F. de Boer, Vrije Univ. Amsterdam (Netherlands) ..... [8565-104]

Lunch Break ..... Sat 12:10 pm to 1:40 pm

### SESSION 3

Room: 226 (Mezzanine) ..... Sat 1:40 pm to 3:00 pm

#### Alveolar Imaging

Session Chair: **Edmund Koch**,  
Universitätsklinikum Carl Gustav Carus Dresden (Germany)

1:40 pm: **Four-dimensional visualization of healthy and diseased subpleural alveolar dynamics in vivo**, William C. Warger II, Eman Namati, Massachusetts General Hospital (USA); Carolin I. Unglert, Massachusetts General Hospital (USA) and Air Liquide (France); Alex C. Chee M.D., Univ. of Calgary (Canada); Brett E. Bouma, Guillermo J. Tearney M.D., Massachusetts General Hospital (USA) ..... [8565-105]

2:00 pm: **Three-dimensional ultrahigh-resolution optical coherence tomography imaging of lung tissues**, Shutaro Ishida, Norihiko Nishizawa, Nagoya Univ. (Japan); Masashi Kitatsuji, Hiroyoshi Ohshima, HOYA Corp. (Japan); Miyoko Matsushima, Tsutomu Kawabe, Nagoya Univ. (Japan) ..... [8565-106]

2:20 pm: **Absolute measurements of subpleural alveolar compliance in vivo using OCT and model-based refraction correction**, Carolin I. Unglert, Wellman Ctr. for Photomedicine (USA) and Air Liquide (France); William C. Warger II, Massachusetts General Hospital (USA); Eman Namati, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA); Jeroen Hostens, Bruker microCT (Belgium); Reginald Birngruber, Univ. zu Lübeck (Germany); Brett E. Bouma, Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) ..... [8565-107]

2:40 pm: **Improved in situ imaging of alveoli with a side-facing OCT needle probe**, Bryden C. Quirk, Robert A. McLaughlin, Alex M. Pagnozzi, Brendan F. Kennedy, Peter B. Noble, David D. Sampson, The Univ. of Western Australia (Australia) ..... [8565-108]

Coffee Break ..... Sat 3:00 pm to 3:30 pm

### SESSION 4

Room: 226 (Mezzanine) ..... Sat 3:30 pm to 5:10 pm

#### New Techniques for Assessing the Lung

Session Chair: **Johannes de Boer**, Vrije Univ. Amsterdam (Netherlands)

3:30 pm: **Measuring cystic fibrosis mucus viscosity using micro-optical coherence tomography**, Bradford J. Diephuis, Massachusetts General Hospital (USA) and Harvard Medical School (USA); Eric Wilsterman, Linbo Liu, Kengyeh K. Chu, Kevin Boehm, Massachusetts General Hospital (USA); Alex Smith, Yao Li, Grace Houser, The Univ. of Alabama at Birmingham (USA); Gregory Dierksen, Massachusetts General Hospital (USA); Steven M. Rowe, The Univ. of Alabama at Birmingham (USA); Guillermo J. Tearney M.D., Massachusetts General Hospital (USA) ..... [8565-109]

3:50 pm: **Imaging of the mouse lung with scanning laser optical tomography**, Marko Heidrich, Laser Zentrum Hannover e.V. (Germany); Manuela Kellner, Rebecca Beigel, Hannover Medical School (Germany); Raoul-Amadeus Lorbeer, Laser Zentrum Hannover e.V. (Germany); Lars Knudsen, Medizinische Hochschule Hannover (Germany); Tammo Ripken, Laser Zentrum Hannover e.V. (Germany); Alexander Heisterkamp, Friedrich-Schiller-Univ. Jena (Germany); Heiko Meyer, Laser Zentrum Hannover e.V. (Germany); Mark P. Kühnel, Matthias Ochs, Hannover Medical School (Germany) ..... [8565-110]

4:10 pm: **Visualizing neutrophil trans-epithelial migration using OCT**, Linbo Liu, Massachusetts General Hospital (USA) and Harvard Medical School (USA); Wayne G. Shreffler, Gregory Dierksen, Mark E. Kusek, Eric Wilsterman, Kengyeh K. Chu, Bryan P. Hurley, Guillermo J. Tearney M.D., Massachusetts General Hospital (USA) ..... [8565-111]

4:30 pm: **Multi-scale fluorescence imaging of bacterial infection of the lung**, Joel N. Bixler, Ying Kong, Jeffrey D. Cirillo, Kristen C. Maitland, Texas A&M Univ. (USA) ..... [8565-112]



4:50 pm: **3D functional imaging of lung vasculature using Doppler optical coherence tomography**, Anthony M. Lee, Hamid Pahlevaninezhad, Daryl Chulho Hyun, Keishi Ohtani, Rosa Lopez Lisbona, Tawimas Shaipanich, Annette M. McWilliams, Stephen Lam, Calum E. MacAulay, The BC Cancer Agency Research Ctr. (Canada); Victor X. D. Yang, Ryerson Univ. (Canada); Pierre M. Lane, The BC Cancer Agency Research Ctr. (Canada) ..... [8565-113]

**BiOS Hot Topics**  
 Sat. 7:00 to 9:00 pm · Room 134  
 Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

**Sunday 3 February**

**SESSION 5**

**Room: 226 (Mezzanine) .....Sun 8:10 am to 10:00 am**

**Ex vivo Imaging of Lung Pathology**

Session Chair: **Melissa J. Suter**, Massachusetts General Hospital (USA)

8:10 am: **Pulmonary pathology (Invited Paper)**, Lida P. Hariri, Massachusetts General Hospital (USA) ..... [8565-114]

8:40 am: **Quantitative label-free multimodality nonlinear optical imaging for in situ differentiation of cancerous lesions**, Xiaoyun Xu, Xiaoyan Li, Jie Cheng, The Methodist Hospital Research Institute (USA); Zhengfan Liu, The Methodist Hospital Research Institute, System Medicine and Bioengineering Department (USA); Michael J. Thrall, Xi Wang, Xu Chen, Zhiyong Wang, Stephen T. C. Wong, The Methodist Hospital Research Institute (USA) ..... [8565-115]

9:00 am: **Pre-clinical study: use of full-field OCT to distinguish between malignant human lung tissue and adjacent tumor-free areas**, Sushmita Mukherjee, Manu Jain, Bekheit Salomoon, Navneet Narula, Nasser Altorki, Weill Cornell Medical College (USA); Fabrice Harms, LLTECH SAS (France); Katharine Grieve, Institut Langevin (France); Bertrand Le Conte De Poly, LLTECH SAS (France); A. Claude Boccara, Institut Langevin (France) and LLTECH SAS (France) ..... [8565-116]

9:20 am: **Optical frequency domain imaging of peripheral lung nodules**, Lida P. Hariri, Matthew B. Applegate, Mari Mino-Kenudson, Eugene J. Mark, Michael Lanuti, Colleen L. Channick, Guillermo J. Tearney M.D., Melissa J. Suter, Massachusetts General Hospital (USA) ..... [8565-117]

9:40 am: **Polarization-sensitive optical frequency domain imaging: identifying fibrosis in peripheral lung nodules**, Lida P. Hariri, Martin L. Villiger, Matthew B. Applegate, Khay M. Tan, Mari Mino-Kenudson, Eugene J. Mark, Brett E. Bouma, Melissa J. Suter, Massachusetts General Hospital (USA) ..... [8565-118]

Coffee Break ..... Sun 10:00 am to 10:20 am

**SESSION 6**

**Room: 226 (Mezzanine) .....Sun 10:20 am to 11:20 am**

**Cilia and Mucus Transport**

Session Chair: **Michael A. Choma M.D.**, Yale School of Medicine (USA)

10:20 am: **Quantitative optical imaging of impaired ciliary flow performance using a microfluidic chip-based mixing assay**, Stephan Jonas, Yale Univ. (USA) and RWTH Aachen (Germany); Elaine Zhou, Engin Deniz M.D., Yale Univ. (USA); Brendan Huang, Yale School of Medicine (USA); Yu Wu, Rong Fang, Yale Univ. (USA); Mustafa K. Khokha M.D., Michael A. Choma M.D., Yale School of Medicine (USA) ..... [8565-119]

10:40 am: **Automated micro-optical coherence tomography image processing for cystic fibrosis**, Bradford J. Diephuis, Massachusetts General Hospital (USA) and Harvard Medical School (USA); Christine P. Fleming, Linbo Liu, Massachusetts General Hospital (USA); Steven M. Rowe, The Univ. of Alabama at Birmingham (USA); Guillermo J. Tearney M.D., Massachusetts General Hospital (USA) ..... [8565-120]

11:00 am: **High throughput screening of primary airway epithelial cells in culture using  $\mu$ OCT**, Kengyeh K. Chu, Linbo Liu, Massachusetts General Hospital (USA); Grace Houser, The Univ. of Alabama at Birmingham (USA); Gregory Dierksen, Eric Wilsterman, Christine P. Fleming, Bradford J. Diephuis, Massachusetts General Hospital (USA); Steven M. Rowe, The Univ. of Alabama at Birmingham (USA); Guillermo J. Tearney M.D., Massachusetts General Hospital (USA) ..... [8565-121]

**PANEL DISCUSSION**

**Room: 226 (Mezzanine) .....Sun 11:20 am to 12:20 pm**

**Optical Photonics in Pulmonary: Applications and Limitations to Clinical Translation**

**Opening debate:** The future of Photonics and OCT in Pulmonary Medicine (pros and cons) followed by panel discussion.

Panelists: **Matthew Brenner**, Univ. of California, Irvine  
**Melissa Suter**, Massachusetts General Hospital  
**Stephen Lam**, The BC Cancer Agency Research Ctr.  
**Septimi Murgu**, Univ. of California, Irvine,  
**Lida Hariri**, Massachusetts General Hospital

# Diagnostic and Therapeutic Applications of Light in Cardiology

Conference Chairs: **Kenton W. Gregory M.D.**, Oregon Medical Laser Ctr. (USA); **Guillermo J. Tearney M.D.**, Massachusetts General Hospital (USA); **Laura Marcu**, Univ. of California, Davis (USA)

## Saturday 2 February

### SESSION 1

Room: Room 301 (Esplanade) . . . . . Sat 8:00 am to 10:00 am

#### Invited Session

Session Chair: **Guillermo J. Tearney M.D.**,  
Wellman Ctr. for Photomedicine (USA)

8:00 am: **Plaque Biomechanics**, Seemantini K. Nadkarni, Harvard Medical School (USA) . . . . . [8565-122]

8:40 am: **Artery Tissue Characterization**, Gijs van Soest, Erasmus MC (Netherlands) . . . . . [8565-123]

9:20 am: **Myocardial Optical Imaging**, Christine P. Fleming, Columbia Univ. (USA) . . . . . [8565-124]

Coffee Break . . . . . Sat 10:00 am to 10:30 am

### SESSION 2

Room: Room 301 (Esplanade) . . . . . Sat 10:30 am to 11:50 am

#### Advanced OCT

Session Chair: **WangYuhl Oh**, KAIST (Korea, Republic of)

10:30 am: **Magnetomotive optical coherence tomography for the assessment of atherosclerotic lesions using  $\alpha\beta3$ -targeted microspheres**, Adeel Ahmad, Jongsik Kim, Marina Marjanovic, Eric J. Chaney, Jonathan Rasio, Zita Hubler, Joanne Li, Kenneth S. Suslick, Stephen A. Boppart M.D., Univ. of Illinois at Urbana-Champaign (USA) . . . . . [8565-141]

10:50 am: **Towards intracoronary polarimetry**, Martin L. Villiger, Ellen Z. Zhang, Wellman Ctr. for Photomedicine (USA); WangYuhl Oh, KAIST (Korea, Republic of); Gijs van Soest, Heleen M. M. van Beusekom, Erasmus MC (Netherlands); Benjamin J. Vakoc, Wellman Ctr. for Photomedicine (USA); Seemantini K. Nadkarni, Harvard Medical School (USA); Brett E. Bouma, Wellman Ctr. for Photomedicine (USA) . . . . . [8565-125]

11:10 am: **Association between macrophage phagocytosis and inflammatory activity assessed by  $\mu$ OCT**, Manabu Kashiwagi, Massachusetts General Hospital (USA); Chen-Hsin Sun, Wellman Ctr. for Photomedicine (USA); Linbo Liu, Joseph A. Gardecki, Massachusetts General Hospital (USA); Atsushi Tanaka M.D., Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) . . . . . [8565-126]

11:30 am: **Ultrahigh frame-rate intravascular 2G-OCT**, Han Saem Cho, Tae Hwan Kim, Sun-Joo Jang, KAIST (Korea, Republic of); Alexey V. Dan-Chin-Yu, Hyunjoo In-Tech Co., Ltd. (Korea, Republic of); Taegee Min, S&H Co., Ltd. (Korea, Republic of); O-ki Kwon, Seoul National Univ. Bundang Hospital (Korea, Republic of); WangYuhl Oh, KAIST (Korea, Republic of) . . . . . [8565-127]

Lunch Break . . . . . Sat 11:50 am to 1:00 pm

### SESSION 3

Room: Room 301 (Esplanade) . . . . . Sat 1:00 pm to 2:20 pm

#### Tissue Characterization by OCT

Session Chair: **Gijs van Soest**, Erasmus MC (Netherlands)

1:00 pm: **Automated tissue characterization using intra-vascular optical coherence tomography**, Giovanni J. Ughi, Katholieke Univ. Leuven (Belgium); Tom Adriaenssens, Univ. Hospitals Leuven (Belgium); Peter R. Sinnaeve, Walter Desmet, Katholieke Univ. Leuven (Belgium) and Univ. Hospitals Leuven (Belgium); Jan D'Hooge, Katholieke Univ. Leuven (Belgium) . . . . . [8565-128]

1:20 pm: **Quantification of bright spots in IVOCT images of human coronary arteries**, Jennifer E. Phipps, The Univ. of Texas Health Science Ctr. at San Antonio (USA); Deborah Vela, The Texas Heart Institute (USA); J. Jacob Mancuso, David L. Halaney, The Univ. of Texas Health Science Ctr. at San Antonio (USA); Thomas E. Milner, The Univ. of Texas at Austin (USA); Marc D. Feldman, The Univ. of Texas Health Science Ctr. at San Antonio (USA) . . . . . [8565-129]

1:40 pm: **Validation of an ex-vivo model for atherosclerotic tissue characterization using optical coherence tomography**, Muthukaruppan Gnanadesigan, Erasmus MC (Netherlands); Steve White, Thomas Johnson, Univ. of Bristol (United Kingdom); Antonius F. W. van der Steen, Erasmus MC (Netherlands) and Netherlands Heart Institute (Netherlands); Gijs van Soest, Erasmus MC (Netherlands) . . . . . [8565-130]

2:00 pm: **Computer-aided image analysis for intravascular OCT**, David L. Wilson, Zhao Wang, Hong Lu, David Prabhu, Hiram G. Bezerra M.D., Marco A. Costa M.D., Andrew M. Rollins, Case Western Reserve Univ. (USA) . . [8565-131]

### SESSION 4

Room: Room 301 (Esplanade) . . . . . Sat 2:20 pm to 4:50 pm

#### Light and Sound

Session Chair: **Laura Marcu**, Univ. of California, Davis (USA)

2:20 pm: **Intravascular near-infrared fluorescence imaging with intravascular ultrasound guidance**, Adam J. Dixon, William H. Guilford, John A. Hossack, Univ. of Virginia (USA) . . . . . [8565-132]

2:40 pm: **Fully integrated intracoronary optical coherence tomography-ultrasound catheter for in vivo real-time assessment of vulnerable plaques**, Jiawen Li, Univ. of California, Irvine (USA); Xiang Li, The Univ. of Southern California (USA); Aidan Rane, Dilbahar Mohar, Univ. of California, Irvine School of Medicine (USA); Joseph Jing, Univ. of California, Irvine (USA); Abbey Johnston, Univ. of California, Irvine School of Medicine (USA); Jun Zhang, Shanshan Liang, Sari Mahon, Matthew Brenner, Univ. of California, Irvine (USA); K. Kirk Shung, Qifa Zhou, The Univ. of Southern California (USA); Pranav M. Patel, Univ. of California, Irvine School of Medicine (USA); Zhongping Chen, Univ. of California, Irvine (USA) . . . . . [8565-133]

3:00 pm: **Continuous monitoring of mixed venous oxygen saturation by transesophageal near-infrared echo-oximetry: a feasibility study**, Li Li, Massachusetts General Hospital (USA); Balachundhar Subramanian, Brett A. Simon, Harvard Medical School (USA); Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) . . . . . [8565-134]

Coffee Break . . . . . Sat 3:20 pm to 3:50 pm

3:50 pm: **Design and validation of a small-profile rotational catheter for combined fluorescence lifetime imaging (FLIm) and intravascular ultrasound (IVUS) imaging of coronary arteries**, Julien Bec, Dinglong M. Ma, Diego R. Yankelevich, Laura Marcu, Univ. of California, Davis (USA) . . [8565-135]

4:10 pm: **Integrated multispectral fluorescence lifetime imaging (FLIm) and intravascular ultrasound (IVUS) system for real-time bimodal imaging of arterial wall pathologies**, Dinglong M. Ma, Univ. of California, Davis (USA); Diego R. Yankelevich, Univ. of California, Davis (USA); Julien Bec, Jing Liu, Laura Marcu, Univ. of California, Davis (USA) . . . . . [8565-136]

4:30 pm: **Optoacoustic processing algorithms for intravascular imaging using interferometric line ultrasonic sensors**, Pablo González, Daniel C. Gallego, Horacio L. Lamela, Univ. Carlos III de Madrid (Spain) . . . . . [8565-137]

**SESSION 5**

**Room: Room 301 (Esplanade) . . . . . Sat 4:50 pm to 5:50 pm**

**OCT Stent Analysis**

Session Chair: **Giovanni Jacopo Ughi**,  
Katholieke Univ. Leuven (Belgium)

4:50 pm: **Fully-automatic 3-dimensional imaging of intravascular optical coherence tomography for stent assessment**, Giovanni J. Ughi, Katholieke Univ. Leuven (Belgium); Tom Adriaenssens, Univ. Hospitals Leuven (Belgium); Walter Desmet, Katholieke Univ. Leuven (Belgium) and Univ. Hospitals Leuven (Belgium); Jan D'Hooge, Katholieke Univ. Leuven (Belgium) . . . . . [8565-138]

5:10 pm: **High-speed automatic segmentation of intravascular stent struts in optical coherence tomography images**, Myounghee Han, Dongkwan Kim, WangYuhl Oh, Sukyoung Ryu, KAIST (Korea, Republic of) . . . . . [8565-139]

5:30 pm: **Effect of neointimal coverage on strut size measurements in IV-OCT imaging of coronary artery stents**, Sahar Elahi, The Univ. of Texas at Austin (USA); Marc D. Feldman, The Univ. of Texas Health Science Ctr. at San Antonio (USA); Jouke Dijkstra, Leids Univ. Medisch Ctr. (Netherlands); Thomas E. Milner, The Univ. of Texas at Austin (USA) . . . . . [8565-140]

**BiOS Hot Topics**

Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

**Sunday 3 February**

**SESSION 6**

**Room: Room 301 (Esplanade) . . . . . Sun 8:30 am to 9:50 am**

**Valves and Neoatherosclerosis**

Session Chair: **Guillermo J. Tearney M.D.**, Wellman Ctr. for Photomedicine (USA)

8:30 am: **Micrometer resolution optical coherence tomography (μOCT) imaging of human calcific aortic valve disease**, Chen-Hsin Sun, Duke-NUS Graduate Medical School (Singapore) and Wellman Ctr. For Photomedicine (USA); Linbo Liu, Manabu Kashiwagi, Joseph A. Gardecki, Massachusetts General Hospital (USA); Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) . . . . . [8565-142]

8:50 am: **Association of neointimal morphology by optical coherence tomography with rupture of neoatherosclerotic plaque very late after coronary stent implantation**, Antonios Karanasos, Jurgen Ligthart, Karen Witberg, Erasmus MC (Netherlands); Konstantinos Toutouzas, Univ. of Athens (Greece); Joost Daemen, Gijs van Soest, Muthukaruppan Gnanadesigan, Robert-Jan van Geuns M.D., Peter de Jaegere, Evelyn Regar M.D., Erasmus MC (Netherlands) . . . . . [8565-143]

9:10 am: **In-stent neoatherosclerosis: are first generation drug eluting stents different than bare metal stents? an optical coherence tomography study**, Antonios Karanasos, Karen Witberg, Jurgen Ligthart, Konstantinos Toutouzas, Gijs van Soest, Muthukaruppan Gnanadesigan, Joost Daemen, Nicholas van Mieghem, Felix Zijlstra, Evelyn Regar M.D., Erasmus MC (Netherlands) . . . . . [8565-144]

9:30 am: **Microscopic aortic valve imaging within the beating heart with OFDI**, William C. Warger II, Joseph A. Gardecki, Kevin A. Gallagher, Luis Guerrero, Farouc A. Jaffer M.D., Guillermo J. Tearney M.D., Massachusetts General Hospital (USA) . . . . . [8565-145]

Coffee Break . . . . . Sun 9:50 am to 10:20 am

**SESSION 7**

**Room: Room 301 (Esplanade) . . . . . Sun 10:20 am to 12:00 pm**

**Multimodality OCT Fluorescence**

Session Chair: **Zhongping Chen**,  
Beckman Laser Institute and Medical Clinic (USA)

10:20 am: **Application of dual-modality optical frequency domain imaging and near-infrared fluorescence imaging in intravascular optical imaging of preclinical animal studies**, Ehsan Hamidi, Wellman Ctr. for Photomedicine (USA); Tetsuya Hara, Eric A. Osborn, Adam Mauskapf, Massachusetts General Hospital (USA); Hongki Yoo, Hanyang Univ. (Korea, Republic of); Farouc A. Jaffer M.D., MGH Cardiovascular Research Ctr. (USA); Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) . . . . . [8565-146]

10:40 am: **Ex vivo imaging of human coronary atherosclerotic plaques by multimodality near-infrared autofluorescence and optical frequency domain imaging**, Hao Wang, Wellman Ctr. for Photomedicine (USA) and Boston Univ. (USA); Paulino Vacas-Jacques, Ehsan Hamidi, Wellman Ctr. for Photomedicine (USA); Joseph A. Gardecki, Massachusetts General Hospital (USA); Hongki Yoo, Hanyang Univ. (Korea, Republic of); Guillermo J. Tearney M.D., Wellman Ctr. for Photomedicine (USA) . . . . . [8565-147]

11:00 am: **Multimodal clinical system for fluorescence and optical frequency domain imaging to study the natural history of plaque progression**, Paulino Vacas-Jacques, Hao Wang, Ehsan Hamidi, Wellman Ctr. for Photomedicine (USA); Ali M. Fard, Harvard Medical School (USA); Hongki Yoo, Hanyang Univ. (Korea, Republic of); Joseph A. Gardecki, Massachusetts General Hospital (USA); Brett E. Bouma, Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) . . . . . [8565-148]

11:20 am: **Simultaneous high-resolution morphological and biochemical optical imaging of atherosclerosis**, Paritosh Pande, Sebina Shrestha, Jesung Park, Fred Clubb, Texas A&M Univ. (USA); Brial Walton, The Texas Heart Institute (USA); Brian E. Applegate, Javier A. Jo, Texas A&M Univ. (USA) . . . . . [8565-149]

11:40 am: **Multimodality intravascular endoscope for diagnosis of vulnerable plaques**, Shanshan Liang, Beckman Laser Institute and Medical Clinic (USA) and Dalian Univ. of Technology (China); Joseph Jing, Univ. of California, Irvine (USA); Xiang Li, The Univ. of Southern California (USA); Jiawen Li, Univ. of California, Irvine (USA); Jun Zhang, Beckman Laser Institute and Medical Clinic (USA); K. Kirk Shung, Qifa Zhou, The Univ. of Southern California (USA); Zhongping Chen, Beckman Laser Institute and Medical Clinic (USA) . . . . . [8565-150]

Lunch Break . . . . . Sun 12:00 pm to 1:30 pm

**SESSION 8**

**Room: Room 301 (Esplanade) . . . . . Sun 1:30 pm to 3:10 pm**

**Therapy**

Session Chair: **Kenton W. Gregory M.D.**,  
Oregon Medical Laser Ctr. (USA)

1:30 pm: **Electrophysiological and histological effects on canine right atrium by photosensitization reaction under catheterization in vivo**, Mei Takahashi, Emiyu Ogawa, Sayaka Motohashi, Tetsuya Nakamura, Hiroshige Kawakami, Naoki Machida, Arisa Ito, Keio Univ. (Japan); Takehiro Kimura, Seiji Takatsuki, Kotaro Fukumoto, Shunichiro Miyoshi, Keiichi Fukuda, Keio Univ. School of Medicine (Japan); Tsunenori Arai, Keio Univ. (Japan) . . . . . [8565-151]

1:50 pm: **Thermal sealing of blood vessels using infrared lasers**, Christopher M. Cilip, Sarah B. Rosenbury, Nicholas Giglio, Thomas C. Hutchens, Gino R. Schweinsberger, The Univ. of North Carolina at Charlotte (USA); Duane E. Kerr, Cassandra Latimer, William H. Nau Jr., Covidien (USA); Nathaniel M. Fried, The Univ. of North Carolina at Charlotte (USA) . . . . . [8565-152]

2:10 pm: **Thermal ablation of WHHLM rabbit atherosclerotic plaque by quantum cascade laser in the 5.7-μm wavelength range**, Keisuke Hashimura, Katsunori Ishii, Osaka Univ. (Japan); Naota Akikusa, Tadataka Edamura, Harumasa Yoshida, Hamamatsu Photonics K.K. (Japan); Kunio Awazu, Osaka Univ. (Japan) . . . . . [8565-153]

2:30 pm: **Optical pacing of the adult rabbit heart**, Yves T. Wang, Yongqiu Q. Doughman, Michiko Watanabe, Case Western Reserve Univ. (USA); Yuanna Cheng M.D., Cleveland Clinic Lerner Research Institute (USA); Andrew M. Rollins, Michael W. Jenkins, Case Western Reserve Univ. (USA) . . . . . [8565-154]

2:50 pm: **Laser-driven short-duration heating angioplasty: dilatation performance in cadaver atherosclerotic femoral arteries**, Natsumi Shimazaki, Sho Naruse, Tsunenori Arai, Nobuaki Imanishi, Sadakazu Aiso, Keio Univ. (Japan) . . . . . [8565-155]

Coffee Break . . . . . Sun 3:10 pm to 3:40 pm



**SESSION 9**

**Room: Room 301 (Esplanade) . . . . .Sun 3:40 pm to 5:20 pm**

**Spectroscopy**

Session Chair: **Christine P. Fleming**,  
Massachusetts General Hospital (USA)

3:40 pm: **Lipid distribution imaging in in-vitro artery model by 1.7- $\mu$ m spectroscopic spectral-domain optical coherence tomography**, Masato Tanaka, Mitsuharu Hirano, Takemi Hasegawa, Ichiro Sogawa, Sumitomo Electric Industries, Ltd. (Japan). . . . . [8565-156]

4:00 pm: **Near-infrared hyperspectral imaging of atherosclerotic plaque in WHHLM rabbit artery**, Katsunori Ishii, Akiko Kitayabu, Kota Omiya, Norihiro Honda, Kunio Awazu, Osaka Univ. (Japan). . . . . [8565-157]

4:20 pm: **Heat as a contrast agent to enhance thermal imaging of blood vessels**, Jason R. Case, Susan R. Trammell, Madison A. Young, Michael X. Crown, Uriah Israel, The Univ. of North Carolina at Charlotte (USA) . . [8565-158]

4:40 pm: **Simultaneous microstructural and compositional imaging using co-registered optical frequency domain imaging and near-infrared spectroscopy for cardiovascular disease diagnostics**, Ali M. Fard, Harvard Medical School (USA); Ehsan Hamidi, Paulino Vacas-Jacques, Hao Wang, Guillermo J. Tearney M.D., Wellman Ctr. for Photomedicine (USA) . . . [8565-159]

5:00 pm: **Intravascular spectroscopic optical coherence tomography for automated detection of lipid**, Christine P. Fleming, Joseph A. Gardecki, Massachusetts General Hospital (USA); Jocelyn Eckert, Atsushi Tanaka M.D., Wellman Ctr. for Photomedicine (USA); Melissa W. Haskell, Massachusetts General Hospital (USA); Giora Wiesz, Columbia Univ. Medical Ctr. (USA); Brett E. Bouma, Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) . . . . . [8565-160]

# Optical Techniques in Neurosurgery, Brain Imaging, and Neurobiology

Conference Chairs: **Henry Hirschberg M.D.**, Beckman Laser Institute and Medical Clinic (USA); **Steen J. Madsen**, Univ. of Nevada, Las Vegas (USA)

Program Committee: **David Abookasis**, Ariel Univ. Ctr. of Samaria (Israel); **Frederic Leblond**, Thayer School of Engineering at Dartmouth (USA); **Marlon Stephen Mathews M.D.**, Univ. of California, Irvine (USA); **Herbert Stepp**, Ludwig-Maximilians-Univ. München (Germany); **Victor X. Yang M.D.**, Ryerson Univ. (Canada)



## Saturday 2 February

### SESSION 1

Room: 220 (Mezzanine) ..... Sat 8:20 am to 10:00 am

#### Spectroscopy and Tomography: Preclinical

Session Chair: **Steen J. Madsen**, Univ. of Nevada, Las Vegas (USA)

8:20 am: **Hyperspectral functional imaging of the human brain**, Vladislav Toronov, Ryerson Univ. (Canada) ..... [8565-162]

8:40 am: **Spontaneous FAD dynamics reveal functional connectivity patterns in mice**, Patrick W. Wright, Adam Q. Bauer, Brian R. White M.D., Joseph P. Culver, Washington Univ. School of Medicine in St. Louis (USA) ..... [8565-164]

9:00 am: **A time-gated near-infrared spectroscopic imaging device for human brain activation**, Patrick Poulet, Wilfried Uhring, Univ. de Strasbourg (France); Walter Hanselmann, montena emc (Switzerland); Rene Glazerborg, Photonis (Netherlands); Farouk Nouzi, Chantal-Virginie Zint, Univ. de Strasbourg (France); Werner Hirschi, montena emc (Switzerland) ..... [8565-166]

9:20 am: **Orthogonal diffuse near-infrared reflectance spectroscopy allows to assess cerebral dysfunction and temperature variations following heatstroke on a mouse model**, David Abookasis, Elad Zafrir, Elimelech Neshet, Albert Pinchasov, Shmuel Sternklar, Ariel Univ. Ctr. of Samaria (Israel); Marlon S. Mathews, Beckman Laser Institute and Medical Clinic (USA) ..... [8565-168]

9:40 am: **Generation of spreading depolarization and prolonged hypoxia in rat brain exposed to a laser-induced shock wave**, Satoko Kawauchi, Shunichi Sato, National Defense Medical College (Japan); Izumi Nishidate, Tokyo Univ. of Agriculture and Technology (Japan); Hiroshi Nawashiro, Hiroshi Ashida, National Defense Medical College (Japan) ..... [8565-170]

Coffee Break ..... Sat 10:00 am to 10:30 am

### SESSION 2

Room: 220 (Mezzanine) ..... Sat 10:30 am to 11:50 am

#### Optical Coherence Tomography

Session Chair: **Victor X. D. Yang**, Ryerson Univ. (Canada)

10:30 am: **in vivo and in situ detection of atherosclerotic plaques using full-range complex-conjugate-free spectral domain optical coherence tomography in the murine carotid**, Yong Huang, Robert Wicks, Johns Hopkins Univ. (USA); Kang Zhang, GE Global Research (USA); Mingtao Zhao, Lee Hwang, Johns Hopkins Univ. (USA); Betty Tyler, Gustavo Pradilla, The Johns Hopkins Hospital (USA); Jin U. Kang, Johns Hopkins Univ. (USA) ..... [8565-172]

10:50 am: **Optical coherence tomography detection of shear wave propagation in inhomogeneous tissue equivalent phantoms**, Marjan Razani, Adrian Mariampillai, Beau A. Standish, Victor X. D. Yang, Michael C. Kolios, Ryerson Univ. (Canada) ..... [8565-173]

11:10 am: **Windows to the brain: novel concept for providing non-invasive, chronic access to brain for optical diagnostics and therapeutics**, Yasaman Damestani, B. Hyle Park, Devin K. Binder, Javier E. Garay, Masaru P. Rao, Guillermo Aguilar, Univ. of California, Riverside (USA) ..... [8565-175]

11:30 am: **Blood flow velocity measurement by endovascular Doppler optical coherence tomography**, Cuiru Sun, Univ. of Toronto (Canada); Barry Vuong, Felix Nolte, Ryerson Univ. (Canada); Kyle Cheng, Kenneth K. C. Lee, Univ. of Toronto (Canada); Beau A. Standish, Ryerson Univ. (Canada); Brian K. Courtney M.D., Sunnybrook Health Sciences Ctr. (Canada); Tom R. Marotta, St. Michael's Hospital (Canada); Adrian Mariampillai, Victor X. D. Yang, Ryerson Univ. (Canada) ..... [8565-236]

Lunch/Exhibition Break ..... Sat 11:50 am to 1:20 pm

### SESSION 3

Room: 220 (Mezzanine) ..... Sat 1:20 pm to 3:00 pm

#### Microscopy

Session Chair: **Herbert Stepp**, Ludwig-Maximilians-Univ. München (Germany)

1:20 pm: **Video-rate resonant scanning multiphoton microscopy: an emerging technique for intravital imaging**, Euiheon Chung, Gwangju Institute of Science and Technology (Korea, Republic of); Nathaniel D. Kirkpatrick, Daniel C. Cook, Xiaoxing Han, Gabriel Gruionu, Shan Liao, Lance L. Munn, Timothy P. Padera, Dai Fukumura M.D., Rakesh K. Jain, Massachusetts General Hospital (USA) ..... [8565-176]

1:40 pm: **Multimodal microscopy imaging of oxygen delivery in mouse cerebral microvasculature**, Sava Sakadžić, Emiri T. Mandeville, Massachusetts General Hospital (USA); Anna Devor, Massachusetts General Hospital (USA) and Univ. of California, San Diego (USA); Mohammad A. Yaseen, Joe J. Musacchia, Massachusetts General Hospital (USA); Louis Gagnon, Harvard-MIT (USA); Katharina Eikermann-Haerter, Massachusetts General Hospital (USA); Emmanuel Roussakis, Univ. of Pennsylvania (USA); Vivek J. Srinivasan, Cenk Ayata, Eng H. Lo, Massachusetts General Hospital (USA); Anders M. Dale, Univ. of California, San Diego (USA); Sergei A. Vinogradov, Univ. of Pennsylvania (USA); David A. Boas, Massachusetts General Hospital (USA) ..... [8565-177]

2:00 pm: **Investigation of human multiple sclerosis lesions using high resolution spectrally unmixed CARS microscopy**, Kelvin W. Poon, Craig Brideau, Wulin Teo, Univ. of Calgary (Canada); Geert J. Schenk, Roel Klaver, Vrije Univ. Medical Ctr. (Netherlands); Jean H. Kawasoe, Univ. of Calgary (Canada); Jeroen Geurts, Vrije Univ. Medical Ctr. (Netherlands); Peter K. Stys, Univ. of Calgary (Canada) ..... [8565-179]

2:20 pm: **Comparative evaluation of methylene blue and demeclocycline for enhancing optical contrast of brain neoplasms**, Dennis J. Wirth, Univ. of Massachusetts Lowell (USA); Matija Snuderl, Harvard Medical School (USA); Sameer A. Sheth, Churl-Su Kwon, William Curry, Massachusetts General Hospital (USA); Anna N. Yaroslavsky, Univ. of Massachusetts Lowell (USA) and Massachusetts General Hospital (USA) and Harvard Medical School (USA) ..... [8565-179]

2:40 pm: **Three-dimensional imaging of whole rat sciatic nerve treatment response by tissue clearing**, Yookyung Jung, Wellman Ctr. for Photomedicine (USA) and Harvard Medical School (USA) and Massachusetts General Hospital (USA); Cameron P. Keating, Prabhu Senthil-Kumar, Harvard Medical School (USA) and Massachusetts General Hospital (USA); Jonathan N. Soriano, Joanna Ng, Mark A. Randolph, Massachusetts General Hospital (USA); Jonathan M. Winograd, Harvard Medical School (USA) and Massachusetts General Hospital (USA); Conor L. Evans, Wellman Ctr. for Photomedicine (USA) and Harvard Medical School (USA) and Massachusetts General Hospital (USA) ..... [8565-180]

Coffee Break ..... Sat 3:00 pm to 3:30 pm

**SESSION 4**

**Room: 220 (Mezzanine) . . . . . Sat 3:30 pm to 5:50 pm**

**Resection Guidance**

Session Chair: **Frederic Leblond**,  
Thayer School of Engineering at Dartmouth (USA)

3:30 pm: **Concurrent multi-scale imaging combining optical coherence tomography with MRI for neurosurgery guidance**, Chia-Pin Liang, Il Kyoon Kim, Bo Yang, Univ. of Maryland, College Park (USA); George Makris, Univ. of Maryland School of Medicine (USA); Jaydev Desai, Univ. of Maryland, College Park (USA); Rao L. Gullapalli, Univ. of Maryland School of Medicine (USA); Yu Chen, Univ. of Maryland, College Park (USA) . . . . . [8565-181]

3:50 pm: **Developing intraoperative confocal microscopes for guiding brain tumor resection**, Steven Y. Leigh, Danni Wang, Ye Chen, Arnavi Varshney, Jonathan T. C. Liu, Stony Brook Univ. (USA) . . . . . [8565-182]

4:10 pm: **High sensitive time-resolved thermography and multivariate image analysis of the cerebral cortex for intrasurgical diagnostic**, Julia Hollmich, Nico Hoffmann, Christian Schnabel, Technische Univ. Dresden (Germany); Saskia Kuchler, Stephan B. Sobotta, Matthias Kirsch, Gabriele Schackert, Edmund Koch, Universitätsklinikum Carl Gustav Carus Dresden (Germany); Gerald Steiner, Technische Univ. Dresden (Germany) . . . . . [8565-183]

4:30 pm: **Non-invasive imaging of tumorous and healthy tissue in the human brain**, Fabrice Harms, LLTECH SAS (France); Bertrand Devaux, Pascale Varlet, Hôpital Sainte Anne (France); Katharine Grieve, Anne Latrive, Institut Langevin (France); Bertrand Le Conte De Poly, LLTECH SAS (France); A. Claude Boccara, Institut Langevin (France) and LLTECH SAS (France) . . . . . [8565-184]

4:50 pm: **Progress in translating multimodal nonlinear microscopy from basic research into neurosurgical praxis**, Jürgen Popp, Tobias Meyer, Anna Medyukhina, Institut für Photonische Technologien e.V. (Germany); Martin Baumgartl, Thomas Gottschall, Jens Limpert, Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany); Benjamin Dietzek, Institut für Photonische Technologien e.V. (Germany); Michael Schmitt, Friedrich-Schiller-Univ. Jena (Germany) . . . . . [8565-185]

5:10 pm: **Raman and infrared spectroscopic imaging for biochemical and morphological assessment of brain tumors**, Christoph Krafft, Norbert Bergner, Institut für Photonische Technologien e.V. (Germany); Bernd F. M. Romeike, Rupert Reichart, Rolf Kalf, Friedrich-Schiller-Univ. Jena (Germany); Kathrin D. Geiger, Gabriele Schackert, Technische Univ. Dresden (Germany); Jürgen Popp, Institut für Photonische Technologien e.V. (Germany) and Friedrich-Schiller-Univ. Jena (Germany) . . . . . [8565-186]

5:30 pm: **Analysis of specific factors of the heme biosynthesis in correlation to 5-ALA induced fluorescence in gliomas**, Georg Widhalm, Barbara Kiesel, Daniela Lötsch, Mauricio Moreno M.D., Engelbert Knosp, Walter Berger, Stefan Wolfsberger, Medizinische Univ. Wien (Austria) . . . . . [8565-187]

**BiOS Hot Topics**  
Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

**Sunday 3 February**

**SESSION 5**

**Room: 220 (Mezzanine) . . . . . Sun 8:00 am to 10:00 am**

**Spectroscopy and Tomography: Clinical**

Session Chair: **David Abookasis**, Ariel Univ. Ctr. of Samaria (Israel)

8:00 am: **Monitoring of human brain function in risk decision-making task by near-infrared spectroscopy using a pixel-wised general linear model**, Lin Li, Zi-Jing Lin, Mary Cazzell, Hanli Liu, The Univ. of Texas at Arlington (USA) . . . . . [8565-161]

8:20 am: **Validation of fNIRS in the visual cortex of neonates via simultaneous fNIRS/fMRI imaging**, Jeffrey W. Barker, Ardalan Arabi, Ashok Panigrahy M.D., Theodore J. Huppert, Univ. of Pittsburgh (USA) . . . . . [8565-163]

8:40 am: **Test-retest assessment of functional near-infrared spectroscopy to measure risk decision making in young adults**, Lin Li, Zi-Jing Lin, Mary Cazzell, Hanli Liu, The Univ. of Texas at Arlington (USA) . . . . . [8565-165]

9:00 am: **Noninvasive optical evaluation of low frequency oscillations in prefrontal cortex hemodynamics during visual verbal working memory**, Ting Li, Univ. of Science and Technology of China (China) . . . . . [8565-167]

9:20 am: **Study of resting state functional connectivity on the prefrontal cortex by using functional optical topography**, Ching-Cheng Chuang, National Yang-Ming Univ. (Taiwan); Yao-Sheng Hsieh, National Taiwan Univ. (Taiwan); Kuen Feng Lin, National Yang-Ming Univ. (Taiwan); Tsan-Chi Liu, Chung Yuan Christian Univ. (Taiwan); Chia-Wei Sun, National Chiao Tung Univ. (Taiwan) . . . . . [8565-169]

9:40 am: **Simultaneous NIRS and kinematics study of planning and execution of motor skill task in subjects with and without cerebral palsy**, Ujwal Chaudhary, Jean Gonzalez, Young-Jin Jung, Jennifer Davis, Patricia Gonzalez, Kyle Rice, Martha Bloyer, Leonard Elbaum, Anuradha Godavarty, Florida International Univ. (USA) . . . . . [8565-171]

**POSTER SESSION AND COFFEE BREAK**

**Room: Hall A, BiOS Expo . . . . . Sun 3:00 pm to 4:00 pm**

Attendees are invited to view the conference posters, which will be available on Saturday and Sunday. The poster session, with authors present, will be held from 3:00 to 4:00 PM on Sunday afternoon, in conjunction with the coffee break.

**POSTER AUTHORS:** Poster setup is scheduled from 10:00 to 11:30 AM on Saturday and Sunday in South Hall A. Please plan to stand with your poster during the poster session on Sunday from 3:00 to 4:00 PM. Posters may remain on the boards both Saturday and Sunday but must be removed following the Sunday afternoon poster session/coffee break. Posters left on the boards after this time will be discarded.

**Changes in cerebral hemodynamics in response to medical therapy for patent ductus arteriosus: prediction of treatment outcome in preterm infants**, Mustafa Ridha, Lawson Health Research Institute (Canada); Rohit Arora, David Lee, Royal Victoria Hospital (Canada); Keith St. Lawrence, Lawson Health Research Institute (Canada); Ting-Yim Lee, Robarts Research Institute (Canada) . . . . . [8565-188]

**Spatial frequency domain imaging for quantitative fluorescence image-guided brain tumor surgery: a comparative study**, Mira Sibai, Princess Margaret Hospital (Canada); Michael J. Daly, MaRS Ctr. (Canada); Israel Veilleux, Princess Margaret Hospital (Canada); Anthony Kim, Sunnybrook Health Sciences Ctr. (Canada); Rolf B. Saagar, Beckman Laser Institute and Medical Clinic (USA); David J. Cuccia, Modulated Imaging, Inc. (USA); Brian C. Wilson, Princess Margaret Hospital (Canada) . . . . . [8565-189]

**Hemodynamic responses to odor stimulation in the main olfactory bulb of rats using NIRS**, Seungduk Lee, Korea Univ. (Korea, Republic of); Jaewoo Shin, Hwan Gon Lee, Chin Su Koh, Jae-Hong Park, Changkyun Im, Hallym Univ. (Korea, Republic of); Choong-Ki Kim, Korea Univ. (Korea, Republic of); In Seok Seo, Hyung-Cheul Shin, Hallym Univ. (Korea, Republic of); Beop-Min Kim, Korea Univ. (Korea, Republic of) . . . . . [8565-190]

**Monitoring brain radiation therapy effects using speckle analysis in optical coherence tomography images**, Andras Lindenmaier, Ontario Cancer Institute (Canada) and Univ. of Toronto (Canada); Kelly Burrell, Hospital for Sick Children (SickKids) (Canada); Leigh Conroy, Ralph DaCosta, Ontario Cancer Institute (Canada); Costel Fluerau, National Research Council Canada (Canada); Gelareh Zadeh, Univ. of Toronto (Canada) and Toronto Western Hospital (Canada); Alex I. Vitkin, Ontario Cancer Institute (Canada) . . . . . [8565-191]

**Effects of combined photochemical internalization and hyperthermia are sensitively dependent on radiant exposure**, Steen J. Madsen, Christina Schlazer, Aaron Andersen, Stephanie Molina, Univ. of Nevada, Las Vegas (USA); Henry Hirschberg, Univ. of California, Irvine (USA) . . . . . [8565-192]

**Unidirectional x-ray microbeam radiosurgery of infantile neuraxial malignancies: estimations of tolerable valley doses**, Albert L. Hanson, Brookhaven National Lab. (USA); Jean A. Laissue, Univ. Bern (Switzerland); Daniel N. Slatkin, Nanoprobes, Inc. (USA) . . . . . [8565-235]



# Neurophotonics

Conference Chairs: **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA); **E. Duco Jansen**, Vanderbilt Univ. (USA)



## Monday 4 February

### SESSION 1

Room: 202 (Mezzanine) ..... Mon 8:30 am to 10:30 am

#### Optical Activation

Session Chair: **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA)

8:30 am: **Optical activation of hippocampal neurons using short pulse laser**, Jaemyung Jang, Seoul National Univ. (Korea, Republic of); Chanyoung Lee, Ulsan National Institute of Science and Technology (Korea, Republic of); Sungchul Bae, Accendo Systems (USA); Nooli Jeon, Seoul National Univ. (Korea, Republic of); Woongyu Jung, Ulsan National Institute of Science and Technology (Korea, Republic of) ..... [8565-195]

8:50 am: **Closing a Venus Flytrap with electrical and mid-IR photon stimulations**, David M. Eisen, Univ. of Maryland, Baltimore County (USA); Douglas Janssen, Greater Grace Christian Academy (USA); Xing Chen, Fow-Sen Choa, Dan Kostov, Univ. of Maryland, Baltimore County (USA); Jenyu Fan, AdTech Optics, Inc. (USA) ..... [8565-206]

9:10 am: **Thresholds of sensation and selective activation of nociceptors in the healthy human hand and foot**, Ernest L. Scott, Thomas Johnson, Colorado State Univ. (USA) ..... [8565-194]

9:30 am: **in vivo optical activation of astrocytes as a therapeutic strategy for neurodegenerative diseases**, Yuanxin Chen, James J. Mancuso, Zhong Xue, Zhen Zhao, Stephen T. C. Wong, The Methodist Hospital Research Institute (USA) ..... [8565-202]

9:50 am: **Characteristics of cellular-scale neural responses to holographically-patterned photo-thermal and optogenetic stimulation**, Shy Shoham, Nairouz Farah, Alaa Zoubi, Technion-Israel Institute of Technology (Israel); Inna Reutsky, Ruppin Academic Ctr. (Israel); Suhail Matar, Lior golan, Inbar Brosh, Technion-Israel Institute of Technology (Israel) ..... [8565-201]

10:10 am: **Optogenetic stimulation of cholinergic projection neurons as a potential therapy for Alzheimer's Disease**, James J. Mancuso, Yuanxin Chen, Zhong Xue, The Methodist Hospital Research Institute (USA); Zhen Zhao, The Methodist Hospital Research Institute (USA) and Southeast Univ. Medical School (China); Stephen T. C. Wong, The Methodist Hospital Research Institute (USA) ..... [8565-199]

Coffee Break ..... Mon 10:30 am to 11:00 am

### SESSION 2

Room: 202 (Mezzanine) ..... Mon 11:00 am to 12:20 pm

#### Infrared Neural Stimulation I

Session Chair: **Matthew D. Keller**, Lockheed Martin Aculight (USA)

11:00 am: **Comparison of three pulsed infrared lasers for optical stimulation of the rat prostate cavernous nerves**, Charlotte D. Stahl, Serhat Tozburun, Thomas C. Hutchens, The Univ. of North Carolina at Charlotte (USA); Gwen A. Lagoda, Arthur L. Burnett M.D., Johns Hopkins Medical Institutions (USA); Matthew D. Keller, Lockheed Martin Aculight (USA); Nathaniel M. Fried, The Univ. of North Carolina at Charlotte (USA) ..... [8565-193]

11:20 am: **Inhibiting neurons with infrared light**, Austin R. Duke, Vanderbilt Univ. (USA); Hillel Chiel, Case Western Reserve Univ. (USA); E. Duco Jansen, Vanderbilt Univ. (USA) ..... [8565-217]

11:40 am: **Radiant energy during infrared neural stimulation at the target structure**, Claus-Peter Richter, Northwestern Univ. (USA); Suhrud M. Rajguru, Univ. of Miami (USA); Ryan Stafford, Alison M. Yates, Bryan J. Norton, Lockheed Martin Aculight (USA); Agnella I. Matic, Northwestern Univ. (USA); Stuart R. Stock, Northwestern Univ. Feinberg School of Medicine (USA) ..... [8565-214]

12:00 pm: **Reduced artifact from optical point stimulation enables optical mapping of embryonic quail hearts**, Yves T. Wang, Shi Gu, Case Western Reserve Univ. (USA); Andreas A. Werdich, MetroHealth Medical Ctr. (USA); Andrew M. Rollins, Michael W. Jenkins, Case Western Reserve Univ. (USA) ..... [8565-205]

Lunch Break ..... Mon 12:20 pm to 1:50 pm

### SESSION 3

Room: 202 (Mezzanine) ..... Mon 1:50 pm to 3:30 pm

#### Infrared Neural Stimulation II

Session Chair: **E. Duco Jansen**, Vanderbilt Univ. (USA)

1:50 pm: **Evaluating the cellular mechanisms of Infrared neural stimulation in the rat somato-sensory cortex**, Jonathan M. Cayce, Vanderbilt Univ. (USA); Matthew B. Bouchard, Columbia Univ. (USA); Mykyta Chernov, Vanderbilt Univ. (USA); Brenda Chen, Lauren Grosberg, Columbia Univ. (USA); E. Duco Jansen, Vanderbilt Univ. (USA); Elizabeth M. Hillman, Columbia Univ. (USA); Anita Mahadevan-Jansen, Vanderbilt Univ. (USA) ..... [8565-216]

2:10 pm: **Optical control the visual perception of awake non-human primate with infrared neural stimulation**, Gang Chen, Jonathan M. Cayce, Xiang Ye, E. Duco Jansen, Anita Mahadevan-Jansen, Anna W. Roe, Vanderbilt Univ. (USA) ..... [8565-208]

2:30 pm: **Longterm infrared neural stimulation in the chronic implanted cat**, Agnella I. Matic, Northwestern Univ. (USA); Alan M. Robinson, Northwestern Univ. Feinberg School of Medicine (USA); Hunter Young, Suhrud M. Rajguru, Stuart R. Stock, Northwestern Univ. (USA); Claus-Peter Richter, Northwestern Univ. (USA) and Northwestern Univ. Feinberg School of Medicine (USA) ..... [8565-215]

2:50 pm: **Responses to amplitude modulated infrared stimuli in the guinea pig inferior colliculus**, Claus-Peter Richter, Northwestern Univ. (USA) ..... [8565-212]

3:10 pm: **Masking of infrared neural stimulation (INS) in hearing and deaf guinea pigs**, Hunter Young, Sama Smit Kadalia, Claus-Peter Richter, Northwestern Univ. (USA) ..... [8565-213]

Coffee Break ..... Mon 3:30 pm to 4:00 pm

### SESSION 4

Room: 202 (Mezzanine) ..... Mon 4:00 pm to 5:20 pm

#### Neurophotonics Instrumentation

Session Chair: **Anna W. Roe**, Vanderbilt Univ. (USA)

4:00 pm: **Optrode arrays for infrared neural stimulation**, Tanya Vanessa F. Abaya, Univ. of Utah (USA); Mohit Diwekar, Steve Blair, Prashant Tathireddy, The Univ. of Utah (USA); Loren Rieth, The Univ. of Utah (USA); Gregory A. Clark, Florian Solzbacher, The Univ. of Utah (USA) ..... [8565-210]

4:20 pm: **Infrared neural stimulation hardware development and challenges**, Matthew D. Keller, David M. Braun, Lockheed Martin Aculight (USA); Matthew M. Dummer, Mary Hibbs-Brenner, Vixar Inc. (USA) ..... [8565-211]

4:40 pm: **Flexible optrode for localized light delivery and electrical recording**, Wei-Chuan Shih, Univ. of Houston (USA) ..... [8565-207]

5:00 pm: **Modeling ultra-violet metal-semiconductor lasers for neurophotonics**, Meng-Mu Shih, Univ. of Florida (USA) ..... [8565-209]

**Tuesday 5 February**

**SESSION 5**

**Room: 202 (Mezzanine) . . . . . Tue 8:30 am to 10:30 am**

**Neuro Imaging**

Session Chair: **Claus-Peter Richter**, Northwestern Univ. (USA)

**8:30 am: Use of functional near-infrared spectroscopy to monitor cortical plasticity induced by transcranial direct current stimulation**, Bilal Khan, Nathan Hervey, The Univ. of Texas at Arlington (USA); Ann Stowe, Timea Hodics, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); George Alexandrakis, The Univ. of Texas at Arlington (USA) . . . . . [8565-196]

**8:50 am: Induction of chronic epileptic seizure and corresponding hemodynamic monitoring in mouse model**, Seungduk Lee, Korea Univ. (Korea, Republic of); Areum Jo, Jeong-Eun Sim, Sungkyunkwan Univ. (Korea, Republic of); Choong-Ki Kim, Hyuna Song, Korea Univ. (Korea, Republic of); Minah Suh, Sungkyunkwan Univ. (Korea, Republic of); Beop-Min Kim, Korea Univ. (Korea, Republic of) . . . . . [8565-197]

**9:10 am: Altered functional connectivity and hemodynamics following ischemic stroke in mice**, Adam Q. Bauer, Andrew Kraft, Patrick Wright, Washington Univ. School of Medicine in St. Louis (USA); Jin-Moo Lee, Washington Univ. in St. Louis (USA); Joseph P. Culver, Washington Univ. School of Medicine in St. Louis (USA) . . . . . [8565-204]

**9:30 am: Concurrent functional near-infrared imaging and motion tracking to assess functional improvement of children with cerebral palsy after constrained induced motion therapy**, Bilal Khan, Nathan Hervey, The Univ. of Texas at Arlington (USA); Laura Shagman, The Univ. of Texas at Dallas (USA); Fenghua Tian, Hanli Liu, The Univ. of Texas at Arlington (USA); Duncan MacFarlane, The Univ. of Texas at Dallas (USA); George Alexandrakis, The Univ. of Texas at Arlington (USA) . . . . . [8565-198]

**9:50 am: Chronic multiphoton microscopy of simultaneous neuronal activity from all cortical layers in awake mice using microprisms**, Michael J. Levene, Yale Univ. (USA); Mark Andermann, Harvard Univ. (USA); Markus Wolfel, Nathan Gilfoy, Yale Univ. (USA); Glenn Goldey, Northeastern Univ. (USA); Robert N. S. Sachdev, David A. McCormick, Yale Univ. (USA); Clay Reid, Harvard Univ. (USA) . . . . . [8565-200]

**10:10 am: A common path optical coherence tomography based electrode for structural imaging of nerves and recording of action potentials**, M. Shahidul Islam, Md. Rezuhanul Haque, Christian M. Oh, Yan Wang, B. Hyle Park, Univ. of California, Riverside (USA) . . . . . [8565-203]

# Optics in Bone Surgery and Diagnostics

Conference Chair: **Andreas Mandelis**, Univ. of Toronto (Canada)

Conference Co-Chair: **Michael D. Morris**, Univ. of Michigan (USA)

Program Committee: **Robert R. Alfano**, The City College of New York (USA); **Bennett T. Amaechi**, The Univ. of Texas Health Science Ctr. at San Antonio (USA); **Peter Fratzl**, Max-Planck-Institut für Kolloid- und Grenzflächenforschung (Germany); **Huabei Jiang**, Univ. of Florida (USA); **Stephen J. Matcher**, The Univ. of Sheffield (United Kingdom); **Eleftherios P. Paschalis**, Ludwig Boltzmann Institut (Austria); **Victor X. Yang M.D.**, Ryerson Univ. (Canada)



## Saturday 2 February

### SESSION 1

Room: 228 (Mezzanine) ..... Sat 8:00 am to 10:00 am

#### Bone Imaging and Diagnostics I

Session Chair: **Andreas Mandelis**, Univ. of Toronto (Canada)

8:00 am: **A novel approach to Paget's disease diagnosis and monitoring using near-infrared spectroscopy** (*Invited Paper*), Diana C. Sordillo, The City Univ. of New York (USA); Yuri Budansky, Peter P. Sordillo, Laura A. Sordillo, Robert R. Alfano, The City College of New York (USA) ..... [8565-218]

8:30 am: **Transcutaneous monitoring of murine bone composition with Raman spectroscopy** (*Invited Paper*), Jason R. Maher, Univ. of Rochester (USA); Jason Inzana, Univ. of Rochester Medical Ctr. (USA); Hani A. Awad, Andrew J. Berger, Univ. of Rochester (USA) ..... [8565-219]

9:00 am: **Optical spectroscopy methods to probe key spectral fingerprints of bone**, Diana C. Sordillo, The City Univ. of New York (USA); Laura A. Sordillo, Peter P. Sordillo, Robert R. Alfano, The City College of New York (USA) ..... [8565-220]

9:20 am: **High temperature heat source generation with a very low power level quasi-CW(continuous wave) semiconductor laser for medical use**, Takahiro Fujimoto M.D., Clinic F (Japan) and Tokai Univ. (Japan); Yusuke Imai, Kazuyoku Tei, Tomoo Fujioka, Shigeru Yamaguchi, Tokai Univ. (Japan) ..... [8565-221]

9:40 am: **Optical methods for knee osteoarthritis detection**, Yanping Chen, Xiamen Univ. (China) ..... [8565-222]

Coffee Break ..... Sat 10:00 am to 10:30 am

### SESSION 2

Room: 228 (Mezzanine) ..... Sat 10:30 am to 12:30 pm

#### Bone Surgery and Ablation I

Session Chair: **Andreas Mandelis**, Univ. of Toronto (Canada)

10:30 am: **Future of bone pathology, bone grafting, and osseointegration in oral and maxillofacial surgery: how applying optical advancements can help both fields** (*Invited Paper*), Rahul Tandon D.D.S., Alan S. Herford D.D.S., Loma Linda Univ. (USA) ..... [8565-223]

11:00 am: **Ultrafast laser ablation and machining of bone** (*Invited Paper*), Qiyin Fang, Ran An, Ghadeer K. Khader, Emilia Wilk, Harold K. Haugen, Gregory R. Wohl, Brett Dunlop, Mehran Anvari, McMaster Univ. (Canada) .... [8565-224]

11:30 am: **Primary investigations on the potential of a novel diode pumped Er:YAG laser system for bone surgery**, Karl Stock, Florian Hausladen, Holger Wurm, Raimund Hibst, Univ. Ulm (Germany) ..... [8565-225]

11:50 am: **Highly efficient nonthermal ablation of bone under bulk water with a frequency-doubled Nd:YVO<sub>4</sub> picosecond laser**, Cristian Tulea, Hud Wahab, Nils Gehlich, Jan Caron, Marco Höfer, Dominik Esser, Bernd Jungbluth, Achim Lenenbach, Reinhard Noll, Fraunhofer-Institut für Lasertechnik (Germany) ..... [8565-226]

12:10 pm: **Laser ablation in temporomandibular joint disorders and a case report involving an ossifying fibroma: how optics could potentially advance treatments in oral and maxillofacial surgery**, Timothy W. Stevens D.D.S., Loma Linda Univ. (USA) ..... [8565-227]

Lunch Break ..... Sat 12:30 pm to 2:00 pm

### SESSION 3

Room: 228 (Mezzanine) ..... Sat 2:00 pm to 3:30 pm

#### Bone Imaging and Diagnostics II

Session Chair: **Michael D. Morris**, Univ. of Michigan (USA)

2:00 pm: **Multispectral photoacoustic method for the early detection and diagnosis of osteoporosis disease** (*Invited Paper*), Idan Steinberg, Avishay Eyal, Israel Gannot, Tel Aviv Univ. (Israel) ..... [8565-228]

2:30 pm: **Non-invasive imaging of zebrafish with spinal deformities using optical coherence tomography: a preliminary study**, Liane Bernstein, Ecole Polytechnique de Montréal (Canada); Kathy Beaudette, Ecole Polytechnique de Montréal (Canada) and CHU Sainte-Justine (Canada); Kessen Patten, Sainte-Justine Mother and Child Univ. Hospital Ctr. (Canada); Emilie Beaulieu-Ouellet, Ecole Polytechnique de Montréal (Canada); Mathias Strupler, Sainte-Justine Mother and Child Univ. Hospital Ctr. (Canada) and Ecole Polytechnique de Montréal (Canada); Florina Moldovan, Sainte-Justine Mother and Child Univ. Hospital Ctr. (Canada); Caroline Boudoux, Ecole Polytechnique de Montréal (Canada) and CHU Sainte-Justine (Canada) ..... [8565-229]

2:50 pm: **Photoacoustic and ultrasonic signature of early bone density variations**, Bahman Lashkari, Andreas Mandelis, Univ. of Toronto (Canada) ..... [8565-230]

3:10 pm: **Raman spectroscopy analysis of breast cancer metastasis induced bone quality alterations**, Xiaohong Bi, Julie A. Sterling, Jeffrey S. Nyman, Daniel S. Perrien, Anita Mahadevan-Jansen, Vanderbilt Univ. (USA) ..... [8565-231]

Coffee Break ..... Sat 3:30 pm to 4:00 pm

### SESSION 4

Room: 228 (Mezzanine) ..... Sat 4:00 pm to 5:00 pm

#### Bone Spectroscopy

Session Chair: **Michael D. Morris**, Univ. of Michigan (USA)

4:00 pm: **Validating transcutaneous Raman spectroscopy in humans** (*Invited Paper*), Francis W. Esmonde-White, Michael D. Morris, Univ. of Michigan (USA) ..... [8565-232]

4:20 pm: **Polarization Raman spectroscopy implicates orientation-composition in a novel mouse model of bone brittleness**, Alexander J. Makowski, Tennessee Valley Healthcare System (USA) and Vanderbilt Univ. (USA); Anita Mahadevan-Jansen, Vanderbilt Univ. (USA); Jeffrey S. Nyman, U.S. Dept. of Veterans Affairs - Tennessee Valley Health Care System (USA) and Vanderbilt Univ. Medical Ctr. (USA) and Vanderbilt Univ. (USA) ..... [8565-233]

4:40 pm: **A survey of practical polarization bias optimization options for confocal Raman spectroscopy of bone**, Alexander J. Makowski, Tennessee Valley Healthcare System (USA) and Vanderbilt Univ. (USA); Jeffrey S. Nyman, U.S. Dept. of Veterans Affairs - Tennessee Valley Health Care System (USA) and Vanderbilt Univ. Medical Ctr. (USA) and Vanderbilt Univ. (USA); Anita Mahadevan-Jansen, Vanderbilt Univ. (USA) ..... [8565-234]



**SESSION 5**

**Room: 228 (Mezzanine) . . . . . Sat 5:00 pm to 5:40 pm**

**Bone Surgery and Ablation II**

Session Chair: **Andreas Mandelis**, Univ. of Toronto (Canada)

5:00 pm: **Comparison of control and quality of bone cutting by using optical topographical imaging guided mechanical drill and 1070 nm laser with in-line coherent imaging**, Marjan Razani, Yasaman Soudagar, Karen Yu, Ryerson Univ. (Canada); Christopher M. Galbraith, Paul J. Webster, Cole P. Van Vlack, Queen's Univ. (Canada); Cuiru Sun, Univ. of Toronto (Canada); Adrian Mariampillai, Beau A. Standish, Ryerson Univ. (Canada); James M. Fraser, Queen's Univ. (Canada); Victor X. D. Yang, Ryerson Univ. (Canada) . . [8565-237]

5:20 pm: **Photodynamic therapy as a local therapeutic adjunct for the treatment of vertebral metastases**, Albert Yee, Shane Burch, Univ. of Toronto (Canada); Margarete K. Akens, Sunnybrook Health Sciences Ctr. (Canada); Emily Won, Victor Lo, Stuart Bisland, Univ. of Toronto (Canada); Brian C. Wilson, Ontario Cancer Institute (Canada); Cari M. Whyne, Sunnybrook Health Sciences Ctr. (Canada) . . . . . [8565-238]

**BiOS Hot Topics**

Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

# Lasers in Dentistry XIX

Conference Chairs: **Peter Rechmann**, Univ. of California, San Francisco (USA); **Daniel Fried**, Univ. of California, San Francisco (USA)

Program Committee: **Gregory B. Altschuler**, Palomar Medical Technologies, Inc. (USA); **Tatjana Dostálová M.D.**, Charles Univ. in Prague (Czech Republic); **John D. B. Featherstone**, Univ. of California, San Francisco (USA); **David M. Harris**, Bio-Medical Consultants, Inc. (USA); **Harvey A. Wigdor D.D.S.**, Advocate Illinois Masonic Medical Ctr. (USA)



## Sunday 3 February

### SESSION 1

Room: 234 (Mezzanine) . . . . . Sun 8:50 am to 10:30 am

#### Lasers in Caries Lesion and Erosion Detection

Session Chair: **Daniel Fried**, Univ. of California, San Francisco (USA)

8:50 am: **Monitoring of enamel lesion remineralization by optical coherence tomography: an alternative approach towards signal analysis**, Alireza Sadr, Mona Mandurah, Syozi Nakashima, Yasushi Shimada, Yuichi Kitasako, Junji Tagami, Tokyo Medical and Dental Univ. (Japan); Yasunori Sumi, National Ctr. for Geriatrics and Gerontology (Japan) . . . . . [8566-2]

9:10 am: **Multimodal optical detection of early childhood caries: a clinical prototype**, Liang Zhang, Jeremy S. Ridge, Leonard Y. Nelson, Joel H. Berg D.D.S., Eric J. Seibel, Univ. of Washington (USA) . . . . . [8566-3]

9:30 am: **Clinical monitoring of early caries lesions using cross polarization optical coherence tomography**, Daniel Fried, Michal Staninec, Cynthia L. Darling, Kenneth H. Chan, Univ. of California, San Francisco (USA) . . . . . [8566-4]

9:50 am: **Polarization sensitive camera for the in vitro diagnostic and monitoring of dental erosion**, Anke Bossen, Berner Fachhochschule Technik und Informatik, Optolab (Switzerland); Christoph Meier, Berner Fachhochschule Technik und Informatik, Otpolab (Switzerland); Ekaterina Rakhmatullina, Adrian Lussi, Bern Univ. Hospital (Switzerland) . . . . . [8566-5]

10:10 am: **Methods for monitoring erosion using optical coherence tomography**, Kenneth H. Chan, Cynthia L. Darling, Daniel Fried, Univ. of California, San Francisco (USA) . . . . . [8566-6]

Coffee Break . . . . . Sun 10:30 am to 11:00 am

### SESSION 2

Room: 234 (Mezzanine) . . . . . Sun 11:00 am to 12:20 pm

#### Lasers in Biofilm, Tooth Structure, and Micro Leakage Imaging and Tooth Reconstruction

Session Chair: **Peter Rechmann**, Univ. of California, San Francisco (USA)

11:00 am: **Imaging biofilm growth on resins containing silver nanoparticles using CP-OCT**, Bethany Kjellgren, Ruoqiong Chen, Corola Carrera, Conrado Aparicio, Alex Fok, Joel Rudney, Robert S. Jones, Univ. of Minnesota, Twin Cities (USA) . . . . . [8566-7]

11:20 am: **Tooth structure characterization and dentin-enamel zone identification based on Stokes-Mueller calculation**, Kuen Feng Lin, National Yang-Ming Univ. (Taiwan); Yao-Sheng Hsieh, National Taiwan Univ. (Taiwan); Ching-Cheng Chuang, National Yang-Ming Univ. (Taiwan); Tsan-Chi Liu, Chung Yuan Christian Univ. (Taiwan); Chia-Wei Sun, National Yang-Ming Univ. (Taiwan) . . . . . [8566-8]

11:40 am: **Microleakage detection based on dental optical coherence tomography**, Yao-Sheng Hsieh, National Taiwan Univ. (Taiwan); Chih-Wei Lu, Industrial Technology Research Institute (Taiwan); Yi-Ching Ho, Shyh-Yuan Lee D.D.S., National Yang-Ming Univ. (Taiwan); Ching-Cheng Chuang, National Chiao Tung Univ. (Taiwan); Wei-Cheng Huang, Industrial Technology Research Institute (Taiwan); Chia-Wei Sun, National Chiao Tung Univ. (Taiwan) . . . . . [8566-9]

12:00 pm: **Utilizing optical coherence tomography for CAD/CAM of indirect dental restorations**, Ravishankar N. Chityala, Univ. of Minnesota, Twin Cities (USA); Robert S. Jones, Univ. of Minnesota, Twin Cities (USA) . . . . . [8566-10]

Lunch/Exhibition Break . . . . . Sun 12:20 pm to 2:00 pm

### SESSION 3

Room: 234 (Mezzanine) . . . . . Sun 2:00 pm to 3:00 pm

#### Lasers in Hard Tissue Removal

Session Chair: **Daniel Fried**, Univ. of California, San Francisco (USA)

2:00 pm: **Selective excavation of human carious dentin using the nanosecond pulsed laser in 5.8-µm wavelength range**, Tetsuya Kita, Katsunori Ishii, Osaka Univ. (Japan); Kazushi Yoshikawa, Kenzo Yasuo, Kazuyo Yamamoto, Osaka Dental Univ. Hospital (Japan); Kunio Awazu, Osaka Univ. (Japan) . . . . . [8566-11]

2:20 pm: **Contact versus non-contact ablation of the artificial enamel caries by Er:YAG and CTH:YAG laser radiation**, Tatjana Dostálová M.D., Charles Univ. in Prague (Czech Republic); Helena Jelinková, Jan Šulc, Michal Nemeč, Czech Technical Univ. in Prague (Czech Republic); Mitsunobu Miyagi, Tohoku Institute of Technology (Japan); Michaela Bucková, M. Kašparová, Charles Univ., 2nd Medical Faculty (Czech Republic) . . . . . [8566-12]

2:40 pm: **A USPL functional system with articulated mirror arm for in-vivo applications in dentistry**, Florian Schelle, Jörg Meister, Claudia Dehn, Christoph Bourauel, Mathias Frentzen D.D.S., Rheinische Friedrich-Wilhelms- Univ. Bonn (Germany) . . . . . [8566-13]

Coffee Break . . . . . Sun 3:00 pm to 3:30 pm

### SESSION 4

Room: 234 (Mezzanine) . . . . . Sun 3:30 pm to 4:50 pm

#### Lasers in Hard Tissue - Selective Calculus Removal, Side Effects, Endodontics, Caries Resistance

Session Chair: **Peter Rechmann**, Univ. of California, San Francisco (USA)

3:30 pm: **The efficacy of selective calculus ablation at 400 nm: comparison to conventional calculus removal methods**, Joshua E. Schoenly, Univ. of Toronto (Canada); Wolf D. Seka, Univ. of Rochester (USA); Georgios Romanos, Stony Brook Univ. (USA); Peter Rechmann, Univ. of California, San Francisco (USA) . . . . . [8566-14]

3:50 pm: **Influence of USP laser radiation on cell morphology: HaCat and MG-63 cell lines for bone and soft tissue modelling in dentistry**, Jörg Meister, Florian Schelle, Imke Beier, Christoph Bourauel, Matthias Frentzen D.D.S., Dominik Kraus, Rheinische Friedrich-Wilhelms-Univ. Bonn (Germany) . . . . . [8566-15]

4:10 pm: **Photodynamic therapy for inactivation of endodontic bacterial biofilms and effect of tissue inhibitors on its antibacterial efficacy**, Annie Shrestha, Anil Kishen II, Univ. of Toronto (Canada) . . . . . [8566-16]

4:30 pm: **Microhardness and acid resistance of hard tooth tissues after single mode YLF: Er laser treatment**, Andrei V. Belikov, Ksenia V. Shatilova, Alexei V. Skrypnik, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) . . . . . [8566-17]

**POSTERS-SUNDAY**

**Room: 103 (Exhibit Level) . . . . .Sun 5:30 pm to 7:30 pm**

Conference attendees are invited to attend the BiOS poster session on Sunday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/x27476.xml> .

**High definition near-IR imaging of occlusal caries lesions**, William A. Fried, Daniel Fried, Kenneth H. Chan, Cynthia L. Darling, Univ. of California, San Francisco (USA) . . . . . [8566-18]

**Remineralization studies of early simulated lesions generated by pH cycling**, Hobin Kang, Cynthia L. Darling, Kenneth H. Chan, Daniel Fried, Univ. of California, San Francisco (USA) . . . . . [8566-19]

**Acoustic comparison of Er,Cr:YSSG laser and dental high speed handpiece for primary anterior tooth preparation**, Monserrat Jorden, U.S. Naval Hospital (Japan); Jung-Wei Chen, Loma Linda Univ. (USA); Elisabeth Easley, Arizona School of Dentistry & Oral Health (USA); Yiming Li, R. Steven Kurti Jr., Loma Linda Univ. (USA) . . . . . [8566-20]

**Laser investigation of the non-uniformity of fluorescent species in dental enamel**, Stephanie U. Tran, Human Photonics Lab. (USA) and Univ. of Washington (USA); Jeremy S. Ridge, Leonard Y. Nelson, Eric J. Seibel, Human Photonics Lab. (USA) . . . . . [8566-21]

**Determination of the suitable laser parameters in periodontal surgery**, Ayse S. Sarp, Murat Gülsoy, Bogaziçi Üniv. (Turkey) . . . . . [8566-22]



Download the SPIE Conference App





# Ophthalmic Technologies XXIII

Conference Chairs: **Fabrice Manns**, Univ. of Miami (USA); **Per G. Söderberg**, Uppsala Univ. (Sweden); **Arthur Ho**, Brien Holden Vision Institute (Australia)

Program Committee: **Rafat R. Ansari**, NASA Glenn Research Ctr. (USA); **Michael Belkin**, Tel Aviv Univ. (Israel); **Kostadinka Bizheva**, Univ. of Waterloo (Canada); **David Borja**, Alcon Labs., Inc. (USA); **Ralf Brinkmann**, Univ. zu Lübeck (Germany); **Wolfgang Drexler**, Medizinische Univ. Wien (Austria); **Daniel X. Hammer**, U.S. Food and Drug Administration (USA); **Karen M. Joos M.D.**, Vanderbilt Univ. (USA); **Kirill V. Larin**, Univ. of Houston (USA); **Ezra Maguen M.D.**, American Eye Institute (USA); **Donald T. Miller**, Indiana Univ. (USA); **Daniel V. Palanker**, Stanford Univ. (USA); **Jean-Marie Parel**, Bascom Palmer Eye Institute (USA); **Roberto Pini**, Istituto di Fisica Applicata Nello Carrara (Italy); **Luigi L. Rovati**, Univ. degli Studi di Modena e Reggio Emilia (Italy); **Georg Schuele**, OptiMedica Corp. (USA); **Jerry Sebag M.D.**, The Univ. of Southern California (USA); **Peter Soliz**, VisionQuest Biomedical, LLC (USA); **William B. Telfair**, Consultant (USA); **Valery V. Tuchin**, N.G. Chernyshevsky Saratov State Univ. (Russian Federation)



## Saturday 2 February

### SESSION 1

Room: 305 (Esplanade) ..... Sat 8:30 am to 10:00 am

#### Ocular Vasculature and Blood Flow

Session Chairs: **Luigi Rovati**, Univ. degli Studi di Modena e Reggio Emilia (Italy); **Daniel X. Hammer**, U.S. Food and Drug Administration (USA); **Karen M. Joos M.D.**, Vanderbilt Univ. (USA)

8:30 am: **Improved visualization of human retinal and choroidal vascular networks with phase-variance optical coherence tomography**, Dae Yu Kim, Jeff Fingler, California Institute of Technology (USA); Robert J. Zawadzki, UC Davis Medical Ctr. (USA); Malvika Verma, California Institute of Technology (USA); Daniel Schwartz, Univ. of California, San Francisco (USA); John S. Werner, UC Davis Medical Ctr. (USA); Scott Fraser, California Institute of Technology (USA) ..... [8567-1]

8:45 am: **Investigation of exudative macular disease by multi-functional optical coherence angiography**, Young-Joo Hong, Univ. of Tsukuba (Japan); Masahiro Miura, Tokyo Medical Univ. Kasumigauro Hospital (Japan); Myeong Jin Ju, Univ. of Tsukuba (Japan) and Univ. of British Columbia (Canada); Shuichi Makita, Yoshiaki Yasuno, Univ. of Tsukuba (Japan) ..... [8567-2]

9:00 am: **in vivo human optic nerve and lamina cribrosa microstructural and vasculature evaluation using ultrahigh sensitive optical microangiography**, Lin An, Lee Peng, Gongpu Lan, Ruikang K. Wang, Univ. of Washington (USA) ..... [8567-3]

9:15 am: **Classification of choroid based on blood vessel structure using high penetration optical coherence tomography**, Lian Duan, Young-Joo Hong, Univ. of Tsukuba (Japan); Myeong Jin Ju, Univ. of Tsukuba (Japan) and Univ. of British Columbia (Canada); Yoshiaki Yasuno, Univ. of Tsukuba (Japan) ..... [8567-4]

9:30 am: **Quantitative analysis of retinal blood vessels based on 3D vasculature maps generated by optical microangiography**, Ruikang K. Wang, Lee Peng, Lin An, Gongpu Lan, Univ. of Washington (USA) ..... [8567-5]

9:45 am: **Vision changes in astronauts and the study of choroidal circulation**, Rafat R. Ansari, NASA Glenn Research Ctr. (USA); Keith Manuel, NASA Johnson Space Ctr. (USA); Kwang I. Suh, NASA Glenn Research Ctr. (USA); Su-Long Nyeo, National Cheng Kung Univ. (Taiwan); Jerry Sebag M.D., The Univ. of Southern California (USA) ..... [8567-6]

Coffee Break ..... Sat 10:00 am to 10:30 am

### SESSION 2

Room: 305 (Esplanade) ..... Sat 10:30 am to 12:15 pm

#### Ophthalmic Lasers, Stimulation, Implants

Session Chairs: **Jean-Marie Parel**, Bascom Palmer Eye Institute (USA); **Ezra Maguen M.D.**, American Eye Institute (USA); **Ralf Brinkmann**, Univ. zu Lübeck (Germany)

10:30 am: **Retinal safety of near-infrared femtosecond lasers in cataract surgery**, Jenny Wang, Christopher Sramek, Stanford Univ. (USA); Yannis M. Paulus, Stanford Univ. School of Medicine (USA); Daniel Lavinsky, Stanford Univ. (USA); Georg Schuele, Dan E. Anderson, OptiMedica Corp. (USA); Daniel V. Palanker, Stanford Univ. (USA) ..... [8567-7]

10:45 am: **In vivo performance of photovoltaic subretinal prosthesis**, Yossi Mandel M.D., Georges Goetz, Daniel Lavinsky M.D., Phil Huie, Stanford Univ. (USA); Keith Mathieson, Univ. of Strathclyde (United Kingdom); Lele Wang, Theodore I. Kamins, Stanford Univ. (USA); Richard Manivanh, Stanford Univ. School of Medicine (USA); James Harris, Daniel V. Palanker, Stanford Univ. (USA) ..... [8567-8]

11:00 am: **Optical modulation of transgene expression in retinal pigment epithelium**, Daniel V. Palanker, Daniel Lavinsky M.D., Stanford Univ. (USA); Thomas W. Chalberg Jr., Avalanche Biotechnologies, Inc. (USA); Yossi Mandel, Stanford Univ. (USA); Phil Huie, Stanford Univ. School of Medicine (USA); Roopa Dalal, Stanford Univ. (USA); Michael Marmor, Stanford Univ. School of Medicine (USA) ..... [8567-9]

11:15 am: **Cell-targeted holographic retinal photo-stimulation in vivo**, Adi Schejter, Limor Tsur, Nairouz Farah, Technion-Israel Institute of Technology (Israel); Inna Reutsky-Gefen, Ruppim Academic Ctr. (Israel); Shy Shoham, Technion-Israel Institute of Technology (Israel) ..... [8567-10]

11:30 am: **To be announced (Keynote Presentation)**, ..... [8567-11]

Lunch Break ..... Sat 12:15 pm to 1:45 pm

### SESSION 3

Room: 305 (Esplanade) ..... Sat 1:45 pm to 3:15 pm

#### Ophthalmic Diagnostics: Polarization

Session Chairs: **Kirill V. Larin**, Univ. of Houston (USA); **Kostadinka Bizheva**, Univ. of Waterloo (Canada); **William B. Telfair**, Consultant (USA)

1:45 pm: **Large-field high-speed polarization sensitive optical coherence tomography of the diseased eye**, Stefan Zotter, Michael Pircher, Bernhard Baumann, Teresa Torzicky, Medizinische Univ. Wien (Austria); Hirofumi Yoshida, Futoshi Hirose, Canon Inc. (Japan); Mitsuro Sugita, Philipp Roberts, Markus Ritter, Christopher Schütze, Erich Göttinger, Wolfgang Trasischker, Clemens Vass, Ursula Schmidt-Erfurth, Christoph K. Hitzenberger, Medizinische Univ. Wien (Austria) ..... [8567-12]

2:00 pm: **High-sensitive detection of keratoconus and keratoconus suspect by corneal birefringence measured by Jones matrix tomography**, Yoshiaki Yasuno, Univ. of Tsukuba (Japan); Masahiro Yamanari, Tomey Corp. (Japan); Shinichi Fukuda, Sujin Hoshi, Simone Behergeray, Yiheng Lim, Testuro Oshika, Univ. of Tsukuba (Japan) and Computational Optics and Ophthalmology Group (Japan) ..... [8567-13]

2:15 pm: **Non-invasive assessment of corneal crosslinking changes using polarization sensitive optical coherence tomography**, David Alonso-Caneiro, Queensland Univ. of Technology (Australia); Masahiro Yamanari, Tomey Corp. (Japan); Shinichi Fukuda, Sujin Hoshi, Univ. of Tsukuba (Japan); Satoko Nagase M.D., Tokyo Medical Univ. (Japan); Tetsuro Oshika, Yoshiaki Yasuno, Univ. of Tsukuba (Japan); Michael J. Collins, Queensland Univ. of Technology (Australia). . . . . [8567-14]

2:30 pm: **Mapping scleral fiber orientation and birefringence in the rat eye in vivo using polarization sensitive optical coherence tomography**, Bernhard Baumann, Marco Bonesi, Sabine Rauscher, Erich Götzinger, Michael Pircher, Harald Sattmann, Stefan Zotter, Teresa Torzicky, Wolfgang Trasischker, Medizinische Univ. Wien (Austria); Christoph M. Eigenwillig, Benjamin R. Biedermann, Wolfgang Wieser, Robert A. Huber, Ludwig-Maximilians-Univ. München (Germany); Christoph K. Hitzenberger, Medizinische Univ. Wien (Austria) . . . . . [8567-15]

2:45 pm: **Retardation of Henle's fiber layer: a comparison of polarization-sensitive methods**, Donald T. Miller, Indiana Univ. (USA); Stefan Zotter, Medizinische Univ. Wien (Austria); Qiang Wang, Indiana Univ. (USA); Christoph K. Hitzenberger, Medizinische Univ. Wien (Austria) . . . . . [8567-16]

3:00 pm: **PS-OCT-based methodology for measuring age and population differences in phase retardation of Henle's fiber layer**, Qiang Wang, Indiana Univ. (USA); Barry Cense, Utsunomiya Univ. (Japan); Omer P. Kocaoglu, Zhoulun Liu, Donald T. Miller, Indiana Univ. (USA) . . . . . [8567-17]

Coffee Break . . . . . Sat 3:15 pm to 3:45 pm

**SESSION 4**

**Room: 305 (Esplanade) . . . . . Sat 3:45 pm to 5:00 pm**

**Ocular Biometry**

Session Chairs: **Wolfgang Drexler**, Medizinische Univ. Wien (Austria); **Ezra Maguen M.D.**, American Eye Institute (USA); **Per G. Söderberg**, Uppsala Univ. (Sweden)

3:45 pm: **Clinically validated quantitative multi-surface corneal topography utilizing OCT**, Ryan P. McNabb, Francesco LaRocca, Duke Univ. (USA); Sina Farsiu, Duke Univ. (USA) and Duke Univ. (USA); Anthony N. Kuo, Joseph A. Izatt, Duke Univ. (USA) . . . . . [8567-18]

4:00 pm: **Assessing the change in axial eye length during accommodation with optical coherence tomography**, Carolina De Freitas, Marco Ruggeri, Bascom Palmer Eye Institute (USA); Fabrice Manns, Bascom Palmer Eye Institute (USA) and Univ. of Miami (USA); Arthur Ho, Brien Holden Vision Institute (Australia) and Bascom Palmer Eye Institute (USA) and Univ. of New South Wales (Australia); Jean-Marie Parel, Bascom Palmer Eye Institute (USA) and Univ. of Miami (USA) and Brien Holden Vision Institute (Australia) . [8567-19]

4:15 pm: **3D ocular morphometry and biometry of accommodating eyes using full eye length imaging with SS-OCT**, Ireneusz Grulkowski, Jonathan J. Liu, Massachusetts Institute of Technology (USA); Benjamin M. Potsaid, Massachusetts Institute of Technology (USA) and Thorlabs Inc. (USA); Vijaysekhar Jayaraman, Praevium Research, Inc. (USA); Alex E. Cable, Thorlabs Inc. (USA); David Huang, Casey Eye Institute OHSU (USA); Jay S. Duker, Tufts Univ. (USA); James G. Fujimoto, Massachusetts Institute of Technology (USA) . . . . . [8567-20]

4:30 pm: **Natural motion of the optic nerve head revealed by high speed phase-sensitive OCT**, Keith OHara, Tilman Schmoll, Clemens Vass, Rainer A. Leitgeb, Medizinische Univ. Wien (Austria) . . . . . [8567-21]

4:45 pm: **Determination of eye shape by ultrawide-field MHz-OCT**, Thomas Klein, Wolfgang Wieser, Tom Pfeiffer, Robert A. Huber, Ludwig-Maximilians-Univ. München (Germany). . . . . [8567-22]

**SESSION 5**

**Room: 305 (Esplanade) . . . . . Sat 5:00 pm to 6:15 pm**

**Ophthalmic Image Processing**

Session Chairs: **Peter Soliz**, VisionQuest Biomedical, LLC (USA); **Rafat R. Ansari**, NASA Glenn Research Ctr. (USA); **Arthur Ho**, Brien Holden Vision Institute (Australia)

5:00 pm: **Simultaneous denoising and interpolation of SDOCT image via sparse representation**, Leyuan Fang, Hunan Univ. (China) and Duke Univ. Medical Ctr. (USA); Shutao Li, Hunan Univ. (China); Ryan P. McNabb, Anthony N. Kuo, Cynthia A. Toth, Duke Univ. (USA); Joseph A. Izatt, Duke Univ. (USA) and Duke Univ. Medical Ctr. (USA); Sina Farsiu, Duke Univ. (USA) and Duke Univ. (USA) . . . . . [8567-23]

5:15 pm: **Automated multilayer segmentation and characterization in 3D spectral-domain optical coherence tomography images**, Zhihong Hu, Doheny Eye Institute (USA); Xiaodong Wu, The Univ. of Iowa (USA); Amirhossein Hariri, Srinivas R. Sadda, Doheny Eye Institute (USA) . . . . . [8567-24]

5:30 pm: **Polarization based segmentation of the choroid-sclera interface and choroidal thickness measurement in 3D data sets of the human eye**, Teresa Torzicky, Michael Pircher, Bernhard Baumann, Stefan Zotter, Wolfgang Trasischker, Erich Götzinger, Christoph K. Hitzenberger, Medizinische Univ. Wien (Austria) . . . . . [8567-25]

5:45 pm: **Validated automatic segmentation of photoreceptors in adaptive optics scanning ophthalmoscope images**, Stephanie J. Chiu, Adam M. Dubis, Duke Univ. (USA); Robert F. Cooper, Marquette Univ. (USA) and Medical College of Wisconsin (USA); Alfredo Dubra, Joseph Carroll, Medical College of Wisconsin (USA); Joseph A. Izatt, Sina Farsiu, Duke Univ. (USA) . . . . [8567-26]

6:00 pm: **Robust 3D-OCT motion correction with applications in pathology imaging, Doppler OCT, and OCT angiography**, Martin F. Kraus, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); WooJhon Choi, Jonathan J. Liu, Massachusetts Institute of Technology (USA); Yali Jia, Casey Eye Institute OHSU (USA); Jason Zhang, New England Eye Ctr. (USA); Mehreen Adhi M.D., Tufts Univ. School of Medicine (USA); Benjamin M. Potsaid, Ireneusz Grulkowski, Massachusetts Institute of Technology (USA); David Huang M.D., Casey Eye Institute OHSU (USA); Jay S. Duker, New England Eye Ctr. (USA); Joachim Hornegger, Friedrich-Alexander Univ. Erlangen-Nuernberg (Germany); James G. Fujimoto, Massachusetts Institute of Technology (USA) . . . . [8567-27]

**BiOS Hot Topics**

**Sat. 7:00 to 9:00 pm · Room 134**

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

## Sunday 3 February

## SESSION 6

Room: 305 (Esplanade) .....Sun 8:15 am to 10:00 am

## Ophthalmic Instrumentation

Session Chairs: **Georg Schuele**, OptiMedica Corp. (USA);  
**David Borja**, Bascom Palmer Eye Institute (USA);  
**Jerry Sebag M.D.**, The Univ. of Southern California (USA)

8:15 am: **Development of a retinal phantom for OCT performance evaluation**, Jigesh Baxi, Anant Agrawal, William R. Calhoun III, William R. Calhoun III, U.S. Food and Drug Administration (USA); Scott A. Mathews, The Catholic Univ. of America (USA); Daniel X. Hammer, Ilko Ilev, Ilko Ilev, Josh Pfefer, U.S. Food and Drug Administration (USA). ..... [8567-28]

8:30 am: **Real-time Hartmann-Shack autorefractor: slit-lamp mounted prototype**, Victor M. Hernandez, Stephanie Delgado, Bascom Palmer Eye Institute (USA) and Univ. of Miami (USA); David Borja, Univ. of Miami (USA) and Bascom Palmer Eye Institute (USA); Arthur Ho, Ophthalmic Biophysics Ctr., Bascom Palmer Eye Institute (USA) and Univ. of Miami (USA) and Univ. of New South Wales (Australia); Fabrice Manns, Bascom Palmer Eye Institute (USA) and Univ. of Miami (USA); Jean-Marie Parel, Bascom Palmer Eye Institute (USA) and Univ. of Miami (USA) and Brien Holden Vision Institute (Australia). ..... [8567-29]

8:45 am: **Real-time SLO eye tracking for improved phase-resolved OCT angiography**, Boy Braaf, Kari V. Vienola, Rotterdam Ophthalmic Institute (Netherlands); Christy K. Sheehy, Univ. of California, Berkeley (USA); Qiang Yang, Montana State Univ. (USA); Koenraad A. Vermeer, Rotterdam Ophthalmic Institute (Netherlands); Pavan Tiruveedhula, Univ. of California, Berkeley (USA); David W. Arathorn, Montana State Univ. (USA); Austin Roorda, Univ. of California, Berkeley (USA); Johannes F. de Boer, Rotterdam Ophthalmic Institute (Netherlands) and Vrije Univ. Amsterdam (Netherlands). ..... [8567-30]

9:00 am: **Low cost active retinal tracker for optical coherence tomography**, Yiheng Lim, Utsunomiya Univ. (Japan); Roy de Kinkelder, Univ. van Amsterdam (Netherlands); Barry Cense, Utsunomiya Univ. (Japan). ..... [8567-31]

9:15 am: **4D dynamic imaging of the eye using ultrahigh speed SS-OCT**, Jonathan J. Liu, Ireneusz Grulkowski, Massachusetts Institute of Technology (USA); Benjamin M. Potsaid, Massachusetts Institute of Technology (USA) and Thorlabs Inc. (USA); Vijaysekhar Jayaraman, Praevium Research, Inc. (USA); Alex E. Cable, Thorlabs Inc. (USA); Martin F. Kraus, Massachusetts Institute of Technology (USA) and Univ. Erlangen-Nuremberg (Germany); Joachim Hornegger, Friedrich-Alexander Univ. Erlangen-Nuernberg (Germany); Jay S. Duker M.D., Tufts Univ. (USA); James G. Fujimoto, Massachusetts Institute of Technology (USA). ..... [8567-32]

9:30 am: **Non-mydratric confocal retinal imaging using a digital light projector**, Matthew S. Muller, Aeon Imaging LLC (USA); Ann E. Elsner, Indiana Univ. (USA). ..... [8567-33]

9:45 am: **Handheld combined SLO/OCT system design**, Francesco LaRocca, Derek Nankivil, Al-Hafeez Dhalla, Ryan P. McNabb, Duke Univ. (USA); Sina Farsi, Duke Univ. (USA) and Duke Univ. (USA); Joseph A. Izatt, Duke Univ. (USA). ..... [8567-34]

Coffee Break ..... Sun 10:00 am to 10:30 am

## SESSION 7

Room: 305 (Esplanade) .....Sun 10:30 am to 12:00 pm

## Ophthalmic Adaptive Optics

Session Chairs: **Donald T. Miller**, Indiana Univ. (USA);  
**Ralf Brinkmann**, Univ. zu Lübeck (Germany);  
**William B. Telfair**, Consultant (USA)

10:30 am: **Compact adaptive optics line scanning retinal imager: recent improvements and pilot clinical study**, Mircea Mujat, R. Daniel Ferguson, Nicusor Iftimia, Ankit H. Patel, Physical Sciences Inc. (USA); Neeru Sarin, Laura Clark, Sina Farsi, Cynthia A. Toth M.D., Duke Univ. (USA); Daniel X Hammer, U.S. Food and Drug Administration (USA). ..... [8567-35]

10:45 am: **In-the-plane design of an off-axis ophthalmic adaptive optics system using toroidal mirrors**, Zhuolin Liu, Omer P. Kocaoglu, Qiang Wang, Ravi S. Jonnal, Donald T. Miller, Indiana Univ. (USA). ..... [8567-36]

11:00 am: **Small animal adaptive optics imaging system**, R. Daniel Ferguson, Ankit H. Patel, Mircea Mujat, Nicusor Iftimia, Physical Sciences Inc. (USA); Daniel X. Hammer, Physical Sciences Inc. (USA) and U.S. Food and Drug Administration (USA); James D. Akula, Children's Hospital Boston (USA) and Harvard Medical School (USA). ..... [8567-37]

11:15 am: **Adaptive optics optical coherence tomography with dynamic retinal tracking**, Omer P. Kocaoglu, Indiana Univ. (USA); R. Daniel Ferguson, Physical Sciences Inc. (USA); Ravi S. Jonnal, Indiana Univ. (USA); Zhuolin Liu, Indiana Univ. (USA); Qiang Wang, Indiana Univ. (USA); Daniel X. Hammer, Physical Sciences Inc. (USA); Donald T. Miller, Indiana Univ. (USA). ... [8567-38]

11:30 am: **Dry age related macula degeneration investigated with a novel lens based adaptive optics ophthalmoscope**, Franz Felberer, Julia-Sophie Kroisamer, Ursula Schmidt-Erfurth, Christoph K. Hitzengerber, Michael Pircher, Medizinische Univ. Wien (Austria). ..... [8567-39]

11:45 am: **The focusing of polychromatic stimuli by the human eye investigated with adaptive optics**, Enrique-Josua Fernández, Alejandro Mira-Agudelo, Pablo Artal, Lab de Óptica Univ. de Murcia (Spain). ..... [8567-40]

Lunch Break ..... Sun 12:00 pm to 1:30 pm

## SESSION 8

Room: 305 (Esplanade) .....Sun 1:30 pm to 3:15 pm

## Functional Imaging

Session Chairs: **Daniel V. Palanker**, Stanford Univ. (USA);  
**Michael Belkin**, Tel Aviv Univ. (Israel);  
**Rafat R. Ansari**, NASA Glenn Research Ctr. (USA)

1:30 pm: **Understanding the early morphological changes in the photoreceptor layer induced by sodium iodate in the rat retina as observed with UHR-OCT**, Man Chun Alan Tam, Denise Hileeto, Donghyun Lee, Kostadinka Bizheva, Univ. of Waterloo (Canada). ..... [8567-41]

1:45 pm: **In utero monitoring of embryonic eye development with OCT**, Narendran Sudheendran, Maleeha Mashiatulla, Saba H. Syed, Univ. of Houston (USA); Irina V. Larina, Mary E. Dickinson, Baylor College of Medicine (USA); Kirill V. Larin, Univ. of Houston (USA). ..... [8567-42]

2:00 pm: **Imaging pigment chemistry in melanocytic conjunctival lesions with nonlinear pump-probe microscopy**, Jesse W. Wilson, Duke Univ. (USA); Lejla Vajzovic M.D., Duke Univ. School of Medicine (USA); Francisco E. Robles, Duke Univ. (USA); Thomas J. Cummings M.D., Prithvi Mruthyunjaya M.D., Duke Univ. School of Medicine (USA); Warren S. Warren, Duke Univ. (USA). [8567-43]

2:15 pm: **In vivo confocal intrinsic optical signal mapping of localized physiological lesion in laser-injured frog eye**, Xincheng Yao, Qiu-Xiang Zhang, Rongwen Lu, The Univ. of Alabama at Birmingham (USA). ..... [8567-44]

2:30 pm: **In vivo three-dimensional characterization of aqueous outflow pathway using optical coherence tomography in human**, Peng Li, Gongpu Lan, Tueng Shen, Murray Johnstone, Rui Kang K. Wang, Univ. of Washington (USA). ..... [8567-45]

2:45 pm: **Flicker-induced near-infrared reflectance changes of the human ocular fundus**, Nithiyanantham Palanisamy, Univ. degli Studi di Modena e Reggio Emilia (Italy) and Erode Sengunthar Engineering College (India); Luigi Rovati, Univ. degli Studi di Modena e Reggio Emilia (Italy); Charles E. Riva, Univ. de Lausanne (Switzerland); Mauro Cellini, Corrado Gizzi, Ernesto Strobbe, Emilio C. Campos, Univ. degli Studi di Bologna (Italy). ..... [8567-46]

3:00 pm: **Functional imaging of hemodynamic stimulus response in the rat retina with ultrahigh-speed spectral / Fourier domain OCT**

, WooJhon Choi, Massachusetts Institute of Technology (USA); Bernhard Baumann, Medizinische Univ. Wien (USA) and Tufts Univ. (USA); Allen C. Clermont, Edward P. Feener, Joslin Diabetes Ctr. (USA); David A. Boas, Massachusetts General Hospital (USA); James G. Fujimoto, Massachusetts Institute of Technology (USA). ..... [8567-47]

Coffee Break ..... Sun 3:15 pm to 3:45 pm



**SESSION 9**

**Room: 305 (Esplanade) . . . . .Sun 3:45 pm to 5:00 pm**

**Ophthalmic Tissues: Anatomy and Properties**

Session Chairs: **Arthur Ho**, Brien Holden Vision Institute (Australia); **Karen M. Joos M.D.**, Vanderbilt Univ. (USA); **Roberto Pini**, Istituto di Fisica Applicata Nello Carrara (Italy)

3:45 pm: **Clinical usefulness of Neural Rim Area, recorded with the Heidelberg Retinal Tomograph, for glaucoma follow up**, Per G. Söderberg, Uppsala Univ. (Sweden) . . . . . [8567-48]

4:00 pm: **Comparison of RNFL thickness and RPE-normalized RNFL attenuation coefficient for glaucoma diagnosis**, Koenraad A. Vermeer, Josine van der Schoot, Rotterdam Ophthalmic Institute (Netherlands); Hans G. Lemij M.D., Rotterdam Eye Hospital (Netherlands); Johannes F. de Boer, Rotterdam Ophthalmic Institute (Netherlands) and Vrije Univ. Amsterdam (Netherlands) . . . . . [8567-49]

4:15 pm: **Direct trabecular meshwork imaging in porcine eyes through multiphoton gonioscopy**, Tim C. Lei, Univ. of Colorado Denver (USA); Omid Masihzadeh, Malik Y. Kahook M.D., Univ. of Colorado Denver School of Medicine (USA); Emily Gibson, Univ. of Colorado Denver (USA); David A. Ammar, Univ. of Colorado Denver School of Medicine (USA) . . . . . [8567-50]

4:30 pm: **In vivo meibomian gland imaging using Fourier-domain OCT**, Tae Joong Eom, Gwangju Institute of Science and Technology (Korea, Republic of); Ho Sik Hwang, Seoul St. Mary's Hospital (Korea, Republic of); Jun Geun Shin, Byeong Ha Lee, Gwangju Institute of Science and Technology (Korea, Republic of); Choun Ki Joo, Seoul St. Mary's Hospital (Korea, Republic of) . . . . . [8567-51]

4:45 pm: **Dynamic OCT measurements of corneal biomechanical properties after UV cross-linking in the rabbit**, Michael D. Twa, Jiasong Li, Ravi K. Manapuram, Floredes M. Menodiado, Manmohan Singh, Univ. of Houston (USA); Salavat Aglyamov, Stanislav Emelianov, The Univ. of Texas at Austin (USA); Kirill V. Larin, Univ. of Houston (USA) . . . . . [8567-52]

**PASCAL ROL AWARD**

**Room: 305 (Esplanade) . . . . .Sun 5:00 pm to 5:30 pm**

Session Chairs: **Arthur Ho**, Brien Holden Vision Institute (Australia); **Fabrice Manns**, Univ. of Miami (USA)

Outstanding extended abstracts submitted to the Ophthalmic Technologies conference will be nominated for the Pascal Rol Award for Best Paper in Ophthalmic Technologies.

Award sponsored by:



5:00 pm: **The legacy of Pascal Rol**, Jean-Marie Parel, Bascom Palmer Eye Institute (USA) . . . . . [8567-53]

**PANEL DISCUSSION**

**Room: 305 (Esplanade) . . . . .Sun 5:30 pm to 5:45 pm**

Session Chairs: **Fabrice Manns**, Univ. of Miami (USA); **Arthur Ho**, Brien Holden Vision Institute (Australia)

**POSTERS-SUNDAY**

**Room: 103 (Exhibit Level) . . . . .Sun 5:30 pm to 7:30 pm**

Conference attendees are invited to attend the BIOS poster session on Sunday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/x27476.xml>.

**Quantitative comparison of different-shaped wavefront sensors and preliminary results on a mechanical eye**, Luis A. V. Carvalho, Univ. de São Paulo (Brazil) and Escola Paulista de Medicina - UNIFESP (Brazil) and Wavetek Technologies, LLC (USA) . . . . . [8567-54]

**Ocular UV protection: revisiting safe limits for sunglasses standards**, Liliane Ventura, Univ. de São Paulo (Brazil); Mauro Masili, UNICEP São Carlos (Brazil); Homero Schiabel, Univ. de São Paulo (Brazil) . . . . . [8567-55]

**Prototype for measuring polarization angles of sunglasses according to Brazilian standard NBR15111**, Luis E. Lopes, Liliane Ventura, Univ. de São Paulo (Brazil) . . . . . [8567-56]

**Method for transmittance measurements in sunglasses for a kiosk**, Marcio Makiyama Mello, Matheus Figueiredo, Ricardo A. Konda, Liliane Ventura, Univ. de São Paulo (Brazil) . . . . . [8567-57]

**Semi-automatic evaluation of intraocular lenses (IOL) using a mechanical eye model**, Andreas Drauschke, Elisabeth Rank, Lukas Traxler, Mathias Forjan, Fachhochschule Technikum Wien (Austria) . . . . . [8567-58]

**Choroidal imaging with dual-beam Doppler OCT using piezo steering mirror for fast adjustable velocity range**, Franck Jaillon, Tomey Corp. (Japan); Shuichi Makita, Yoshiaki Yasuno, Univ. of Tsukuba (Japan) . . . . . [8567-59]

**Longitudinal imaging of the human choroid using 1-micron swept-source optical coherence tomography**, Yukari Jo M.D., Osaka Univ. Graduate School of Medicine FOM (Japan); Yasushi Ikuno M.D., Osaka Univ. (Japan); Yoshiaki Yasuno, Univ. of Tsukuba (Japan); Satoshi Sugiyama, Nobuyori Aoki, Naoko Hara, Tsutomu Ohmori, Tomey Corp. (Japan); Kohji Nishida, Osaka Univ. Graduate School of Medicine, FOM (Japan) . . . . . [8567-60]

**Semi-automatic detection in optical coherence tomography images of hard exudates in diabetic patients**, Joel A. Papay, Indiana Univ. (USA); Ann E. Elsner, Indiana Univ. (USA) and Aeon Imaging, LLC (USA); Victor E. Malinovsky, Christopher A. Clark, Bryan P. Haggerty, Andrea V. Walker, Stuart B. Young, Shane G. Brahm, Colleen M. McIntyre, Indiana Univ. (USA); Taras V. Litvin, Glen Y. Ozawa, Jorge A. Cuadros, Tracy Wang, Univ. of California, Berkeley (USA); Matthew S. Muller, Indiana Univ. (USA) and Aeon Imaging, LLC (USA) . [8567-61]

**Laser welding in penetrating keratoplasty and cataract surgery of pediatric patients: early results**, Francesca Rossi, Roberto Pini, Istituto di Fisica Applicata Nello Carrara (Italy); Luca Menabuoni, Alex Malandrini, Annalisa Canovetti, Ivo Lenzetti, Azienda USL 4 (Italy); Paolo Capozzi, Paola Valente, Luca Buzzonetti, Bambino Gesù Children's Hospital (Italy) . . . . . [8567-62]

**All-femtosecond laser-assisted in situ keratomileusis**, Egle Gabryte, Light Conversion Ltd. (Lithuania) and Vilnius Univ. (Lithuania); Danieliene Egle, Private Ophthalmological Practice (Lithuania); Agne Vaiceliunaite, Osvaldas Ruksenas, Mikas Vengris, Vilnius Univ. (Lithuania); Romualdas Danielius, Light Conversion Ltd. (Lithuania) . . . . . [8567-63]

**A low coherence interferometry-based eye length optometer**, Alexander Meadway, The Univ. of Alabama at Birmingham School of Medicine (USA); Christine F. Wildsoet, Yue M. Liu, Univ. of California, Berkeley (USA); Yuhua Zhang, The Univ. of Alabama at Birmingham (USA) . . . . . [8567-64]

**Study of the possibility of diagnostic cataract in the THz range**, Anna Ezerskaya, Olga Smolyanskaya, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation); Aleksandra Goncharenko, FSBI Academy S.N. Fyodorov (Russian Federation) . . . . . [8567-65]

**Symbolic algebra approach to the calculation of intraocular lens powers following cataract surgery**, David P. Hjelmstad, Arizona State Univ. (USA) and The Eye Ctr. (USA); Samir I. Sayegh M.D., The Eye Center (USA) . . . . . [8567-66]

**Adaptive optics-assisted optical coherence tomography for imaging of patients with age related macular degeneration**, Kenta Sudo, Barry Cense, Utsunomiya Univ. (Japan) . . . . . [8567-67]

**Volumetric imaging of the intraocular propagation medium using differential OTF wavefront sensing**, Johanan L. Codona, The Univ. of Arizona (USA); Nathan Doble, New England College of Optometry (USA) . . . . . [8567-68]

**Cataract screening by minimally trained remote observer with non-mydratric digital fundus camera**, Ann Choi, Univ. of Illinois at Urbana-Champaign (USA) and The Eye Ctr. (USA); David P. Hjelmstad, Arizona State Univ. (USA) and The Eye Ctr. (USA); Jessica N. Taibl, The Eye Center (USA) and Univ. of Illinois at Urbana-Champaign (USA); Samir I. Sayegh, The Eye Center (USA) ..... [8567-69]

**Real-time eye motion compensation in OCT imaging with tracking SLO**, Kari V. Vienola, Boy Braaf, Rotterdam Ophthalmic Institute (Netherlands); Christy K. Sheehy, Univ. of California, Berkeley (USA); Qiang Yang, Montana State Univ. (USA); Pavan Tiruveedhula, Univ. of California, Berkeley (USA); David W. Arathorn, Montana State Univ. (USA); Johannes F. de Boer, Rotterdam Ophthalmic Institute (Netherlands) and Vrije Univ. Amsterdam (Netherlands); Austin Roorda, Univ. of California, Berkeley (USA) ..... [8567-70]

**Comparing different imaging modalities for optimal visualization of lamina cribrosa features**, Zach Nadler, UPMC Presbyterian (USA); Daniel X. Hammer, U.S. Food and Drug Administration (USA); R. Daniel Ferguson, Physical Sciences Inc. (USA); Larry Kagemann, Hiroshi Ishikawa M.D., Jessica E. Nevins, Gadi Wollstein M.D., Joel S. Schuman M.D., UPMC Presbyterian (USA) ..... [8567-71]

**Device for imaging fundus autofluorescence with lock-in detection technique**, Katarzyna Komar, Patrycjusz Stremplewski, Maciej Szkulmowski, Marta Motoczynska, Maciej Wojtkowski, Nicolaus Copernicus Univ. (Poland) ..... [8567-72]

**Reflective afocal adaptive optics-optical coherence tomography retinal imaging system**, Sang Hyuck Lee, John S. Werner, Robert J. Zawadzki, UC Davis Medical Ctr. (USA) ..... [8567-73]

**Human retinal imaging using a conjugate-resolved 1050-nm swept source OCT with enhanced signal-to-noise ratio**, Zhijia Yuan, Zhenguo Wang, Charles Reisman, Kinpui Chan, Topcon Medical Systems, Inc. (USA) .. [8567-74]

**Three-dimensional high spatial resolution retinal imaging: full field OCT with adaptive optics**, Guillaume Chenegros, Observatoire de Paris à Meudon (France) and Observatoire de Meudon (France); Marie Glanc, Marie Blavier, Observatoire de Paris à Meudon (France); Gérard Rousset, Roderick Dembet, LESIA - Observatoire de Paris (France) ..... [8567-75]

**Multimodal imaging in clinical diagnosis and treatment of macular disease**, Jessica N. Taibl, Univ. of Illinois at Urbana-Champaign (USA) and The Eye Ctr. (USA); Nancy Ayad, Samir I. Sayegh, The Eye Center (USA) ..... [8567-76]

**Picosecond laser ablation of porcine sclera**, Wojciech S. Góra, Heriot-Watt Univ. (United Kingdom); Eleanor M. Harvey, The Univ. of Edinburgh (United Kingdom); Baljean Dhillon, NHS Lothian (United Kingdom); Simon H. Parson, The Univ. of Edinburgh (United Kingdom); Robert R. J. Maier, Duncan P. Hand, Jonathan D. Shephard, Heriot-Watt Univ. (United Kingdom) ..... [8567-77]

**Sapphire ball lensed fiber probe for common-path optical coherence tomography in ocular imaging and sensing**, Mingtao Zhao, Yong Huang, Jin U. Kang, Johns Hopkins Univ. (USA) ..... [8567-78]

**High quality optical microangiography of ocular microcirculation and measurement of total retinal blood flow in mouse eye**, Zhongwei Zhi, Xin Yin, Suzan Dziennis, Charles Alpers, Ruikang K. Wang, Univ. of Washington (USA) ..... [8567-79]

**Contact focusing multimodal probes for potential use in ophthalmic surgery with the Erbium:YAG laser**, Arash Darafsheh, Thomas C. Hutchens, S. Adam Burand, Kenneth W. Allen, The Univ. of North Carolina at Charlotte (USA); Amir Fardad, PhotonTech, LLC. (USA); Andrew N. Antoszyk, Uniformed Services Univ. of the Health Sciences (USA); Howard S. Ying, Johns Hopkins Univ. (USA); Nathaniel M. Fried, Vasily N. Astratov, The Univ. of North Carolina at Charlotte (USA) ..... [8567-80]

**Automatic algorithm for measuring visually evoked pupil size changes from OCT images**, Chenyi Liu, Beijing Univ. of Posts and Telecommunications (China) and Univ. of Waterloo (Canada); Alireza Akhlagh Moayed, Alexander Wong, Paul Fieguth, Univ. of Waterloo (Canada); Hongxia Bie, Beijing Univ. of Posts and Telecommunications (China); Vivian Choh, Kostadinka Bizheva, Univ. of Waterloo (Canada) ..... [8567-81]

**Quantification of phase retardation in corneal tissues using a femtosecond laser**, William R. Calhoun III, Alexander Beylin, Richard P. Weiblinger, Ilko Ilev, U.S. Food and Drug Administration (USA) ..... [8567-82]

**Combination of optical coherence tomography and reflectometry for ophthalmologic measurements**, Hui Lu, Michael R. Wang, Univ. of Miami (USA) ..... [8567-83]

**Study of zonule arrangement in human and non-human primates using fluorescent confocal microscopy**, Heather A. Durkee, Ophthalmic Biophysics Ctr., Bascom Palmer Eye Institute (USA) and Univ. of Miami (USA); Steven Bassnett, Yanrong Shi, Washington Univ. School of Medicine in St. Louis (USA); Esdras Arrieta, Sonia Yoo, Bascom Palmer Eye Institute (USA); Jean-Marie Parel, Bascom Palmer Eye Institute (USA) and Univ. of Miami (USA) and Vision Cooperative Research Ctr. (Australia) ..... [8567-84]

**Ultrahigh precision diamond machining of contact lenses from advanced polymers**, Khaled Abou-El-Hossein, Oluwole Olufayo, Nelson Mandela Metropolitan Univ. (South Africa); Vanessa Moodley, Univ. of KwaZulu-Natal (South Africa); Tony Bunn, South African Medical Research Council (South Africa); Johannes H. Neethling, Nelson Mandela Metropolitan Univ. (South Africa) ..... [8567-85]

**Adaptive optics for reduced threshold energy in femtosecond laser induced optical breakdown in water based eye model**, Anja Hansen, Tammo Ripken, Alexander Krueger, Laser Zentrum Hannover e.V. (Germany) . . [8567-86]

# Optical Methods for Tumor Treatment and Detection: Mechanisms and Techniques in Photodynamic Therapy XXII

Conference Chairs: **David H. Kessel**, Wayne State Univ. (USA); **Tayyaba Hasan**, Massachusetts General Hospital (USA)

Program Committee: **Charles J. Gomer**, Children's Hospital Los Angeles (USA); **Nancy L. Oleinick**, Case Western Reserve Univ. (USA); **Ravindra K. Pandey**, Roswell Park Cancer Institute (USA); **Brian W. Pogue**, Dartmouth College (USA); **Kenneth K. Wang M.D.**, Mayo Clinic (USA)

## Saturday 2 February

### SESSION 1

Room: 236 (Mezzanine) ..... Sat 9:00 am to 10:10 am

#### PDT Basic Science I

Session Chair: **David H. Kessel**, Wayne State Univ. (USA)

9:00 am: **Determinants of reactive oxygen species formation during PDT** (*Invited Paper*), David H. Kessel, Michael Price, Wayne State Univ. (USA) ..... [8568-1]

9:30 am: **Determinants of treatment resistance in 3D cellular models of cancer**, Tayyaba Hasan, Massachusetts General Hospital (USA) ..... [8568-2]

9:50 am: **High-content image-based screening platforms for the optimization of PDT against select tumor populations**, Oliver J. Klein, Yookyung Jung, Brijesh Bhayana, Conor L. Evans, Wellman Ctr. for Photomedicine (USA) ..... [8568-3]

Coffee Break ..... Sat 10:10 am to 10:50 am

### SESSION 2

Room: 236 (Mezzanine) ..... Sat 10:50 am to 12:30 pm

#### Basic Science II

Session Chair: **Tayyaba Hasan**, Massachusetts General Hospital (USA)

10:50 am: **A theoretical comparison of macroscopic and microscopic modeling of singlet oxygen during HPPH mediated-PDT**, Baochang Liu, Univ. of Pennsylvania (USA); Michele M. Kim, Univ. of Pennsylvania School of Medicine (USA); Xing Liang, Timothy C. Zhu, The Univ. of Pennsylvania Health System (USA) ..... [8568-4]

11:10 am: **Photonic cancer therapy: modulating cellular metabolism with light**, Isabel Coutinho, Thiagarajan Viruthachalam, Gnana P. Gajula, International Iberian Nanotechnology Lab. (Portugal); Steffen B. Petersen, Maria Teresa Neves-Petersen, International Iberian Nanotechnology Lab. (Portugal) and Aalborg Univ. (Denmark) ..... [8568-5]

11:30 am: **Mechanism of enhanced responses after combination photodynamic therapy (cPDT) in carcinoma cells involves C/EBP-mediated transcriptional upregulation of the coproporphyrinogen oxidase (CPO) gene**, Sanjay Anand, Cleveland Clinic Lerner Research Institute (USA); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA); Edward V. Maytin M.D., The Cleveland Clinic (USA) ..... [8568-6]

11:50 am: **Addition of erlotinib to photodynamic therapy improves therapeutic benefit through multiple mechanisms**, Shannon Gallagher-Colombo, Cory T. Rice, Joann Miller, Shirron L. Carter, Theresa M. Busch, Univ. of Pennsylvania (USA) ..... [8568-7]

12:10 pm: **Spatial measurement of subsurface PpIX fluorescence in vivo with ultrasound-guided tomographic spectroscopy**, Brendan P. Flynn, Alisha V. D'Souza, Stephen C. Kanick, Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) ..... [8568-8]

Lunch/Exhibition Break ..... Sat 12:30 pm to 1:50 pm

### SESSION 3

Room: 236 (Mezzanine) ..... Sat 1:50 pm to 4:10 pm

#### Photophysics

Session Chair: **Timothy C. Zhu**,

The Univ. of Pennsylvania Health System (USA)

1:50 pm: **Development a point measurement dosimeter to quantitatively monitor protoporphyrin IX fluorescence in skin during photodynamic therapy**, Stephen C. Kanick, Scott C. Davis, Martin E. Isabelle, Dartmouth College (USA); Edward V. Maytin M.D., The Cleveland Clinic (USA); Tayyaba Hasan, Massachusetts General Hospital (USA); Brian W. Pogue, Dartmouth College (USA) ..... [8568-9]

2:10 pm: **Photodynamic therapy light dose modeling using arterial and venous contrast CT information**, Michael Jermyn, Scott C. Davis, Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA); Matthew T. Huggett, Stephen P. Pereira, Univ. College London (United Kingdom); Tayyaba Hasan, Wellman Ctr. for Photomedicine (USA) ..... [8568-10]

2:30 pm: **Theoretical and experimental examination of fluorescence generated during PDT treatment of enclosed cavities**, Kara Lambson, Xing Liang, Timothy C. Zhu, Jarod C. Finlay, The Univ. of Pennsylvania Health System (USA) ..... [8568-11]

2:50 pm: **Imaging of absolute PpIX concentration during PDT**, Ulas Sunar, Andrew Kowalczewski, Daniel J. Rohrbach, Janet Morgan, Natalie Zeitouni, Barbara W. Henderson, Roswell Park Cancer Institute (USA) ..... [8568-12]

Coffee Break ..... Sat 3:10 pm to 3:30 pm

3:30 pm: **Binding of new cationic porphyrins to plasma proteins: study by spectral and molecular docking analysis methods**, Aram G. Gyulkhandanyan, Lusine Z. Gyulkhandanyan, Institute of Biochemistry (Armenia); Robert K. Ghazaryan, Yerevan State Medical Univ. (Armenia); Vehary A. Sakanyan, Univ. de Nantes (France) and ProtNeteomix Co. Ltd. (France); Grigor V. Gyulkhandanyan, Institute of Biochemistry (Armenia) ..... [8568-13]

3:50 pm: **Modelling hypersensitivity of cancer cells to infra-red laser irradiation: breaking ROS defence machinery**, Sergei G. Sokolovski, Univ. of Dundee (United Kingdom); Alexey Goltsov, Univ. of Abertay Dundee (United Kingdom); Edik U. Rafailov, Univ. of Dundee (United Kingdom) ..... [8568-14]

### SESSION 4

Room: 236 (Mezzanine) ..... Sat 4:10 pm to 5:40 pm

#### Basic Science III

Session Chair: **Imran Rizvi**, Massachusetts General Hospital (USA)

4:10 pm: **Photodynamic therapy for the treatment of retinoblastoma: revisiting an old concept with new ideas** (*Invited Paper*), Charles J. Gomer, Children's Hospital Los Angeles (USA) and Univ. of Southern California (USA) ..... [8568-15]

4:40 pm: **KillerRed as a potential genetically encoded photosensitizer for PDT of cancer**, Elena V. Zagaynova M.D., Marina V. Shirmanova, Nizhny Novgorod State Medical Academy (Russian Federation); Ekaterina O. Serebrovskay, Konstantin A. Lukyanov, Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry of the Russian Academy of Sciences (Russian Federation); Ludmila B. Snopova M.D., Ekatarina A. Minakova, Nizhny Novgorod State Medical Academy (Russian Federation); Ilya V. Turchin, Vladislav A. Kamensky, Institute of Applied Physics (Russian Federation); Sergey A. Lukyanov, Shemyakin-Ovchinnikov Institute of Bioorganic Chemistry of the Russian Academy of Sciences (Russian Federation) ..... [8568-16]



5:00 pm: **Modeling physical and stromal determinants of 3D tumor growth to inform PDT-mediated combination treatments**, Imran Rizvi, Massachusetts General Hospital (USA) and Harvard Medical School (USA) and Wellman Ctr. for Photomedicine (USA); Umut A. Gurkan, Brigham and Women's Hospital (USA) and Harvard Medical School (USA); Nermina Alagic, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA); Sriram R. Anbil, Massachusetts General Hospital (USA) and Wellman Ctr. for Photomedicine (USA); Jonathan P. Celli, Univ. of Massachusetts (USA) and Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA); Savas Tasoglu, Brigham and Women's Hospital (USA) and Harvard Medical School (USA); Lawrence Mensah, Zhiming Mai, Iqbal Massodi, Massachusetts General Hospital (USA) and Wellman Ctr. for Photomedicine (USA); Utkan Demirci, Brigham and Women's Hospital (USA) and Harvard Medical School (USA); Tayyaba Hasan, Massachusetts General Hospital (USA) and Harvard Medical School (USA) and Wellman Ctr. for Photomedicine (USA) . . . . . [8568-17]

5:20 pm: **Photodynamic characterization and optimization using multifunctional nanoparticles for brain cancer treatment**, Kristen Herrmann, Yong-Eun Lee Koo, Daniel A. Orringer, Oren Sagher, Raoul Kopelman, Univ. of Michigan (USA) . . . . . [8568-18]

**BiOS Hot Topics**  
Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

## Sunday 3 February

### SESSION 5

**Room: 236 (Mezzanine) . . . . . Sun 8:30 am to 10:30 am**

#### PDT Clinical I

Session Chair: **Kenneth K. Wang M.D.**, Mayo Clinic (USA)

8:30 am: **Photodynamic therapy of locally advanced pancreatic cancer (VERTPAC study): final clinical results** (*Invited Paper*), Matthew T. Huggett, Univ. College London (United Kingdom); Michael Jermy, Thayer School of Engineering at Dartmouth (USA); Alice Gillams, Univ. College Hospital (United Kingdom); Sandy Mosse, Univ. College London (United Kingdom); E. Kent, Univ. College Hospital (United Kingdom); Stephen G. Bown M.D., Univ. College London (United Kingdom); Tayyaba Hasan, Massachusetts General Hospital (USA); Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA); Stephen P. Pereira, Univ. College London (United Kingdom) . . . . . [8568-49]

9:00 am: **Photodynamic therapy in the treatment of pancreatic lesions** (*Invited Paper*), Kenneth K. Wang M.D., Mayo Clinic (USA) . . . . . [8568-19]

9:30 am: **Effects of surgical resection on outcomes following intraoperative photodynamic therapy** (*Invited Paper*), Keith A. Cengel, Charles B. Simone M.D., Theresa M. Busch, Joseph S. Friedberg, Univ. of Pennsylvania School of Medicine (USA) . . . . . [8568-20]

10:00 am: **Photodynamic therapy and the treatment of head and neck malignancies** (*Invited Paper*), Merrill A. Biel M.D., Univ. of Minnesota, Twin Cities (USA) and Virginia Piper Cancer Institute (USA) . . . . . [8568-21]

Coffee Break . . . . . Sun 10:30 am to 11:00 am

### SESSION 6

**Room: 236 (Mezzanine) . . . . . Sun 11:00 am to 12:20 pm**

#### PDT Clinical II

Session Chair: **Merrill A. Biel M.D.**, Univ. of Minnesota, Twin Cities (USA)

11:00 am: **Clinical studies of combined photodynamic therapy using 5-fluorouracil and methylnolevulinate in patients at high risk for squamous cell carcinoma**, Edward V. Maytin M.D., Sara Lohser M.D., Alejandra Tellez M.D., Lauren C. Wene, The Cleveland Clinic (USA) . . . [8568-22]

11:20 am: **Real-time treatment feedback guidance of pleural PDT**, Timothy C. Zhu, The Univ. of Pennsylvania Health System (USA); Michele M. Kim, Univ. of Pennsylvania (USA); Xing Liang, Baochang Liu, The Univ. of Pennsylvania Health System (USA); Julia Sandell, Univ. of Pennsylvania (USA); Jarod C. Finlay, Andreea Dimofte, Carmen E. Rodriguez, Charles B. Simone M.D., Keith A. Cengel, Joseph S. Friedberg, The Univ. of Pennsylvania Health System (USA) . . . . . [8568-23]

11:40 am: **Effects of modelled optical properties on recovered fluorophore concentration during image-guided fluorescence tomography**, Alisha V. D'Souza, Brendan P. Flynn, Stephen C. Kanick, Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) . . . . . [8568-24]

12:00 pm: **A robotic multi-channel platform for interstitial photodynamic therapy**, Anna V. Sharikova, Jarod C. Finlay, Timothy C. Zhu, The Univ. of Pennsylvania Health System (USA) . . . . . [8568-25]

Lunch Break . . . . . Sun 12:20 pm to 1:20 pm

### SESSION 7

**Room: 236 (Mezzanine) . . . . . Sun 1:20 pm to 4:30 pm**

#### PDT: Preclinical and Clinical III

Session Chair: **Conor L. Evans**, Wellman Ctr. for Photomedicine (USA)

1:20 pm: **Overcoming therapeutic resistance in pancreatic cancer with photodynamic therapy (PDT): development of pre-clinical models to evaluate the role of tumor-stroma interactions**, Jonathan P. Celli, Univ. of Massachusetts (USA); Imran Rizvi, Iqbal Massodi, Massachusetts General Hospital (USA) and Wellman Ctr. for Photomedicine (USA); Michael Glidden, Univ. of Massachusetts (USA); Tayyaba Hasan, Massachusetts General Hospital (USA) and Wellman Ctr. for Photomedicine (USA) . . . . . [8568-46]

1:40 pm: **The impact of tumor endothelial cells on the biological characteristics of three-dimensional ovarian micronodules**, Sriram R. Anbil, Imran Rizvi, Nermina Alagic, Iqbal Massodi, Massachusetts General Hospital (USA); Jonathan P. Celli, Univ. of Massachusetts (USA); Tayyaba Hasan, Massachusetts General Hospital (USA) . . . . . [8568-47]

2:00 pm: **Monitoring photosensitizer uptake using two photon fluorescence lifetime imaging microscopy**, Shu-Chiun Yeh, Kevin R. Diamond, Michael S. Patterson, David W. Andrews, Zhaojun Nie, Joseph E. Hayward, Qiyan Fang, McMaster Univ. (Canada) . . . . . [8568-26]

2:20 pm: **Monte Carlo simulation of light fluence calculation during pleural PDT**, Julia Sandell, The Univ. of Pennsylvania Health System (USA); Michelle M. Kim, Univ. of Pennsylvania School of Medicine (USA); Timothy C. Zhu, The Univ. of Pennsylvania Health System (USA) . . . . . [8568-27]

2:40 pm: **Light dosimetry and dose verification for pleural PDT**, Andreea Dimofte, Anna V. Sharikova, The Univ. of Pennsylvania Health System (USA); Michele M. Kim, Univ. of Pennsylvania School of Medicine (USA); Timothy C. Zhu, The Univ. of Pennsylvania Health System (USA) . . . . . [8568-28]

Coffee Break . . . . . Sun 3:00 pm to 3:30 pm

3:30 pm: **LEDs as excitation source for time resolved singlet oxygen luminescence detection in cell suspensions**, Steffen Hackbarth, Annegret Preuss, Tobias Perma, Jan C. Schlothauer, Beate Röder, Humboldt-Univ. zu Berlin (Germany) . . . . . [8568-29]

3:50 pm: **2D-scanning of singlet oxygen luminescence in skin using fiber optics**, Jan C. Schlothauer, Steffen Hackbarth, Beate Röder, Humboldt-Univ. zu Berlin (Germany) . . . . . [8568-30]

4:10 pm: **In vivo luminescence model for the study of tumor regression and regrowth following combination regimens with differentiation-promoting agents and photodynamic therapy**, Kishore Reddy Rollakanti, The Cleveland Clinic (USA); Sanjay Anand, Cleveland Clinic Lerner Research Institute (USA); Edward V. Maytin M.D., The Cleveland Clinic (USA) . . . . . [8568-31]

**Monday 4 February**

**POSTERS-MONDAY**

**Room: 103 (Exhibit Level) . . . . . Mon 5:30 pm to 7:30 pm**

Conference attendees are invited to attend the BIOS poster session on Monday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Parameter determination for singlet oxygen modeling of BPD-mediated PDT**, Dayton D. McMillan, Daniel Chen, Michele M. Kim, Xing Liang, Timothy C. Zhu, Hospital of the Univ. of Pennsylvania (USA) . . . . . [8568-32]

**A novel LED-based light source for PDT applications in 96 well plate**, Hasim O. Tabakoglu, Mehmet N. Burgucu, Tugba Sagir, Mehmet Senel, Sevim Isik, Fatih Univ. (Turkey) . . . . . [8568-33]

**A novel near real-time laser scanning device for geometrical determination of pleural cavity surface**, Michele M. Kim, Timothy C. Zhu, Univ. of Pennsylvania School of Medicine (USA) . . . . . [8568-34]

**Photodynamic therapy mediated by Cerenkov radiation from beta-emitting radionuclides**, David Boucher, Brad Hartl, Laura Marcu, Simon R. Cherry, Univ. of California, Davis (USA) . . . . . [8568-35]

**Assessing patient response during PDT in head and neck lesions with diffuse optical spectroscopies**, Daniel J. Rohrbach, Nestor Rigual, Erin Tracy, Andrew Kowalczewski, Kenneth Keymel, Michele T. Cooper, Heinz Baumann, Barbara W. Henderson, Ulas Sunar, Roswell Park Cancer Institute (USA) . . . . . [8568-36]

**A probe specific empirical light transport model for improved quantification of optical parameters during PDT**, Daniel J. Rohrbach, Andrew Kowalczewski, Bouri Chen, Ulas Sunar, Roswell Park Cancer Institute (USA) . . . . . [8568-37]

**Imaging nonmelanoma skin cancers at pre- and post-PDT with combined ultrasound-photoacoustic microscopy**, Ulas Sunar, Roswell Park Cancer Institute (USA) . . . . . [8568-38]

**PDT dose dosimetry for pleural photodynamic therapy**, Anna V. Sharikova, Jarod C. Finlay, The Univ. of Pennsylvania Health System (USA); Xing Liang, Univ. of Pennsylvania (USA); Timothy C. Zhu, The Univ. of Pennsylvania Health System (USA) . . . . . [8568-39]

**Cytokine-reported inflammation after pre-PDT tumor excision is correlated with PDT-induced hypoxia measured by diffuse optical spectroscopy in mesothelioma patients**, So Hyun Chung, Univ. of Pennsylvania (USA); Keith A. Cengel, Charles B. Simone M.D., Joseph S. Friedberg, Hospital of the Univ. of Pennsylvania (USA); Steven M. Albelda, Madeline E. Winters, Julien Menko, Univ. of Pennsylvania (USA); Jarod C. Finlay, Timothy C. Zhu, Eli Glatstein, Hospital of the Univ. of Pennsylvania (USA); Arjun G. Yodh, Univ. of Pennsylvania (USA); Theresa M. Busch, Hospital of the Univ. of Pennsylvania (USA) . . . . . [8568-40]

**Targeted imaging of ovarian cancer cells using viral nanoparticles doped with indocyanine green**, Yadir A. Guerrero, Baharak Bahmani, Bonsu Jung, Valentine I. Vullev, Univ. of California, Riverside (USA); Vikas Kundra, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Bahman Anvari, Univ. of California, Riverside (USA) . . . . . [8568-41]

**An ultrasound-guided fluorescence tomography system: design and specification**, Alisha V. D'Souza, Brendan P. Flynn, Sason Torosean, Stephen C. Kanick, Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) . . . . . [8568-42]

**Photodynamic therapy: diagnostic and therapeutic applications**, Ivy M. Ndhundhuma, Council for Scientific and Industrial Research (South Africa) . . . . . [8568-43]

**Towards image guided drug delivery and therapy of glioblastoma**, Srivalleesha Mallidi, Harvard Medical School (USA); Lawrence Mensah, Massachusetts General Hospital (USA); Kimberley S. Samkoe, Dartmouth College (USA); Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA); Tayyaba Hasan, Massachusetts General Hospital (USA) . . . . . [8568-45]

**Calculation of singlet oxygen formation from one and two photon absorbing photosensitizers used in PDT**, Mary J. Potasek, Mary J. Potasek, Gene Parilov, Karl Beeson, Simphotek Inc. (USA) . . . . . [8568-48]

**CT imaging of orthotopic pancreas tumors in Rabbit correlating to verteporfin uptake**, Jason Gunn, Kenneth M. Tichauer, Thayer School of Engineering at Dartmouth (USA); Karen L. Moodie, Dartmouth Hitchcock Medical Ctr. (USA); Susan Kane, Thayer School of Engineering at Dartmouth (USA); P. Jack Hoopes, Geisel School of Medicine (USA); Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) . . . . . [8568-50]

**Photodynamic therapy for cancer with tyrosine kinase inhibitors: the power of combination therapy**, Andrea Weiss, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Judy van Beijnum, VU Univ. Medical Center, Amsterdam (Netherlands); Debora Bonvin, Hubert E. van den Bergh, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Arjan . W Griffioen, VU Univ. Medical Center (Netherlands); Patrycja M. Nowak-Sliwinska, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8568-51]

# Mechanisms for Low-Light Therapy VIII

Conference Chairs: **Michael R. Hamblin**, Wellman Ctr. for Photomedicine (USA); **Juanita Anders**, Uniformed Services Univ. of the Health Sciences (USA); **James D. Carroll**, THOR Photomedicine Ltd. (United Kingdom)

Program Committee: **Tomas Hode**, Immunophotonics, Inc. (USA); **Praveen R. Arany**, Massachusetts General Hospital (USA); **Daniel Barolet M.D.**, McGill Univ (Canada)

## Saturday 2 February

### SESSION 1

Room: 252 (Mezzanine) ..... Sat 8:30 am to 10:20 am

#### Dosimetry

Session Chair: **Michael R. Hamblin**,  
Wellman Ctr. for Photomedicine (USA)

8:30 am: **The DOSE in LLLT: still no consensus** (*Invited Paper*), Tomas Hode, Immunophotonics, Inc. (USA); Lars Hode, Swedish Laser-Medical Society (Sweden); Peter A. Jenkins, SpectraMedics (USA) ..... [8569-1]

8:55 am: **Low-level laser/light therapy (LLLT) direct and indirect targets** (*Invited Paper*), James D. Carroll, THOR Photomedicine Ltd. (United Kingdom) ..... [8569-2]

9:20 am: **The wavelength, beam size, and type dependences of cerebral low-level light therapy: a Monte Carlo study on visible Chinese human**, Ting Li, Univ. of Electronic Science and Technology of China (China) ..... [8569-3]

9:40 am: **Mapping optical properties of rat brain for LLLT dosimetry**, Marcelo V. P. Pires de Sousa, Univ. de São Paulo (Brazil); Renato Prates, Ilka Kato, Caetano Sabino, Tania Yoshimura, Luis Suzuki, Martha Ribeiro, Instituto de Pesquisas Energéticas e Nucleares (Brazil); Elisabeth M. Yoshimura, Univ. de São Paulo (Brazil) ..... [8569-4]

10:00 am: **Red and infrared light distribution in blood**, Ana Carolina de Magalhaes, Elisabeth M. Yoshimura, Univ. de São Paulo (Brazil) ..... [8569-5]  
Coffee Break ..... Sat 10:20 am to 10:50 am

### SESSION 2

Room: 252 (Mezzanine) ..... Sat 10:50 am to 12:10 pm

#### In vitro Studies

Session Chair: **Praveen R. Arany**,  
National Institute of Dental and Craniofacial Research (USA)

10:50 am: **Tissue regeneration with photobiomodulation**, Praveen R. Arany, National Institute of Dental and Craniofacial Research (USA) ..... [8569-28]

11:10 am: **Exposing human retinal pigmented epithelial cells to red light in vitro elicits an adaptive response to a subsequent 2-µm laser challenge**, Kurt J. Schuster, TASC, Inc. (USA); Larry E. Estlack, Conceptual MindWorks, Inc. (USA); Jeffrey C. Wigle, Air Force Research Lab. (USA) ..... [8569-7]

11:30 am: **How low-level laser therapy can change mechanical properties of cells**, Ana Carolina de Magalhaes, Diana Martinez, Elisabeth M. Yoshimura, Adriano M. Alencar, Univ. de São Paulo (Brazil); Marcia Z. Z. J. Ferreira, Univ. Estadual de Campinas (Brazil); Cristina M. Chavantes M.D., Instituto do Coração (Brazil) ..... [8569-8]

11:50 am: **Study on the Curcumin dynamics and distribution through living biofilms**, Mariana T. Carvalho, Univ. de São Paulo (Brazil); Livia N. Dovigo, Alessandra N. S. Rastelli, Univ. Estadual Paulista (Brazil); Vanderlei S. Bagnato, Univ. de São Paulo (Brazil) ..... [8569-9]

Lunch Break ..... Sat 12:10 pm to 1:30 pm

### SESSION 3

Room: 252 (Mezzanine) ..... Sat 1:30 pm to 3:00 pm

#### In vivo Studies

Session Chair: **James D. Carroll**,  
THOR Photomedicine Ltd. (United Kingdom)

1:30 pm: **Low-intensity laser for treatment of Herpes Simplex on Escherichia coli cultures and DNA repair**, Adenilson S. Fonseca, Univ. do Estado do Rio de Janeiro (Brazil); Roberta S. Marciano, Luiz Phelippe S. Sergio, Giovanni Augusto C. Polignano, Oscar R. Guimaraes, Mauro Geller, Ctr. Univ. Serra dos Órgãos (Brazil); Flavia Paoli, UFJF (Brazil) ..... [8569-10]

1:50 pm: **Effects of speckle-like laser irradiation on growth of bacteria in vitro**, Andreiy Yu. Popov, Nataliya A. Popova, Aleksandr V. Tyurin, Odessa National Univ. named after I. I. Mechnikov (Ukraine); Valentin M. Grimblatov, Photonics Life Technologies (USA) ..... [8569-11]

2:10 pm: **Biostimulative effect of 809-nm diode laser and indocyanine green on p. aeruginosa instead of photodynamic effect** (*Invited Paper*), Nuray Aysan, Nermin Topaloglu, Sahrui Yueksel, Murat Gulsoy, Bogaziçi Üniv. (Turkey) ..... [8569-12]

2:35 pm: **Transcranial low-level light therapy induces neurogenesis and synaptogenesis in mice** (*Invited Paper*), Michael R. Hamblin, Weijun Xuan, Shih-Fong Huang, Qiuhe Wu, Ying-Ying Huang, Wellman Ctr. for Photomedicine (USA) ..... [8569-13]

### POSTER SESSION AND COFFEE BREAK

Room: Hall A, BiOS Expo ..... Sat 3:00 pm to 4:00 pm

Attendees are invited to view the conference posters, which will be available on Saturday and Sunday. The poster session, with authors present, will be held from 3:00 to 4:00 PM on Saturday afternoon, in conjunction with the coffee break.

**POSTER AUTHORS:** Poster setup is scheduled from 10:00 to 11:30 AM on Saturday and Sunday in South Hall A. Please plan to stand with your poster during the poster session on Sunday from 3:00 to 4:00 PM. Posters may remain on the boards both Saturday and Sunday but must be removed following the Sunday afternoon poster session/coffee break. Posters left on the boards after this time will be discarded.

**Raman study of the effect of LED light on grafted bone defects**, Luiz Guilherme P. Soares, Antônio Luiz B. Pinheiro D.D.S., Gilbeth Tadeu S. Aciole D.D.S., Joubert Mateus S. Aciole, Artur F. Barbosa, Univ. Federal da Bahia (Brazil); Landolfo Silveira Jr., Camilo Castelo Branco Univ. (Brazil) . . . . [8569-20]

**Green LED associated to hydrogen peroxide 20% for dental bleaching: nanomorphology study of enamel by scanning electron microscopy**, Priscila C. Oliveira D.D.S., Susana P. S. Olivera D.D.S., Juliana S. Monteiro D.D.S., Gustavo M. P. Santos, Fernando J. P. Sampaio D.D.S., Maria Gesteira D.D.S., Maria Antonia de Fatima Zanin D.D.S., Antônio Luiz B. Pinheiro, Univ. Federal da Bahia (Brazil) ..... [8569-21]

**Traditional phenothiazine derivatives as promising photosensitizers for a photodynamic antimicrobial chemotherapy (PACT) against parasites of Leishmania braziliensis: in vitro study**, Artur F. Barbosa, Univ. Federal da Bahia (Brazil); Bruno B. Sangiorgi, Fundacao Oswaldo Cruz (Brazil) and Centro de Pesquisas Gonçalo Moniz (Brazil); Suely L. Galdino, Univ. Federal de Pernambuco (Brazil); Manoel B. Netto, Fundacao Oswaldo Cruz (Brazil); Ivan R. Pitta, Univ. Federal de Pernambuco (Brazil); Antônio Luiz B. Pinheiro, Univ. Federal da Bahia (Brazil) ..... [8569-22]

**Use of laser phototherapy on oral mucositis associated with CMF in FAC chemotherapy protocols in patients with breast cancer**, Fabiola B. Carvalho D.D.S., Maria F. Ferreira, Susana Carla P. Oliveira D.D.S., Juliana S. Monteiro D.D.S., Gustavo M. P. Santos, Maria Gesteira, Tereza C. Maia, Antônio Luiz B. Pinheiro, Univ. Federal da Bahia (Brazil) ..... [8569-23]



**Photodynamic antimicrobial chemotherapy (PACT) using Phenothiazines derivatives associated with the red LED against staphylococcus aureus (ATCC 23529): in vitro**, Anderson F. S. Miranda, Fundacao Oswaldo Cruz (Brazil); Gustavo M. Pires-Santos, Fundacao Oswaldo Cruz (Brazil) and a+ Medicina Diagnóstica (Brazil); Susana Carla P. Oliveira, Juliana S. Monteiro, Fernando J. P. Sampaio, Maria Gesteira, Fátima A. Zanin, Univ. Federal da Bahia (Brazil); Marcos A. V. Santos, Fundacao Oswaldo Cruz (Brazil); Antônio Luiz B. Pinheiro, Univ. Federal da Bahia (Brazil) . . . . . [8569-24]

**The response of human retinal pigment epithelium cells in vitro to changes in [NO] stimulated by low-levels of red light**, Brent J. Lavey, U.S. Air Force (USA); Larry E. Estlack, Conceptual MindWorks, Inc. (USA); Kurt J. Schuster, TASC, Inc. (USA); Benjamin A. Rockwell, Air Force Research Lab. (USA); Jeffrey C. Wigle, U.S. Air Force (USA) . . . . . [8569-25]

**Photodynamic antimicrobial chemotherapy (PACT) using phenothiazines derivatives associated with the red LASER against staphylococcus aureus (ATCC 23529) in vitro**, Gustavo M. P. Santos, Fundacao Oswaldo Cruz (Brazil) and a+ Medicina Diagnóstica (Brazil); Juliana S. Monteiro, Univ. Federal da Bahia (Brazil); Susana C. de Oliveira, Anderson F. S. Miranda, Fundacao Oswaldo Cruz (Brazil); Fernando J. P. Sampaio, Maria Gesteira, Univ. Federal da Bahia (Brazil); Marcos A. V. dos Santos, Fundacao Oswaldo Cruz (Brazil); Fatima A. Zanin, Antônio Luiz B. Pinheiro, Univ. Federal da Bahia (Brazil) . . . . . [8569-26]

**Low-level laser therapy (LLLT) using 635-nm light emitting diode (LED) inhibits bone resorptive osteoclast formation by regulating the actin cytoskeleton**, Hyun-Ju Lim, Jang-In Shin, Man-Seok Bang, Chung-Hun Oh, Dankook Univ. (Korea, Republic of) . . . . . [8569-27]

4:40 pm: **Influence of two laser light delivery protocols in the cutaneous healing of diabetic rat: morphological and myofibroblast evaluation**, Brunna P. A. Sampaio, Cristiano L. Santana, Fabiana Santos, Kristianne P. S. Fernandes D.D.S., Raquel A. Mesquita-Ferrari, Alessandro M. Deana, Daniela F. Silva, Cristiane M. França, UNINOVE (Brazil) . . . . . [8569-16]

5:00 pm: **Laser immunotherapy for advanced breast cancer: a case report**, Tomas Hode, Immunophotonics, Inc. (USA); Orn Adalsteinsson, International Strategic Cancer Alliance (USA); Gabriela L. Ferrel, Hospital Nacional Edgardo Rebagliati Martins (Peru); John A. Lunn, Commonwealth Medical Research Institute (Bahamas); Xiaosong Li, Chinese PLA General Hospital (China); Robert E. Nordquist, Immunophotonics, Inc. (USA); Wei R. Chen, Univ. of Central Oklahoma (USA) . . . . . [8569-17]

5:20 pm: **Influence of wavelength on the outcome of treatment of TMJ disorders: TMDS**, Antônio Luiz B. Pinheiro D.D.S., Aparecida Maria C. Marques D.D.S., Carolina M. Carvalho D.D.S., Maria Cristina T. Cangussu D.D.S., Luiz Guilherme P. Soares, Univ. Federal da Bahia (Brazil) . . . . . [8569-18]

5:40 pm: **Laser-acupuncture for autism/autism spectrum disorder: a randomized sham controlled trial**, Shahzad Anwar, Anwar Shah's First C.P. and Paralysis Clinic and Research Ctr. (Pakistan) . . . . . [8569-19]

**SESSION 4**

**Room: 252 (Mezzanine) . . . . . Sat 4:00 pm to 6:00 pm**

**In vivo/Clinical Studies**

Session Chair: **Tomas Hode**, Immunophotonics, Inc. (USA)

4:00 pm: **Photobiomodulation Protects Against Retinal Degeneration in a Rodent Model of Retinitis Pigmentosa**, Janis T. Eells, Sandeep Gopalakrishnan, Heather Schmitt, Univ. of Wisconsin-Milwaukee (USA); Adam M. Dubis, Joseph Carroll, Medical College of Wisconsin (USA) . . . . . [8569-14]

4:20 pm: **Study of T lymphocytes activation in cutaneous repair of diabetic rats treated with low-level laser therapy**, Cristiane M. França D.D.S., Cristiano L. Santana, Brunna P. A. Sampaio, Fabiana Santos, Kristianne P. S. Fernandes D.D.S., Alessandro M. Deana, Raquel A. Mesquita-Ferrari, Daniela F. Silva, UNINOVE (Brazil) . . . . . [8569-15]

**BiOS Hot Topics**  
Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

**Don't miss  
BiOS EXPO**

See new products, top companies,  
potential collaborators, and the  
best suppliers face-to-face

**2-3 February 2013  
SOUTH HALL A**

Saturday · 12:00 pm to 5:00 pm  
Sunday · 10:00 am to 5:00 pm

# Frontiers in Biological Detection: From Nanosensors to Systems

Conference Chairs: **Benjamin L. Miller**, Univ. of Rochester Medical Ctr. (USA); **Philippe M. Fauchet**, Vanderbilt Univ. (USA)

Program Committee: **Holger Becker**, microfluidic ChipShop GmbH (Germany); **Xudong Fan**, Univ. of Michigan (USA); **Jiri Homola**, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); **Laura Maria Lechuga**, Ctr. d'Investigacions en Nanociència i Nanotecnologia (Spain); **Frances S. Ligler**, U.S. Naval Research Lab. (USA); **Elric W. Saaski**, Research International, Inc. (USA); **Michael J. Sailor**, Univ. of California, San Diego (USA); **Oliver G. Schmidt**, Leibniz-Institut für Festkörper- und Werkstoffforschung Dresden (Germany); **Christopher C. Striemer**, Adarza Biosystems Inc (USA); **Sharon M. Weiss**, Vanderbilt Univ. (USA)

## Saturday 2 February

### SESSION 1

Room: 302 (Esplanade) ..... Sat 8:50 am to 10:10 am

#### Waveguides and Ring Resonators

Session Chair: **Benjamin L. Miller**, Univ. of Rochester Medical Ctr. (USA)

8:50 am: **A computational approach to optimize microring resonators for biosensing applications**, Brett R. Wenner, Air Force Research Lab. (USA); Justin C. Wirth, Purdue Univ. (USA) and Birck Nanotechnology Ctr. (USA); Monica S. Allen, Jeffery W. Allen, Air Force Research Lab. (USA); Minghao Qi, Purdue Univ. (USA) and Birck Nanotechnology Ctr. (USA) ..... [8570-1]

9:10 am: **Cascaded microring resonators for biomedical applications: improved sensitivity at large tuning range**, Alethea V. Zamora Gomez, Daniel Pergande, Peter Lützw, Helmut Heidrich, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany) ..... [8570-2]

9:30 am: **FDTD simulation of microring resonator-based sensing**, Dan T. Nguyen, Robert A. Norwood, College of Optical Sciences, The Univ. of Arizona (USA) ..... [8570-3]

9:50 am: **Detection of small and large molecules using a porous silicon grating-coupled Bloch surface wave label-free biosensor**, Gilberto A. Rodriguez, Judson D. Ryckman, Yang Jiao, Vanderbilt Univ. (USA); Robert L. Fuller, Villanova Univ. (USA) and Vanderbilt Univ. (USA); Sharon M. Weiss, Vanderbilt Univ. (USA) ..... [8570-5]

Coffee Break ..... Sat 10:10 am to 10:40 am

### SESSION 2

Room: 302 (Esplanade) ..... Sat 10:40 am to 12:15 pm

#### Photonic Crystals

Session Chair: **Philippe M. Fauchet**, Vanderbilt Univ. (USA)

10:40 am: **Silicon photonic crystal microarrays for high throughput label-free proteomics for detection of cancers with sensitivity and specificity** (*Invited Paper*), Swapnajit Chakravarty, Omega Optics, Inc. (USA); Ray T. Chen, Wei-Cheng Lai, Yi Zou, The Univ. of Texas at Austin (USA); Robert M. Gemmill, Medical Univ. of South Carolina (USA) ..... [8570-6]

11:15 am: **Evanescence field trapping of bacteria using photonic crystal cavities**, Thijs van Leest, Jaap Caro, Technische Univ. Delft (Netherlands) ..... [8570-7]

11:35 am: **Two-dimensional photonic crystal biosensor as a platform for label-free sensing of virus simulants**, Rashmi Sriram, James E. Baker, Univ. of Rochester Medical Ctr. (USA); Philippe M. Fauchet, Vanderbilt Univ. (USA); Benjamin L. Miller, Univ. of Rochester Medical Ctr. (USA) ..... [8570-8]

11:55 am: **High yield silicon photonic crystal microcavity biosensors with 100fM detection limit**, Yi Zou, The Univ. of Texas at Austin (USA); Swapnajit Chakravarty, Omega Optics, Inc. (USA); Wei-Cheng Lai, Ray T. Chen, The Univ. of Texas at Austin (USA) ..... [8570-9]

Lunch Break ..... Sat 12:15 pm to 1:45 pm

### SESSION 3

Room: 302 (Esplanade) ..... Sat 1:45 pm to 3:20 pm

#### Fluidics and Systems

Session Chair: **Benjamin L. Miller**, Univ. of Rochester Medical Ctr. (USA)

1:45 pm: **Microscale tools for measuring spatiotemporal chemical gradients in biological systems** (*Invited Paper*), Charles Henry, David S. Dandy, Stuart Tobet, Colorado State Univ. (USA) ..... [8570-10]

2:20 pm: **Detection, isolation, and capture of circulating breast cancer cells with photoacoustic flow cytometry**, Kiran D. Bhattacharyya, Martin Njoroge, Brian Gaffigan, Benjamin S. Goldschmidt, Kyle Rood, John A. Viator, Univ. of Missouri-Columbia (USA) ..... [8570-11]

2:40 pm: **A compact spatially encoded flow cytometry apparatus for the detection of fluorescent particles**, Félix-Antoine Lavoie, David Béliveau-Viel, Olivier Ratelle, Danny Brouard, Denis Boudreau, Univ. Laval (Canada) . [8570-12]

3:00 pm: **Biophotonics: a European perspective**, Thierry Robin, Jacques Cochard, TEMATYS (France); Frédéric Breussin, Yole Développement (France) ..... [8570-13]

Coffee Break ..... Sat 3:20 pm to 3:50 pm

### SESSION 4

Room: 302 (Esplanade) ..... Sat 3:50 pm to 5:25 pm

#### Fibers and Plasmonics

Session Chair: **Philippe M. Fauchet**, Vanderbilt Univ. (USA)

3:50 pm: **Taking single virus detection and sizing to the limit with molecular sensitivity within a syringe needle: the birth of nanoplasmonic-microcavity hybrid sensors** (*Invited Paper*), Stephen Arnold, Polytechnic Institute of New York Univ. (USA) ..... [8570-14]

4:25 pm: **Sub-wavelength fluorescent polymer coatings to convert standard glass capillaries into robust microfluidic refractometric sensors**, Kristopher J. Rowland, Alexandre Francois, Tanya M. Monroe, The Univ. of Adelaide (Australia) ..... [8570-15]

4:45 pm: **A fiber tip label free biological sensing platform for in vivo applications**, Alexandre Francois, Kristopher J. Rowland, Tanya M. Monroe, The Univ. of Adelaide (Australia) ..... [8570-16]

5:05 pm: **Tapered optical fibers for aqueous and gaseous phase biosensing applications**, Branden J. King, Peter E. Powers, Andrew M. Sarangan, Joseph W. Haus, Ighodalo Idehenre, Karolyn M. Hansen, Univ. of Dayton (USA) ..... [8570-17]

### BiOS Hot Topics

Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

## Sunday 3 February

### SESSION 5

Room: 302 (Esplanade) . . . . .Sun 9:00 am to 10:30 am

#### Nanopores and Plasmonics

Session Chair: **Benjamin L. Miller**,  
Univ. of Rochester Medical Ctr. (USA)

9:00 am: **Controlled release of theophylline from poly(vinyl alcohol) hydrogels/porous silicon (SiP) nanostructured systems**, Gabriela Palestino, Nancy Ayerim Cervantes-Rincon, Francisco Javier Medellin-Rodríguez, Univ. Autónoma de San Luis Potosí (Mexico); Vladimir Escobar-Barrios, Instituto Potosino de Investigación Científica y Tecnología (Mexico) . . . . . [8570-18]

9:20 am: **Whispering gallery mode biosensing of translocation events through a single solid-state nanopore**, Kyujung Kim, Max Planck Institute for the Science of Light (Germany); Gaurav Goyal, Min Jun Kim, Drexel Univ. (USA); Frank Vollmer, Max Planck Institute for the Science of Light (Germany) [8570-19]

9:40 am: **Quantum bio-nanosensors based on quantum dot-metallic nanoparticle systems**, Seyed M. Sadeghi, The Univ. of Alabama in Huntsville (USA) . . . . . [8570-20]

10:00 am: **Properties of resonant modal-plasmonic multiparametric biosensors** (*Invited Paper*), Robert Magnusson, Jaewoong Yoon, The Univ. of Texas at Arlington (USA); Debra D. Wawro, Resonant Sensors Inc. (USA) . . . . . [8570-21]

Coffee Break . . . . . Sun 10:30 am to 11:00 am

### SESSION 6

Room: 302 (Esplanade) . . . . .Sun 11:00 am to 12:20 pm

#### Imaging, Absorbance, and Fluorescence

Session Chair: **Philippe M. Fauchet**, Vanderbilt Univ. (USA)

11:00 am: **Single nanoparticle and virus imaging using computational on-chip microscopy**, Onur Mudanyali, Euan R. McLeod, Wei Luo, Alon Greenbaum, Ahmet Faruk Coskun, Univ. of California, Los Angeles (USA); Jean-Marc Dinten, Yves Hennequin, Cédric P. Allier, CEA-LETI (France); Aydogan Ozcan, Univ. of California, Los Angeles (USA) . . . . . [8570-22]

11:20 am: **Rapid detection of malignant bio-species using digital holographic pattern recognition and nano-photonics**, Sergey S. Sarkisov Sr., SSS Optical Technologies, LLC (USA); Tatjana Kukhtareva, Nickolai Kukhtarev, Michael J. Curley, Vernessa Edwards, John Corda, Marylyn Creer, Alabama A&M Univ. (USA) . . . . . [8570-23]

11:40 am: **Towards a simple tuberculosis diagnosis through the exhaled breath—A liquid fluorimeter with an excitation at 265 nm**, Jean B. Hue, Mathieu G. Dupoy, Severine Vignoud, Jean-Luc Ricaud, CEA-LETI (France); Thu-hoa Tran-Thi, Commissariat à l'Énergie Atomique (France); Sandrine Karpe, Ctr. National de la Recherche Scientifique (France); Armelle Novelli-Rousseau, Frédéric Mallard, BioMérieux (France) . . . . . [8570-24]

12:00 pm: **Optical characterization of microporous ceramics and applications for gas detection**, Liang Mei, Lund Univ. (Sweden) and Zhejiang Univ. (China) and Joint Research Ctr. of Photonics (China); Sune Svanberg, Lund Univ. (Sweden) and Joint Research Ctr. of Photonics (China) and South China Normal Univ. (China); Gabriel Somesfalean, Lund Univ. (Sweden) and Zhejiang Univ. (China) and Joint Research Ctr. of Photonics (China) . . . [8570-25]

### POSTER SESSION AND COFFEE BREAK

Room: Hall A, BiOS Expo . . . . .Sun 3:00 pm to 4:00 pm

Attendees are invited to view the conference posters, which will be available on Saturday and Sunday. The poster session, with authors present, will be held from 3:00 to 4:00 PM on Sunday afternoon, in conjunction with the coffee break.

**POSTER AUTHORS:** Poster setup is scheduled from 10:00 to 11:30 AM on Saturday and Sunday in South Hall A. Please plan to stand with your poster during the poster session on Sunday from 3:00 to 4:00 PM. Posters may remain on the boards both Saturday and Sunday but must be removed following the Sunday afternoon poster session/coffee break. Posters left on the boards after this time will be discarded.

**Enhance the detection limit of SiNW-FET biosensor by cholic acid treatment**, Wen-Ti Hsu, Chia-Chang Tsai, Shi-Ya Hsu, An-Cheng Li, Jr Hau He, Shuchen Hsieh, Kuang-Hung Cheng, Hay-Yan Jack Wang, Kung-Kai Kuo, Li-Wei Tu, National Sun Yat-Sen Univ. (Taiwan) . . . . . [8570-26]

**Combined sensing platform for advanced diagnostics in exhaled mouse breath**, Paula R. Fortes, Univ. Estadual de Campinas (Brazil); Andreas Wilk, Felicia Seichter, Univ. Ulm (Germany); Merima Cajlakovic, Stefan Köstler, Volker Ribitsch, JOANNEUM RESEARCH Forschungsgesellschaft mbH (Austria); Ulrich Wachter, Josef Vogt, Peter Radermacher, Univ. Ulm (Germany); Ivo M. Raimundo Jr., Univ. Estadual de Campinas (Brazil); Boris Mizaikoff, Univ. Ulm (Germany) . . . . . [8570-27]

**Charge injection through nanocomposite electrode in microfluidic channel for electrical lysis of biological cells**, Madhusmita Mishra, Anil Krishna, Manish K. Priyadarshi, B. M. Shenoy, Gopalkrishna M. Hegde, D. Roy Mahapatra, Indian Institute of Science (India) . . . . . [8570-28]



# Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XVII

*Conference Chairs:* **James G. Fujimoto**, Massachusetts Institute of Technology (USA); **Joseph A. Izatt**, Duke Univ. (USA); **Valery V. Tuchin**, N.G. Chernyshevsky Saratov State Univ. (Russian Federation), Univ. of Oulu (Finland)

*Program Committee:* **Peter E. Andersen**, Technical Univ. of Denmark (Denmark); **Kostadinka Bizheva**, Univ. of Waterloo (Canada); **Stephen A. Boppart M.D.**, Univ. of Illinois at Urbana-Champaign (USA); **Zhongping Chen**, Beckman Laser Institute and Medical Clinic (USA); **Johannes F. de Boer**, Vrije Univ. Amsterdam (Netherlands); **Wolfgang Drexler**, Medizinische Univ. Wien (Austria); **Christoph K. Hitzenberger**, Medizinische Univ. Wien (Austria); **Robert Huber**, Ludwig-Maximilians-Univ. München (Germany); **Rainer Leitgeb**, Medizinische Univ. Wien (Austria); **Xingde D. Li**, Johns Hopkins Univ. (USA); **Yingtian Pan**, Stony Brook Univ. (USA); **Adrian Gh. Podoleanu**, Univ. of Kent (United Kingdom); **Andrew M. Rollins**, Case Western Reserve Univ. (USA); **Natalia M. Shakhova**, Institute of Applied Physics (Russian Federation); **Guillermo J. Tearney M.D.**, Massachusetts General Hospital (USA); **Ruikang K. Wang**, Univ. of Washington (USA); **Maciej Wojtkowski**, Nicolaus Copernicus Univ. (Poland); **Yoshiaki Yasuno**, Univ. of Tsukuba (Japan)

## Monday 4 February

### SESSION 1

Room: 303 (Esplanade) ..... Mon 8:30 am to 10:00 am

#### OCT Technology 1

Session Chair: **James G. Fujimoto**, Massachusetts Institute of Technology (USA)

8:30 am: **Joint aperture detection for angle-resolved ophthalmic MHz OCT**, Thomas Klein, Raphael André, Wolfgang Wieser, Tom Pfeiffer, Robert Huber, Ludwig-Maximilians-Univ. München (Germany) ..... [8571-1]

8:45 am: **Dual-wavelength photothermal optical coherence tomography for blood oxygen saturation measurement**, Biwei Yin, The Univ. of Texas at Austin (USA); Roman V. Kuranov, The Univ. of Texas Health Science Ctr. at San Antonio (USA); Austin B. McElroy, Thomas E. Milner, The Univ. of Texas at Austin (USA) ..... [8571-2]

9:00 am: **Off-axis full-field swept-source optical coherence tomography using holographic refocusing**, Dierck Hillmann, Medizinisches Laserzentrum Lübeck GmbH (Germany) and Thorlabs GmbH (Germany); Gesa L. Franke, Institut für Biomedizinische Optik Luebeck (Germany) and Medizinisches Laserzentrum Luebeck GmbH (Germany); Peter Koch, Thorlabs GmbH (Germany); Gereon Hüttmann, Univ. zu Lübeck (Germany) and Medizinisches Laserzentrum Luebeck GmbH (Germany) ..... [8571-3]

9:15 am: **Chromatic visualization of reflectivity variance within hybridized directional OCT images**, Vikram S. Makhijani, Austin Roorda, Jan Kristine Bayabo, Kevin K. Tong, Carlos A. Rivera-Carpio, Brandon J. Lujan M.D., Univ. of California, Berkeley (USA) ..... [8571-4]

9:30 am: **Using guide stars with computational adaptive optics for correcting spatially-varying optical aberrations in coherence-based imaging**, Nathan D. Shemonski, Steven G. Adie, Adeel Ahmad, Paul S. Carney, Stephen A. Boppart M.D., Univ. of Illinois at Urbana-Champaign (USA) ..... [8571-5]

9:45 am: **Sensorless modal deformable mirror correction in adaptive optics: optical coherence tomography**, Stefano Bonora, Univ. degli Studi di Padova (Italy); Steven S. Jones, Lawrence Livermore National Lab. (USA); Robert J. Zawadzki, UC Davis Medical Ctr. (USA) ..... [8571-6]

Coffee Break ..... Mon 10:00 am to 10:30 am

### SESSION 2

Room: 303 (Esplanade) ..... Mon 10:30 am to 12:00 pm

#### Lightsources and High speed OCT Technology

Session Chair: **Joseph A. Izatt**, Duke Univ. (USA)

10:30 am: **Efficient sweep buffering in swept source optical coherence tomography using a fast optical switch**, Al-Hafeez Z. Dhalla, Kevin Shia, Joseph A. Izatt, Duke Univ. (USA) ..... [8571-7]

10:45 am: **MEMS tunable 1065nm and 1310nm VCSEL technology for flexible ultrahigh speed, ultralong imaging range, and Doppler OCT**, Benjamin M. Potsaid, Massachusetts Institute of Technology (USA) and Thorlabs Inc. (USA); James Y. Jiang, Thorlabs Inc. (USA); Vijaysekhar Jayaraman, Praevium Research, Inc. (USA); Ireneusz Grulkowski, Woo Jhon Choi, Jonathan J. Liu, Massachusetts Institute of Technology (USA); Jens Peupelmann, Thorlabs GmbH (Germany) and IJP (Germany); Peter J. S. Heim, Thorlabs Quantum Electronics, Inc. (USA); James G. Fujimoto, Massachusetts Institute of Technology (USA); Alex E. Cable, Thorlabs Inc. (USA) ..... [8571-8]

11:00 am: **4D OCT: full volumetric OCT at 25 Hz video rate**, Wolfgang Wieser, Thomas Klein, Sebastian Karpf, Christoph M. Eigenwillig, Robert Huber, Ludwig-Maximilians-Univ. München (Germany) ..... [8571-9]

11:15 am: **Ultrahigh resolution optical coherence tomography using high power fiber laser supercontinuum at 1.7 um wavelength region**, Shutaro Ishida, Hiroyuki Kawagoe, Nagoya Univ. (Japan); Youichi Sakakibara, Emiko Omoda, Hiromichi Kataura, National Institute of Advanced Industrial Science and Technology (Japan); Norihiko Nishizawa, Nagoya Univ. (Japan) ... [8571-10]

11:30 am: **Enhancement of the depth range up to 13.8 mm with filtered external k-sampling-clock in an SS-OCT system using a reflective Fabry-Perot tunable laser**, Hisashi Yamada, Yasuo Niimura, Fumiko Hiwatashi, Systems Engineering Inc. (Japan); Dong-Hac Choi, Kitasato Univ. (Japan); Koji Ohbayashi, Kitasato Univ. School of Medicine (Japan) ..... [8571-11]

11:45 am: **High-speed Doppler OFDI using frequency multiplexed dual beam illumination**, SunHee Kim, TaeJin Park, YongKeun Park, Wang-Yuhl Oh, KAIST (Korea, Republic of) ..... [8571-12]

Lunch Break ..... Mon 12:00 pm to 1:30 pm

### SESSION 3

Room: 303 (Esplanade) ..... Mon 1:30 pm to 3:30 pm

#### Ophthalmic Applications I

Session Chair: **Wolfgang Drexler**, Medizinische Univ. Wien (Austria)

1:30 pm: **Comprehensive structural and functional imaging of the human retina with ultrahigh speed swept source OCT using a VCSEL light source**, WooJhon Choi, Massachusetts Institute of Technology (USA); Benjamin M. Potsaid, Massachusetts Institute of Technology (USA) and Advanced Imaging Group, Thorlabs Inc. (USA); Vijaysekhar Jayaraman, Praevium Research, Inc. (USA); Bernhard Baumann, Medizinische Univ. Wien (USA) and New England Eye Ctr. (USA) and Tufts Univ. (USA); Martin F. Kraus, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) and Pattern Recognition Lab., Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) and School of Advanced Optical Technologies, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Jonathan J. Liu, Ireneusz Grulkowski, Chen D. Lu, Massachusetts Institute of Technology (USA); Alex E. Cable, Thorlabs Inc. (USA); David Huang, Casey Eye Institute OHSU (USA); Jay S. Duker, New England Eye Ctr. (USA); Joachim Hornegger, Pattern Recognition Lab. (Germany) and Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); James G. Fujimoto, Massachusetts Institute of Technology (USA) ..... [8571-13]

1:45 pm: **Multi-functional optical coherence tomography for polarization and Doppler investigation of posterior eye**, Myeong Jin Ju, Univ. of Tsukuba (Canada) and Univ. of Tsukuba (Japan); Young-Joo Hong, Yiheng Lim, Lian Duan, Shuichi Makita, Univ. of Tsukuba (Japan); Shuo Tang, The Univ. of British Columbia (Canada); Masahiro Miura, Tokyo Medical Univ. Kasumigaura Hospital (Japan); Yoshiaki Yasuno, Univ. of Tsukuba (Japan) ..... [8571-14]

2:00 pm: **Split-spectrum amplitude-decorrelation angiography and its quantification of optic nerve head blood flow**, Yali Jia, Casey Eye Institute OHSU (USA); John C. Morrison M.D., Oregon Health & Science Univ. (USA); Jason Tokayer, The Univ. of Southern California (USA); Tan Ou, Lorinna Lombardi, Oregon Health & Science Univ. (USA); Bernhard Baumann, Chen D. Lu, WooJhon Choi, James G. Fujimoto, Massachusetts Institute of Technology (USA); David Huang M.D., Casey Eye Institute OHSU (USA) ..... [8571-15]

2:15 pm: **Wide field-of-view retinal capillary mosaic by ultrahigh-speed dual-beam Doppler optical coherence angiography**, Shuichi Makita, Kazuhiro Kurokawa, Franck Jaillon, Yoshiaki Yasuno, Univ. of Tsukuba (Japan) ..... [8571-16]

- 2:30 pm: **Angiography of the retina and choroid with phase-resolved OCT using interval-optimized backstitched B-scans**, Boy Braaf, Koenraad A. Vermeer, Kari V. Vienola, Rotterdam Ophthalmic Institute (Netherlands); Johannes F. de Boer, Rotterdam Ophthalmic Institute (Netherlands) and LaserLAB, VU Univ. Amsterdam (Netherlands) . . . . . [8571-17]
- 2:45 pm: **Enhanced vascular imaging by scattering and phase information of optical coherence tomography**, Kazuhiro Kurokawa, Shuichi Makita, Young-Joo Hong, Yoshiaki Yasuno, Univ. of Tsukuba (Japan) . . . . . [8571-18]
- 3:00 pm: **Image acquisition and processing methods for artifact-reduced imaging and differentiation of retinal capillary beds using speckle variance optical coherence tomography**, Hansford C. Hendargo, Theodore B. DuBose, Rolando Estrada, Stephanie J. Chiu, Sina Farsiou, Joseph A. Izatt, Duke Univ. (USA) . . . . . [8571-19]
- 3:15 pm: **Retinal micro-capillaries blood flow estimation based on intensity information analysis of OCT data**, Daniel Ruminski, Iwona M. Gorczyńska, Maciej Szkulmowski, Danuta Bukowska, Nicolaus Copernicus Univ. (Poland); Robert Zawadzki, UC Davis Medical Ctr. (USA); Maciej Wojtkowski, Nicolaus Copernicus Univ. (Poland) . . . . . [8571-20]
- Coffee Break . . . . . Mon 3:30 pm to 4:00 pm

**SESSION 4**

**Room: 303 (Esplanade) . . . . . Mon 4:00 pm to 6:00 pm**

**Endoscopic and Intravascular OCT**

Session Chair: **Xinde Li**, John's Hopkins Univ. (USA)

- 4:00 pm: **First in human experience with tethered capsule OFDI endomicroscopy**, Michalina J. Gora, Wellman Ctr. for Photomedicine (USA); Jenny S. Sauk, Robert W. Carruth, Kevin A. Gallagher, Melissa J. Suter, Norman S. Nishioka, Lauren E. Kava, Mireille Rosenberg, Massachusetts General Hospital (USA); Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) . . . . . [8571-21]
- 4:15 pm: **Ultrahigh speed endoscopic optical coherence tomography using micro-motor imaging catheter and VCSEL technology**, Tsung-Han Tsai, Yuankai K. Tao, Massachusetts Institute of Technology (USA); Benjamin M. Potsaid, Massachusetts Institute of Technology (USA) and Thorlabs Inc. (USA); Vijaysekhar Jayaraman, Praevium Research, Inc. (USA); Martin Kraus, Massachusetts Institute of Technology (USA) and Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Peter J. S. Heim, Thorlabs Quantum Electronics, Inc. (USA); Joachim Hornegger, Friedrich-Alexander Univ. Erlangen-Nuernberg (Germany); Hiroshi Mashimo, VA Boston Healthcare System (USA) and Harvard Medical School (USA); Alex E. Cable, Thorlabs Inc. (USA); James G. Fujimoto, Massachusetts Institute of Technology (USA) . . . . . [8571-22]
- 4:30 pm: **Optical frequency domain imaging: guiding biopsy site selection in pulmonary nodules**, Lida P. Hariri, Matthew B. Applegate, Massachusetts General Hospital (USA); Martin Villiger, Wellman Ctr. for Photomedicine (USA); Mari Mino-Kenudson, Eugene J. Mark, Colleen Channick, Michael Lanuti, Massachusetts General Hospital (USA); Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA); Brett E. Bouma, Melissa J. Suter, Massachusetts General Hospital (USA) . . . . . [8571-23]
- 4:45 pm: **High speed miniature motorized endoscopic probe for optical frequency domain imaging**, Jianan Li, Jianhua Mo, Frank Helderma, Mattijs de Groot, Johannes F. de Boer, Vrije Univ. Amsterdam (Netherlands) . . [8571-24]
- 5:00 pm: **Multimodal endoscopic Full-Field OCT imaging and elasticity mapping with a needle-like probe**, Anne Latrive, Amir Nahas, Claude A. Boccara, Institut Langevin (France) and LLTech SAS (France) . . . . . [8571-25]
- 5:15 pm: **Optimum stent detection in intravascular OCT: A 3-D approach**, Zhao Wang, George C. Linderman, Case Western Reserve Univ. (USA); Hiram G. Bezerra, Univ. Hospitals of Cleveland (USA); Marco A. Costa, David L. Wilson, Andrew M. Rollins, Case Western Reserve Univ. (USA) . . . . . [8571-26]
- 5:30 pm: **Intravascular spectroscopic optical coherence tomography for automated detection of lipid**, Christine P. Fleming, Joseph A. Gardecki, Massachusetts General Hospital (USA); Jocelyn Eckert, Atsushi Tanaka, Wellman Ctr. for Photomedicine (USA); Melissa Haskell, Massachusetts General Hospital (USA); Giora Weiz, Columbia Medical Ctr. (USA); Brett E. Bouma, Guillermo J. Tearney M.D., Wellman Ctr. for Photomedicine (USA) . . . . [8571-91]
- 5:45 pm: **Three dimensional calcified plaque segmentation of intravascular optical coherence tomography using interactive graph cuts**, George C. Linderman, Zhao Wang, Case Western Reserve Univ. (USA); Hiram G. Bezerra, Univ. Hospitals of Cleveland (USA); Marco A. Costa, David L. Wilson, Andrew M. Rollins, Case Western Reserve Univ. (USA) . . . . . [8571-27]

**POSTERS-MONDAY**

**Room: 103 (Exhibit Level) . . . . . Mon 5:30 pm to 7:30 pm**

Conference attendees are invited to attend the BIOS poster session on Monday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

- Direct electronic linearization for camera based spectral domain optical coherence tomography**, Adrian G. Podoleanu, Andrew Payne, Univ. of Kent (United Kingdom) . . . . . [8571-31]
- Variable-range Doppler OCT using stabilized step scanning and phase variance binarized mask**, Lei Shi, Jia Qin, Suzan Dziennis, Ruikang Wang, Univ. of Washington (USA) . . . . . [8571-84]
- Quantitative transverse flow assessment using OCT speckle decorrelation analysis**, Xuan Liu, Yong Huang, Johns Hopkins Univ. (USA); Jessica C. Ramella-Roman, The Catholic Univ. of America (USA); Jin U. Kang, Johns Hopkins Univ. (USA) . . . . . [8571-85]
- Two-reference swept-source optical Doppler tomography of high operation flexibility**, Ting-Ta Chi, Chiung-Ting Wu, Chen-Chin Liao, Yi-Chou Tu, Yean-Woei Kiang, Chih-Chung Yang, National Taiwan Univ. (Taiwan) . . . . . [8571-86]
- Doppler frequency estimators under additive and multiplicative noise**, Aaron C. Chan, Edmund Y. Lam, The Univ. of Hong Kong (Hong Kong, China); Vivek J. Srinivasan, Massachusetts General Hospital (USA) . . . . . [8571-87]
- High-speed, high-sensitivity spectral-domain correlation mapping optical coherence tomography based modified scanning protocol**, Hrebesh M. Subhash, Joey Enfield, Martin Leahy, National Biophotonics and Imaging Platform (Ireland) . . . . . [8571-88]
- Absolute fast axis determination using non-polarization maintaining fiber-based polarization-sensitive optical coherence tomography**, Zenghai Lu, Stephen J. Matcher, The Univ. of Sheffield (United Kingdom) . . . . . [8571-90]
- Investigation of polarization-sensitive optical coherence tomography towards the study of microstructure of articular cartilage**, Deepa K. Kasaragod, Zenghai Lu, The Univ. of Sheffield (United Kingdom); Christine Le Maitre, Sheffield Hallam Univ. (United Kingdom); Mark Wilkinson, Stephen J. Matcher, The Univ. of Sheffield (United Kingdom) . . . . . [8571-92]
- Brownian motion based glucose measurement spectral domain optical coherence tomography**, Michal Vymyslicky, Kostadinka Bizheva, Univ. of Waterloo (Canada) . . . . . [8571-93]
- Ultrahigh-resolution optical coherence tomography imaging of protein crystals using gel inclusion technique**, Norihiko Nishizawa, Shutaro Ishida, Nagoya Univ. (Japan); Mika Hirose, Shigeru Sugiyama, Tsuyoshi Inoue, Yusuke Mori, Kazuyoshi Itoh, Hiroyoshi Matsumura, Osaka Univ. (Japan) . . . . [8571-94]
- Simultaneous measurement of the sweating dynamics of a few tens of eccrine sweat glands by optical coherence tomography**, Masato Ohmi, Yuki Wada, Osaka Univ. (Japan) . . . . . [8571-95]
- Behavior of the thermal diffusivity of native and oxidized human low-density lipoprotein solutions studied by the z-scan technique**, Antonio Figueiredo Neto, Priscila Santos, Thiago Genaro-Mattos, Andrea Monteiro, Sayuri Miyamoto, Univ. de São Paulo (Brazil) . . . . . [8571-96]
- Temperature dependence of the fluorescence spectrum of ZnCdS nanoparticles**, Elena K. Volkova, Vyacheslav Kochubey, Julia Konyukhova, Alexander Skaptsov, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) . . . . . [8571-97]
- Imaging of electro-kinetic properties of tissue by optical coherence tomography**, Vladislav Toronov, Valentin Demidov, Yuan Xu, Victor Yang, Ryerson Univ. (Canada) . . . . . [8571-98]
- Swept source optical coherence microscopy using VCSEL technology**, Osman Ahsen, Yuankai K. Tao, Massachusetts Institute of Technology (USA); James Y. Jiang, Thorlabs Inc. (USA); Benjamin M. Potsaid, Massachusetts Institute of Technology (USA) and Thorlabs Inc. (USA); Hsiang-Chieh Lee, Massachusetts Institute of Technology (USA); Yury Sheykin, Beth Israel Deaconess Medical Ctr. (USA); Aguirre D. Aguirre, Massachusetts Institute of Technology (USA) and Brigham and Women's Hospital (USA); Vijaysekhar Jayaraman, Praevium Research, Inc. (USA); James L. Connolly, Beth Israel Deaconess Medical Ctr. (USA); Alex E. Cable, Thorlabs Inc. (USA); James G. Fujimoto, Massachusetts Institute of Technology (USA) . . . . . [8571-99]

- Simultaneous optical coherence tomography and autofluorescence microscopy with a single light source**, Cuixia Dai, Shanghai Institute of Technology (China); Shuliang Jiao, Xiaoqing Liu, The Univ. of Southern California (USA) ..... [8571-101]
- 200kHz A-line rate SS-OCT imaging at 1060nm using a time-multiplexed system architecture**, Brian D. Goldberg, Bart C. Johnson, Walid Atia, Mark Kuznetsov, Dale Flanders, AXSUN Technologies Inc. (USA) ..... [8571-102]
- Passively mode locked swept lasers**, Bart C. Johnson, Walid Atia, Mark Kuznetsov, Dale Flanders, AXSUN Technologies Inc. (USA) ..... [8571-103]
- Fast wavelength sweep in dispersion-tuned fiber laser using a chirped FBG and a reflective SOA for OCT applications**, Yuya Takubo, Shinji Yamashita, The Univ. of Tokyo (Japan) ..... [8571-104]
- Combined tunable filters based swept laser source for optical coherence tomography**, Minghui Chen, Univ. of Shanghai for Science and Technology (China); Zhihua Ding, Zhejiang Univ. (China); Cheng Wang, Chengli Song, Univ. of Shanghai for Science and Technology (China) ..... [8571-105]
- High-speed miniaturized swept sources based on resonant MEMS mirrors and diffraction gratings**, Stefan Gloor, Adrian H. Bachmann, Marc Epitoux, Tim Niederhäusern, Philipp Vorreau, Nicolai Matuschek, Kevin Hsu, Marcus Duellk, Christian Velez, Exalos AG (Switzerland) ..... [8571-106]
- FPGA-based non-uniform fast fourier transform (NUFFT) algorithm for real-time OCT signal processing**, Anke Bossen, Stefan Remund, Dominic Ernst, Christoph Meier, Berner Fachhochschule Technik und Informatik (Switzerland); Tim von Niederhäusern, Marcus Duellk, Exalos AG (Switzerland); Kalyanramu Vemishetty, National Instruments Corp. (USA) ..... [8571-108]
- FPGA-based real-time swept-source OCT system for B-scan live-streaming or volumetric imaging**, Marcel Jacomet, Vinzenz Bandi, Josef Goette, Berner Fachhochschule Technik und Informatik (Switzerland); Tim von Niederhäusern, Adrian H. Bachmann, Marcus Duellk, Exalos AG (Switzerland) ..... [8571-109]
- GPU-based real-time processing of Fourier domain OCT with zero-filling interpolation and fixed-pattern noise removal by partial median subtraction**, Yuuki Watanabe, Yamagata Univ. (Japan) ..... [8571-110]
- A GPU accelerated real-time multi-functional SD-OCT system**, Yan Wang, Christian M. Oh, Michael C. Oliveira, M. Shahidul Islam, Arthur Ortega, B. Hyle Park, Univ. of California, Riverside (USA) ..... [8571-111]
- Method of performing Fourier transform of data not sampled on Cartesian grid and its validation on spectral domain optical coherence tomography data**, Alexander A. Moiseev, Grigory V. Gelikonov, Pavel A. Shilyagin, Valentine M. Gelikonov, Institute of Applied Physics (Russian Federation) ..... [8571-112]
- Improving resolution in spectral domain low coherence interferometry through FFT harmonic artifacts**, Marcus P. Raele, Instituto de Pesquisas Energéticas e Nucleares (Brazil); Luiz V. G. Tarelho, Iakya B. Couceiro, Carlos L. S. Azeredo, National Institute of Metrology, Standardization and Industrial Quality (Brazil); Anderson Z. de Freitas, Instituto de Pesquisas Energéticas e Nucleares (Brazil) ..... [8571-113]
- Blue light spectral optical coherence tomography with spectrally encoded illumination**, Sylwia M Maliszewska, Nicolaus Copernicus Univ. (Poland); Robert J. Zawadzki, UC Davis Medical Ctr. (USA); Maciej Wojtkowski, Nicolaus Copernicus Univ. (Poland) ..... [8571-114]
- Interferometric synthetic aperture microscopy implementation on a floating point multi-core digital signal processor**, Adeel Ahmad, Univ. of Illinois at Urbana-Champaign (USA); Murtaza Ali, Texas Instruments Inc. (USA); Fredrick South, Guillermo L. Monroy, Steven G. Adie, Nathan Shemonski, Paul S. Carney, Stephen A. Boppart, Univ. of Illinois at Urbana-Champaign (USA) ..... [8571-115]
- Wavefront control on optical coherence tomography for high penetration depth**, Jaeduck Jang, KAIST (Korea, Republic of); Jaeguyn Lim, Samsung Advanced Institute of Technology (Korea, Republic of); Hyeonseung Yu, KAIST (Korea, Republic of); Hyun Choi, Jinyong Ha, Samsung Advanced Institute of Technology (Korea, Republic of); Wang-Yuhl Oh, KAIST (Korea, Republic of); Wooyoung Jang, Samsung Advanced Institute of Technology (Korea, Republic of); YongKeun Park, KAIST (Korea, Republic of) ..... [8571-116]
- Combining Gabor and Talbot bands techniques to enhance the sensitivity with depth in Fourier domain optical coherence tomography**, Adrian Bradu, Manuel Marques, Petr Bouchal, Adrian G. Podoleanu, Univ. of Kent (United Kingdom) ..... [8571-117]
- Forward scanning probe for 3D optical coherence tomography (OCT)**, Hinnek Schulz-Hildebrandt, Daniel Kirsten, Gereon Hüttmann, Univ. zu Lübeck (Germany) ..... [8571-118]
- Complex artifact suppression using vestigial sideband filter in Fourier-domain optical coherence tomography**, Hyun-Woo Jeong, Korea Univ. (Korea, Republic of); Jae-Guyn Lim, SAMSUNG Electronics Co., Ltd. (Korea, Republic of); Hyung-Jin Kim, Wonzoo Chung, Beop-Min Kim, Korea Univ. (Korea, Republic of) ..... [8571-119]
- Tunable linear in-wavenumber optical spectrometer for spectral-domain optical coherence tomography**, Pavel A. Shilyagin, Grigory V. Gelikonov, Valentin M. Gelikonov, Institute of Applied Physics (Russian Federation) ..... [8571-120]
- Ultrahigh resolution endoscopic spectral domain optical coherence tomography with a tiny rotary probe driven by a hollow ultrasonic motor**, Ning Zhang, Tianyuan Chen, Tiancheng Huo, Chengming Wang, Jing-gao Zheng, Tieying Zhou, Ping Xue, Tsinghua Univ. (China) ..... [8571-121]
- In vivo human optic nerve and lamina cribrosa microstructural and vasculature evaluation using ultrahigh sensitive optical microangiography**, Lin An, Peng Lee, Gongpu Lan, Ruikang Wang, Univ. of Washington (USA) ..... [8571-122]
- Application of full range swept source optical coherence tomography for imaging anterior eye segments of the patients with keratoprosthesis implants**, Raju Poddar, Dennis Cortes, Robert J. Zawadzki, Mark J. Mannis, John S. Werner, UC Davis Medical Ctr. (USA) ..... [8571-123]
- OCT corneal topography within ¼ diopter in the presence of saccadic eye movements**, Samir I. Sayegh M.D., The Eye Center (USA) ..... [8571-124]
- In vivo detection of cortical optical changes associated with seizure activity with optical coherence tomography**, Melissa M. Eberle, Carissa L. Reynolds, Jenny I. Szu, Yan Wang, Anne M. Hansen, Mike S. Hsu, Devin K. Binder, B. Hyle Park, Univ. of California, Riverside (USA) ..... [8571-125]
- Identification of in vivo brain structures using optical coherence tomography**, Carissa Reynolds, Melissa M. Eberle, Jenny I. Szu, Mike S. Hsu, Yan Wang, Devin K. Binder, B. Hyle Park, Univ. of California, Riverside (USA) ..... [8571-126]
- Reflective type objective based spectral-domain phase-sensitive optical coherence tomography for high-sensitive structural and functional imaging of cochlear microstructures through intact bone of an excised guinea pig cochlea**, Hrebbesh M. Subhash, Oregon Health & Science Univ. (USA); Ruikang K. Wang, Univ. of Washington (USA); Fangyi Chen, Alfred L. Nuttall, Oregon Health & Science Univ. (USA) ..... [8571-127]
- History compounding: a novel speckle reduction technique for OCT guided cochleostomy**, Yaokun Zhang, Karlsruher Institut für Technologie (Germany); Tom Pfeiffer, Wolfgang Wieser, Ludwig-Maximilians-Univ. München (Germany); Marcel Weller, Univ. Hospital Duesseldorf (Germany); Robert Huber, Ludwig-Maximilians-Univ. München (Germany); Thomas Klenzner, Univ. Hospital Duesseldorf (Germany); Joerg Raczekowsky, Heinz Woern, Karlsruher Institut für Technologie (Germany) ..... [8571-128]
- Visualization of heart chamber of Drosophila with dual-beam optical coherence tomography**, Cheng-Kuang Lee, Feng-Yu Chang, Meng-Tsan Tsai, Chang Gung Univ. (Taiwan); June-Tai Wu M.D., National Taiwan Univ. Hospital (Taiwan); Chih-Chung Yang, National Taiwan Univ. (Taiwan) ..... [8571-129]
- Ex-vivo bladder cancer study with combined two-photon microscopy and optical coherence tomography**, Yeoreum Yoon, Bumju Kim, Junho Lee, Peng Xiao, Pohang Univ. of Science and Technology (Korea, Republic of); Ingul Kim, Ji Yeol Lee, The Catholic Univ. of Korea (Korea, Republic of); Ki Hean Kim, Pohang Univ. of Science and Technology (Korea, Republic of) ..... [8571-131]
- Design of a swept-source, anatomical OCT system for pediatric bronchoscopy**, Kushal C. Wijesundara, The Univ. of North Carolina at Chapel Hill (USA); Nicusor V. Iftimia, Physical Sciences Inc. (USA); Amy L. Oldenburg, The Univ. of North Carolina at Chapel Hill (USA) ..... [8571-132]
- Finger Print Detection by Optical Coherence Tomography**, Sven Meissner, Edmund Koch, Universitätsklinikum Carl Gustav Carus Dresden (Germany); Ralph Breithaupt, Bundesamt für Sicherheit in der Informationstechnik (Germany) ..... [8571-133]



**Tuesday 5 February**

**SESSION 5**

**Room: 303 (Esplanade) . . . . . Tue 8:30 am to 10:00 am**

**OCT Technology II**

Session Chair: **Robert A. Huber**,  
Ludwig-Maximilians-Univ. München (Germany)

8:30 am: **Optical-domain subsampling for data efficient Fourier-domain optical coherence tomography**, Meena Siddiqui, Massachusetts Institute of Technology (USA) and Harvard Univ. (USA); Benjamin Vakoc, Wellman Ctr. for Photomedicine (USA) and Harvard Medical School (USA) . . . . . [8571-28]

8:45 am: **Single-shot interpixel shifting for optical coherence tomography by oblique incidence spectroscopy**, Hee Yoon Lee, Audrey K. Ellerbee, Stanford Univ. (USA) . . . . . [8571-29]

9:00 am: **Improvement of lateral resolution of optical coherence tomography images based on capon estimation of weighted multi-scatterer contributions**, Evgenia Bousi, Costas Pitris, Univ. of Cyprus (Cyprus) . . . . . [8571-30]

9:15 am: **Polarization sensitive en face optical coherence tomography using multichannel acousto-optic deflectors**, Mantas Zurauskas, John Rogers, Adrian G. Podoleanu, Univ. of Kent (United Kingdom) . . . . . [8571-89]

9:30 am: **Real time 3D structural and Doppler OCT imaging on graphics processing units**, Marcin Sylwestrzak, Daniel Szlag, Maciej Szkulmowski, Iwona M. Gorczynska, Danuta Bukowska, Maciej Wojtkowski, Piotr Targowski, Nicolaus Copernicus Univ. (Poland) . . . . . [8571-32]

9:45 am: **GPU accelerated OCT processing at megahertz axial scan rate and high resolution video rate volumetric rendering**, Yifan Jian, Kevin Wong, Marinko V. Sarunic, Simon Fraser Univ. (Canada) . . . . . [8571-33]

Coffee Break . . . . . Tue 10:00 am to 10:30 am

**SESSION 6**

**Room: 303 (Esplanade) . . . . . Tue 10:30 am to 12:00 pm**

**Functional, Doppler and PS OCT I**

Session Chair: **Peter E. Andersen**,  
Technical Univ. of Denmark (Denmark)

10:30 am: **Mitigating polarization mode dispersion for polarization sensitive intracoronary imaging**, Martin L. Villiger, Ellen Z. Zhang, Wellman Ctr. for Photomedicine (USA); William W. Oh, KAIST (Korea, Republic of); Seemantini K. Nadkarni, Benjamin J. Vakoc, Brett E. Bouma, Wellman Ctr. for Photomedicine (USA) . . . . . [8571-34]

10:45 am: **OCT speckle statistics can quantify micro-scale organization of tissue**, Dirk J. Faber, Daniel M. de Bruin, Jeroen Kalkman, Ton G. van Leeuwen, Academisch Medisch Ctr. (Netherlands) . . . . . [8571-35]

11:00 am: **Numerical compensation of system polarization mode dispersion in polarization sensitive optical coherence tomography**, Ellen Z. Zhang, Wellman Ctr. for Photomedicine (USA); Wang-Yuhl Oh, KAIST (Korea, Republic of); Martin L. Villiger, Wellman Ctr. for Photomedicine (USA); Liang Chen, Univ. of Ottawa (Canada); Brett E. Bouma, Benjamin J. Vakoc, Wellman Ctr. for Photomedicine (USA) . . . . . [8571-36]

11:15 am: **Dependent and multiple scattering unraveled by transmission and backscattered optical coherence tomography**, Duc V. Nguyen, Edwin van der Pol, Dirk J. Faber, Ton G. van Leeuwen, Jeroen Kalkman, Academisch Medisch Ctr. (Netherlands) . . . . . [8571-37]

11:30 am: **Accurate and generic method for characterizing the optical properties of OCT contrast agents by using self-referencing OCT imaging**, Jiefeng Xi, Yongping Chen, Xingde Li, Johns Hopkins Univ. (USA) . . . . [8571-38]

11:45 am: **Imaging the complete set of optical and physical properties of biological tissue using inverse spectroscopic optical coherence tomography**, Ji Yi, Vadim Backman, Northwestern Univ. (USA) . . . . . [8571-39]

Lunch/Exhibition Break . . . . . Tue 12:00 pm to 1:30 pm

**SESSION 7**

**Room: 303 (Esplanade) . . . . . Tue 1:30 pm to 3:30 pm**

**Ophthalmic Applications II**

Session Chair: **Yoshiaki Yasuno**, Univ. of Tsukuba (Japan)

1:30 pm: **En-face adaptive optics optical coherence tomography with 3D-motion correction**, Franz Felberer, Gerold Aschinger, Julia S. Kroisamer, Christoph K. Hitztenberger, Michael Pircher, Medizinische Univ. Wien (Austria) . . . . . [8571-40]

1:45 pm: **Rotational dove prism scanning dual angle Doppler OCT**, Cedric Blatter, Séverine Coquoz, Branislav Grajciar, Amardeep S. Singh, René M. Werkmeister, Leopold Schmetterer, Rainer A. Leitgeb, Medizinische Univ. Wien (Austria) . . . . . [8571-41]

2:00 pm: **Intraoperative SDOCT for vitreo-retinal surgery with an integrated fundus camera for closed-loop surgical instrument tracking**, Justin V. Migacz, Tomas Moreno, Duke Univ. (USA); Francisco Folgar, Duke Eye Center (USA); Adam Dubis, Sina Frasiu, Cynthia A. Toth, Duke Univ. (USA); Joseph A. Izatt, Duke Univ. (USA) and Duke Eye Ctr. (USA); Paul Hahn, Duke Univ. (USA) . . . . . [8571-42]

2:15 pm: **High sensitive fundus autofluorescence imaging combined with speckle-free optical coherence tomography**, Patrycja Stremplewski, Katarzyna Komar, Maciej Szkulmowski, Marta Motoczynska, Maciej Wojtkowski, Nicolaus Copernicus Univ. (Poland) . . . . . [8571-43]

2:30 pm: **Retinal tracking polarization sensitive optical coherence tomography**, Mitsuro Sugita, Medizinische Univ. Wien (Austria) and Canon Inc. (Japan); Stefan Zotter, Michael Pircher, Medizinische Univ. Wien (Austria); Tomoyuki Makihira, Nobuhiro Tomatsu, Canon Inc. (Japan); Christoph K. Hitztenberger, Medizinische Univ. Wien (Austria) . . . . . [8571-44]

2:45 pm: **Degree of polarization uniformity measured with polarization sensitive OCT as a function of the input polarization state**, Stefan Zotter, Bernhard Baumann, Michael Pircher, Teresa Torzicky, Mitsuro Sugita, Erich Götzinger, Wolfgang Trasischker, Christoph K. Hitztenberger, Medizinische Univ. Wien (Austria) . . . . . [8571-45]

3:00 pm: **Detection of retinal degeneration using angle-resolved low coherence interferometry**, Michael G. Giacomelli, Rolf Herrmann, Sanghoon Kim, Vadim Arshavsky, Adam Wax, Duke Univ. (USA) . . . . . [8571-46]

3:15 pm: **Comparative optical coherence tomography and histological investigation of the outer retina**, Xincheng Yao, Rongwen Lu, The Univ. of Alabama at Birmingham (USA) . . . . . [8571-47]

Coffee Break . . . . . Tue 3:30 pm to 4:00 pm

**SESSION 8**

**Room: 303 (Esplanade) . . . . . Tue 4:00 pm to 6:00 pm**

**OCM, Full Field and Microscopy Techniques**

Session Chair: **Johannes de Boer**, Vrije Univ. Amsterdam (Netherlands)

4:00 pm: **Photothermal optical lock-in optical coherence microscopy**, Christophe Pache, Noelia L. Bocchio, Arno Bouwens, Martin Villiger, Corinne Berclaz, Joan Gouley, Theo Lasser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8571-48]

4:15 pm: **Three-dimensional intracellular optical coherence phase imaging**, Frank Helderman, Vrije Univ. Amsterdam (Netherlands); Bryan Haslam, Massachusetts Institute of Technology (USA); Mattijs de Groot, Johannes F. de Boer, Vrije Univ. Amsterdam (Netherlands) . . . . . [8571-49]

4:30 pm: **Label-free imaging of the dynamics of cell-to-cell string-like structure bridging in the free-space by low-coherent quantitative phase microscopy**, Toyohiko Yamauchi, Hidenao Iwai, Yutaka Yamashita, Hamamatsu Photonics K.K. (Japan) . . . . . [8571-50]

4:45 pm: **2D and 3D static elastography using full field OCT**, Amir Nahas, Anne Latrive, Institut Langevin (France) and LLTech SAS (France); Stéphane Roux, Ecole Normale Supérieure de Cachan (France); Claude A. Boccara, Institut Langevin (France) and LLTech SAS (France) . . . . . [8571-51]

5:00 pm: **Self-interference fluorescence microscopy: three dimensional fluorescence imaging without depth scanning**, Mattijs de Groot, Vrije Univ. Amsterdam (Netherlands) . . . . . [8571-52]

5:15 pm: **Using smart gold nanoparticles in photothermal optical coherence tomography combined with two-photon microscopy**, Peng Xiao, Qingyun Li, Taejun Wang, Yeoreum Yoon, Yongjoon Joo, Juttaek Nam, Sungjee Kim, Ki Hean Kim, Pohang Univ. of Science and Technology (Korea, Republic of) . . . . . [8571-53]

5:30 pm: **Visible spectrum optical coherence microscopy for live subcellular imaging**, Arno Bouwens, Paul Marchand, Christophe Pache, Daniel Szlag, Theo Lasser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . [8571-54]

5:45 pm: **High speed dispersion contrast coherence microscopy for imaging of cell dynamics**, Branislav Grajciar, Cedric Blatter, Katharina Ludwig, Daniel Fechtig, Rainer A. Leitgeb, Medizinische Univ. Wien (Austria) . . [8571-55]



**Wednesday 6 February**

**SESSION 9**

**Room: 303 (Esplanade) . . . . . Wed 8:45 am to 10:00 am**

**OCT Technology III**

Session Chair: **Adrian Gh. Podoleanu**, Univ. of Kent (United Kingdom)

8:45 am: **Double-clad-fiber needle probe for combined optical coherence tomography and fluorescence imaging**, Dirk Lorensen, Bryden C. Quirk, The Univ. of Western Australia (Australia); Mathieu Auger, Wendy-Julie Madore, Ecole Polytechnique de Montréal (Canada); Rodney W. Kirk, The Univ. of Western Australia (Australia); Nicolas Godbout, Ecole Polytechnique de Montréal (Canada); David D. Sampson, The Univ. of Western Australia (Australia); Caroline Boudoux, Ecole Polytechnique de Montréal (Canada); Robert A. McLaughlin, The Univ. of Western Australia (Australia) . . . . . [8571-56]

9:00 am: **Motion compensated hand-held common-path Fourier-domain optical coherence tomography probe for image-guided intervention**, Yong Huang, Cheol Song, Xuan Liu, Jin U. Kang, Johns Hopkins Univ. (USA) [8571-57]

9:15 am: **Towards microscopic resolution in holoscopy**, Gesa L. Franke, Univ. zu Lübeck (Germany) and Medizinisches Laserzentrum Lübeck GmbH (Germany); Dierck Hillmann, Thorlabs GmbH (Germany) and Medizinisches Laserzentrum Lübeck GmbH (Germany); Christian Lührs, Peter Koch, Thorlabs GmbH (Germany); Gereon Hüttmann, Univ. zu Lübeck (Germany) . . . . . [8571-59]

9:30 am: **Freehand OCT with real-time lateral motion tracking**, Xuan Liu, Yong Huang, Peter Gehlbach, Jin U. Kang, Johns Hopkins Univ. (USA) [8571-60]

9:45 am: **Measurement of angle-resolved scattering property of ovarian tissue by use of OCT**, Yi Yang, Tianheng Wang, Univ. of Connecticut (USA); Molly Brewer, Univ. of Connecticut (USA) and Univ. of Connecticut Health Ctr. (USA); Qing Zhu, Univ. of Connecticut (USA) . . . . . [8571-61]

Coffee Break . . . . . Wed 10:00 am to 10:30 am

**SESSION 10**

**Room: 303 (Esplanade) . . . . . Wed 10:30 am to 12:00 pm**

**Small Animal and Developmental Biology**

Session Chair: **Kostadinka Bizheva**, Univ. of Waterloo (Canada)

10:30 am: **Ultrahigh-speed ultrahigh-resolution adaptive optics: optical coherence tomography system for in-vivo small animal retinal imaging**, Yifan Jian, Simon Fraser Univ. (Canada); Robert J. Zawadzki, UC Davis Medical Ctr. (USA); Marinko V. Sarunic, Simon Fraser Univ. (Canada) . . . . . [8571-62]

10:45 am: **Phase-sensitive optical coherence tomography characterization of pulse-induced trabecular meshwork displacement in ex vivo non-human primate eyes**, Peng Li, Roberto Reif, Zhongwei Zhi, Lin An, Elizabeth Martin, Tueng Shen, Murray Johnstone, Ruikang Wang, Univ. of Washington (USA) . . . . . [8571-63]

11:00 am: **Dynamic OCT measurement of the biomechanical properties of gelatin phantom and mouse cornea in vivo**, Jiasong Li, Ravi K. Manapuram, Floredes M. Menodiado, Manmohan Singh, Univ. of Houston (USA); Salavat Aglyamov, Stanislav Emelianov, The Univ. of Texas at Austin (USA); Michael Twa, Kirill V. Larin, Univ. of Houston (USA) . . . . . [8571-64]

11:15 am: **Simultaneous multi chromophore and in vivo pump-probe OCT imaging in Xenopus laevis**, Oscar Carrasco-Zevallos, Ryan L. Shelton, Wihan Kim, Jeremy Pearson, Brian E. Applegate, Texas A&M Univ. (USA) . . . . . [8571-65]

11:30 am: **OCT detection of neural activity in American cockroach nervous system**, Iwona M. Gorczynska, Joanna Wyszowska, Danuta Bukowska, Daniel Ruminski, Karol Kamowski, Maria Stankiewicz, Maciej Wojtkowski, Nicolaus Copernicus Univ. (Poland) . . . . . [8571-66]

11:45 am: **OCT imaging of early effects of ethanol exposure on the embryonic heart**, Lindsay M. Peterson, Ganga H. Karunamuni, Shi Gu, Zhao Liu, Michael W. Jenkins, Michiko Watanabe, Andrew M. Rollins, Case Western Reserve Univ. (USA) . . . . . [8571-67]

Lunch/Exhibition Break . . . . . Wed 12:00 pm to 1:30 pm

**SESSION 11**

**Room: 303 (Esplanade) . . . . . Wed 1:30 pm to 3:30 pm**

**Clinical Applications**

Session Chair: **Yingtian Pan**, Stony Brook Univ. (USA)

1:30 pm: **Improved imaging of breast cancer using optical coherence elastography**, Brendan F. Kennedy, Robert A. McLaughlin, Kelsey M. Kennedy, The Univ. of Western Australia (Australia); Andrea Curatolo, Univ. of Western Australia (Australia); Alan Tien, The Univ. of Western Australia (Australia); Bruce Latham, Royal Perth Hospital (Australia); Christobel M. Saunders, David D. Sampson, The Univ. of Western Australia (Australia) . . . . . [8571-68]

1:45 pm: **Application of optical coherence tomography in brain cancer: detecting glioma invasion from non-neoplastic white matter in human ex vivo samples**, Carmen Kut, The Johns Hopkins Hospital (USA); Jiefeng Xi, Johns Hopkins Univ. (USA); Shaan Raza M.D., The Johns Hopkins Hospital (USA); Jessica Mavadia, Johns Hopkins Univ. (USA); Wenxuan Liang, Johns Hopkins Univ. (USA) and The Johns Hopkins Hospital (USA); Hugo Guerrero-Cazares, Elliot McVeigh, Alfredo Quinones-Hinjosa M.D., The Johns Hopkins Hospital (USA); Xingde Li, Johns Hopkins Univ. (USA) . . . . . [8571-69]

2:00 pm: **Optical coherence tomography and hyperspectral imaging of vascular recovery in a model of peripheral arterial disease**, Kristin M. Poole, Wesley W. Sit, Jason Tucker-Schwartz, Craig L. Duvall, Melissa C. Skala, Vanderbilt Univ. (USA) . . . . . [8571-70]

2:15 pm: **Characterization of middle ear effusions using phase variance and decorrelation OCT imaging**, Guillermo L. Monroy, Cac Nguyen, Ryan Nolan, Nathan Shemonski, Univ. of Illinois at Urbana-Champaign (USA); Michael Novak M.D., Carle Foundation Hospital (USA); Stephen A. Boppart M.D., Univ. of Illinois at Urbana-Champaign (USA) and Carle Foundation Hospital (USA) . . . . . [8571-71]

2:30 pm: **Sensing and three-dimensional imaging of cochlea and surrounding temporal bone using swept source high-speed optical coherence tomography**, Mingtao Zhao, The Johns Hopkins Univ. (USA); Jin Kang, Johns Hopkins Univ. (USA) . . . . . [8571-72]

2:45 pm: **Measuring elastic contrast in human tissues using OCT needle probes**, Kelsey M. Kennedy, Brendan F. Kennedy, Robert A. McLaughlin, David D. Sampson, The Univ. of Western Australia (Australia) . . . . . [8571-73]

3:00 pm: **Ultrahigh resolution OCT of muco-ciliary activity on in vitro human airway epithelium**, Amy L. Oldenburg, Raghav Chhetri, David B. Hill, Brian Button, The Univ. of North Carolina at Chapel Hill (USA) . . . . . [8571-74]

3:15 pm: **Characterization of ovarian tissue using polarization-sensitive optical coherence tomography**, Tianheng Wang, Yi Yang, Qing Zhu, Univ. of Connecticut (USA) . . . . . [8571-75]

Coffee Break . . . . . Wed 3:30 pm to 4:00 pm

**SESSION 12**

**Room: 303 (Esplanade) . . . . . Wed 4:00 pm to 6:00 pm**

**Functional and Doppler OCT II**

Session Chair: **Valery V. Tuchin,**

N.G. Chernyshevsky Saratov State Univ. (Russian Federation)

4:00 pm: **Label-free optical imaging of blood and lymphatic vessels within tissue beds in vivo.** Zhongwei Zhi, Yeongri Jung, Ruikang Wang, Univ. of Washington (USA) . . . . . [8571-76]

4:15 pm: **3d velocity vector measurement by 3-beam spectral-domain doppler optical coherence tomography.** Wolfgang Trasischker, Stefan Zotter, Bernhard Baumann, Teresa Torzicky, Erich Götzinger, Michael Pircher, Christoph K. Hitzinger, Medizinische Univ. Wien (Austria) . . . . . [8571-77]

4:30 pm: **High quality optical microangiography of ocular microcirculation and measurement of total retinal blood flow in mouse eye.** Zhongwei Zhi, Xin Yin, Suzan Dziennis, Charles Alpers, Ruikang Wang, Univ. of Washington (USA) . . . . . [8571-78]

4:45 pm: **Diabetes imaging: pancreatic vasculature and blood flow analysis using joint spectral and time domain OCM.** Daniel Szig, Nicolaus Copernicus Univ. (Poland) and Ecole Polytechnique Fédérale de Lausanne (Switzerland); Corinne Berclaz, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Joan Goulley, Swiss Institute for Experimental Cancer Research (Switzerland); Arno Bouwens, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Maciej Szkulmowski, Maciej Wojtkowski, Nicolaus Copernicus Univ. (Poland); Theo Lasser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8571-79]

5:00 pm: **Dynamic phase-resolved acoustic radiation force optical coherence elastography.** Wenjuan Qi, Beckman Laser Institute and Medical Clinic (USA); Ruimin Chen, The Univ. of Southern California (USA); Lidek Chou, Gangjun Liu, Jun Zhang, Beckman Laser Institute and Medical Clinic (USA); Qifa Zhou, The Univ. of Southern California (USA); Zhongping Chen, Beckman Laser Institute and Medical Clinic (USA) . . . . . [8571-80]

5:15 pm: **Elastic restoring-force-free magnetomotive optical coherence tomography.** Jongsik Kim, Adeel Ahmad, Stephen A. Boppart, Univ. of Illinois at Urbana-Champaign (USA) . . . . . [8571-81]

5:30 pm: **Revealing viscoelasticity of soft tissue tumors using phase-sensitive optical coherence tomography and a focused air puff system.** Shang Wang, Jiasong Li, Ravi K. Manapuram, Floredes M. Menodiado, Univ. of Houston (USA); Davis R. Ingram, The Univ. of Texas at Austin (USA); Michael D. Twa, Univ. of Houston (USA); Alexander J. Lazar, Dina C. Lev, Raphael E. Pollock, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Kirill V. Larin, Univ. of Houston (USA) and Baylor College of Medicine (USA) . . . . . [8571-82]

5:45 pm: **In vivo imaging of gold nanorod contrast agents using photothermal optical coherence tomography.** Jason M. Tucker-Schwartz, Travis A. Meyer, Chetan A. Patil, Craig L. Duvall, Melissa C. Skala, Vanderbilt Univ. (USA) . . . . . [8571-83]



Download the SPIE Conference App



# Advanced Biomedical and Clinical Diagnostic Systems XI

Conference Chairs: **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA); **Tuan Vo-Dinh**, Duke Univ. (USA); **Warren S. Grundfest M.D.**, Univ. of California, Los Angeles (USA)

## Sunday 3 February

### SESSION 1

Room: 252 (Mezzanine) .....Sun 9:30 am to 10:10 am

#### Functional Imaging I

Session Chair: **Anita Mahadevan-Jansen**, Vanderbilt Univ. (USA)

9:30 am: **Optical measurement of autonomic dysfunction in diabetic patients**, Yuri An, Jungsul Lee, Chulhee Choi, KAIST (Korea, Republic of) ..... [8572-1]

9:50 am: **New bilirubin sensors for total jaundice management using laser diodes, LEDs, and OLEDs**, Mostafa Hamza, Mansoura Univ. (Egypt); Mohammad H. Sayed El-Ahl, Military Medical Academy (Egypt); Ahmad M. Hamza, National Research Ctr. (Egypt); Aya M. Hamza, Yahya M. Hamza, Tabarak Children's Hospital (Egypt) ..... [8572-2]

Coffee Break ..... Sun 10:10 am to 10:40 am

### SESSION 2

Room: 252 (Mezzanine) .....Sun 10:40 am to 12:20 pm

#### Functional Imaging II

Session Chairs: **Anuradha Godavarty**, Florida International Univ. (USA); **Warren S. Grundfest M.D.**, Univ. of California, Los Angeles (USA)

10:40 am: **Photometric sensor system for a non-invasive real-time hemoglobin monitoring**, Ulrich Timm, Jens Kraittl, Hartmut Ewald, Univ. Rostock (Germany) ..... [8572-6]

11:00 am: **Laser reflectance oximetry and Doppler flowmetry in assessment of complex physiological parameters of cutaneous blood microcirculation**, Andrey V. Dunaev, Sergei G. Sokolovski, Neil A. Steward, Univ. of Dundee (United Kingdom); Victor V. Sidorov, SPE LAZMA Ltd. (Russian Federation); Edik U. Rafailov, Univ. of Dundee (United Kingdom) ..... [8572-7]

11:20 am: **Doppler diffuse optical multipatch imaging for microcirculatory monitoring**, Liu Tsan Chi, Chung Yuan Christian Univ. (Taiwan); Ching-Cheng Chuang, National Taiwan Univ. (Taiwan); Yao-Sheng Hsieh, National Chiao Tung Univ. (Taiwan); Kuen Feng Lin, National Yang-Ming Univ. (Taiwan); Chia-Wei Sun, National Taiwan Univ. (Taiwan) ..... [8572-8]

11:40 am: **Non-contact tissue perfusion and oxygenation imaging using a LED based multi-spectral and a thermal imaging system: first results of clinical intervention studies**, John H. Klaessens, Martin Nelisse, Univ. Medical Ctr. Utrecht (Netherlands); Rudolf Verdaasdonk, Vrije Univ. Medical Ctr. (Netherlands); Herke Jan Noordmans, Univ. Medical Ctr. Utrecht (Netherlands) ..... [8572-9]

12:00 pm: **Coherence-gated Doppler (CGD) for blood vessel detection**, Chia-Pin Liang, Yalun Wu, Univ. of Maryland, College Park (USA); Joe Schmitt, St. Jude Medical, Inc. (USA); Cha-Min Tang, Univ. of Maryland School of Medicine (USA); Yu Chen, Univ. of Maryland, College Park (USA) ..... [8572-10]

Lunch Break ..... Sun 12:20 pm to 1:20 pm

### SESSION 3

Room: 252 (Mezzanine) .....Sun 1:20 pm to 3:00 pm

#### Optical Tomography

Session Chair: **Jianan Y. Qu**, Hong Kong Univ. of Science and Technology (Hong Kong, China)

1:20 pm: **A multidimensional design for TCSPC-based diffuse optical/fluorescent tomography system**, Wei Zhang, Yiming Lu, Liming Zhang, Feng Gao, Linhui Wu, Tianjin Univ. (China) ..... [8572-11]

1:40 pm: **A super-resolution method for arbitrary retrospective sampling in fluorescence tomography with raster scanning photodetectors**, Xiaofeng Zhang, Duke Univ. (USA) ..... [8572-12]

2:00 pm: **Portable wide-field hand-held NIR scanner**, Young-Jin Jung, Manuela Roman, Jennifer Carrasquilla, Sarah J. Erickson, Anuradha Godavarty, Florida International Univ. (USA) ..... [8572-13]

2:20 pm: **Imaging functional brain networks in patients with deep brain stimulators using diffuse optical tomography**, Amy R. Viehoveer, Washington Univ. School of Medicine in St. Louis (USA); Adam T. Eggebrecht, Silvina L. Ferradal, Tasha Doty, Washington Univ. in St. Louis (USA); Tamara Hershey, Joseph P. Culver, Washington Univ. School of Medicine in St. Louis (USA) ..... [8572-14]

2:40 pm: **Bedside diffuse optical tomography of resting-state functional connectivity in hospitalized neonates**, Silvina L. Ferradal, Washington Univ. in St. Louis (USA); Steve M. Liao, Washington Univ. School of Medicine in St. Louis (USA); Adam T. Eggebrecht, Washington Univ. in St. Louis (USA); Terrie E. Inder, Joseph P. Culver, Washington Univ. School of Medicine in St. Louis (USA) ..... [8572-15]

Coffee Break ..... Sun 3:00 pm to 3:30 pm

### SESSION 4

Room: 252 (Mezzanine) .....Sun 3:30 pm to 5:30 pm

#### Optical Coherence Tomography

Session Chair: **Jennifer K. Barton**, The Univ. of Arizona (USA)

3:30 pm: **Label-free cell-based assay with spectral-domain optical coherence phase microscopy**, SuHo Ryu, Chulmin Joo, Yonsei Univ. (Korea, Republic of) ..... [8572-16]

3:50 pm: **A method to visualize lipid distribution within arterial vessel walls by 1.7 μm spectroscopic spectral-domain optical coherence tomography**, Mitsuharu Hirano, Ichiro Sogawa, Takemi Hasegawa, Masato Tanaka, Sumitomo Electric Industries, Ltd. (Japan) ..... [8572-17]

4:10 pm: **Assessment of skin lesions with combined Reflectance confocal microscopy-optical coherence tomography**, Nicusor Iftimia, Mircea Mujat, R. Daniel Ferguson, Physical Sciences Inc. (USA); William Fox, Lucid, Inc. (USA); Miliind Rajadhyaksha, Memorial Sloan-Kettering Cancer Ctr. (USA) ..... [8572-19]

4:30 pm: **Intraoperative hand-held probe-based imaging of in situ breast tumor margins and lymph nodes using OCT and ISAM**, Fredrick South, Marina Marjanovic, Steven G. Adie, Eric J. Chaney, Partha Ray M.D., Kimberly Cradock M.D., Univ. of Illinois at Urbana-Champaign (USA); John Brockenbrough M.D., George Liu M.D., Carle Foundation Hospital (USA); Guillermo Monroy, Ryan Nolan, Nathan D. Shemonski, Univ. of Illinois at Urbana-Champaign (USA); Jeffrey Putney, Donald Darga, Andrew J. Cittadine, Diagnostic Photonics, Inc. (USA); Paul S. Carney, Univ. of Illinois at Urbana-Champaign (USA); Stephen A. Boppart M.D., Univ. of Illinois at Urbana-Champaign (USA) and Diagnostic Photonics, Inc. (USA) ..... [8572-20]

4:50 pm: **Non-invasive assessment of sentinel node biopsies with full-field OCT**, Katharine Grieve, Institut Langevin (France); Fabrice Harms, LLTECH SAS (France); Martine Antoine, Hôpital de Paris (France); Brigitte Sigal-Zafrany, Institut Curie (France); Osnath Assayag, Ecole Supérieure de Physique et de Chimie Industrielles (France); Bertrand Le Conte De Poly, LLTECH SAS (France); Claude Boccara, Institut Langevin (France) and LLTech SAS (France) ..... [8572-21]

5:10 pm: **High-resolution spectrometer: solution to the axial resolution and imaging depth trade-off of SD-OCT**, Tahereh Marvdashti, Audrey Ellerbee, Hee Yoon Lee, Stanford Univ. (USA) ..... [8572-22]



POSTERS-SUNDAY

Room: 103 (Exhibit Level) . . . . .Sun 5:30 pm to 7:30 pm

Session Chair: Anita Mahadevan-Jansen, Vanderbilt Univ. (USA)

Conference attendees are invited to attend the BIOS poster session on Sunday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/x27476.xml>.

**A glucose concentration detection method in interstitial fluid based on microdialysis for calibration of minimally invasive blood glucose monitoring.** Ridong Wang, Tianjin Univ. of Commerce (China); Dachao Li, Tianjin Univ. (China) . . . . . [8572-3]

**An optimized algorithm of image stitching in the case of a multi-modal probe for monitoring the evolution of scars,** Rami Kassab, FEMTO-ST (France); Sylvie Treuillet, Univ. d'Orléans (France); Franck S. Marzani, Univ. de Bourgogne (France); Christian Pieralli, Jean-Christophe Lapayre, Univ. de Franche-Comté (France) . . . . . [8572-51]

**Handheld optical coherence tomography for human cutaneous chronic graft-versus-host disease,** Mansik Jeon, Chulhong Kim, Univ. at Buffalo (USA); George L. Chen, Roswell Park Cancer Institute (USA) . . . . . [8572-52]

**A novel imaging strategy in 5-ALA-induced photodynamic diagnosis based on photobleaching of PpIX,** Noriaki Koizumi M.D., Yoshinori Harada M.D., Eigo Otsuji M.D., Tetsuro Takamatsu M.D., Kyoto Prefectural Univ. of Medicine (Japan) . . . . . [8572-53]

**The effect of borate polymer layers on measurement of glucose concentration by surface plasmon resonance,** Jia Yang, Peng Wu, Dachao Li, Tianjin Univ. (China) . . . . . [8572-54]

**Cell phone based fluorescence dipstick reader for rapid diagnosis of Salmonella pathogen in water and beverages,** Padmavathy Bakthavathsalam, Vinoth Kumar Rajendiran, The AU-KBC Research Ctr. (India); Jaffar Ali Baquir Mohammed, Pondicherry Univ. (India) . . . . . [8572-55]

**Non-labeling imaging of rat colorectal cancers in vivo,** Yoshinori Harada, Kiiichiro Miyawaki, Katsuichi Imaizumi, Noriaki Koizumi, Keimei Nakano, Yoshihisa Yamaoka, Ping Dai, Tetsuro Takamatsu, Kyoto Prefectural Univ. of Medicine (Japan) . . . . . [8572-56]

**Raman spectroscopy using time-correlated photon-counting detection,** Zhaokai Meng, Shuna Cheng, Georgi I. Petrov, Javier A. Jo, Vladislav V. Yakovlev, Texas A&M Univ. (USA) . . . . . [8572-57]

**Normalized fluorescence lifetime imaging for tumor identification and margin delineation,** Adria J. Sherman, Asael Papour, Univ. of California, Los Angeles (USA) . . . . . [8572-23]

Monday 4 February

SESSION 5

Room: 252 (Mezzanine) . . . . . Mon 8:50 am to 10:10 am

Fluorescence

Session Chair: Laura Marcu, Univ. of California, Davis (USA)

8:50 am: **Advanced fluorescence imaging system for clinical translation,** Soren D. Konecky, Victor Ninov, Dar Bahatt, Jay Whalen, David Nilson, Heng Xu, Brad Rice, Caliper Life Sciences, Inc. (USA) . . . . . [8572-24]

9:10 am: **Sentinel lymph nodes fluorescence and hyperspectral imaging using Patent Blue V,** Franklin Tellier, Jerome Steibel, Renee Chabrier, Univ. de Strasbourg (France); Jean-Francois Rodier, Les Centres de Lutte Contre le Cancer (France); Genevieve Pourroy, Patrick Poulet, Univ. de Strasbourg (France) . . . . . [8572-26]

9:30 am: **Laser line scanning illumination scheme for the enhancement of contrast and resolution for fluorescence reflectance imaging,** Frederic Fantoni, Lionel Hervé, Vincent Poher, CEA-LETI-Minatec (France); Sylvain Gioux, Beth Israel Deaconess Medical Ctr. (USA); Jérôme Mars, Institut National Polytechnique de Grenoble (France); Jean-Marc Dinten, CEA-LETI-Minatec (France) . . . . . [8572-27]

9:50 am: **Combination of widefield fluorescence imaging and nonlinear optical microscopy/spectroscopy of oral epithelial neoplasia,** Gracie Vargas, Kert Edward, Liang Ma, Tyra Brown, Suimin Qiu, Susan McCammon, The Univ. of Texas Medical Branch (USA); Massoud Motamedi, The Univ. of Texas Medical Branch (USA) and Univ. of Texas Medical Branch (USA) . . . . . [8572-28]

Coffee Break . . . . . Mon 10:10 am to 10:40 am

SESSION 6

Room: 252 (Mezzanine) . . . . . Mon 10:40 am to 12:20 pm

Endoscopy, etc.

Session Chair: Tuan Vo-Dinh, Duke Univ. (USA)

10:40 am: **Infrared dermal thermography on diabetic feet soles to predict ulcerations: a case study,** Chanjuan Liu, Ferdi van der Heijden, Univ. Twente (Netherlands); Marvin E. Klein, DEMCON (Netherlands); Jeff G. van Baal, Hospital Group Twente (Netherlands); Sicco A. Bus, Hospital Group Twente (Netherlands) and Univ. van Amsterdam (Netherlands); Jaap J. Van Netten, Hospital Group Twente (Netherlands) . . . . . [8572-29]

11:00 am: **Laser scanning cytometry as a tool for biomarker validation,** Anja Mittag, Univ. Leipzig (Germany) and Translational Ctr. for Regenerative Medicine (Germany); Christiane Földner, Jörg Lehmann, Fraunhofer-Institut für Zelltherapie und Immunologie (Germany); Attila Tamok, Univ. Leipzig (Germany) . . . . . [8572-30]

11:20 am: **Microendoscopy of small ducts as a potential tool for guiding and monitoring intraductal biopsy and therapy,** Alexandre Douplik, Ryerson Univ. (Canada); Martin Hohmann, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Asaf Shahmoon, Bar-Ilan Univ. (Israel); Azhar Zam, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Zeev Zalevsky, Bar-Ilan Univ. (Israel); Michael Schmidt, Florian Stelzle, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Hansgeorg Schaaf, POLYDIAGNOST GmbH (Germany) . . . . . [8572-31]

11:40 am: **Wide-field flexible endoscope for simultaneous color and NIR fluorescence image acquisition during surveillance colonoscopy,** Pilar Beatriz Garcia Allende, Helmholtz Zentrum München GmbH (Germany); Wouter B. Nagengast, Univ. Medical Ctr. Groningen (Netherlands); Juergen Glatz, Vasilis Ntziachristos, Helmholtz Zentrum München GmbH (Germany) . . [8572-32]

12:00 pm: **Real-time endoscopic guidance using near-infrared fluorescent light for thoracic surgery,** Vivek Venugopal, Alan Stockdale, Florin Neacsu, Frank Kettenring, John V. Frangioni, Sidharta P. Gangadharan, Sylvain Gioux, Beth Israel Deaconess Medical Ctr. (USA) . . . . . [8572-33]

Lunch Break . . . . . Mon 12:20 pm to 1:35 pm

## SESSION 7

Room: 252 (Mezzanine) . . . . . Mon 1:35 pm to 3:15 pm

## Novel Technologies

Session Chair: **Urs Utzinger**, The Univ. of Arizona (USA)1:35 pm: **Exploiting multimode waveguides for pure fibre based imaging**, Tomáš Cizmar, Kishan Dholakia, Univ. of St. Andrews (United Kingdom) . . . . . [8572-34]1:55 pm: **A new spectroscopic paradigm for discrimination of lesions associated with breast microcalcifications**, Narahara Chari Dingari, Ishan Barman, Jaqueline S. Soares, Massachusetts Institute of Technology (USA); Anushree Saha, Case Western Reserve Univ. (USA); Sasha McGee, The Univ. of North Carolina, Chapel Hill (USA); Luis H. Galindo, Massachusetts Institute of Technology (USA); Wendy Liu, Donna Plecha, Nina Klein, Case Western Reserve Univ. (USA) and Univ. Hospitals Case Medical Ctr. (USA); Ramachandra R. Dasari, Peter T. C. So, Massachusetts Institute of Technology (USA); Maryann Fitzmaurice, Case Western Reserve Univ. (USA) . . . . . [8572-35]2:15 pm: **Mobile large area confocal scanner for imaging tumor margins: Initial testing in the Pathology Department**, Sanjeewa Abeytunge, Bjorg Larson, Yongbiao Li, Memorial Sloan-Kettering Cancer Ctr. (USA); Emily Seltzer, Livingston High School (USA); Ricardo Toledo-Crow, Milind Rajadhyaksha, Memorial Sloan-Kettering Cancer Ctr. (USA) . . . . . [8572-36]2:35 pm: **In-depth performance analysis and high impact applications of the HyperFlux spectrometer**, Jeffrey T. Meade, Bradford B. Behr, Arjae Spectral Enterprises, Inc. (Canada); Andrew T. Cenko, Thunder Bay Regional Research Institute (Canada); Arsen R. Hajian, Tornado Spectral Systems (Canada) . . . . . [8572-37]2:55 pm: **Multispectral digital colposcopy For detection of clinical cervical intraepithelial neoplasia**, Michele Follen, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Sylvia F. Lam, Martial Guillaud, Deanna Ceron, The BC Cancer Agency Research Ctr. (Canada); Judith Banath, The BC Cancer Agency Research Ctr (Canada); Jagoda Korbelik, The BC Cancer Agency Research Ctr. (Canada); Dennis D. Cox, Rice Univ. (USA); Neely Atkinson, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Roderick Price, Texas Tech Univ. (USA); Timon P. H. Buys, The BC Cancer Agency Research Ctr. (Canada); Salvador Saldivar, Texas Tech Univ. (USA); Sarah Finlayson, Mark Heywood, Janice Kwon, Murette Lee, Jessica McAlpine, Tom Ehlen, Dianne Miller, The Univ. of British Columbia (Canada); Dirk van Niekerk, British Columbia Cancer Agency (Canada); Pierre M. Lane, Calum MacAulay, The BC Cancer Agency Research Ctr. (Canada) . . . . . [8572-38]

Coffee Break . . . . . Mon 3:15 pm to 3:45 pm

## SESSION 8

Room: 252 (Mezzanine) . . . . . Mon 3:45 pm to 5:45 pm

## Vibrational Spectroscopy

Session Chair: **Andrew J. Berger**, Univ. of Rochester (USA)4:05 pm: **Classification of Raman spectra of bacteria using rank order kernels**, Alexandros Kyriakides, Univ. of Cyprus (Cyprus); Evdokia Kastanos, Univ. of Nicosia (Cyprus); Katerina Hadjigeorgiou, Costas Pitris, Univ. of Cyprus (Cyprus) . . . . . [8572-40]4:25 pm: **Integrated fingerprint and high wavenumber confocal Raman spectroscopy for in vivo diagnosis of cervical precancer**, Shiyamala Duraipandian, Zhiwei Huang, Wei Zheng, National Univ. of Singapore (Singapore); Joseph Ng, Jeffrey J. Low, Arunachalam Ilancheran, National Univ. Hospital (Singapore) . . . . . [8572-41]4:45 pm: **Comparison of high and low frequency Raman spectra for colonic neoplasia detection**, Michael A. Short, The BC Cancer Agency Research Ctr. (Canada); Isabella T. Tai, The Univ. of British Columbia (Canada); David Owen, Vancouver General Hospital (Canada); Calum MacAulay, Haishan Zeng, The BC Cancer Agency Research Ctr. (Canada) . . . . . [8572-42]5:05 pm: **Quantitative and qualitative analysis of fluorescent substances and binary mixtures by use of shifted excitation Raman difference spectroscopy**, Boris L. Volodin, PD-LD, Inc. (USA); William Yang, BaySpec Inc. (USA); Sergei Dolgy, PD-LD, Inc. (USA); Huawei Wu, BaySpec Inc. (USA); Chad Lieber, BaySpec, Inc. (USA) . . . . . [8572-43]5:25 pm: **Tissue measurement using 1064-nm dispersive Raman spectroscopy**, Chad A. Lieber, BaySpec, Inc. (USA); Huawei Wu, William Yang, BaySpec Inc. (USA) . . . . . [8572-44]11:45 pm: **Raman microspectrometer combined with scattering microscopy and lensless imaging for bacteria identification**, Samy Andrea Strola, Emmanuelle Schultz, Cédric Allier, J. Lemmonier, J. Lemmonier, CEA-LETI-Minatec (France); Brandon DesRoches, Tornado Medical System (Canada); Jean-Marc Dinten, CEA-LETI-Minatec (France) . . . . . [8572-39]

## Tuesday 5 February

## SESSION 9

Room: 252 (Mezzanine) . . . . . Tue 8:30 am to 10:30 am

## Bio-Sensors

Session Chair: **Maurice C. G. Aalders**, Univ. van Amsterdam (Netherlands)8:30 am: **Utilization of fringe projection technique for evaluation of wound dimensions and of healing progress**, Marcia T. Saito, Elisabeth M. Yoshimura, Univ. de São Paulo (Brazil); Antonio C. L. Lino, Instituto Agronômico (Brazil); Francisco P. Fernández, Univ. de Oriente (Cuba); Marcelo V. P. Sousa, Univ. de São Paulo (Brazil) . . . . . [8572-45]8:50 am: **Fluorescence lifetime for blood stain age dating**, Mikhail Y. Berezin, Washington Univ. School of Medicine in St. Louis (USA); Kevin Guo, Washington Univ. in St. Louis (USA); Samuel Achilefu, Washington Univ. School of Medicine in St. Louis (USA) . . . . . [8572-46]9:10 am: **Using color intensity projections to visualize air flow in operating theaters with the goal of reducing infections**, Keith S. Cover, Joost de Jong, Rudolf Verdaasdonk, Vrije Univ. Medical Ctr. (Netherlands) . . . . . [8572-47]9:30 am: **Universal rapid diagnostic test (RDT) reader on a cell-phone for real-time spatio-temporal mapping of infectious diseases**, Onur Mudanyali, Stoyan Dimitrov, Uzair Y. Sikora, Swati Padmanabhan, Isa Navruz, Aydogan Ozcan, Univ. of California, Los Angeles (USA) . . . . . [8572-48]9:50 am: **Label-free biosensor based on long period grating**, Francesco Baldini, Francesco Chiavaioli, Ambra Giannetti, Massimo Brenci, Cosimo Trono, Istituto di Fisica Applicata Nello Carrara (Italy) . . . . . [8572-49]10:10 am: **A portable microfluidic-based biophotonic sensor for extracellular H2O2 measurements**, Volodymyr Koman, Guillaume Suárez, Christian Santschi, Victor Javier Cadarso, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Nadia von Moos, Univ. of Geneva (Switzerland); Jürgen Brugger, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Vera I. Slaveykova, Institute F.A. Forel, Univ. of Geneva (Switzerland); Olivier J. F. Martin, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8572-50]

# Design and Quality for Biomedical Technologies V

Conference Chairs: **Ramesh Raghavachari**, U.S. Food and Drug Administration (USA); **Rongguang Liang**, College of Optical Sciences, The Univ. of Arizona (USA)

Conference Co-Chair: **Joshua Pfefer**, U.S. Food and Drug Administration (USA)

Program Committee: **Anthony J. Durkin**, Beckman Laser Institute and Medical Clinic (USA); **Kenji Taira**, Olympus Corp. (USA); **Jeeseong Hwang**, National Institute of Standards and Technology (USA); **Stephen P. Morgan**, The Univ. of Nottingham (United Kingdom); **Robert J. Nordstrom**, National Institutes of Health (USA); **Jannick P. Rolland**, Univ. of Rochester (USA); **Eric J. Seibel**, Univ. of Washington (USA); **Tomasz S. Tkaczyk**, Rice Univ. (USA); **Rudolf M. Verdaasdonk**, Vrije Univ. Medical Ctr. (Netherlands); **David W. Allen**, National Institute of Standards and Technology (USA)

## Saturday 2 February

### SESSION 1

Room: 202 (Mezzanine) ..... Sat 1:50 pm to 3:10 pm

#### Optical Tomography System Design

Session Chair: **Rudolf M. Verdaasdonk**,  
Vrije Univ. Medical Ctr. (Netherlands)

1:50 pm: **Fluorescence advantages with microscopic spatiotemporal control** (*Invited Paper*), Debabrata Goswami, Debjit Roy, Indian Institute of Technology Kanpur (India); Arijit K. De, Indian Institute of Technology Kanpur (India) and Lawrence Berkeley National Lab. (USA) ..... [8573-1]

2:10 pm: **Optimal design for high-quality functional brain imaging by diffuse optical tomography** (*Invited Paper*), Hanli Liu, The Univ. of Texas at Arlington (USA) ..... [8573-2]

2:30 pm: **Component and system evaluation for the development of a handheld point-of-care spatial frequency domain imaging (SFDI) device**, Kyle P. Nadeau, Beckman Laser Institute and Medical Clinic (USA); Pierre Khoury, Amaan Mazhar, David J. Cuccia, Modulated Imaging, Inc. (USA); Anthony J. Durkin, Beckman Laser Institute and Medical Clinic (USA) .. [8573-3]

2:50 pm: **Real-time multispectral diffuse optical tomography system for imaging epileptic activity and connectivity** (*Invited Paper*), Huabei Jiang, Tao Zhang, Jianjun Yang, Hao Yang, Univ. of Florida (USA) ..... [8573-4]

Coffee Break ..... Sat 3:10 pm to 3:30 pm

### SESSION 2

Room: 202 (Mezzanine) ..... Sat 3:30 pm to 5:30 pm

#### Optical Design of Biomedical Imaging

Session Chair: **Joshua Pfefer**,  
U.S. Food and Drug Administration (USA)

3:30 pm: **The design and integration of a custom broadband 15x zoom lens for NIR fluorescence-guided surgery** (*Invited Paper*), Julie Bentley, Univ. of Rochester (USA); John V. Frangioni M.D., Harvard Univ. (USA); Sylvain Gioux, Beth Israel Deaconess Medical Ctr. (USA) ..... [8573-5]

3:50 pm: **An algorithm for automated selection of application-specific fiber optic probes**, Andrew J. Gomes, Vadim Backman, Northwestern Univ. (USA) ..... [8573-6]

4:10 pm: **Design of a miniature objective lens for in vivo confocal microendoscopy**, Tzu-Yu Wu, College of Optical Sciences, The Univ. of Arizona (USA); Arthur F. Gmitro, Andrew R. Rouse, The Univ. of Arizona (USA) ..... [8573-7]

4:30 pm: **A multiresolution foveated laparoscope**, Yi Qin, College of Optical Sciences, The Univ. of Arizona (USA); Zhenrong Zheng, Zhejiang Univ. (China); Hong Hua, College of Optical Sciences, The Univ. of Arizona (USA) .... [8573-8]

4:50 pm: **A virtual size-variable pinhole device for single photon confocal microscopy**, Guangjun Gao, Retina Health Ctr. (USA); Bahram Khoobehi, LSU Health Sciences Ctr. (USA) ..... [8573-9]

5:10 pm: **Using a mini aspheric lens as the objective of a miniaturized video-rate nonlinear optical microscope**, Hsiang-Yu Chung, National Taiwan Univ. (Taiwan); Chi-Kuang Sun, National Taiwan Univ. (Taiwan) and Molecular Imaging Ctr., National Taiwan Univ. (Taiwan) and Institute of Physics & Research Ctr. for Applied Sciences, Academia Sinica (Taiwan) ..... [8573-10]

## BiOS Hot Topics

Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

## Sunday 3 February

### SESSION 3

Room: 202 (Mezzanine) ..... Sun 8:30 am to 10:30 am

Joint Session with Conferences 8573 and 8583

Session Chairs: **Robert J. Nordstrom**,  
National Institutes of Health (USA);

**Ramesh Raghavachari**, U.S. Food and Drug Administration (USA)

8:30 am: **Calibration of fluorescence reflectance reference phantoms** (*Invited Paper*), Jean-Pierre Bouchard, François Baribeau, Ozzy Mermut, INO (Canada) ..... [8583-20]

9:00 am: **Performance assessment of time-domain optical brain imagers: a multi-laboratory study** (*Invited Paper*), Heidrun Wabnitz, Alexander Jelzow, Mikhail Mazurenka, Oliver Steinkellner, Dieter R. Taubert, Rainer Macdonald, Physikalisches Technische Bundesanstalt (Germany); Antonio Pifferi, Politecnico di Milano (Italy) and Consiglio Nazionale delle Ricerche (Italy); Alessandro Torricelli, Davide Contini, Lucia M. G. Zucchelli, Politecnico di Milano (Italy); Lorenzo Spinelli, Consiglio Nazionale delle Ricerche Istituto di Fotonica e Nanotecnologie (Italy); Rinaldo Cubeddu, Politecnico di Milano (Italy) and Consiglio Nazionale delle Ricerche (Italy); Daniel Milej, Norbert Zolek, Michal Kacprzak, Piotr Sawosz, Adam Liebert, Institute of Biocybernetics and Biomedical Engineering (Poland); Salavat Magazov, Jeremy C. Hebden, Univ. College London (United Kingdom); Fabrizio Martelli, Paola Di Ninni, Giovanni Zaccanti, Univ. degli Studi di Firenze (Italy) ..... [8583-21]

9:20 am: **Multi-system comparison of optical coherence tomography performance with point spread function phantoms** (*Invited Paper*), Joshua Pfefer, U.S. Food and Drug Administration (USA); Chao-Wei Chen, Anthony Fouad, Univ. of Maryland, College Park (USA); Wei Gong, Univ. of Maryland, Baltimore (USA) and Fujian Normal Univ. (China); Peter Tomlins, Queen Mary, Univ. of London (United Kingdom); Peter Woolliams, National Physical Lab. (United Kingdom); Rebekah Drezek, Rice Univ. (USA); Anant Agrawal, U.S. Food and Drug Administration (USA); Yu Chen, Univ. of Maryland, College Park (USA) ..... [8573-11]

9:50 am: **A one step vs. a multi step geometric calibration of an optical coherence tomography**, Jesús Díaz Díaz, Maik Rahlves, Leibniz Univ. Hannover (Germany); Omid Majdani, Medizinische Hochschule Hannover (Germany); Eduard Reithmeier, Tobias Ormaier, Leibniz Univ. Hannover (Germany) ..... [8573-12]

10:10 am: **A quantitative evaluation of digital tissue phantoms for oximetry**, David W. Allen, National Institute of Standards and Technology (USA); Ronald Xu, The Ohio State Univ. (USA); Joseph P. Rice, Maritoni Litorja, Jeeseong Hwang, National Institute of Standards and Technology (USA) ..... [8573-13]

Coffee Break ..... Sun 10:30 am to 11:00 am

**SESSION 4**

Room: 202 (Mezzanine) .....Sun 11:00 am to 12:00 pm

**FDA Regulation**

Session Chair: **Ramesh Raghavachari**,  
U.S. Food and Drug Administration (USA)

11:00 am: **FDA regulation of in vitro diagnostic devices**  
(*Keynote Presentation*), Yun-Fu Hu, U.S. Food and Drug Administration  
(USA) ..... [8573-14]

Lunch/Exhibition Break ..... Sun 12:00 pm to 1:00 pm

**SESSION 5**

Room: 202 (Mezzanine) .....Sun 1:00 pm to 3:40 pm

**Clinical Systems**

Session Chair: **Rongguang Liang**,  
College of Optical Sciences, The Univ. of Arizona (USA)

1:00 pm: **Challenges and opportunities in clinical translation of fluorescence lifetime diagnostic techniques** (*Invited Paper*), Laura Marcu, Univ. of California, Davis (USA) ..... [8573-15]

1:30 pm: **Delineation of clinical needs and device determinant parameters for oral applications of optical techniques** (*Invited Paper*), Petra Wilder-Smith, Beckman Laser Institute and Medical Clinic (USA) ..... [8573-16]

2:00 pm: **Using multiphoton excitation for in vivo human clinical imaging: feasibility and possible applications.** (*Invited Paper*), Warren R. Zipfel, Cornell Univ. (USA) ..... [8573-17]

2:30 pm: **Imaging of epithelial neoplasia by multiphoton autofluorescence and second harmonic generation microscopy/spectroscopy** (*Invited Paper*), Gracie Vargas, The Univ. of Texas Medical Branch (USA); Kert Edward, Univ. of the West Indies (Jamaica); Liang Ma, Suimin Qiu, Vicente Resto, Susan McCammon, The Univ. of Texas Medical Branch (USA) ..... [8573-18]

3:00 pm: **Large field air flow visualization in the operating room to study potential sources for contaminations during surgery**, Rudolf M. Verdaasdonk, Joost de Jong, Albert Van der Veen, Keith Cover, Vrije Univ. Medical Ctr. (Netherlands) ..... [8573-19]

3:20 pm: **Image-guided liver surgeries using fluorescence goggle system**, Yang Liu, Washington Univ. in St. Louis (USA); Walter J. Akers, Washington Univ. School of Medicine in St. Louis (USA); Gail P. Sudlow, Washington Univ. in St. Louis (USA); Kexian Liang, Samuel Achilefu, Washington Univ. School of Medicine in St. Louis (USA) ..... [8573-30]

Coffee Break ..... Sun 3:40 pm to 4:00 pm

**SESSION 6**

Room: 202 (Mezzanine) .....Sun 4:00 pm to 5:50 pm

**System Development and Simulation**

Session Chair: **Jeeseong Hwang**,  
National Institute of Standards and Technology (USA)

4:00 pm: **Photoacoustic microscopy based multimodal imaging system** (*Invited Paper*), Hao F. Zhang, Northwestern Univ. (USA); Shuliang Jiao, The Univ. of Southern California (USA) ..... [8573-20]

4:30 pm: **Spectral variations in narrow band imaging depth-selectivity: mucosal scattering vs. hemoglobin**, Quanzeng Wang, U.S. Food and Drug Administration (USA); Du Le, U.S. Food and Drug Administration (USA) and The Catholic Univ. of America (USA); Jessica Ramella-Roman, The Catholic Univ. of America (USA); Joshua Pfefer, U.S. Food and Drug Administration (USA) ..... [8573-21]

4:50 pm: **Biofilm formation on different stainless steel morphologies studied by hyperspectral imaging**, Do-Hyun Kim, U.S. Food and Drug Administration (USA); Hanh N. D. Le, U.S. Food and Drug Administration (USA); Moon S. Kim, U.S. Dept. of Agriculture (USA); Jeeseong Hwang, National Institute of Standards and Technology (USA) ..... [8573-22]

5:10 pm: **Label-free mapping and modeling of the distribution of intracellular molecules using hyperspectral microscopy**, Daniel Stark, Ji Youn Lee, National Institute of Standards and Technology (USA); Fuyuki Tokumasu, National Institutes of Health (USA); Robert Chang, David W. Allen, Maritoni Litorja, Matthew Clarke, National Institute of Standards and Technology (USA); Do-Hyun Kim, U.S. Food and Drug Administration (USA); Jeeseong Hwang, National Institute of Standards and Technology (USA) ..... [8573-23]

5:30 pm: **Evaluation of shape recognition abilities for micro-lens array based optical detectors by a dedicated simulation framework**, Xiaoming Jiang, Liji Cao, Wolfhard Semmler, Jörg Peter, Deutsches Krebsforschungszentrum (Germany) ..... [8573-24]

**POSTERS-SUNDAY**

Room: 103 (Exhibit Level) .....Sun 5:30 pm to 7:30 pm

Conference attendees are invited to attend the BIOS poster session on Sunday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/x27476.xml>.

**A novel method for MTF measurement based on resampling techniques**, Zhongxing Zhou, Qingzhen Zhu, Feng Gao, Huijuan Zhao, Lixin Zhang, Tianjin Univ. (China) ..... [8573-25]

**Improving the fluorescence spectrometer sensitivity limit towards femtomolar concentrations**, Manoel Veiga, Peter Kapusta, Sebastian Tannert, Felix Koberling, Matthias Patting, Marcus Sackrow, Michael Wahl, Rainer Erdmann, PicoQuant GmbH (Germany) ..... [8573-26]

**The performance evaluation of the Mach-Zehnder type full-field optical coherence imaging**, Eun-Seo Choi, Joo Ha Kim, Seung Suk Lee, Chosun Univ. (Korea, Republic of) ..... [8573-27]

**Modeling near-infrared semiconductor lasers for microsurgery in stem cell studies**, Meng-Mu Shih, Univ. of Florida (USA) ..... [8573-28]

**Conversion of a low cost off-the-shelf spectrometer into a broadband continuous-wave near-infrared spectrometer for deep tissue spectroscopy**, Mamadou Diop, Eric Wright, Keith St. Lawrence, Lawson Health Research Institute (Canada) ..... [8573-29]

**Surgical oncology aided by fluorescence goggle system**, Yang Liu, Washington Univ., St. Louis (USA); Walter J. Akers, Adam Q. Bauer, Washington Univ. School of Medicine in St. Louis (USA); Gail P. Sudlow, Washington Univ. in St. Louis (USA); Kexian Liang, Joseph P. Culver, Samuel Achilefu, Washington Univ. School of Medicine in St. Louis (USA) ..... [8573-31]



# Multimodal Biomedical Imaging VIII

Conference Chairs: **Fred S. Azar**, Philips Medical Systems (USA); **Xavier Intes**, Rensselaer Polytechnic Institute (USA)

## Saturday 2 February

### SESSION 1

Room: 200 (Mezzanine) ..... Sat 8:20 am to 10:00 am

#### Diffuse Optical Imaging

Session Chairs: **Gultekin Gulsen**, Univ. of California, Irvine (USA);  
**Fred S. Azar**, Philips Medical Systems (USA)

8:20 am: **Synchromodal optical in vivo imaging employing micro-lens-array optics: a complete framework**, Jörg Peter, Deutsches Krebsforschungszentrum (Germany) ..... [8574-2]

8:40 am: **Toward ideal imaging geometry for recovery independence in fluorescence molecular tomography**, Robert W. Holt, Dartmouth College (USA); Frederic Leblond, Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) ..... [8574-3]

9:00 am: **A novel high-resolution optical imaging modality: photo-magnetic tomography**, Alex Luk, David Thayer, Yuting Lin, Univ. of California, Irvine (USA); Hao Gao, Emory Univ. (USA); Gultekin Gulsen, Univ. of California, Irvine (USA) ..... [8574-4]

9:20 am: **Design of a rotational ultrasound guided diffuse optical tissue identification system for whole breast imaging**, Zixin Deng, Yuting Lin, Kenji Ikemura, Po-jung M. Tseng, Yu-wen Chang, Gultekin Gulsen, Univ. of California, Irvine (USA) ..... [8574-5]

9:40 am: **Simultaneous multimodal microscopy for head and neck tissue identification**, Etienne De Montigny, Nadir Goulamhousen, Ecole Polytechnique de Montréal (Canada); Mathias Strupler, Sainte-Justine Mother and Child Univ. Hospital Ctr. (Canada) and Ecole Polytechnique de Montréal (Canada); Caroline Boudoux, Ecole Polytechnique de Montréal (Canada) and Sainte Justine Univ. Hospital Ctr. (Canada) ..... [8574-6]

Coffee Break ..... Sat 10:00 am to 10:30 am

### SESSION 2

Room: 200 (Mezzanine) ..... Sat 10:30 am to 12:20 pm

#### Microscopic Imaging

Session Chairs: **Caroline Boudoux**, Ecole Polytechnique de Montréal (Canada); **Xavier Intes**, Rensselaer Polytechnic Institute (USA)

10:30 am: **TBD (Invited Paper)**, ..... [8574-7]

11:00 am: **Static and quasi-static elastography adding contrast to full-field optical coherence tomography**, Amir Nahas, Institut Langevin (France) and LLTECH SAS (France); Stéphane Roux, Ecole Normale Supérieure de Cachan (France); A. Claude Boccara, Institut Langevin (France) and LLTECH SAS (France) ..... [8574-8]

11:20 am: **in vivo monitoring of laser wound healing in the mouse cornea with two-photon microscopy**, Jun Ho Lee, Changho Seo, Dongsik Kim, Pohang Univ. of Science and Technology (Korea, Republic of); Ho Sik Hwang, Choun Ki Joo, Seoul St. Marys Hospital (Korea, Republic of); Ki Hean Kim, Pohang Univ. of Science and Technology (Korea, Republic of) ..... [8574-9]

11:40 am: **Optical design of a compound lens satisfying both optical coherence tomography and confocal microscopy constrains**, Mathias Strupler, Ecole Polytechnique de Montréal (Canada) and Sainte Justine Hospital Research Ctr. (Canada); Etienne De Montigny, Ecole Polytechnique de Montréal (Canada); Caroline Boudoux, Ecole Polytechnique de Montréal (Canada) and Sainte Justine Hospital Research Ctr. (Canada) ..... [8574-10]

12:00 pm: **Integrated laser scanning photoacoustic and confocal microscopy for real-time imaging**, Sang-Won Lee, Joo Hyun Park, Jae Yong Lee, Eun Seong Lee, Korea Research Institute of Standards and Science (Korea, Republic of) ..... [8574-11]

Lunch Break ..... Sat 12:20 pm to 1:30 pm

### SESSION 3

Room: 200 (Mezzanine) ..... Sat 1:30 pm to 3:00 pm

#### Clinical Applications I

Session Chairs: **Sylvain Gioux**, Beth Israel Deaconess Medical Ctr. (USA); **Fred S. Azar**, Philips Medical Systems (USA)

1:30 pm: **Using multimodal imaging techniques to monitor limb ischemia: a rapid noninvasive method for assessing extremity wounds**, Rajiv Luthra, Naval Medical Research Ctr. (USA); Nicole J. Crane, Naval Medical Research Ctr. (USA) and Uniformed Services Univ. of the Health Sciences (USA); Jonathan Forsberg, Naval Medical Research Ctr. (USA) and Uniformed Services Univ. of the Health Sciences (USA) and Department of Orthopedics and Rehabilitation, Walter Reed National Military Medical Center, Bethesda (USA); Eric A. Elster, Naval Medical Research Ctr. (USA) ..... [8574-12]

1:50 pm: **TBD (Invited Paper)**, ..... [8574-13]

2:20 pm: **Elasticity image analysis of optical-based tactile system used for breast tumor characterization**, Jong-Ha Lee, Samsung Advanced Institute of Technology (Korea, Republic of); Chang-Hee Won, Temple Univ. (USA) [8574-14]

2:40 pm: **Multimodal tissue perfusion imaging using multi-spectral and thermographic imaging systems applied on clinical data**, John H. Klaessens, Martin Nelisse, Univ. Medical Ctr. Utrecht (Netherlands); Rudolf M. Verdaasdonk, Vrije Univ. Medical Ctr. (Netherlands); Herke Jan Noordmans, Univ. Medical Ctr. Utrecht (Netherlands) ..... [8574-15]

### POSTER SESSION AND COFFEE BREAK

Room: Hall A, BiOS Expo ..... Sat 3:00 pm to 4:00 pm

Attendees are invited to view the conference posters, which will be available on Saturday and Sunday. The poster session, with authors present, will be held from 3:00 to 4:00 PM on Sunday afternoon, in conjunction with the coffee break.

**POSTER AUTHORS:** Poster setup is scheduled from 10:00 to 11:30 AM on Saturday and Sunday in South Hall A. Please plan to stand with your poster during the poster session on Sunday from 3:00 to 4:00 PM. Posters may remain on the boards both Saturday and Sunday but must be removed following the Sunday afternoon poster session/coffee break. Posters left on the boards after this time will be discarded.

**Time resolved optical tomography locates fluorescent targets in a turbid medium**, Binlin Wu, Wei Cai, Swapan K. Gayen, The City College of New York (USA) ..... [8574-1]

**Towards diffuse optical tomography of arbitrarily heterogeneous turbid medium using GPU-accelerated Monte-Carlo forward calculation**, Xi Yi, Weiting Chen, Linhui Wu, Wei Zhang, Jiao Li, Xin Wang, Liming Zhang, Feng Gao, Tianjin Univ. (China) ..... [8574-23]

**Dynamic fluorescence diffuse tomography methodology for imaging pharmacokinetic-rates of indocyanine green in small animal**, Xin Wang, Xi Yi, Linhui Wu, Jiao Li, Liming Zhang, Wei Zhang, Feng Gao, Tianjin Univ. (China) ..... [8574-24]

**Color intensity projections with hue cycling for intuitive and compressed presentation of motion in medical imaging modalities**, Keith S. Cover, Frank J. Lagerwaard, Rudolf M. Verdaasdonk, Vrije Univ. Medical Ctr. (Netherlands) ..... [8574-25]

**Comparison of brain-related, systemic physiological, and instrumentation noise during a test-retest study of brain responses with concurrent MRI and NIRS**, Theodore J. Huppert, Jeffrey W. Barker, Ardalan Aarabi, Univ. of Pittsburgh Medical Ctr. (USA) ..... [8574-26]

**Multimodal tissue diagnostic technique combining fluorescence lifetime imaging (FLIm), ultrasound backscatter microscopy (UBM) and photoacoustic imaging (PAI): design and in vivo validation in a hamster oral carcinoma model**, Feifei Zhou, Yang Sun, Hussain Fatakdawala, Hussain Fatakdawala, Abhijit J. Chaudhari, Julien Bec, Jing Liu, Diego Yankelevich, Univ. of California, Davis (USA); Shannon Poti, Steve P. Tingling, Gregory D. Farwell, Regina F. Gandour-Edwards, UC Davis Medical Ctr. (USA); Laura Marcu, Univ. of California, Davis (USA) ..... [8574-27]

**Simulation of action-potential-sensitive second harmonic generation response of myelinated afferents to temperature effects**, Xinguang Chen, Zhihui Luo, Hongqin Yang, An Zhang, Shusen Xie, Fujian Normal Univ. (China) . . . . . [8574-28]

**An optical 3D model construction system for medical imaging**, Arezoo Movaghar, Reza Safabakhsh, Khosro Madanipour, Amirkabir Univ. of Technology (Iran, Islamic Republic of) . . . . . [8574-29]

#### SESSION 4

**Room: 200 (Mezzanine) . . . . . Sat 4:00 pm to 5:20 pm**

##### Clinical Applications II

Session Chairs: **Sylvain Gioux**, Beth Israel Deaconess Medical Ctr. (USA); **Fred S. Azar**, Philips Medical Systems (USA)

4:00 pm: **Diagnosing breast cancer using independent diffuse optical tomography and x-ray mammography scans**, Maxim Fradkin, Jean-Michel Rouet, Philips France (France); Richard H. Moore, Daniel B. Kopans, Massachusetts General Hospital (USA); Keith Tipton, Sankar Suryanarayanan, Philips Healthcare, N.A. (USA); David A. Boas, Qianqian Fang, Massachusetts General Hospital (USA) . . . . . [8574-16]

4:20 pm: **A dual oxygenation and fluorescence imaging platform for reconstructive surgery**, Yoshitomo Ashitate, John N. Nguyen, Vivek Venugopal, Alan Stockdale, Florin Neacsu, Frank Kettenring, Bernard T. Lee, John V. Frangioni, Sylvain Gioux, Beth Israel Deaconess Medical Ctr. (USA) . . . . . [8574-17]

4:40 pm: **Multimodal investigation of neural-vascular coupling during somatosensory stimulation and resting state using concurrent MEG-NIRS and MRI-NIRS**, Theodore J. Huppert, Avniel Ghuman, Univ. of Pittsburgh Medical Ctr. (USA) . . . . . [8574-18]

5:00 pm: **A device for multimodal imaging of skin**, Janis Spigulis, Univ. of Latvia (Latvia); Valerijs Garancis, Telemedica, SIA (Latvia); Uldis Rubins, Eriks Zaharans, Janis Zaharans, Liene Elste, Univ. of Latvia (Latvia) . . . . . [8574-19]

#### SESSION 5

**Room: 200 (Mezzanine) . . . . . Sat 5:20 pm to 6:20 pm**

##### Preclinical Imaging

Session Chairs: **Yves Bérubé-Lauzière**, Univ. de Sherbrooke (Canada); **Xavier Intes**, Rensselaer Polytechnic Institute (USA)

5:20 pm: **Validation of diffuse optical tomography using a bi-functional optical-MRI contrast agent and a hybrid DOT-MRI system**, Alex Luk, Yuting Lin, David Thayer, Anjani Hagan, Kristin Murray, Univ. of California, Irvine (USA); Burcin Unlu, Bogaziçi Univ. (Turkey); Brian Grimmond, GE Gobal Research (USA); Anup Sood, GE Global Research (USA); Egidijus Uzgiris, Rensselaer Polytechnic Institute (USA); Orhan Nalcioğlu, Gultekin Gulsen, Univ. of California, Irvine (USA) . . . . . [8574-20]

5:40 pm: **Multimodality pH imaging in a mouse dorsal skin fold window chamber model**, Hui Min Leung, The Univ. of Arizona, College of Optical Sciences (USA); Rachel Schafer, Mark D. Pagel, The Univ. of Arizona (USA); Ian F. Robey, The Univ. of Arizona (USA); Arthur F. Gmitro, The Univ. of Arizona (USA) . . . . . [8574-21]

6:00 pm: **Ultra-high sensitivity detection of bimodal probes at ultra-low noise for combined fluorescence and positron emission tomography imaging**, Nikta Zarifyussefian, Univ. de Sherbrooke (Canada); Olivier Daigle, Nüvü Caméras Inc. (Canada); Elena Ranyuk, Réjean Lebel, Johannes Van Lier, Brigitte Guérin, Roger Lecomte, Univ. de Sherbrooke (Canada); Marc Massonneau, Quidd (France); Marie-Eve Ducharme, Nüvü Caméras Inc. (Canada); Yves Bérubé-Lauzière, Univ. de Sherbrooke (Canada) . . . . . [8574-22]

### BiOS Hot Topics

Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.



Download the  
SPIE Conference App



# Endoscopic Microscopy VIII

*Conference Chairs:* **Guillermo J. Tearney M.D.**, Massachusetts General Hospital (USA); **Thomas Duen-Shyr Wang**, Univ. of Michigan (USA)

*Program Committee:* **David L. Dickensheets**, Montana State Univ. (USA); **Arthur F. Gmitro**, The Univ. of Arizona (USA); **Ralf Kiesslich M.D.**, Johannes Gutenberg Univ. Mainz (Germany); **Francois Lacombe**, Mauna Kea Technologies (France); **Stephen Lam**, The BC Cancer Agency Research Ctr. (Canada); **Hiroshi Mashimo**, VA Boston Healthcare System (USA); **Kenzi Murakami**, Olympus Corp. (Japan); **Norman S. Nishioka M.D.**, Massachusetts General Hospital (USA); **Wibool Piyawattanametha**, National Electronics and Computer Technology Ctr. (Thailand); **Mark J. Schnitzer**, Stanford Univ. School of Medicine (USA); **Peter T. C. So**, Massachusetts Institute of Technology (USA); **Melissa J. Suter**, Massachusetts General Hospital (USA)

## Sunday 3 February

### SESSION 1

**Room: 304 (Esplanade) . . . . . Sun 8:20 am to 10:30 am**

#### Fiber Bundle Techniques

Session Chair: **Francois Lacombe**, Mauna Kea Technologies (France)

8:20 am: **Barrett's pathology update** (*Invited Paper*), Guillermo J. Tearney M.D., Wellman Ctr. for Photomedicine (USA) . . . . . [8575-34]

9:00 am: **Molecular imaging for endoscopic detection of neoplasia in Barrett's esophagus** (*Invited Paper*), Thomas D. Wang, Univ. of Michigan (USA) . . . . . [8575-35]

9:30 am: **Multicolor probe-based confocal laser endomicroscopy: a new world for in vivo and real-time cellular imaging**, Hédi Gharbi, Tom K. Vercauteren, François Doussoux, Matthieu Cazaux, Francois Lacombe, Mauna Kea Technologies (France) . . . . . [8575-2]

9:50 am: **Needle endomicroscope with a plastic achromatic objective to perform optical biopsies of breast tissue**, Matthew R. Kyriakos, Jessica Dobbs, Rebecca Richards-Kortum, Tomasz S. Tkaczyk, Rice Univ. (USA) . . . . [8575-3]

10:10 am: **A near infrared angioscope visualizing lipid within arterial vessel wall based on multi-spectral image in 1.7 μm wavelength band**, Takemi Hasegawa, Ichiro Sogawa, Hiroshi Suganuma, Sumitomo Electric Industries, Ltd. (Japan) . . . . . [8575-4]

Coffee Break . . . . . Sun 10:30 am to 11:00 am

### SESSION 2

**Room: 304 (Esplanade) . . . . . Sun 11:00 am to 12:40 pm**

#### New Techniques and Contrast Agents

Session Chair: **Arthur F. Gmitro**, The Univ. of Arizona (USA)

11:00 am: **μOCT Imaging probe for imaging functional anatomy of respiratory epithelium in Vivo**, Ken Chu, Tzahi Grunzweig, Linbo Liu, Gregory Dierksen, Robert W. Carruth, Massachusetts General Hospital (USA); Ramses V. Martinez, George Whitesides, Harvard Univ. (USA); Steven M. Rowe, The Univ. of Alabama at Birmingham (USA); Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) . . . . . [8575-5]

11:20 am: **OFDI guided biopsy of Barrett's esophagus**, Melissa J. Suter, Massachusetts General Hospital (USA); Michalina J. Gora, Wellman Ctr. for Photomedicine (USA); Gregory Lauwers, Arni T. Arnason, Jenny S. Sauk, Khay M. Tan, Kevin A. Gallagher, Lauren Kava, Massachusetts General Hospital (USA); Brett E. Bouma, Wellman Ctr. for Photomedicine (USA); Norman S. Nishioka, Massachusetts General Hospital (USA); Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) . . . . . [8575-6]

11:40 am: **Mesoscopic spectrally encoded tomography**, Paulino Vacas-Jacques, Wellman Ctr. for Photomedicine (USA); Joseph A. Gardecki, Massachusetts General Hospital (USA); Brett E. Bouma, Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) . . . . . [8575-7]

12:00 pm: **Development of a fluorescence-labeled peptide for cervical cancer screening with microendoscope**, Numfon Khemthongcharoen, National Electronics and Computer Technology Ctr. (Thailand) and Chulalongkorn Univ. (Thailand); Santi Rattanavarin, National Electronics and Computer Technology Ctr. (Thailand); Pongsak Sarapukdee, Chulalongkorn Univ. (Thailand); Satjana Pattanasak, National Science and Technology Development Agency (Thailand); Somchai Niruthisard M.D., Chulalongkorn Univ. (Thailand); Wibool Piyawattanametha, National Electronics and Computer Technology Ctr. (Thailand) and Chulalongkorn Univ. (Thailand) . . . . . [8575-8]

12:20 pm: **Detecting fluorescence hot-spots using mosaic maps generated from multimodal endoscope imaging**, Chenying Yang, Timothy D. Soper, Eric J. Seibel, Univ. of Washington (USA) . . . . . [8575-9]

Lunch Break . . . . . Sun 12:40 pm to 1:40 pm

### SESSION 3

**Room: 304 (Esplanade) . . . . . Sun 1:40 pm to 3:00 pm**

#### Advances in SECM Technology

Session Chair: **DongKyun Kang**, Massachusetts General Hospital (USA)

1:40 pm: **High-speed high-resolution noninvasive microscopy of blood**, Lior Golan, Daniella Yeheeskely-Hayon, Limor Minai, Dvir Yelin, Technion-Israel Institute of Technology (Israel) . . . . . [8575-10]

2:00 pm: **Tethered capsule spectrally encoded confocal endomicroscopy for eosinophilic esophagitis**, Nima Tabatabaei, Dongkyun Kang, Harvard Medical School (USA) and Massachusetts General Hospital (USA); Robert W. Carruth, Massachusetts General Hospital (USA); Minkyu Kim, Harvard Medical School (USA) and Massachusetts General Hospital (USA) and Univ. of Tokyo (Japan); Guillermo J. Tearney, Harvard Medical School (USA) and Massachusetts General Hospital (USA) and Massachusetts Institute of Technology (USA); Tao Wu, Harvard Medical School (USA) and Massachusetts General Hospital (USA) . . . . . [8575-11]

2:20 pm: **Comprehensive confocal endomicroscopy of the esophagus in vivo using SECM**, DongKyun Kang, Massachusetts General Hospital (USA); Simon Schlachter, Nine Point Medical (USA) and Massachusetts General Hospital (USA); Robert W. Carruth, Massachusetts General Hospital (USA); Minkyu Kim, Massachusetts General Hospital (USA) and Univ. of Tokyo (Japan); Tao Wu, Wellman Ctr. for Photomedicine (USA); Nima Tabatabaei, Milen Shishkov, Paulino Vacas-Jacques, Wellman Ctr. for Photomedicine (USA); Kevin Woods, Wellman Ctr. for Photomedicine (USA) and Emory Univ. Hospital (USA); Jenny S. Sauk, Norman S. Nishioka, Massachusetts General Hospital (USA); Brett E. Bouma, Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) . . . . . [8575-12]

2:40 pm: **Compound vari-focal objective lens for confocal endomicroscopy**, Minkyu Kim, Massachusetts General Hospital (USA) and Univ. of Tokyo (Japan); Dongkyun Kang, Robert W. Carruth, Massachusetts General Hospital (USA); Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) and Massachusetts Institute of Technology (USA) and Harvard Medical School (USA); Tao Wu, Massachusetts General Hospital (USA); Nima Tabatabaei, Harvard Medical School (USA) . . . . . [8575-13]

Coffee Break . . . . . Sun 3:00 pm to 3:30 pm

### SESSION 4

**Room: 304 (Esplanade) . . . . . Sun 3:30 pm to 5:10 pm**

#### Multiphoton

Session Chair: **Peter T. C. So**, Massachusetts Institute of Technology (USA)

3:30 pm: **High resolution large field-of-view endomicroscope with optical zoom capability**, Dimitre G. Ouzounov, David R. Rivera, Watt W. Webb, Chris Xu, Cornell Univ. (USA) . . . . . [8575-14]

3:50 pm: **Label free multiphoton imaging of human pulmonary tissues through two-meter-long microstructured fiber and multicore image-guide**, Guillaume Ducourthial, Claire Lefort, XLIM Institut de Recherche (France); Donald A. Peyrot, Univ. Pierre et Marie Curie (France); Tigran Mansuryan, XLIM Institut de Recherche (France); Sergei G. Kruglik, Christine Vever-Bizet, Univ. Pierre et Marie Curie (France); Luc Thiberville, Rouen Univ. Hospital (France); Francois Lacombe, Mauna Kea Technologies (France); Geneviève Bourg-Heckly, Univ. Pierre et Marie Curie (France); Frédéric Louradour, XLIM Institut de Recherche (France) . . . . . [8575-15]



4:10 pm: **Development of a side-looking endoscopic imaging probe for combined two-photon microscopy and optical coherence tomography**, Taejun Wang, Peng Xiao, Qingyun Li, Jun Ho Lee, Pohang Univ. of Science and Technology (Korea, Republic of); Pilhan Kim, KAIST (Korea, Republic of); Euiheon Chung, Gwangju Institute of Science and Technology (Korea, Republic of); Seungjae Myung, Asan Medical Ctr. (Korea, Republic of); Ki Hean Kim, Pohang Univ. of Science and Technology (Korea, Republic of) . . . . . [8575-16]

4:30 pm: **Fiber optic nonlinear endomicroscopy for imaging biological tissues based on intrinsic contrast**, Wenxuan Liang, Yuying Zhang, Johns Hopkins Univ. (USA); Meredith Akins, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Yongping Chen, Qi Mao, Johns Hopkins Univ. (USA); Ming-Jun Li, Corning Incorporated (USA); Kristine Glunde, Zaver Bhujwala, Johns Hopkins Univ. (USA); Katherine Luby-Phelps, Mala Mahendroo, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Xingde Li, Johns Hopkins Univ. (USA) . . . . . [8575-17]

4:50 pm: **Development of a coherent Raman scattering fiber optic probe**, Richa Mittal, Mihaela Balu, Gangjun Liu, Zhongping Chen, Bruce J. Tromberg, Petra Wilder-Smith, Beckman Laser Institute and Medical Clinic (USA); Eric O. Potma, Univ. of California, Irvine (USA) . . . . . [8575-18]

**POSTERS-SUNDAY**

**Room: 103 (Exhibit Level) . . . . . Sun 5:30 pm to 7:30 pm**

Conference attendees are invited to attend the BIOS poster session on Sunday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/x27476.xml>.

**Compact 2D MEMS mirror for dual-axes confocal endomicroscope**, Haijun Li, Zhen Qiu, Xiyu Duan, Wajih Shahid, Quan Zhou, Kenn R. Oldham, Katsuo Kurabayashi, Thomas D. Wang, Univ. of Michigan (USA) . . . . . [8575-29]

**Ultrafast laser scalpel**, Onur Ferhanoglu, Murat Yildirim, Adela Ben-Yakar, The Univ. of Texas at Austin (USA) . . . . . [8575-32]

**Evaluation of a compound eye type tactile endoscope**, Kayo Yoshimoto, Kenji Yamada, Nagisa Sasaki, Maki Takeda, Sachiko Shimizu, Osaka Univ. (Japan); Toshiaki Nagakura, Osaka Electro-Communication Univ. (Japan); Hideya Takahashi, Osaka City Univ. (Japan); Yuko Ohno, Osaka Univ. (Japan) . . . . . [8575-33]

**Monday 4 February**

**SESSION 5**

**Room: 304 (Esplanade) . . . . . Mon 8:40 am to 10:00 am**

**Advances in SEE Technology**

Session Chair: **Dvir Yelin**, Technion-Israel Institute of Technology (Israel)

8:40 am: **Phase sensitive imaging of acoustic vibrations using spectrally encoded interferometry**, Ovadia Ilgayev, Dvir Yelin, Technion-Israel Institute of Technology (Israel) . . . . . [8575-19]

9:00 am: **Dual-channel spectrally encoded endoscopic probe**, Dvir Yelin, Guy Engel, Technion-Israel Institute of Technology (Israel) . . . . . [8575-20]

9:20 am: **Fabrication of miniature endoscope using soft lithography**, DongKyun Kang, Massachusetts General Hospital (USA); Ramses V. Martinez, George Whitesides, Harvard Univ. (USA); Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) . . . . . [8575-21]

9:40 am: **Novel double clad fiber couplers for spectrally encoded endoscopy**, Wendy-Julie Madore, Etienne De Montigny, Simon Lemire-Renaud, Etienne Duchesne De Lamotte, Ecole Polytechnique de Montréal (Canada); Mathias Strupler, Sainte Justine Mother and Child Univ. Hospital Ctr. (Canada); Nicolas Godbout, Ecole Polytechnique de Montréal (Canada); Caroline Boudoux, Ecole Polytechnique de Montréal (Canada) and Sainte Justine Univ. Hospital Ctr. (Canada) . . . . . [8575-22]

Coffee Break . . . . . Mon 10:00 am to 10:30 am

**SESSION 6**

**Room: 304 (Esplanade) . . . . . Mon 10:30 am to 12:10 pm**

**New OCT Probes**

Session Chair: **Jennifer K. Barton**, The Univ. of Arizona (USA)

10:30 am: **Flexible fiber-bundle probe for endoscopic full-field OCT**, Anne Latrive, Ecole Supérieure de Physique et de Chimie Industrielles (France) and LLTECH SAS (France); Claude A. Boccara, Institut Langevin (France) and LLTECH SAS (France) . . . . . [8575-23]

10:50 am: **OFDI tethered capsule localization for unseeded gastrointestinal 3D imaging**, Melissa W. Haskell, Massachusetts General Hospital (USA); Michalina J. Gora, Wellman Ctr. for Photomedicine (USA); Robert W. Carruth, Massachusetts General Hospital (USA); Martin Villiger, Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) . . . . . [8575-24]

11:10 am: **Spiral-scanning, side-viewing optical coherence tomography endoscope for three-dimensional fully sampled in vivo imaging of the mouse colon**, Weston A. Welge, College of Optical Sciences, The Univ. of Arizona (USA); Jennifer K. Barton, The Univ. of Arizona (USA) . . . . . [8575-25]

11:30 am: **Fluorescence-based SMC and OCT endoscope to study aberrant crypt foci in mouse model of colon cancer**, Molly Keenan, The Univ. of Arizona (USA); R. Andrew Wall, College of Optical Sciences, The Univ. of Arizona (USA); Jennifer K. Barton, The Univ. of Arizona (USA) . . . . . [8575-26]

11:50 am: **OFDI tethered capsule endomicroscopy for unseeded gastrointestinal imaging**, Michalina J. Gora, Wellman Ctr. for Photomedicine (USA); Jenny S. Sauk, Robert W. Carruth, Kevin A. Gallagher, Melissa J. Suter, Norman S. Nishioka, Massachusetts General Hospital (USA); Guillermo J. Tearney, Wellman Ctr. for Photomedicine (USA) . . . . . [8575-27]

Lunch Break . . . . . Mon 12:10 pm to 1:30 pm

**SESSION 7**

**Room: 304 (Esplanade) . . . . . Mon 1:30 pm to 4:40 pm**

**NOTE ROOM CHANGE**

**Microscopy**

Joint Session with Conferences 8616 and 8575

Session Chair: **David L. Dickensheets**, Montana State Univ. (USA)

1:30 pm: **Achromatic surgical MEMS-based dual-axis confocal microscope for delineation of brain tumor margins**, Steven Y. Leigh, Danni Wang, Ye Chen, Jonathan T. C. Liu, Stony Brook Univ. (USA) . . . . . [8575-28]

1:50 pm: **Handheld multispectral dual-axis confocal microscope for cervical cancer screening**, Pongsak Sarapukdee, Santi Rattanavarin, Numfon Khemthongcharoen, Ungkarn Jarujareet, Romuald Jolivot, National Electronics and Computer Technology Ctr. (Thailand); Il Woong Jung, Daniel Lopez, Argonne National Lab. (USA); Michael J. Mandella, Stanford Univ. School of Medicine (USA); Wibool Piyawattanametha, National Electronics and Computer Technology Ctr. (Thailand) . . . . . [8575-30]

2:10 pm: **Vertical cross-sectional imaging by multi-color handheld dual-axes confocal microscope**, Zhen Qiu, Xiyu Duan, Haijun Li, Choong-ho C. Rhee, Supang Khondee, Bishnu Joshi, Xiaoming Zhou, Kenn R. Oldham, Katsuo Kurabayashi, Thomas D. Wang, Univ. of Michigan (USA) . . . . . [8575-31]

Coffee Break . . . . . Mon 2:50 pm to 3:20 pm

3:20 pm: **Optical probe design with extended depth-of-focus for optical coherence microscopy and optical coherence tomography**, Seungwan Lee, Minseog Choi, Eunsung Lee, Kyu-Dong Jung, Jong-hyeon Chang, Woonbae Kim, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8616-1]

3:40 pm: **Multi-wafer bonding technology for a 3D micro-optical lens scanner**, Christophe Gorecki, Sylwester Bargiel, Nicolas Passilly, Maciej Baranski, FEMTO-ST (France); Maik Wiemer, Chenping Jia, Jörg Frömel, Fraunhofer-Institut für Elektronische Nanosysteme (Germany) . . . . . [8616-2]

4:00 pm: **Electrostatic MEMS resonating micro polygonal scanner for circumferential endoscopic bio-imaging**, Xiaojing Mu, Guangya Zhou, National Univ. of Singapore (Singapore); Hongbin Yu, Julius Ming-Lin Tsai, A\*STAR Institute of Microelectronics (Singapore); Wee Keong Neo, A. Senthil Kumar, Fook Siong Chau, National Univ. of Singapore (Singapore) . . . . . [8616-3]

4:20 pm: **A water-immersible 2-axis scanning mirror microsystem for ultrasound and photoacoustic microscopic imaging applications**, Chih-Hsien Huang, Texas A&M Univ. (USA) . . . . . [8616-4]



# Optical Fibers and Sensors for Medical Diagnostics and Treatment Applications XIII

Conference Chair: **Israel Gannot**, Tel Aviv Univ. (Israel)

Program Committee: **James P. Clarkin**, Polymicro Technologies, A Subsidiary of Molex Incorporated (USA); **Ilko K. Ilev**, U.S. Food and Drug Administration (USA); **Jin U. Kang**, Johns Hopkins Univ. (USA); **Karl-Friedrich Klein**, Technische Hochschule Mittelhessen (Germany); **Pierre Lucas**, The Univ. of Arizona (USA); **Yuji Matsuura**, Tohoku Univ. (Japan); **Angela B. Seddon**, The Univ. of Nottingham (United Kingdom)

## Saturday 2 February

### SESSION 1

Room: 250 (Mezzanine) ..... Sat 8:30 am to 10:30 am

#### Optical Fibers and Sensors I

Session Chair: **Israel Gannot**, Tel Aviv Univ. (Israel)

8:30 am: **Fabrication of a rugged polymer-coated silver hollow fiber with a vitreous film for the infrared**, Katsumasa Iwai, Sendai National College of Technology (Japan); Mitsunobu Miyagi, Tohoku Institute of Technology (Japan); Yi-Wei Shi, Fudan Univ. (China); Yuji Matsuura, Tohoku Univ. (Japan) .. [8576-1]

8:50 am: **Focused light delivery and all optical scanning from a multimode optical fiber using digital phase conjugation**, Ioannis N. Papadopoulos, Salma Farahi, Christophe Moser, Demetri Psaltis, Ecole Polytechnique Fédérale de Lausanne (Switzerland) ..... [8576-2]

9:10 am: **Dual-modality fiber-optic imager (DFOI) for intracellular gene delivery in human cervical cancer cell**, Jaepyeong Cha, Jing Zhang, Saumya Gurbani, Min Li, Jin U. Kang, Johns Hopkins Univ. (USA) ..... [8576-3]

9:30 am: **Numerical analysis of the diffusive mass transport in brain tissues with applications to optical sensors**, Adrian Neculau, Univ. of West Timisoara (Romania); Andreas Otte, Univ. of Applied Sciences Offenburg (Germany); Dan Curticepean, Hochschule Offenburg (Germany) ..... [8576-4]

9:50 am: **Effects of sterilization methods on key properties of specialty optical fibers used in medical devices**, Andrei A. Stolov, Brian Slyman, David T. Burgess, Adam S. Hokansson, Jie Li, R. Steve Allen, OFS Specialty Photonics Div. (USA) ..... [8576-5]

10:10 am: **Laser-induced damage to large core optical fiber by high peak power laser**, Xiaoguang Sun, Jie Li, OFS Specialty Photonics Div. (USA) ..... [8576-6]

Coffee Break ..... Sat 10:30 am to 11:00 am

### SESSION 2

Room: 250 (Mezzanine) ..... Sat 11:00 am to 12:20 pm

#### Optical Fibers and Sensors II

Session Chair: **Israel Gannot**, Tel Aviv Univ. (Israel)

11:00 am: **Flexible delivery of Er:YAG radiation at 2.94 μm with novel hollow-core silica glass fibres: demonstration of tissue ablation**, Artur Urich, Robert R. J. Maier, Heriot-Watt Univ. (United Kingdom); Jonathan C. Knight, Fei Yu, Univ. of Bath (United Kingdom); Duncan P. Hand, Jonathan D. Shephard, Heriot-Watt Univ. (United Kingdom) ..... [8576-7]

11:20 am: **Research on the FBG's high temperature sustainability influenced by the drawing process**, Shuqiang Zhang, Feng Tu, Weijun Huang, Fei Liu, Jing Ma, Yingsong Li, Yangtze Optical Fibre and Cable Co., Ltd. (China) ..... [8576-8]

11:40 am: **Large-mode area fiber for optical coherence tomography**, Suchei Moon, Kookmin Univ. (Korea, Republic of); Zhongping Chen, Beckman Laser Institute and Medical Clinic (USA) ..... [8576-9]

12:00 pm: **Dual-channel fiber-probe for simultaneous imaging of swept source optical coherence tomography and fluorescence spectroscopy**, Eun Jung Min, Jae Hwi Lee, Jun Geun Shin, Byeong Ha Lee, Gwangju Institute of Science and Technology (Korea, Republic of) ..... [8576-10]

Lunch/Exhibition Break ..... Sat 12:20 pm to 1:20 pm

### SESSION 3

Room: 250 (Mezzanine) ..... Sat 1:20 pm to 3:20 pm

#### Optical Fibers and Sensors III

Session Chair: **Israel Gannot**, Tel Aviv Univ. (Israel)

1:20 pm: **Simultaneous measurement of radiation dose and strain using a micro-tapered long-period fiber grating incorporating an erbium-doped fiber**, Young Bo Shim, Hyun-Joo Kim, Hanyang Univ. (Korea, Republic of); Young-Hoon Ji, Korea Institute of Radiological & Medical Sciences (Korea, Republic of); Young-Geun Han, Hanyang Univ. (Korea, Republic of) . . . [8576-11]

1:40 pm: **Real-time depth-resolved Raman endoscopy for in vivo diagnosis of dysplasia in Barrett's esophagus**, Mads Sylvest Bergholt, Wei Zheng, Khek Yu Ho, Ming Teh, Khay Guan Yeoh, Jimmy B. Y. So, Zhiwei Huang, National Univ. of Singapore (Singapore) ..... [8576-12]

2:00 pm: **Microstructured optical fiber Bragg grating sensor for DNA detection**, Alessandro Candiani, Michele Sozzi, Enrico Coscelli, Federica Poli, Annamaria Cucinotta, Alessandro Bertucci, Roberto Corradini, Univ. degli Studi di Parma (Italy); Maria Konstantaki, Foundation for Research and Technology - Hellas (Greece); Walter Margulis, Acreo AB (Sweden); Stavros Pissadakis, Foundation for Research and Technology - Hellas (Greece); Stefano Selleri, Sara Giannetti, Univ. degli Studi di Parma (Italy) ..... [8576-13]

2:20 pm: **Hollow core photonic crystal fiber as a robust Raman biosensor**, Altaf Khetani, Ali Monenpour, Jason Riordon, Vidhu S. Tiwari, Michel Godin, Hanan Anis, Univ. of Ottawa (Canada) ..... [8576-14]

2:40 pm: **Augmenting convection-enhanced delivery through simultaneous co-delivery of fluids and laser energy with a fiber optic microneedle device**, R. Lyle Hood, Rudy T. Andriani Jr., John L. Robertson, John H. Rossmesl Jr., Christopher G. Rylander, Virginia Polytechnic Institute and State Univ. (USA) ..... [8576-15]

3:00 pm: **Controlled surgery using cw 2-μm laser systems with modified fiber tips**, Rudolf M. Verdaasdonk, Vrije Univ. Medical Ctr. (Netherlands) and Free Univ. Amsterdam (Netherlands); Albert Van der Veen, Vrije Univ. Medical Ctr. (Netherlands); Tjeerd de Boorder, Herke Jan Noordmans, Univ. Medical Ctr. Utrecht (Netherlands); Peter Vandertop, Hans Daniels, Vrije Univ. Medical Ctr. (Netherlands); Aijt Pothen, Univ. Medical Ctr. Utrecht (Netherlands); Andreas Eing, LISA laser products (Germany) ..... [8576-16]

Coffee Break ..... Sat 3:20 pm to 3:50 pm

### SESSION 4

Room: 250 (Mezzanine) ..... Sat 3:50 pm to 5:50 pm

#### Optical Fibers and Sensors IV

Session Chair: **Israel Gannot**, Tel Aviv Univ. (Israel)

3:50 pm: **Ball lens fiber optic sensor based smart handheld microsurgical instrument**, Cheol Song, Johns Hopkins Univ. (USA); Peter Gehlbach, Wilmer Eye Institute (USA); Jin U. Kang, Johns Hopkins Univ. (USA) ..... [8576-17]

4:10 pm: **Non-circular core all silica fibers for irradiation and sensing medical applications**, Bolesh J. Skutnik, CeramOptec Industries, Inc. (USA) ..... [8576-18]

4:30 pm: **Delivery systems with higher stability for 266 and 355-nm pulsed Nd-YAG laser light**, Karl-Friedrich Klein, Cornell P. Gonschior, Technische Hochschule Mittelhessen (Germany); Moritz B. Klein, TransMIT GmbH (Germany); Jan C. Heimann, Technische Hochschule Mittelhessen (Germany) ..... [8576-19]

4:50 pm: **Fluorescence image-guided photodynamic therapy of cancer cells using a scanning fiber endoscope**, Eric J. Seibel, Mikias H. Woldetensae, Mark R. Kirshenbaum, Univ. of Washington (USA); Greg M. Kramer, Nortis Corp. (USA); Liang Zhang, Univ. of Washington (USA) ..... [8576-20]

5:10 pm: **Development of a custom optical fiber device with four-wave mixing mitigation for CARS endoscopy**, Pascal Deladurantaye, INO (Canada); Eric J. Seibel, Univ. of Washington (USA); Alex Paquet, David Gay, Michel Poirier, Benoît Fortin, Carl Larouche, INO (Canada); Brian C. Wilson, Ontario Cancer Institute (Canada); Ozzy Mermut, Jean-François Cormier, INO (Canada) ..... [8576-21]

5:30 pm: **Monitoring the impact of pressure on the assessment of skin perfusion and oxygenation using a novel pressure device**, Jessica C. Ramella-Roman, Thuan Ho, Du V. N. Le, Pejman Ghassemi, Thu Nguyen, The Catholic Univ. of America (USA); Alison Lichy, Suzanne Groah, National Rehabilitation Hospital (USA) ..... [8576-22]

**BiOS Hot Topics**

Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

**Sunday 3 February**

**SESSION 5**

**Room: 250 (Mezzanine) . . . . .Sun 8:30 am to 11:40 am**

**Optical Fibers and Sensors V**

Session Chair: **Israel Gannot**, Tel Aviv Univ. (Israel)

8:30 am: **Design and fabrication of multilayer thin film coated hollow waveguides for enhanced infrared radiation delivery**, Carlos M. Bledt III, Jeffrey E. Melzer, James A. Harrington, Rutgers, The State Univ. of New Jersey (USA) ..... [8576-33]

8:50 am: **Mid-infrared fiber optic approach for detecting surface biochemical contamination using Fourier transform infrared (FTIR) spectroscopy**, Moinuddin Hassan, Xin Tan, Ilko Ilev, U.S. Food and Drug Administration (USA) ..... [8576-23]

9:10 am: **Calcium detection in muscle tissue with fiber-optic based biofluorometer and UV-LED excitation**, Mathias Belz, World Precision Instruments, Inc. (Germany); Alexander Dickson, Xavier O. Acevedo, World Precision Instruments, Inc. (USA); Karl-Friedrich Klein, Technische Hochschule Mittelhessen (Germany) ..... [8576-24]

9:30 am: **Optical fiber probe for all-optical photoacoustic measurement**, Yusuke Miida, Yuji Matsuura, Tohoku Univ. (Japan) ..... [8576-25]

9:50 am: **Hollow waveguide with multiple dielectric layer for infrared cavity-ring-down spectroscopy**, Ryo Ichikawa, Takashi Katagiri, Yuji Matsuura, Tohoku Univ. (Japan) ..... [8576-26]

Coffee Break . . . . . Sun 10:10 am to 10:40 am

10:40 am: **Measurement of blood glucose by infrared spectroscopy using hollow-optical fiber probe**, Yuki Tanaka, Saiko Kino, Yuji Matsuura, Tohoku Univ. (Japan) ..... [8576-27]

11:00 am: **Whispering gallery mode aptasensors for detection of blood proteins**, Silvia Soria, Gualtiero Nunzi Conti, Andrea Barucci, Istituto di Fisica Applicata Nello Carrara (Italy); Simone Berneschi, Istituto di Fisica Applicata Nello Carrara (Italy) and Centro Fermi (Italy); Lorenzo Lunelli, Fondazione Bruno Kessler (Italy) and IBF-CNR Univ. of Trento (Italy); Cecilia Pederzoli, Laura Pasquardini, Fondazione Bruno Kessler (Italy); Masimiliano Insinna, Simone Salvadori, Univ. degli Studi di Firenze (Italy) ..... [8576-30]

11:20 am: **Mid-infrared (IR) - a hot topic: the potential for using mid-IR light for non-invasive, early-detection of skin cancers in vivo**, Angela B. Seddon, The Univ. of Nottingham (United Kingdom) ..... [8576-34]

**POSTERS-SUNDAY**

**Room: 103 (Exhibit Level) . . . . .Sun 5:30 pm to 7:30 pm**

Conference attendees are invited to attend the BiOS poster session on Sunday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/x27476.xml>.

**Real-time optical fiber dosimeter probe**, Hyun-Joo Kim, Young Bo Shim, Young-Hoon Ji, Young-Geun Han, Hanyang Univ. (Korea, Republic of) [8576-28]

**A glucose concentration measurement method based on fiber optic surface plasmon resonance sensor**, Dachao Li, Zhu Rui, Peng Wu, Tianjin Univ. (China) ..... [8576-29]

**Interventional operation OCT probe with the function of real time temperature monitoring**, Yuan Guo, Johns Hopkins Univ. (USA); Lian suo Wei, Qiqihar Univ. (China); Xuan Liu, Johns Hopkins Univ. (USA) ..... [8576-31]

**Monitoring of the degradation in the rat's articular cartilage inducing osteoarthritis using common-path Fourier-domain optical coherence tomography**, Chul-Gyu Song, Yong Kyun Oh, Dong Ho Shin, Jeong Hwan Seo, Min Ho Kim, Chonbuk National Univ. (Korea, Republic of); Jin U. Kang, Johns Hopkins Univ. (USA) ..... [8576-32]

## Optical Biopsy X

Conference Chairs: **Robert R. Alfano**, The City College of New York (USA); **Stavros G. Demos**, Lawrence Livermore National Lab. (USA)

Program Committee: **Stefan Andersson-Engels**, Lund Univ. (Sweden); **Nicole J. Crane**, Naval Medical Research Ctr. (USA); **Jason M. Eichenholz**, Ocean Optics, Inc. (USA); **Zhiwei Huang**, National Univ. of Singapore (Singapore); **Amir H. Gandjbakhche**, National Institutes of Health (USA); **Israel Gannot**, Tel Aviv Univ. (Israel); **Xiaohui Ni**, Harvard Univ. (USA); **Milind Rajadhyaksha**, Memorial Sloan-Kettering Cancer Ctr. (USA); **Kestutis Sutkus**, The City College of New York (USA); **Sebastian Wachsmann-Hogiu**, NSF Ctr. for Biophotonics Science and Technology (USA); **Siavash Yazdanfar**, GE Global Research (USA)

### Tuesday 5 February

#### SESSION 1

Room: 304 (Esplanade) . . . . . Tue 8:40 am to 9:40 am

#### Fluorescence I

Session Chair: **Stavros G. Demos**,  
Lawrence Livermore National Lab. (USA)

8:40 am: **The efficacy of Stokes Shift Spectroscopy to detect prostate and breast cancer in human tissues**, Yang Pu, Wubao Wang, Yuanlong Yang, Robert R. Alfano, The City College of New York (USA) . . . . . [8577-1]

9:00 am: **Diagnosis of colorectal cancer using autofluorescence combined with diffuse reflectance spectra**, Lina Liu, Fujian Normal Univ. (China) and Fujian Normal Univ. (China); Zhihai Qiu, Yingbin Nie, Fujian Normal Univ. (China); Weihua Li, Fujian Provincial Hospital (China); Lisheng Lin, Shusen Xie, Buhong Li, Fujian Normal Univ. (China) . . . . . [8577-2]

9:20 am: **In vivo fluorescence lifetime imaging for detection of cancer biomarkers**, Yasaman Ardeshirpour, Victor Chernomordik, Moinuddin Hassan, Rafal Zielinski, Jacek Capala, Amir Gandjbakhche, National Institutes of Health (USA) . . . . . [8577-3]

Coffee Break . . . . . Tue 10:00 am to 10:30 am

#### SESSION 2

Room: 304 (Esplanade) . . . . . Tue 10:30 am to 11:50 am

#### Fluorescence II

Session Chair: **Yang Pu**, The City College of New York (USA)

10:30 am: **Autofluorescence microscopy with sub-300 nm excitation for cellular diagnostics**, Timothy E. Renkoski, College of Optical Sciences, The Univ. of Arizona (USA); Bhaskar Banerjee M.D., The Univ. of Arizona College of Medicine (USA); Logan R. Graves, College of Optical Sciences, The Univ. of Arizona (USA); Nathaniel S. Rial M.D., The Univ. of Arizona College of Medicine (USA); Brenda Baggett, Urs Utzinger, The Univ. of Arizona (USA) . . . . . [8577-4]

10:50 am: **Large area mapping of excised breast tissue by fluorescence confocal strip scanning: a preliminary feasibility study**, Bjorg A. Larson, Sanjeeva Abeytunge, Melissa Murray, Milind Rajadhyaksha, Memorial Sloan-Kettering Cancer Ctr. (USA) . . . . . [8577-5]

11:10 am: **Steady state and time-resolved fluorescence spectroscopic characterisation of normal and cancerous urine**, Rajasekaran Ramu, Prakasarao Aruna, Anna Univ. Chennai (India); Munusamy Balu David, Arignar Anna Memorial Cancer Hospital & Research Institute (India); Domadula Koteeswaran, Meenakshi Ammal Dental College & Hospital (India); Kulandaivel Muthuvelu, Stanley Medical College and Hospital (India); Rai R., Dr. Rai Memorial Cancer Institute (India); Singaravelu Ganesan, Anna Univ. Chennai (India) . . . . . [8577-6]

11:30 am: **Time-resolved fluorescence polarization for breast cancer detection in vitro using an octreotide-indocyanine green conjugate**, Laura A. Sordillo, Giovanni Milione, Peter P. Sordillo, Bidyut Das, Wubao Wang, Samuel Achilefu, Robert R. Alfano, The City College of New York (USA). [8577-7]

Lunch/Exhibition Break . . . . . Tue 11:50 am to 1:20 pm

Sponsored by



#### SESSION 3

Room: 304 (Esplanade) . . . . . Tue 1:20 pm to 1:40 pm

#### Imaging, Polarization, and Thz I

Session Chair: **Nicole J. Crane**, Naval Medical Research Ctr. (USA)

1:20 pm: **Multimodal optical detection of breast cancers**, Anna N. Yaroslavsky, Rakesh Patel, Univ. of Massachusetts Lowell (USA); Ashraf Khan, Robert Quinlan, Univ. of Massachusetts Medical School (USA) . . . . . [8577-30]

#### SESSION 4

Room: 304 (Esplanade) . . . . . Tue 1:40 pm to 2:00 pm

#### Fluorescence III

Session Chair: **Nicole J. Crane**, Naval Medical Research Ctr. (USA)

1:40 pm: **Diagnosis of malignant and benign prostate tumor from spectra of blood plasma**, Vadivel Masilamani, King Saud Univ. (Saudi Arabia) . . [8577-9]

#### SESSION 5

Room: 304 (Esplanade) . . . . . Tue 2:00 pm to 2:40 pm

#### Raman I

Session Chair: **Zhiwei Huang**, National Univ. of Singapore (Singapore)

2:00 pm: **Resonance Raman Spectroscopy for Human Cancer Detection of Key Molecules with Clinical Diagnosis**, Yan Zhou, The General Hospital of the Air Force, PLA (China); Cheng-hui Liu, The City College of New York (USA); Jiyou Li M.D., Lixin Zhou M.D., Jingsheng He M.D., Beijing Cancer Hospital (China); Yi Sun, Yang Pu, The City College of New York (USA); Ke Zhu, Yulong Liu, Institute of Physics (China); Qingbo Li, BeiHang Univ. (China); Gangge Cheng, The General Hospital of the Air Force, PLA (China); Robert R. Alfano, The City College of New York (USA) . . . . . [8577-10]

2:20 pm: **Confocal resonance Raman probes the cell-cycle dependence of the spectra of proliferating normal and neoplastic single cells**, Susie Boydston-White, Borough of Manhattan Community College (USA); Cheng-hui Liu, Robert R. Alfano, The City College of New York (USA) . . . . . [8577-11]

Coffee Break . . . . . Tue 3:00 pm to 3:30 pm



## SESSION 6

Room: 304 (Esplanade) .....Tue 3:30 pm to 4:30 pm

## Raman II

Session Chair: **Laura A. Sordillo**, The City College of New York (USA)

3:30 pm: **An all-in-one demonstration of the diagnostic power of Raman spectroscopy in breast cancer: lesion discrimination and microcalcification identification**, Ishan Barman, Narahara Chari Dingari, Jaqueline S. Soares, Massachusetts Institute of Technology (USA); Anushree Saha, Sasha McGee, Case Western Reserve Univ. (USA); Luis Galindo, Massachusetts Institute of Technology (USA); Wendy Liu, Donna Plecha, Nina Klein, Case Western Reserve Univ. (USA); Ramachandra R. Dasari, Peter T. C. So, Massachusetts Institute of Technology (USA); Maryann Fitzmaurice, Case Western Reserve Univ. (USA) ..... [8577-12]

3:50 pm: **Analysis of healthy and regenerated bone tissue: use of the Fourier transform infrared spectroscopy (FT-IR) in the molecular identification in situ**, Taciana D. Magrini, Herculano S. da Silva Martinho, Arnaldo R. dos Santos, UFABC (Brazil) ..... [8577-13]

4:10 pm: **Could near-infrared Raman spectroscopy be correlated with the Metavir scores in liver lesions induced by hepatitis C virus?**, Marcio C. R. Gaggini M.D., Ricardo S. Navarro, Aline R. Stefanini, Rubens S. Sano, Univ. Camilo Castelo Branco (Brazil); Landulfo Silveira Jr., Camilo Castelo Branco Univ. (Brazil) ..... [8577-14]

## SESSION 7

Room: 304 (Esplanade) .....Tue 4:30 pm to 6:10 pm

## Raman III

Session Chair: **Israel Gannot**, Tel Aviv Univ. (Israel)

4:30 pm: **Moving Raman spectroscopy into real-time, online diagnosis and detection of precancer and cancer in vivo in the upper GI during clinical endoscopic examination**, Zhiwei Huang, Mads Sylvest Bergholt, Wei Zheng, National Univ. of Singapore (Singapore); Khok Yu Ho, Ming Teh, Khay G. Yeoh, Jimmy B. Y. So, Asim Shabbir, National Univ. Hospital (Singapore) ... [8577-15]

4:50 pm: **Protein-like bulk model: a model for study the vibrational spectra of confined water in tissues**, Herculano S. da Silva Martinho, Erika T. Sato, UFABC (Brazil) ..... [8577-16]

5:10 pm: **Identifying pathological bone mineralization in diabetic foot wounds by Raman spectroscopy**, Karen A. Esmonde-White, Francis W. Esmonde-White, Univ. of Michigan (USA); Crystal Holmes, Univ. of Michigan Medical School (USA); Michael D. Morris, Univ. of Michigan (USA); Blake J. Roessler, Univ. of Michigan Health System (USA) ..... [8577-17]

5:30 pm: **Multicore fiber with integrated fiber Bragg grating for background-free Raman sensing**, Sebastian Dochow, Ines Latka, Martin Becker, Ron Spittel, Jens Kobelke, Kay Schuster, Albrecht Graf, Sven Brückner, Sonja Unger, Manfred Rothardt, Institut für Photonische Technologien e.V. (Germany); Benjamin Dietzek, Institut für Photonische Technologien e.V. (Germany) and Univ. Jena (Germany); Christoph Krafft, Institut für Photonische Technologien e.V. (Germany); Jürgen Popp, Institut für Photonische Technologien e.V. (Germany) and Univ. Jena (Germany) ..... [8577-18]

5:50 pm: **Spectral diagnosis of thalassemia: an innovative technique**, Vadivel Masilamani, King Saud Univ. (Saudi Arabia) ..... [8577-19]

## Wednesday 6 February

## SESSION 8

Room: 304 (Esplanade) ..... Wed 8:00 am to 10:40 am

## Overview: Special Hot Biomedical Optics Topics

Session Chair: **Robert R. Alfano**, The City College of New York (USA)

8:00 am: **Overview of light transport in scattering biomedical-like media**, Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA) [8577-20]

8:40 am: **Biomedical Raman spectroscopy in tissue diagnosis and characterization**, Zhiwei Huang, National Univ. of Singapore (Singapore) ..... [8577-21]

9:20 am: **Complex light**, Giovanni Milione, The City College of New York (USA) ..... [8577-22]

10:00 am: **The role of tissue optics in functional imaging**, Bruce J. Tromberg, Beckman Laser Institute and Medical Clinic (USA) .... [8577-23]

Coffee Break .....Wed 10:40 am to 11:00 am

## SESSION 9

Room: 304 (Esplanade) ..... Wed 11:00 am to 12:20 pm

## Multi-photon and NLO

Session Chair: **Lingyan Shi**, The City College of New York (USA)

11:00 am: **In vivo three-dimensional optical coherence tomography and multiphoton microscopy in a mouse model of ovarian neoplasia**, Jennifer M. Watson, Samuel Marion, Photini F. Rice, Dave Bentley, David G. Besselsen, Urs Utzinger, Patricia B. Hoyer, Jennifer K. Barton, The Univ. of Arizona (USA) ..... [8577-24]

11:20 am: **A novel intravital multi-harmonic generation microscope for early diagnosis of oral cancer**, Yu-Hsiang Cheng, Chih-Feng Lin, National Taiwan Univ. (Taiwan); Chi-Kuang Sun, National Taiwan Univ. (Taiwan) and Institute of Physics & Research Ctr. for Applied Sciences (Taiwan) and Molecular Imaging Ctr. (Taiwan) ..... [8577-25]

11:40 am: **Highly-sensitive detection of cancer cells using femtosecond dual-wavelength near-IR two-photon-excited fluorescence imaging**, Aleksander K. Rebane, Montana State Univ. (USA) and National Institute of Chemical Physics and Biophysics (Estonia); Jean R. Starkey, Mikhail Drobijev, Montana State Univ. (USA); Nikolay S. Makarov, Los Alamos National Lab. (USA) ..... [8577-26]

12:00 pm: **High-spectral resolution nonlinear microspectroscopy and imaging of soft condensed and biological media**, Feruz S. Ganikhanov, Shan Yang, Sanjay Adhikari, West Virginia Univ. (USA) ..... [8577-27]

Lunch/Exhibition Break .....Wed 12:20 pm to 1:50 pm

## SESSION 10

Room: 304 (Esplanade) ..... Wed 1:50 pm to 3:10 pm

## Imaging, Polarization, and THz II

Session Chairs: **Amir Gandjbakhche**, National Institutes of Health (USA); **Stavros G. Demos**, Lawrence Livermore National Lab. (USA)

1:50 pm: **Polarimetric Mueller microscopy as a tool for parametric studies of healthy and cancerous human colon tissue**, Angelo Pierangelo, Sandeep Manhas, Bicher Haj-Ibrahim, Ecole Polytechnique (France); Abdelali Benali, Institut Mutualiste Montsouris (France); Tatiana Novikova, Ecole Polytechnique (France); Brice Gayet, Pierre Validire, Institut Mutualiste Montsouris (France); André Nazac, CHU Bicêtre (France); Antonello De Martino, Ecole Polytechnique (France) ..... [8577-29]

2:10 pm: **Optical and terahertz biopsy of skin cancers**, Cecil S. Joseph, Rakesh Patel, Univ. of Massachusetts Lowell (USA); Victor A. Neel, Massachusetts General Hospital (USA); Robert H. Giles, Univ. of Massachusetts Lowell (USA); Anna N. Yaroslavsky, Univ. of Massachusetts Lowell (USA) and Massachusetts General Hospital (USA) ..... [8577-31]

2:30 pm: **Formulaic ratio imaging for improved visualization of low contrast lesions in human colon specimens**, Urs Utzinger, The Univ. of Arizona (USA); Timothy E. Renkoski, College of Optical Sciences, The Univ. of Arizona (USA); Bhaskar Banerjee, The Univ. of Arizona College of Medicine (USA); Logan R. Graves, College of Optical Sciences, The Univ. of Arizona (USA); Nathaniel S. Rial, The Univ. of Arizona College of Medicine (USA); Sirandon A. H. Reid, The Univ. of Arizona (USA); Vassiliki L. Tsikitis, Valentine N. Nfonsam, Piyush Tiwari, Hemant Gavini, The Univ. of Arizona College of Medicine (USA) ..... [8577-32]

2:50 pm: **Study and discrimination of human cervical tissue Images through multi-fractal analysis**, Jaidip M. Jagtap, Indian Institute of Technology Kanpur (India) ..... [8577-33]

## POSTERS-WEDNESDAY

Room: 304 (Esplanade) ..... Wed 6:00 pm to 8:00 pm

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Investigation of native spectral difference among cancer cell lines with different risk levels**, Yang Pu, City College of New York (USA); Jianpeng Xue, China Pharmaceutical Univ. (China); Baogang Xu, Washington Univ. in St. Louis (USA); Wubao Wang, The City College of New York (USA); Yueqing Gu, China Pharmaceutical Univ. (China); Rui Tang, Washington Univ. in St. Louis (USA); Samuel Achilefu, Washington Univ. School of Medicine in St. Louis (USA); Robert R. Alfano, The City College of New York (USA) ..... [8577-8]



# Optical Tomography and Spectroscopy of Tissue X

**Conference Chairs:** **Bruce J. Tromberg**, Beckman Laser Institute and Medical Clinic (USA); **Arjun G. Yodh**, Univ. of Pennsylvania (USA); **Eva Marie Sevick-Muraca**, The Univ. of Texas Health Science Ctr. at Houston (USA)

**Conference Co-Chair:** **Robert R. Alfano**, The City College of New York (USA)

**Program Committee:** **Samuel Achilefu**, Washington Univ. School of Medicine in St. Louis (USA); **David A. Boas**, Massachusetts General Hospital (USA); **Sergio Fantini**, Tufts Univ. (USA); **Marco Ferrari**, Univ. degli Studi dell'Aquila (Italy); **Amir H. Gandjbakhche**, National Institutes of Health (USA); **Jeremy C. Hebden**, Univ. College London (United Kingdom); **Andreas H. Hielscher**, Columbia Univ. (USA); **Jana M. Kainerstorfer**, Tufts Univ. (USA); **Anand T. N. Kumar**, Athinoula A. Martinos Ctr. for Biomedical Imaging (USA); **Frederic Leblond**, Thayer School of Engineering at Dartmouth (USA); **Mark J. Niedre**, Northeastern Univ. (USA); **Brian W. Pogue**, Dartmouth College (USA); **Quing Zhu**, Univ. of Connecticut (USA)

## Sunday 3 February

### SESSION 1

**Room: 306 (Esplanade) . . . . . Sun 8:15 am to 9:55 am**

#### **Brain, Neuro, and Functional Imaging I: Clinical**

Session Chair: **Jana M. Kainerstorfer**, Tufts Univ. (USA)

8:15 am: **Cerebral tissue oxygen saturation monitoring using frequency-domain near-infrared spectroscopy in anesthetized patients: a clinician's perspective of cerebral circulation physiology** (*Invited Paper*), Lingzhong Meng, Duke Univ. Medical Ctr. (USA); A. W. Gelb, Univ. of California, San Francisco (USA); W. W. Mantulin, Univ. of California, Irvine (USA); Albert E. Cerussi, Bruce J. Tromberg, Beckman Laser Institute and Medical Clinic (USA) . . . . . [8578-1]

8:40 am: **Validation of optically measured cerebral venous oxygen saturation in humans**, Jennifer M. Lynch, Univ. of Pennsylvania (USA); Erin M. Buckley, Peter Schwab, Brian D. Hanna, Daniel J. Licht, The Children's Hospital of Philadelphia (USA); Arjun G. Yodh, Univ. of Pennsylvania (USA) . . . . . [8578-2]

8:55 am: **Use of diffuse optical spectroscopy to monitor muscle and brain oxygenation dynamics during isometric and isokinetic exercise**, Goutham Ganesan, Joshua Cotter, Univ. of California, Irvine (USA); Warren Reuland, Beckman Laser Institute and Medical Clinic (USA); Robert V. Warren, Soroush M. Mirzaei Zarandi, Univ. of California, Irvine (USA); Albert E. Cerussi, Bruce J. Tromberg, Beckman Laser Institute and Medical Clinic (USA); Pietro R. Galassetti, Univ. of California, Irvine (USA) . . . . . [8578-3]

9:10 am: **Investigation of human frontal cortex under noxious thermal stimulation of temporomandibular joint using functional near infrared spectroscopy**, Amarnath S. Yennu, Rohit Rawat, Mayur Jadhav, Michael T. Manry, Hanli Liu, The Univ. of Texas at Arlington (USA) . . . . . [8578-4]

9:25 am: **functional near-infrared spectroscopy (fNIRS) during vestibulo-ocular and postural challenges**, Helmet T. Karim, Univ. of Pittsburgh Medical Ctr. (USA) and Univ. of Pittsburgh (USA); Joseph M. Furman M.D., Univ. of Pittsburgh (USA); Theodore J. Huppert, Univ. of Pittsburgh Medical Ctr. (USA) . . . . . [8578-5]

9:40 am: **Low frequency oscillations measured with near infrared spectroscopy shed light onto underlying cerebral hemodynamics**, Jana M. Kainerstorfer, Michele L. Pierro, Angelo Sassaroli, Tufts Univ. (USA); Peter R. Bergethon, Boston Univ. (USA); Sergio Fantini, Tufts Univ. (USA) . . . . . [8578-6]

Coffee Break . . . . . Sun 9:55 am to 10:30 am

### SESSION 2

**Room: 306 (Esplanade) . . . . . Sun 10:30 am to 12:00 pm**

#### **Brain, Neuro, and Functional Imaging II: Instrumentation and Methods**

Session Chair: **David A. Boas**, Massachusetts General Hospital (USA)

10:30 am: **Functional brain imaging with a supercontinuum time-domain NIRS system**, Juliette J. Selb, Bernhard B. Zimmermann, Mark Martino, Tyler M. Ogden, David A. Boas, Massachusetts General Hospital (USA) . . . . . [8578-7]

10:45 am: **Imaging high level functional networks with diffuse optical tomography**, Adam T. Eggebrecht, Silvina L. Ferradal, Washington Univ. in St. Louis (USA); Amy Robichaux Viehoveer, Washington Univ. School of Medicine in St. Louis (USA); Mahlega Hassanpour, Washington Univ. in St. Louis (USA); Abraham Z. Snyder, Joseph P. Culver, Washington Univ. School of Medicine in St. Louis (USA) . . . . . [8578-8]

11:00 am: **Improved depth specificity and spatial resolution in brain atlas-guided diffuse optical tomography**, Fenghua Tian, Venkaiah C. Kavuri, Hanli Liu, The Univ. of Texas at Arlington (USA) . . . . . [8578-9]

11:15 am: **Dynamic contrast enhanced time-resolved near-infrared measurement of cerebral hemodynamics before and during ischemia**, Jonathan T. Elliott, Lawson Health Research Institute (Canada) and Univ. of Western Ontario (Canada); Mamadou Diop, Laura B. Morrison, Lawson Health Research Institute (Canada); Ting-Yim Lee, Lawson Health Research Institute (Canada) and Univ. of Western Ontario (Canada); Keith St. Lawrence, Univ. of Western Ontario (Canada) and Lawson Health Research Institute (Canada) . . . . . [8578-10]

11:30 am: **Optical characterization of two-layered diffusive media for absolute brain oximetry with frequency-domain near-infrared spectroscopy**, Bertan Hallacoglu, Angelo Sassaroli, Irwin H. Rosenberg, Sergio Fantini, Tufts Univ. (USA) . . . . . [8578-11]

11:45 am: **Phasor brain mapping of tissue hemoglobin concentration, blood volume, and flow velocity with near-infrared spectroscopy**, Michele L. Pierro, Jana M. Kainerstorfer, Angelo Sassaroli, Tufts Univ. (USA); Peter R. Bergethon, Boston Univ. (USA); Sergio Fantini, Tufts Univ. (USA) . . . . . [8578-12]

Lunch/Exhibitoin Break . . . . . Sun 12:00 pm to 1:15 pm

### SESSION 3

**Room: 306 (Esplanade) . . . . . Sun 1:15 pm to 3:05 pm**

#### **Breast I: Clinical**

Session Chair: **Arjun G. Yodh**, Univ. of Pennsylvania (USA)

1:15 pm: **Predicting breast cancer response to neoadjuvant chemotherapy using a generalized linear model** (*Invited Paper*), Quing Zhu, Univ. of Connecticut (USA); Liqun Wang, Univ. of Manitoba (Canada) . . . . . [8578-13]

1:40 pm: **Early prediction of neoadjuvant chemotherapeutic efficacy with multi-parametric diffuse optical methods** (*Invited Paper*), Regine Choe, Univ. of Rochester Medical Ctr. (USA); David R. Busch, Univ. of Pennsylvania (USA); Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain); Joseph M. Giammarco, Eastern Univ. (USA); Saurav Pathak, So Hyun Chung, Han Y. Ban, Ellen K. Foster, Tiffany Avena, Univ. of Pennsylvania (USA); Ki Won Jung, Peter Carlile, Univ. of Rochester (USA); Erin M. Buckley, Meeri N. Kim, Univ. of Pennsylvania (USA); Mary E. Putt, Carolyn Mies, Mitchell D. Schnall, The Univ. of Pennsylvania Health System (USA); Mark A. Rosen M.D., Hospital of the Univ. of Pennsylvania (USA); Angela DeMichele, The Univ. of Pennsylvania Health System (USA); Arjun G. Yodh, Univ. of Pennsylvania (USA) . . . . . [8578-14]

2:05 pm: **Early optical predictors of neoadjuvant chemotherapy response in breast cancer measured using diffuse optical spectroscopic imaging (DOSI)**, Darren M. Roblyer, Boston Univ. (USA) and Beckman Laser Institute (USA); Hideki Takeuchi, Shigeto Ueda, Albert E. Cerussi, Amanda F. Durkin, Anais Leproux, Beckman Laser Institute and Medical Clinic (USA); Ylenia Santoro, Univ. of California, Irvine (USA); Shanshan Xu, Beckman Laser Institute and Medical Clinic (USA); Rita S. Mehta, David J. Hsiang, John A. Butler, Univ. of California, Irvine (USA); Bruce J. Tromberg, Beckman Laser Institute and Medical Clinic (USA) . . . . . [8578-15]

2:20 pm: **Monitoring neoadjuvant chemotherapy responses with NIR spectral tomography**, Shudong Jiang, Brian W. Pogue, Michael A. Mastanduno, Kelly E. Michaelsen, Fadi El-Ghoussein, Keith D. Paulsen, Thayer School of Engineering at Dartmouth (USA); Wendy A. Wells, Peter A. Kaufman, Dartmouth Hitchcock Medical Ctr. (USA) . . . . . [8578-16]

2:35 pm: **Functional measurements of tumor response during neoadjuvant chemotherapy using diffuse optical spectroscopic imaging: preliminary results of the ACRIN #6691 trial**, Anais Leproux, Amanda F. Durkin, Montana Compton, Erin Sullivan, Darren M. Roblyer, Hideki Takeuchi, Albert E. Cerussi, Beckman Laser Institute and Medical Clinic (USA); Rita S. Mehta, Chao Family Comprehensive Cancer Ctr. (USA); Bruce J. Tromberg, Beckman Laser Institute and Medical Clinic (USA) . . . . . [8578-17]

2:50 pm: **Dynamic optical breast imaging for neoadjuvant therapy monitoring**, Stefan A. Carp, Christy M. Wanyo, Qianqian Fang, David A. Boas, Steven J. Isakoff, Massachusetts General Hospital (USA) . . . . . [8578-18]  
Coffee Break . . . . . Sun 3:05 pm to 3:45 pm

## SESSION 4

Room: 306 (Esplanade) . . . . . Sun 3:45 pm to 5:15 pm

## Breast II: Clinical and Pre-Clinical

Session Chair: **Regine Choe**, Univ. of Rochester Medical Ctr. (USA)

3:45 pm: **A diffuse optical tomography imaging system for monitoring tumor response to neoadjuvant chemotherapy in breast cancer patients**, Jacqueline E. Gunther, Emerson Lim, Hyun-Keol Kim, Melinda Brown, Susan Refrice, Molly L. Flexman, Kevin Kalinsky, Columbia Univ. (USA); Dawn L. Hershman, Columbia Univ. Medical Ctr. (USA); Andreas H. Hielscher, Columbia Univ. (USA) . . . . . [8578-19]

4:00 pm: **Imaging the effects of neoadjuvant chemotherapy on the contralateral normal breast using MRI and diffuse optical spectroscopic imaging (DOSI)**, Thomas D. O'Sullivan, Anais Leproux, Jeon-Hor Chen, Orhan Nalcioğlu, Alex Matlock, Min-Ying Su, Bruce J. Tromberg, Univ. of California, Irvine (USA) . . . . . [8578-20]

4:15 pm: **Non-invasive in vivo characterization of cancer-cell proliferation and angiogenesis in breast cancer using diffuse optical tomography**, So Hyun Chung, Univ. of Pennsylvania (USA); Michael D. Feldman, The Univ. of Pennsylvania Health System (USA); Daniel Martinez, The Children's Hospital of Philadelphia (USA); Helen Kim, David R. Busch, Univ. of Pennsylvania (USA); Regine Choe, Univ. of Rochester Medical Ctr. (USA); Arjun G. Yodh, Univ. of Pennsylvania (USA) . . . . . [8578-21]

4:30 pm: **Broadband optical mammography: oxygenation mapping, edge-effect corrections, and depth discrimination**, Pamela G. Anderson, Jana M. Kainerstorfer, Angelo Sassaroli, Elizabeth Rosenberg, Roni Cantor-Balan, Geethika Weliwitigoda, Fridrik Larusson, Eric L. Miller, Misha E. Kilmer, Tufts Univ. (USA); Marc J. Homer, Roger A. Graham, Tufts Medical Ctr. (USA); Sergio Fantini, Tufts Univ. (USA) . . . . . [8578-22]

4:45 pm: **Improvisations on target specific optical reconstruction of breast cancer using NIR fluorescence-enhanced contrast agent**, Francis K. J., Iven Jose, Christ Univ. (India) . . . . . [8578-23]

5:00 pm: **Three-dimensional tomographic imaging using a Gen-2 hand-held optical imager: reflectance and transmission studies**, Jean Gonzalez, Manuela Roman, Sarah J. Erickson, Jennifer Carrasquilla, Anuradha Godavarty, Florida International Univ. (USA) . . . . . [8578-24]

## POSTERS-SUNDAY

Room: 103 (Exhibit Level) . . . . . Sun 5:30 pm to 7:30 pm

Session Chair: **Goro Nishimura**, Hokkaido Univ. (Japan)

Conference attendees are invited to attend the BIOS poster session on Sunday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/x27476.xml>.

**Dual-source and dual-frequency endoscopic diffuse optical tomography reconstruction algorithm based on the effective detection area**, Zhuangping Qin, Shanshan Cui, Yanshuang Yang, Ying Fan, Xiaoqing Zhou, Huijuan Zhao, Feng Gao, Tianjin Univ. (China) . . . . . [8578-91]

**Resolution studies of a hand-held optical imager**, Manuela Roman, Jean Gonzalez, Jennifer Carrasquilla, Sarah J. Erickson, Anuradha Godavarty, Florida International Univ. (USA) . . . . . [8578-92]

**EasyTopo: tool for rapid diffuse optical topography based on standard brain atlas**, Fenghua Tian, Hanli Liu, The Univ. of Texas at Arlington (USA) . . . . . [8578-93]

**Mechanical indentation improves cerebral blood oxygenation signal quality of functional near-infrared spectroscopy (fNIRS) during breath holding**, William C. Vogt, Edwin Romero, Virginia Polytechnic Institute and State Univ. (USA); Stephen M. LaConte, Virginia Tech Carilion Research Institute (USA) and School of Biomedical Engineering and Sciences, Virginia Tech (USA); Christopher G. Rylander, School of Biomedical Engineering and Sciences, Virginia Tech (USA) . . . . . [8578-94]

**in vivo evaluation of atlas-based HD-DOT reconstructions over the occipital cortex**, Silvina L. Ferradal, Adam T. Eggebrecht, Mahlega S. Hassanpour, Washington Univ. in St. Louis (USA); Abraham Z. Snyder, Joseph P. Culver, Washington Univ. School of Medicine in St. Louis (USA) . . . . . [8578-95]

**Development of quality control and instrumentation performance metrics for diffuse optical spectroscopic imaging instruments in the multi-center clinical environment**, Samuel T. Keene, Albert E. Cerussi, Robert V. Warren, Brian Hill, Darren M. Roblyer, Anais Leproux, Amanda F. Durkin, Thomas D. O'Sullivan, Hosain Haghany, Bruce J. Tromberg, Beckman Laser Institute and Medical Clinic (USA) . . . . . [8578-96]

**Noninvasive quantification of in vivo optical properties and chromophores concentrations of different layers of human tissue using portable multichannel frequency domain photon migration system**, Soroush Mirzaei Zarendi, Oren Gross, Hosain Haghany, Goutham Ganesan, Albert E. Cerussi, Bruce J. Tromberg, Univ. of California, Irvine (USA) . . . . . [8578-97]

**Fluorescence imaging of vascular endothelial growth factor in mice tumors using targeted liposome ICG probe**, Saeid Zanganeh, Yan Xu, Univ. of Connecticut (USA); Marina V. Backer, Joseph M. Backer, SibTech, Inc. (USA); Qing Zhu, Univ. of Connecticut (USA) . . . . . [8578-99]

**Brain and Muscle Oxygenation Monitoring using Near-infrared Spectroscopy (NIRS) during All-night Sleep**, Zhongxing Zhang, Ramin Khatami, Clinic Barmelweid (Switzerland) and Univ. of Zürich (Switzerland) and Univ. Hospital Zurich (Switzerland) . . . . . [8578-100]

**Digital lock-in detection system based on single photon counting for near-infrared functional brain imaging**, Wei Meng, Ming Liu, Xi Yi, Linhui Wu, Zhuangping Qin, Huijuan Zhao, Feng Gao, Tianjin Univ. (China) . . . . . [8578-101]

**The study of the ellipsoid parametric description of the shape-based diffusion optical tomography**, Yuan Wang, Linhui Wu, Zhuangping Qin, Ming Liu, Xiaoqing Zhou, Huijuan Zhao, Feng Gao, Tianjin Univ. (China) . . . . . [8578-102]

**Near-infrared optical imaging of human brain based on the semi-3D reconstruction algorithm**, Ming Liu, Wei Meng, Zhuangping Qin, Xiaoqing Zhou, Huijuan Zhao, Feng Gao, Tianjin Univ. (China) . . . . . [8578-104]

**Experimental investigation on region-based diffuse optical tomography**, Linhui Wu, Wei Zhang, Limin Zhang, Yuan Wang, Yiming Lu, Huijuan Zhao, Feng Gao, Tianjin Univ. (China) . . . . . [8578-105]

**A novel fast image reconstruction of fluorescence diffuse optical tomography for non-contact 360° projection system**, Xiaoqing Zhou, Ying Fan, Zhuangping Qin, Ming Liu, Qiang Hou, Huijuan Zhao, Feng Gao, Tianjin Univ. (China) . . . . . [8578-106]

**Multi-wavelength diffuse optical tomography system using digital lock-in photon-counting technique**, Weiting Chen, Hui Guo, Xi Yi, Feng Gao, Limin Zhang, Tianjin Univ. (China) . . . . . [8578-107]

**Near-infrared spectroscopy system with non-contact source and detector for in vivo multi-distance measurement of deep biological tissue**, Tsukasa Funane, Hitachi, Ltd. (Japan) and Keio Univ. (Japan); Hirokazu Atsumori, Masashi Kiguchi, Hitachi, Ltd. (Japan); Yukari Tanikawa, National Institute of Advanced Industrial Science and Technology (Japan); Eiji Okada, Keio Univ. (Japan) . . . . . [8578-108]

**New nonlinear inversion technique for depth distribution of absorption by spatially resolved backscattering measurement**, Kazuhiro Nishida, Takeshi Namita, Yuji Kato, Koichi Shimizu, Hokkaido Univ. (Japan) . . . . . [8578-109]

**In vivo estimation of light scattering and absorption properties of rat brain using single reflectance fiber probe during cortical spreading depression**, Izumi Nishidate, Chiharu Mizushima, Keiichi Yoshida, Tokyo Univ. of Agriculture and Technology (Japan); Satoko Kawauchi, Shinichi Sato, National Defense Medical College (Japan); Manabu Sato, Yamagata Univ. (Japan) . . . . . [8578-110]

**Investigation of verbal and visual working memory by multi-channel time-resolved functional near-infrared spectroscopy**, Davide Contini, Politecnico di Milano (Italy); Matteo Caffini, Univ. degli Studi dell'Aquila (Italy); Rebecca Re, Lucia M. G. Zucchelli, Politecnico di Milano (Italy); Lorenzo Spinelli, Consiglio Nazionale delle Ricerche-Istituto di Fotonica e Nanotecnologie (Italy); Sara Basso Moro, Silvia Bisconti, Marco Ferrari, Valentina Quaresima, Univ. degli Studi dell'Aquila (Italy); Simone Cutini, Univ. degli Studi di Padova (Italy); Alessandro Torricelli, Politecnico di Milano (Italy) . . . . . [8578-111]

**Development of optical research platform to investigate hemodynamic and metabolic responses to breast cancer chemotherapy in animal models**, Ki Won Jung, Natalie A. Mitchell, Hyun Jin Kim, Teresa Yung, Univ. of Rochester (USA); Timothy M. Baran, Univ. of Rochester Medical Ctr. (USA); Kelley S. Madden, Univ. of Rochester (USA); Edward B. Brown, Soumya Mitra, Univ. of Rochester Medical Ctr. (USA); Thomas H. Foster, Univ. of Rochester (USA) and Univ. of Rochester Medical Ctr., Imaging Sciences (USA); Regine Choe, Univ. of Rochester Medical Ctr. (USA) . . . . . [8578-112]

**Sparse signal recovery techniques in fluorescence diffuse optical tomography**, An Jin, Birsen Yazici, Rensselaer Polytechnic Institute (USA) ..... [8578-113]

**Multi-channel time-resolved functional near infrared spectroscopy system**, Davide Contini, Rebecca Re, Massimo Turolo, Politecnico di Milano (Italy); Lorenzo Spinelli, IFN-CNR (Italy); Giuseppe Romano, Rinaldo Cubeddu, Alessandro Torricelli, Politecnico di Milano (Italy) ..... [8578-114]

**Monitoring changes in the cerebral metabolic rate of oxygen consumption with diffuse optical and MRI susceptometry techniques in a pig model**, Wesley B. Baker, Zachary Rodgers, Kejia Cai, Erin M. Buckley, Joel H. Greenberg, Univ. of Pennsylvania (USA); Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain); Arjun G. Yodh, Ravinder Reddy, Univ. of Pennsylvania (USA) ..... [8578-115]

**Experimental results using a three-layer skin model for diffuse reflectance spectroscopy**, Hanna Karlsson, Ingemar Fredriksson, Marcus Larsson, Tomas Strömberg, Linköping Univ. (Sweden) ..... [8578-116]

**Hybrid model for photon propagation in random media based on the radiative transfer and diffusion equations**, Hiroyuki Fujii, The Tokyo Metropolitan Institute of Medical Science (Japan); Yoko Hoshi M.D., Tokyo Institute of Medical Science (Japan); Shinpei Okawa, National Defense Medical College (Japan); Kosuge Tomoya, The Univ. of Electro-Communications (Japan); Satoru Kohno, The Tokyo Metropolitan Institute of Medical Science (Japan) ..... [8578-117]

## Monday 4 February

### SESSION 5

**Room: 306 (Esplanade) ..... Mon 8:00 am to 9:55 am**

#### Advances in Instrumentation and Technology

Session Chair: **Brian W. Pogue**,  
Thayer School of Engineering at Dartmouth (USA)

8:00 am: **Use of a coherent fiber bundle for multi-diameter single fiber reflectance spectroscopy** (*Invited Paper*), Arjen Amelink, Chris Hoy, Henricus J. Sterenborg, Erasmus MC (Netherlands) ..... [8578-25]

8:25 am: **Masked diffuse scanning: towards real-time reconstruction-free diffuse optical depth sectioning**, Joseph Angelo, Beth Israel Deaconess Medical Ctr. (USA) and Boston Univ. (USA); Vivek Venugopal, Beth Israel Deaconess Medical Ctr. (USA); Frederic Fantoni, CEA-LETI (France); Irving J. Bigio, Boston Univ. (USA); Lionel Hervé, Jean-Marc Dinten, Vincent Poher, CEA-LETI (France); Sylvain Gioux, Beth Israel Deaconess Medical Ctr. (USA) [8578-26]

8:40 am: **A handheld wireless device for diffuse optical spectroscopic assessment of infantile hemangiomas**, Christopher J. Fong, Hyun Kim, Lauren Geller, Nicole Weitz, Molly L. Flexman, Maria Garzon M.D., Andreas H. Hielscher, Columbia Univ. (USA) ..... [8578-27]

8:55 am: **Imaging SERS nanoparticles with Raman tomography**, Jennifer-Lynn H. Demers, Scott C. Davis, Brian W. Pogue, Dartmouth College (USA) ..... [8578-28]

9:10 am: **A combined 3D and hyperspectral method for surface imaging of wounds**, Lukasz A. Paluchowski, Thomas Røren, Martin Denstedt, Norwegian Univ. of Science and Technology (Norway); Brita S. Pukstad, Norwegian Univ. of Science and Technology (Norway) and St. Olavs Hospital, Univ. Hospital of Trondheim (Norway); Lise L. Randeberg, Norwegian Univ. of Science and Technology (Norway) ..... [8578-29]

9:25 am: **Diffuse optical tomography using wavelength-swept laser**, Jae Du Cho, Pusan National Univ. (Korea, Republic of) and Univ. of California, Irvine (USA); Gukbin Lim, Myung-Yong Jeong, Pusan National Univ. (Korea, Republic of); Orhan Nalcioglu, Gultekin Gulsen, Univ. of California, Irvine (USA); Chang-Seok Kim, Pusan National Univ. (Korea, Republic of) ..... [8578-30]

9:40 am: **Spectroscopic diffuse optical tomography with high yield**, Martin B. van der Mark, Milan J. H. Marell, Philips Research Nederland B.V. (Netherlands) ..... [8578-31]

Coffee Break ..... Mon 10:05 am to 10:30 am

### SESSION 6

**Room: 306 (Esplanade) ..... Mon 10:30 am to 12:00 pm**

#### Breast III: Instrumentation and Methods

Session Chair: **Darren M. Roblyer**, Boston Univ. (USA)

10:30 am: **MRI-guided optical spectroscopy of breast cancer: optimized coupling to varying breast sizes and integration with clinical DCE-MRI**, Michael A. Mastanduno, Shudong Jiang, Thayer School of Engineering at Dartmouth (USA); Roberta M. DiFlorio-Alexander, Dartmouth Hitchcock Medical Ctr. (USA); Brian W. Pogue, Keith D. Paulsen, Thayer School of Engineering at Dartmouth (USA) ..... [8578-32]

10:45 am: **Hybrid-PMT and photodiode-based multiwavelength diffuse optical tomography system for multiple chromophore recovery in the breast with MRI guidance**, Fadi El-Ghoussein, Shudong Jiang, Michael A. Mastanduno, Brian W. Pogue, Keith D. Paulsen, Thayer School of Engineering at Dartmouth (USA) ..... [8578-33]

11:00 am: **Concurrent diffuse optical tomography and photoacoustic tomography with indocyanine green enhancement**, Chen Xu, Patrick D. Kumavor, Yan Xu, Qing Zhu, Univ. of Connecticut (USA) ..... [8578-34]

11:15 am: **Mitigating the effects of the chest wall boundary in diffuse optical tomography**, Han Y. Ban, Univ. of Pennsylvania (USA); Manabu Machida, Univ. of Michigan (USA); David R. Busch, Univ. of Pennsylvania (USA); Frank A. Moscatelli, Swarthmore College (USA); Saurav Pathak, Univ. of Pennsylvania (USA); John C. Schotland, Univ. of Michigan (USA); Vadim A. Markel, Univ. of Pennsylvania School of Medicine (USA); Arjun G. Yodh, Univ. of Pennsylvania (USA) ..... [8578-35]

11:30 am: **Portable handheld broadband multi-channel diffuse optical spectroscopic imaging device for breast cancer applications**, Hosain Haghany, Beckman Laser Institute and Medical Clinic (USA) ..... [8578-36]

11:45 am: **Scattering estimation from digital breast tomosynthesis guiding near infrared spectral tomographic reconstruction**, Kelly E. Michaelsen, Venkataramanan Krishnaswamy, Brian W. Pogue, Dartmouth College (USA); Stephen P. Poplack, Geisel School of Medicine at Dartmouth (USA); Keith D. Paulsen, Dartmouth College (USA) ..... [8578-37]

Lunch Break ..... Mon 12:00 pm to 1:15 pm

### SESSION 7

**Room: 306 (Esplanade) ..... Mon 1:15 pm to 2:55 pm**

#### Theory, Algorithms, and Modeling I

Session Chair: **Andreas H. Hielscher**, Columbia Univ. (USA)

1:15 pm: **Light transport in biological media: analytical solutions, simulations, and experiments** (*Invited Paper*), Alwin Kienle, Andre Liemert, Florian Foschum, Univ. Ulm (Germany) ..... [8578-38]

1:40 pm: **Efficient Green's function and Jacobian matrix calculations for optical tomography problems near boundaries using phase-function-corrected diffusion theory approximations**, Roger J. Zemp, Univ. of Alberta (Canada) ..... [8578-39]

1:55 pm: **Normalized Born ratio of steady-state fluorescence in concave- and convex- shaped infinitely long cylindrical medium geometries**, Anqi Zhang, Daqing Piao, Oklahoma State Univ. (USA) ..... [8578-40]

2:10 pm: **Transport-theory-based transfer matrix for generalized optical system components in contact-free optical tomography**, Jingfei Jia, Hyun-Keol Kim, Jong Hwan Lee, Andreas H. Hielscher, Columbia Univ. (USA) ..... [8578-41]

2:25 pm: **Statistical inference for functional imaging data of HD-DOT using non-stationary cluster size analysis based on random field theory**, Mahlega S. Hassanpour, Washington Univ. in St. Louis (USA); Brian R. White M.D., Washington Univ. School of Medicine in St. Louis (USA); Adam T. Eggebrecht, Washington Univ. in St. Louis (USA); Silvina L. Ferradal, Washington Univ. School of Medicine, Dept of Biomedical Engineering (USA) and Washington Univ. in St. Louis (USA); Abraham Z. Snyder, Joseph P. Culver, Washington Univ. School of Medicine in St. Louis (USA) ..... [8578-42]

2:40 pm: **Systematic evaluation of the time-domain two-layer analytical model to estimate the adult brain optical properties**, Juliette J. Selb, Tyler M. Ogden, Jay Dubb, Qianqian Fang, David A. Boas, Massachusetts General Hospital (USA) ..... [8578-43]

Coffee Break ..... Mon 2:55 pm to 3:30 pm



## SESSION 8

Room: 306 (Esplanade) . . . . . Mon 3:30 pm to 5:10 pm

## Theory, Algorithms, and Modeling II

Session Chair: **Amir Gandjbakhche**, National Institutes of Health (USA)3:30 pm: **Convergence features of four Monte Carlo methods in the time domain** (*Invited Paper*), Angelo Sassaroli, Tufts Univ. (USA); Fabrizio Martelli, Univ. degli Studi di Firenze (Italy) . . . . . [8578-44]3:55 pm: **Image reconstruction techniques for ultrasound-modulated optical tomography**, Samuel Powell, Terence S. Leung, Univ. College London (United Kingdom). . . . . [8578-45]4:10 pm: **Genetic algorithm-based approach for quantitative imaging of inhomogeneities in turbid medium using diffuse optical tomography**, Atul Srivastava, Abhishek R. Sethi, Indian Institute of Technology Bombay (India). . . . . [8578-47]4:25 pm: **Numerical and experimental studies of x-ray luminescence optical tomography for small-animal imaging**, Changqing Li, Univ. of California, Davis (USA); Arnulfo Martínez Dávalos, Univ. Nacional Autónoma de México (Mexico); Simon R. Cherry, Univ. of California, Davis (USA). . . . . [8578-48]4:40 pm: **Continuous wave broadband analysis of tissues**, Vladislav Toronov, Ryerson Univ. (Canada). . . . . [8578-49]4:55 pm: **Diffuse optical imaging system design with point-target Cramér-Rao bounds**, Vivian E. Pera, Dana H. Brooks, Mark J. Niedre, Northeastern Univ. (USA) . . . . . [8578-50]

## Tuesday 5 February

## SESSION 9

Room: 306 (Esplanade) . . . . . Tue 8:00 am to 9:55 am

## Pre-Clinical/Clinical Applications I

Session Chair: **Hanli Liu**, The Univ. of Texas at Arlington (USA)8:00 am: **Measuring tumor cycling hypoxia and angiogenesis using a side-firing fiber optic probe** (*Invited Paper*), Bing Yu, The Univ. of Akron (USA) and Duke Univ. (USA); Amy Shah, Duke Univ. (USA) and Vanderbilt Univ. (USA); Bingqing Wang, Narasimhan Rajaram, Quanli Wang, Nirmala Ramanujam, Duke Univ. (USA); Gregory M. Palmer, Duke Univ. School of Medicine (USA); Mark W. Dewhirst, Duke Univ. (USA). . . . . [8578-51]8:25 am: **Ovarian tissue characterization using bulk optical properties**, Behnoosh Tavakoli, Yan Xu, Quing Zhu, Univ. of Connecticut (USA). . . [8578-52]8:40 am: **Monitoring changes in tissue optical properties during and after interstitial photothermal therapy of ex vivo human prostate tissue**, Robert A. Weersink, Jie He, Israel Veilleux, John Trachtenberg M.D., Brian C. Wilson, Univ. Health Network (Canada). . . . . [8578-53]8:55 am: **Dynamic contact-free continuous-wave diffuse optical tomography system for the detection of vascular dynamics within the foot**, Michael A. Khalil, Hyun-Keol Kim, Andreas H. Hielscher, Columbia Univ. (USA) . . . . . [8578-54]9:10 am: **Measurement of oxygen consumption during muscle flaccidity exercise by near-infrared spectroscopy**, Keiko Fukuda, Tokyo Metropolitan Institute of Technology (Japan); Yuuta Fukawa, Tokyo Metropolitan College of Industrial Technology (Japan) and Tokyo Metropolitan Institute of Technology (Japan). . . . . [8578-55]9:25 am: **Development of transrectal diffuse optical tomography combined with 3D-transrectal ultrasound imaging to monitor the photocoagulation front during interstitial photothermal therapy of primary focal prostate cancer**, Jie He, Univ. of Toronto (Canada); Robert A. Weersink, Israel Veilleux, Ontario Cancer Institute (Canada); Daqing Piao, Oklahoma State Univ. (USA); John Trachtenberg M.D., Brian C. Wilson, Univ. of Toronto (Canada) and Ontario Cancer Institute (Canada) . . . . . [8578-56]9:40 am: **Development of multispectral transrectal ultrasound compatible near infrared imaging system for early detection of prostate cancer**, Venkaiah C. Kavuri, Hanli Liu, The Univ. of Texas at Arlington (USA). . . [8578-57]

Coffee Break . . . . . Tue 9:55 am to 10:30 am

## SESSION 10

Room: 306 (Esplanade) . . . . . Tue 10:30 am to 12:00 pm

## Pre-Clinical/Clinical Applications II

Session Chair: **Sergio Fantini**, Tufts Univ. (USA)10:30 am: **Dynamics of tumor oxygen state after single irradiation**, Anna V. Maslennikova M.D., Institute of Applied Physics (Russian Federation) and Nizhny Novgorod State Medical Academy (Russian Federation); Anna G. Orlova, Tatiana I. Pryanikova, German J. Golubjatnikov, Institute of Applied Physics (Russian Federation); Ludmila B. Snopova M.D., Nizhny Novgorod State Medical Academy (Russian Federation); Tatiana Smirnova, N.I. Lobachevsky State Univ. of Nizhni Novgorod (Russian Federation); Ilya V. Turchin, Institute of Applied Physics (Russian Federation) . . . . . [8578-58]10:45 am: **Detection of peripheral arterial disease within the foot using dynamic diffuse optical tomography**, Michael A. Khalil, Hyun-Keol Kim, In-Kyong Kim, Martina Barbiero, Columbia Univ. (USA); Rajeev Dayal, New York Presbyterian Hospital (USA); Gautam Shrikande, New York-Presbyterian Hospital (USA); Andreas H. Hielscher, Columbia Univ. (USA). . . . . [8578-59]11:00 am: **Computer aided diagnosis of rheumatoid arthritis with frequency domain optical tomography**, Ludguier D. Montejo, Andreas H. Hielscher, Hyun-Keol Kim, Columbia Univ. (USA) . . . . . [8578-60]11:15 am: **Quantitative assessment of partial vascular occlusions in a swine pedicle flap model using spatial frequency domain imaging**, Adrien Ponticorvo, Eren Taydas, Univ. of California, Irvine, Beckman Laser Institute (USA); Amaan Mazhar, Modulated Imaging Inc., Beckman Laser Institute Photonic Incubator (USA); Thomas Scholz M.D., Univ. of California, Irvine (USA); Jonathan Rimpler, Hak-Su Kim, Univ. of California Irvine Medical Ctr. (USA); Gregory R. D. Evans M.D., Univ. of California, Irvine (USA); David J. Cuccia, Modulated Imaging, Inc. (USA); Anthony J. Durkin, Beckman Laser Institute and Medical Clinic (USA) . . . . . [8578-61]11:30 am: **Near-infrared spectroscopy of renal tissue in vivo**, Dirk Grosenick, Oliver Steinkellner, Heidrun Wabnitz, Rainer Macdonald, Physikalisch-Technische Bundesanstalt (Germany); Thoralf Niendorf, Max-Delbrück-Ctr. für Molekulare Medizin Berlin-Buch (Germany); Kathleen Cantow, Bert Flemming, Erdmann Seeliger, Charité Universitätsmedizin Berlin (Germany) . . . . [8578-62]11:45 am: **Importance of optical path length in determining brain hemodynamic properties in a pre-clinical mouse model of Alzheimer's disease**, Alexander J. Lin, Adrien Ponticorvo, Bernard Choi, Anthony J. Durkin, Bruce J. Tromberg, Beckman Laser Institute and Medical Clinic (USA). [8578-63]

Lunch/Exhibition Break . . . . . Tue 12:00 pm to 1:30 pm

## SESSION 11

Room: 306 (Esplanade) . . . . . Tue 1:30 pm to 3:15 pm

## Fluorescence I: Instrumentation and Methods

Session Chair: **Frederic Leblond**, Ecole Polytechnique de Montréal (Canada)1:30 pm: **Fluorescence tomography applied to prostate cancer diagnosis using a white pulsed laser**, Anthony Daures, Commissariat à l'Énergie Atomique et aux Energies Alternatives (France); Jerome Boutet, Commissariat à l'Énergie Atomique (France); Lionel Hervé, CEA-LETI (France); Roland Sauze, Commissariat à l'Énergie Atomique et aux Energies Alternatives (France); Emilie Heinrich, Commissariat à l'Énergie Atomique (France); Nicolas Grenier, Univ. Bordeaux 1 (France); Jean-Marc Dinten, CEA-LETI (France) . . . . . [8578-64]1:45 pm: **Whole body fluorescence imaging in humans**, Sophie K. Piper, Charité Universitätsmedizin Berlin (Germany); Jan Mehnert, Berlin Neuroimaging Ctr., Charité Universitätsmedizin Berlin (Germany) and Max-Planck-Institut für Kognitions- und Neurowissenschaften (Germany) and Machine Learning Department, Berlin Institute of Technology, Technical University Berlin (Germany); Christina Habermehl, Charité Universitätsmedizin Berlin (Germany); Andreas Wunder, Experimental Neurology, Charité Universitätsmedizin Berlin (Germany) and Ctr. for Stroke Research, Charité Universitätsmedizin Berlin (Germany); Christoph H. Schmitz, Berlin Neuroimaging Ctr., Charité Universitätsmedizin Berlin (Germany) and NIRx Medizintechnik GmbH (Germany); Hellmuth Obrig M.D., Berlin Neuroimaging Ctr., Charité Universitätsmedizin Berlin (Germany) and Max-Planck-Institut für Kognitions- und Neurowissenschaften (Germany) and Clinic for Cognitive Neurology, Univ. Hospital Leipzig (Germany); Jens M. Steinbrink, Ctr. for Stroke Research, Charité Universitätsmedizin Berlin (Germany) and Berlin Neuroimaging Ctr., Charité Universitätsmedizin Berlin (Germany). . . . . [8578-65]



2:00 pm: **Maximum likelihood reconstruction of extremely sparse solutions in diffuse fluorescence flow cytometry**, Vivian E. Pera, Dana H. Brooks, Mark J. Niedre, Northeastern Univ. (USA) ..... [8578-66]

2:15 pm: **Quantitative depth resolved imaging of protoporphyrin IX (PpIX) using spatial frequency domain imaging (SFDI)**, Rolf B. Saager, Beckman Laser Institute and Medical Clinic (USA); Steve Saggese, David J. Cuccia, Modulated Imaging, Inc. (USA); Kristen M. Kelly, Univ. of California, Irvine School of Medicine (USA); Anthony J. Durkin, Beckman Laser Institute and Medical Clinic (USA) ..... [8578-67]

2:30 pm: **A dual-reporter fluorescent imaging approach can be used to estimate sentinel lymph node tumor burden**, Kenneth M. Tichauer, Kimberley S. Samkoe, Jason R. Gunn, Dartmouth College (USA); Tayyaba Hasan, Wellman Institute of Photomedicine (USA); Brian W. Pogue, Dartmouth College (USA) ..... [8578-68]

2:45 pm: **Optimized methodology for low-contrast fluorescence recovery using a new approach for reference tracer normalization**, Robert W. Holt, Kenneth M. Tichauer, Fadi El-Ghoussein, Jason R. Gunn, Frederic Leblond, Brian W. Pogue, Dartmouth College (USA) ..... [8578-69]

3:00 pm: **Fluorescence molecular tomography on animal model by means of multiple views structured light illumination**, Nicolas Ducros, Andrea Bassi, Gianluca Valentini, Politecnico di Milano (Italy); Gianfranco L. Canti, Univ. degli Studi di Milano (Italy); Simon R. Arridge, Univ. College London (United Kingdom); Cosimo D'Andrea, Politecnico di Milano (Italy) ..... [8578-70]

Coffee Break ..... Tue 3:15 pm to 3:45 pm

### SESSION 12

Room: 306 (Esplanade) ..... Tue 3:45 pm to 5:15 pm

#### Fluorescence II: Pre-Clinical

Session Chair: **Samuel Achilefu**,

Washington Univ. School of Medicine in St. Louis (USA)

3:45 pm: **Imaging with ICG-loaded monocytes to distinguish infection and sterile inflammation**, Joani M. Christensen, Yongping Chen, Gabriel A. Brat, Kate J. Burette, Damon S. Cooney, Gerald Brandacher, Kristine E. Johnson, W. P. Andrew Lee M.D., Xingde Li, Justin M. Sacks M.D., Johns Hopkins Univ. (USA) ..... [8578-71]

4:00 pm: **Target tumor hypoxia with 2-nitroimidazole-ICG dye conjugates**, Yan Xu, Saeid Zanganeh, Younis Mohammad, Andres Aguirre, Tianheng Wang, Yi Yang, Michael B. Smith, Qing Zhu, Univ. of Connecticut (USA) ..... [8578-72]

4:15 pm: **Monitoring of tumor growth in mice using fluorescence transillumination imaging setup with a single source-detector pair**, Ilya V. Turchin, Mikhail S. Kleshnin, Ilya I. Fiks, Institute of Applied Physics (Russian Federation); Irina V. Balalaeva, N.I. Lobachevsky State Univ. of Nizhni Novgorod (Russian Federation) ..... [8578-73]

4:30 pm: **A fast full-body fluorescence/bioluminescence imaging system for small animals**, Jong Hwan Lee, Hyun-Keol Kim, Jingfei Jia, Christopher J. Fong, Andreas H. Hielscher, Columbia Univ. (USA) ..... [8578-74]

4:45 pm: **Dynamic fluorescence mediated tomography**, Metasebya Solomon, Washington Univ. in St. Louis (USA); Walter J. Akers, Koresh I. Shoghi, Samuel Achilefu, Joseph P. Culver, Washington Univ. School of Medicine in St. Louis (USA) ..... [8578-75]

5:00 pm: **Assessment of tumour physiology by dynamic contrast-enhanced near-infrared spectroscopy**, Kyle Verdecchia, Jonathan T. Elliot, Mamadou Diop, Lisa Hoffman, Lawson Health Research Institute (Canada) and Western Univ. (Canada); Ting-Yim Lee, Imaging Div., Lawson Health Research Institute (Canada) and Western Univ. (Canada) and Robarts Research Institute (Canada); Keith St. Lawrence, Lawson Health Research Institute (Canada) and Western Univ. (Canada) ..... [8578-76]

## Wednesday 6 February

### SESSION 13

Room: 306 (Esplanade) ..... Wed 8:00 am to 9:55 am

#### Advances in Time Domain Techniques I

Session Chair: **Mark J. Niedre**, Northeastern Univ. (USA)

8:00 am: **Time domain fluorescence lifetime tomography: theory and in vivo applications** (*Invited Paper*), Anand T. N. Kumar, Athinoula A. Martinos Ctr. for Biomedical Imaging (USA) ..... [8578-77]

8:25 am: **A time-domain diffuse optical tomography scanner with multi-view non-contact dual wavelength detection for intrinsic and fluorescence small animal imaging**, Yves Bérubé-Lauzière, Eric Lapointe, Julien Pichette, Univ. de Sherbrooke (Canada) ..... [8578-78]

8:40 am: **Design of an optimized time-resolved diffuse optical tomography probe to achieve deep absorption contrast reconstruction in a cylindrical geometry**, Anne Planat-Chretien, Lionel Hervé, Michel Berger, Agathe Puszkas, Jean-Marc Dinten, CEA-LETI (France) ..... [8578-79]

8:55 am: **Robust imaging strategies in time-resolved wide-field optical tomography**, Vivek Venugopal, Beth Israel Deaconess Medical Ctr. (USA); Jin Chen, Xavier Intes, Rensselaer Polytechnic Institute (USA) ..... [8578-80]

9:10 am: **An overview of time-domain diffuse fluorescence imaging: instrumentation and applications**, Kenneth M. Tichauer, Robert W. Holt, Frederic Leblond, Brian W. Pogue, Dartmouth College (USA) ..... [8578-81]

9:25 am: **Time resolved functional near infrared spectroscopy by means of time gated system at small interfiber distance**, Davide Contini, Alberto Dalla Mora, Laura Di Sieno, Alberto Tosi, Gianluca Boso, Alessandro Torricelli, Politecnico di Milano (Italy); Lorenzo Spinelli, Istituto di Fotonica e Nanotecnologie (Italy); Rinaldo Cubeddu, Antonio Pifferi, Politecnico di Milano (Italy) ..... [8578-82]

9:40 am: **Three-dimensional diffuse optical tomography with full multi-view time-domain experimental data**, Jorge Bouza Dominguez, Yves Bérubé-Lauzière, Univ. de Sherbrooke (Canada) ..... [8578-83]

Coffee Break ..... Wed 9:55 am to 10:30 am

### SESSION 14

Room: 306 (Esplanade) ..... Wed 10:30 am to 12:10 pm

#### Advances in Time Domain Techniques II

Session Chair: **Anand T. N. Kumar**,  
Athinoula A. Martinos Ctr. for Biomedical Imaging (USA)

10:30 am: **Non-contact type time-domain fluorescence diffuse optical tomography for quantitative analysis of fluorophores** (*Invited Paper*), Goro Nishimura, Daisuke Furukawa, Kamlesh Awasthi, Hokkaido Univ. (Japan) ..... [8578-84]

10:55 am: **in vivo fluorescence lifetime imaging for monitoring the efficacy of the cancer treatment**, Yasaman Ardeshirpour, Victor V. Chernomordik, Moinuddin Hassan, Rafal Zielinski, Jacek Capala, Amir H. Gandjbakhche, National Institutes of Health (USA) ..... [8578-85]

11:10 am: **ICG-bolus tracking based on time-resolved reflectometry for assessment of cerebral perfusion in post-traumatic brain injury patients**, Daniel Milej, Anna Gerega, Institute of Biocybernetics and Biomedical Engineering (Poland); Wojciech Weigl, Warsaw Praski Hospital (Poland); Roman Maniewski, Adam Liebert, Institute of Biocybernetics and Biomedical Engineering (Poland) ..... [8578-86]

11:25 am: **Deconvolution improves the depth sensitivity of time-resolved techniques**, Mamadou Diop, Keith St. Lawrence, Lawson Health Research Institute (Canada) ..... [8578-87]

11:40 am: **Development of an optical non-contact time-resolved diffuse reflectance scanning imaging system: first in vivo tests**, Mikhail Mazurenka, Physikalisch-Technische Bundesanstalt (Germany); Laura Di Sieno, Gianluca Boso, Davide Contini, Antonio Pifferi, Alberto Dalla Mora, Alberto Tosi, Politecnico di Milano (Italy); Heidrun Wabnitz, Rainer Macdonald, Physikalisch-Technische Bundesanstalt (Germany) ..... [8578-88]

11:55 am: **Analytical solutions of time-domain fluorescence molecular tomography based on simplified spherical harmonics equations**, Limin Zhang, Tianjin Univ. (China); Wei Zhang, Tianjin Univ. (China) and Tianjin Univ. (China); Feng Gao, Jiao Li, Huijuan Zhao, Tianjin Univ. (China) ..... [8578-89]

# Optical Interactions with Tissue and Cells XXIV

Conference Chairs: **E. Duco Jansen**, Vanderbilt Univ. (USA); **Robert J. Thomas**, Air Force Research Lab. (USA)

Program Committee: **Randolph D. Glickman**, The Univ. of Texas Health Science Ctr. at San Antonio (USA); **Steven L. Jacques**, Oregon Health & Science Univ. (USA); **Duncan J. Maitland**, The Texas A&M Univ. System (USA); **Jessica C. Ramella-Roman**, The Catholic Univ. of America (USA); **William P. Roach**, Air Force Research Lab. (USA); **Marissa Nicole Rylander**, Virginia Polytechnic Institute and State Univ. (USA); **Alfred Vogel**, Univ. zu Lübeck (Germany); **Lihong V. Wang**, Washington Univ. in St. Louis (USA); **Gerald J. Wilmink**, Air Force Research Lab. (USA)



## Monday 4 February

### SESSION 1

Room: 220 (Mezzanine) ..... Mon 8:30 am to 10:10 am

#### Short Pulse Photomechanical Response

Session Chair: **William P. Roach**, Air Force Research Lab. (USA)

8:30 am: **Ultrashort femtosecond laser pulses for imaging and nanomanipulation of living cells**, Aisada Uchugonova, Karsten König, Univ. des Saarlandes (Germany) ..... [8579-1]

8:50 am: **Impact of a temporal pulse overlap on laser-tissue-interaction of modern ophthalmic laser systems**, Nadine Tinne, Nicole Kallweit, Gesche Knoop, Eike Lübking, Laser Zentrum Hannover e.V. (Germany); Holger Lubatschowski, Rowiak GmbH (Germany); Alexander Krüger, Tammo Ripken, Laser Zentrum Hannover e.V. (Germany) ..... [8579-2]

9:10 am: **Investigation of the morphology of the features generated via femtosecond lasers in the interior of a bovine cornea sections**, Sinisa Vukelic, Bucknell Univ. (USA); Panjawan Kongsuwan, Y. Lawrence Yao, Columbia Univ. (USA) ..... [8579-3]

9:30 am: **Comparison of laser-induced damage with forward-firing and diffusing optical fiber during laser-assisted lipoplasty**, Changhai Kim, Kyungpook National Univ. (Korea, Republic of); Ik-Bu Sohn, Gwangju Institute of Science and Technology (Korea, Republic of); Hoyong Park, Mingi Kang, Yong J. Lee, Ho Lee, Kyungpook National Univ. (Korea, Republic of) ..... [8579-4]

9:50 am: **Erbium laser induced water jet cleaning of root canals enhanced with gas bubbles**, Rudolf M. Verdaasdonk, Vrije Univ. Medical Ctr. (Netherlands) and Free Univ. of Amsterdam (Netherlands); Vladimir Lemberg, BIOLASE Technology, Inc. (USA); Albert Van der Veen, Vrije Univ. Medical Ctr. (Netherlands); Dmitri Boutoussov, BIOLASE Technology, Inc. (USA) ..... [8579-5]

Coffee Break ..... Mon 10:10 am to 11:00 am

### SESSION 2

Room: 220 (Mezzanine) ..... Mon 11:00 am to 12:00 pm

#### Photothermal Response

Session Chair: **E. Duco Jansen**, Vanderbilt Univ. (USA)

11:00 am: **Determination of cell death mechanisms initiated during gold nanoparticle-mediated photothermal therapy**, Varun Pattani, James Tunnell, The Univ. of Texas at Austin (USA) ..... [8579-7]

11:20 am: **Green's function representation of laser induced thermal dynamics and determination of thermal criteria for optically induced neural activation**, Bryan J. Norton, Meghan A. Bowler, Lockheed Martin Aculight (USA) ..... [8579-8]

11:40 am: **Infrared nerve stimulation: modelling of photon transport and heat conduction**, Alexander C. Thompson, Scott A. Wade, Peter J. Cadusch, Will G. A. Brown, Paul R. Stoddart, Swinburne Univ. of Technology (Australia) ..... [8579-9]

Lunch Break ..... Mon 12:00 pm to 1:10 pm

### SESSION 3

Room: 220 (Mezzanine) ..... Mon 1:10 pm to 3:30 pm

#### Photochemical Response

Session Chair: **Randolph Glickman**,

The Univ. of Texas Health Science Ctr. at San Antonio (USA)

1:10 pm: **Discovery of photochemical damage mechanisms using in vitro and in silico models** (Invited Paper), Pamela K. Fink, Saint Mary's Univ. (USA); Michael L. Denton, TASC, Inc. (USA); Cherry Castellanos, 711 HPW/RHDO (USA); Amanda J. Tijerina, Conceptual Mindworks, Inc. (USA); Kurt J. Schuster, TASC, Inc. (USA); Jeffrey W. Oliver, Air Force Research Lab. (USA) ... [8579-39]

1:30 pm: **Nonlinear optical frequency conversions of femtosecond laser in corneal tissue**, William R. Calhoun III, U.S. Food and Drug Administration (USA); Divya Kernik, U.S. Food and Drug Administration (USA) and Johns Hopkins Univ. (USA); Alexander Beylin, Richard P. Weiblinger, Ilko Ilev, U.S. Food and Drug Administration (USA) ..... [8579-10]

1:50 pm: **Plasmonic properties of gold nanoparticles can promote neuronal activity**, Chiara Paviolo, Swinburne Univ. of Technology (Australia); John W. Haycock, The Univ. of Sheffield (United Kingdom); Jiawey Yong, Aimin Yu, Sally L. McArthur, Paul R. Stoddart, Swinburne Univ. of Technology (Australia) ..... [8579-11]

2:10 pm: **Study of photosensitization reaction progress in a 96 well plate with photosensitizer rich condition using Talaporfin sodium**, Emiyu Ogawa, Mei Takahashi, Tsunenori Arai, Keio Univ. (Japan) ..... [8579-12]

2:30 pm: **Detection of oxidative stress biomarker-induced assembly of gold nanoparticles in retinal pigment epithelial cells**, Zannatul Yasmin, The Univ. of Texas at San Antonio (USA); Yuan-Hao Lee, Saher Maswadi, Randolph D. Glickman, The Univ. of Texas Health Science Ctr. at San Antonio (USA); Kelly L. Nash, The Univ. of Texas at San Antonio (USA) ..... [8579-34]

2:50 pm: **Ursolic Acid Mediates Photosensitization by Initiating Mitochondrial-Dependent Apoptosis**, Yuan-Hao Lee, The Univ. of Texas Health Science Ctr. at San Antonio (USA); Exing Wang, Indiana Univ. (USA) and Univ. of Texas Health Science Center (USA); Neeru C. Kumar, Randolph D. Glickman, The Univ. of Texas Health Science Ctr. at San Antonio (USA) ..... [8579-13]

3:10 pm: **Comparison of photoinduced conformational changes of human serum albumin bound to protoporphyrin IX and hemin**, Sarah C. Rozinek, Lorenzo Brancalion, The Univ. of Texas at San Antonio (USA) ..... [8579-14]

Coffee Break ..... Mon 3:30 pm to 4:00 pm

### SESSION 4

Room: 220 (Mezzanine) ..... Mon 4:00 pm to 5:20 pm

#### Novel Response and Safety

Session Chair: **Robert J. Thomas**, Tri Service Research Lab. (USA)

4:00 pm: **Influence of different output powers on the efficacy of photodynamic therapy with 809-nm diode laser and indocyanine green**, Nermin Topaloglu, Sahrü Yuksel, Murat Gülsoy, Bogaziçi Üniv. (Turkey) ..... [8579-15]

4:20 pm: **Trigger effect of infrared femtosecond laser irradiation on neoplasm in experimental cervical cancer**, Tatyana Gening, Olga Voronova, Igor Zolotovskiy, Ulyanovsk State Univ. (Russian Federation); Alexey Sysoliatin, A. M. Prokhorov General Physics Institute (Russian Federation); Dinara Dolgova, Tatyana Abakumova, Ulyanovsk State Univ. (Russian Federation) ... [8579-16]

4:40 pm: **Thermodynamic finite-element-method (FEM) eye model for laser safety considerations**, Nico Heussner, FZI Forschungszentrum Informatik (Germany); Lukas Holl, Karlsruher Institut für Technologie (Germany); Ariana Shults, Illinois Institute of Technology (USA); Thorsten Beuth, Harsha Umesh Babu, Leilei Shinohara, Siegwart Bogatscher, Karlsruher Institut für Technologie (Germany); Matthias Wippler, Karlsruhe Institut of Technology - Institute for Information Processing Technology (Germany); Wilhelm Stork, Karlsruher Institut für Technologie (Germany) ..... [8579-17]

# Conference 8579 · Room: 220 (Mezzanine)

5:00 pm: **Visualization of thermal lensing induced image distortion using Zemax ray tracing and BTEC thermal modeling.**, Erica Towle, The Univ. of Texas at Austin (USA); Clifton D. Clark III, Fort Hays State Univ. (USA) and TASC, Inc. (USA); Michelle T. Aaron, Robert J. Thomas, Air Force Research Lab. (USA) ..... [8579-18]

## POSTERS-MONDAY

Room: 103 (Exhibit Level) ..... Mon 5:30 pm to 7:30 pm

Conference attendees are invited to attend the BIOS poster session on Monday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Low level laser irradiation induces metabolic changes in bovine oocytes, improving the in vitro production of embryos.** Carlos A. Soares, Kelly Annes, Thiago R. Dreyer, Taciana D. Magrini, Herculano S. da Silva Martinho, Marcella P. Milazzotto, UFABC (Brazil) ..... [8579-35]

**Effects of low level laser therapy on skeletal muscle repair following cryolesion.** Raquel A. Mesquita-Ferrari, Agnelo N. Alves, Kristianne P. Fernandes D.D.S., Claudia A. V. Melo, Renato Y. Yamaguchi, Cristiane M. França, Sandra K. Bussadori, UNINOVE (Brazil); Fabio D. Nunes, Univ. de São Paulo (Brazil) ..... [8579-36]

**A nondestructive diffuse reflectance calibration-free method for determine optical parameters of biological tissues.** Alexander Lappa, Artem Kulikovskiy, Anton Kulikovskiy, Tamara Makarova, Chelyabinsk State Univ. (Russian Federation) ..... [8579-37]

**Resolution analysis of an angular domain imaging system with two-dimensional angular filters.** Eldon Ng, The Univ. of Western Ontario (Canada) and Lawson Health Research Institute (Canada); Jeffrey J. L. Carson, Lawson Health Research Institute (Canada) and Univ. of Western Ontario (Canada) ..... [8579-38]

## Tuesday 5 February

### SESSION 5

Room: 220 (Mezzanine) ..... Tue 8:00 am to 10:00 am

#### Spectroscopy and Imaging I

Session Chair: **Jessica Ramella-Roman**,  
The Catholic Univ. of America (USA)

8:00 am: **Raman Fiberoptic Probe for Monitoring Human Tissue Engineered Oral Mucosa Constructs.** Alexander T. Khmaladze, Shiuhyang Kuo, Cynthia L. Marcelo, Stephen E. Feinberg, Michael D. Morris, Univ. of Michigan (USA) ..... [8579-19]

8:20 am: **A novel and real-time identification methodology for microcalcifications in breast needle biopsies.** Jaqueline S. Soares, Ishan Barman, Narahara Chari Dingari, Massachusetts Institute of Technology (USA); Zoya Volynskaya, Massachusetts Institute of Technology (USA) and Aperio Technologies, Inc. (USA); Wendy Liu, Nina Klein, Donna Plecha, Case Western Reserve Univ. (USA) and Univ. Hospitals Case Medical Ctr. (USA); Ramachandra R. Dasari, Peter T. C. So, Massachusetts Institute of Technology (USA); Maryann Fitzmaurice, Case Western Reserve Univ. (USA) and Univ. Hospitals Case Medical Ctr. (USA) ..... [8579-20]

8:40 am: **Hyperspectral imaging of tissue mimicking phantoms: principle component analysis.** Philip Wong, The Univ. of Western Ontario (Canada); Fartash Vasefi, SMI (USA); Muriel Brackstone, Lawson Health Research Institute (Canada); Bozena Kaminska, Simon Fraser Univ. (Canada); Jeffrey J. L. Carson, Lawson Health Research Institute (Canada) ..... [8579-21]

9:00 am: **Assessment of optical properties in turbid media using frequency-modulated continuous-wave diode lasers.** Liang Mei, Lund Univ. (Sweden) and Zhejiang Univ. (China) and Joint Research Ctr. of Photonics (China); Sune Svanberg, Lund Univ. (Sweden) and South China Normal Univ. (China) and Joint Research Ctr. of Photonics (China); Gabriel Somesfalean, Lund Univ. (Sweden) and Zhejiang Univ. (China) and Joint Research Ctr. of Photonics (China) ..... [8579-22]

9:20 am: **A compensation algorithm for multiple scattering in laser speckle rheology of biological fluids.** Zeinab Hajjarian Kashany, Seemantini K. Nadkarni, Harvard Medical School (USA) ..... [8579-23]

9:40 am: **Automated quantification of birefringence for assessment of muscle necrosis using polarization-sensitive optical coherence tomography.** Lixin Chin, Univ. of Western Australia (Australia); Xiaojie Yang, Blake R. Kiyen, Robert A. McLaughlin, Tea Shavlakadze, Miranda D. Grounds, David D. Sampson, The Univ. of Western Australia (Australia) ..... [8579-24]

Coffee Break ..... Tue 10:00 am to 10:30 am

### SESSION 6

Room: 220 (Mezzanine) ..... Tue 10:30 am to 11:50 am

#### Spectroscopy and Imaging II

Session Chair: **Duncan J. Maitland**,  
The Texas A&M Univ. System (USA)

10:30 am: **Skin microvascular and metabolic response to pressure relief maneuvers in people with spinal cord injury.** Jessica C. Ramella-Roman, Du V. N. Le, Thu Nguyen, The Catholic Univ. of America (USA); Alison Lichy, Suzanne Groah, National Rehabilitation Hospital (USA) ..... [8579-25]

10:50 am: **Effect of xenon/hypothermia on cerebral blood flow and oxygen consumption in newborn piglets with a time-resolved near-infrared technique.** Mohammad Fazel Bakhsheshi, Jennifer Hadway, The Univ. of Western Ontario (Canada); Mamadou Diop, Lawson Health Research Institute (Canada); Keith St. Lawrence, Ting-Yim Lee, The Univ. of Western Ontario (Canada) ..... [8579-26]

11:10 am: **Optical properties of tumor tissues grown on the chorioallantoic membrane of chicken eggs measured with a double integrating sphere and inverse Monte Carlo method in the wavelength range of 350-1000 nm.** Norihiro Honda, Yoichiro Kariyama, Osaka Univ. (Japan); Takuya Ishii, Chiaki Abe, Katsushi Inoue, Masahiro Ishizuka, Tohru Tanaka, SBI Pharmaceuticals Co., Ltd. (Japan); Hisanao Hazama, Kunio Awazu, Osaka Univ. (Japan) ..... [8579-27]

11:30 am: **High performance near-IR imaging for breast cancer detection.** Yasser H. El-Sharkawy, Cairo Univ. (Egypt) ..... [8579-28]

Lunch Break ..... Tue 11:50 am to 1:30 pm

### SESSION 7

Room: 220 (Mezzanine) ..... Tue 1:30 pm to 3:10 pm

#### Optical Properties of Tissues

Session Chair: **Robert J. Thomas**, Tri Service Research Lab. (USA)

1:30 pm: **Complex tissue phantoms using intralipid-infused solids for testing on fluorescence angular domain imaging.** Rongen L. K. Cheng, Glenn H. Chapman, Mohammad Osama, Simon Fraser Univ. (Canada) ..... [8579-29]

1:50 pm: **Two-dimensional angular filter array for angular domain imaging with 3D printed angular filters.** Eldon Ng, Jeffrey J. L. Carson, The Univ. of Western Ontario (Canada) and Lawson Health Research Institute (Canada) ..... [8579-30]

2:10 pm: **A discrete particle Monte-Carlo simulation of the effect of blood flow on the scattered light autocorrelation function.** Noam Racheli, Ilan Breskin, Avihai Ron, Yaakov Metzger, Ornim Medical Ltd. (Israel); Giora Enden, Ben-Gurion Univ. of the Negev (Israel); Revital Shechter, Ornim Medical Ltd. (Israel) ..... [8579-31]

2:30 pm: **Use of photoelastic modulator to linear dichroism measurement of bundles of collagen.** Rosimere J. V. Moya, Victória Dias, Josiane A. F. Shibuya, Fernanda I. Correa, Cristiane M. França, Daniela F. Silva, UNINOVE (Brazil) ..... [8579-32]

2:50 pm: **Monte Carlo simulation of radiation transfer in human skin with geometrically correct treatment of boundaries between different tissues.** Jan Premru, Univ. of Ljubljana (Slovenia); Matija Milanic, Jožef Stefan Institute (Slovenia); Boris Majaron, Jožef Stefan Institute (Slovenia) and Univ. of Ljubljana (Slovenia) ..... [8579-33]



# Dynamics and Fluctuations in Biomedical Photonics VIII

*Conference Chairs:* **Valery V. Tuchin**, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) and Univ. of Oulu (Finland); **Donald D. Duncan**, Portland State Univ. (USA); **Kirill V. Larin**, Univ. of Houston (USA); **Martin J. Leahy**, National Univ. of Ireland, Galway (Ireland); **Ruikang K. Wang**, Univ. of Washington (USA)

*Program Committee:* **Pierre O. Bagnaninchi**, The Univ. of Edinburgh (United Kingdom); **Wei R. Chen**, Univ. of Central Oklahoma (USA); **Joseph P. Culver**, Washington Univ. School of Medicine in St. Louis (USA); **Ekaterina I. Galanzha**, Univ. of Arkansas for Medical Sciences (USA); **Miya Ishihara**, National Defense Medical College (Japan); **Jingying Jiang**, Tianjin Univ. (China); **Sean J. Kirkpatrick**, Michigan Technological Univ. (USA); **Jürgen M. Lademann**, Charité Universitätsmedizin Berlin (Germany); **Hong Liu**, The Univ. of Oklahoma (USA); **Qingming Luo**, Britton Chance Ctr. for Biomedical Photonics (China); **Igor V. Meglinski**, Univ. of Otago (New Zealand); **Brian S. Sorg**, Univ. of Florida (USA); **Vladislav Toronov**, Ryerson Univ. (Canada); **Lihong V. Wang**, Washington Univ. in St. Louis (USA); **Ying Yang**, Keele Univ. (United Kingdom); **Anna N. Yaroslavsky**, Univ. of Massachusetts Lowell (USA); **Vladimir P. Zharov**, Univ. of Arkansas for Medical Sciences (USA)

## Saturday 2 February

### SESSION 1

Room: 112 (Exhibit Level) . . . . . Sat 8:30 am to 12:00 pm

#### Speckle Technologies

Session Chairs: **Ruikang K. Wang**, Univ. of Washington (USA); **Anna N. Yaroslavsky**, Univ. of Massachusetts Lowell (USA)

8:30 am: **Mapping of spatial distribution of superficial blood vessels in human skin by double correlation analysis of optical coherence tomography images**, Alexander Doronin, Sam Botting, Univ. of Otago (New Zealand); Marie Meglinski, Columba College (New Zealand); Karin M. Jentoft, Helmholtz Zentrum München GmbH (Germany); Igor V. Meglinski, Univ. of Otago (New Zealand) . . . . . [8580-21]

8:50 am: **Fractals and fluctuations: spatial and temporal correlations in optical coherence tomography of human breast cancer models**, Zachary F. Phillips, Raghav K. Chhetri, Jason Cooper, Melissa A. Troester, Amy L. Oldenburg, The Univ. of North Carolina at Chapel Hill (USA) . . . . . [8580-2]

9:10 am: **Effect of scattering coefficient on laser speckle contrast imaging**, Kosar Khaksari, Dennis Thomas, Sean J. Kirkpatrick, Michigan Technological Univ. (USA) . . . . . [8580-3]

9:30 am: **Optical vortex behavior in numerically and experimentally generated speckle fields with different phase correlations**, Dennis Thomas, Kosar Khaksari, Michigan Technological Univ. (USA); Donald D. Duncan, Portland State Univ. (USA); Sean J. Kirkpatrick, Michigan Technological Univ. (USA) . . . . . [8580-4]

9:50 am: **On the relationship between speckle-field and vortex-field decorrelation behaviors**, Sean J. Kirkpatrick, Michigan Technological Univ. (USA); Donald D. Duncan, Portland State Univ. (USA) . . . . . [8580-5]

Coffee Break . . . . . Sat 10:10 am to 10:40 am

10:40 am: **Measurement of dynamic scattering beneath stationary layers using multiple-exposure laser speckle contrast analysis**, Evan R. Hirst, Oliver B. Thompson, Michael K. Andrews, Industrial Research Ltd. (New Zealand) . . . . . [8580-6]

11:00 am: **Effective frequency sensitivity of laser speckle contrast measurements**, Oliver B. Thompson, Evan R. Hirst, Michael K. Andrews, Industrial Research Ltd. (New Zealand) . . . . . [8580-7]

11:20 am: **Vortex lifetimes in dynamic speckle fields**, Donald D. Duncan, James C. Gladish, Portland State Univ. (USA); Sean J. Kirkpatrick, Michigan Technological Univ. (USA) . . . . . [8580-8]

11:40 am: **Scatter characteristics of liquid crystal variable retarders**, James C. Gladish, Donald D. Duncan, Portland State Univ. (USA) . . . . . [8580-9]

Lunch Break . . . . . Sat 12:00 pm to 1:30 pm

### SESSION 2

Room: 112 (Exhibit Level) . . . . . Sat 1:30 pm to 4:20 pm

#### Tissue and Cell Dynamics

Session Chairs: **Kirill V. Larin**, Univ. of Houston (USA); **Wei R. Chen**, Univ. of Central Oklahoma (USA)

1:30 pm: **Enhancing antibiofilm efficacy in photodynamic therapy: effect of microemulsion** (*Invited Paper*), Anil Kishen II, Univ. of Toronto (Canada) . . . . . [8580-10]

2:10 pm: **Imaging the molecular diffusion in biological tissues with optical coherence tomography**, Alexander Doronin, Anthony Karl, Adrián F. Peña Delgado, Ruth M. Empson, Igor V. Meglinski, Univ. of Otago (New Zealand) . . . . . [8580-42]

2:30 pm: **Investigating the response of mammalian cells to terahertz radiation**, Jillian P. Giles, Cecil S. Joseph, Peter Gaines, Robert H. Giles, Univ. of Massachusetts Lowell (USA) . . . . . [8580-12]

2:50 pm: **Monitoring cells in engineered tissues with optical coherence phase microscopy: optical phase fluctuations as an endogenous source of contrast**, Pierre O. Bagnaninchi, The Univ. of Edinburgh (United Kingdom); Christina Holmes, Maryam Tabrizian, McGill Univ. (Canada) . . . . . [8580-13]

3:10 pm: **Cross-polarized terahertz and optical imaging of nonmelanoma skin cancers**, Cecil S. Joseph, Rakesh Patel, Univ. of Massachusetts Lowell (USA); Victor A. Neel, Massachusetts General Hospital (USA); Robert H. Giles, Univ. of Massachusetts Lowell (USA); Anna N. Yaroslavsky, Univ. of Massachusetts Lowell (USA) and Massachusetts General Hospital (USA) . . . . . [8580-35]

Coffee Break . . . . . Sat 3:30 pm to 4:00 pm

4:00 pm: **Delineation of the interaction of PAMAM dendrimer and skin by OCT**, Amy Judd Judd, Keele Univ. (United Kingdom); Jon Heylings, Dermal Technology Lab., Ltd. (United Kingdom); Ka-Wai Wan, Univ. of Central Lancashire (United Kingdom); Gary Moss, Ying Yang, Keele Univ. (United Kingdom) . . . . . [8580-15]

### SESSION 3

Room: 112 (Exhibit Level) . . . . . Sat 4:20 pm to 5:40 pm

#### Keynote Session

Session Chair: **Valery V. Tuchin**, N.G. Chernyshevsky Saratov State Univ. (Russian Federation), Univ. of Oulu (Finland)

4:20 pm: **Randomness in OCT and diffuse tomography** (*Keynote Presentation*), A. Claude Boccara, Sylvain Gigan, Institut Langevin (France) . . . . . [8580-16]

### BiOS Hot Topics

Sat. 7:00 to 9:00 pm • Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

**Sunday 3 February**

**SESSION 4**

**Room: 112 (Exhibit Level) . . . . .Sun 8:30 am to 12:00 pm**

**Clinical Imaging and Evaluation**

Session Chairs: **Martin J. Leahy**,

National Univ. of Ireland, Galway (Ireland);

**Jürgen M. Lademann**, Charité Universitätsmedizin Berlin (Germany)

8:30 am: **Self-adaptation optical effects in photothermal treatment of tissue structures** (*Invited Paper*), Ilya V. Yaroslavsky, James J. Childs, Igor Perchuk, Mikhail Smirnov, Andrey V. Erofeev, Gregory B. Altshuler, Palomar Medical Technologies, Inc. (USA) . . . . . [8580-17]

9:10 am: **Non-invasive detection of antioxidants in human skin** (*Invited Paper*), Jürgen M. Lademann, Ruo-Xi Yu, Charité Universitätsmedizin Berlin (Germany); Wolfgang Köcher, Opsolution GmbH (Germany); Martina C. Meinke, Alexa Patzelt M.D., Sabine Schanzer, Wolfram Sterry, Maxim E. Darvin M.D., Charité Universitätsmedizin Berlin (Germany) . . . . . [8580-18]

9:50 am: **A preliminary investigation: the impact of microscopic condenser on depth of field in cytogenetic imaging**, Liqiang Ren, Zheng Li, Yuhua Li, The Univ. of Oklahoma (USA); Bin Zheng, Univ. of Pittsburgh (USA); Shibo Li M.D., The Univ. of Oklahoma Health Sciences Ctr. (USA); Wei R. Chen, Univ. of Central Oklahoma (USA); Hong Liu, The Univ. of Oklahoma (USA) . . . . [8580-19]

Coffee Break . . . . . Sun 10:10 am to 10:40 am

10:40 am: **Multiple reference OCT (MRO) system**, Martin J. Leahy, National Univ. of Ireland, Galway (Ireland), National Biophotonics and Imaging Platform (Ireland) and Royal College of Surgeons in Ireland (Ireland); Josh Hogan, Carol Wilson, Compact Imaging Inc., California, (USA); , Hreesh Subhash, Roshan Dsouza, , National Univ. of Ireland, Galway (Ireland) and National Biophotonics and Imaging Platform (Ireland) . . . . . [8580-20]

11:00 am: **In vivo microcirculation imaging of the sub-surface fingertip using correlation mapping optical coherence tomography (cmOCT)**, Roshan I. Dsouza, Azhar Zam, Hreesh M. Subhash, National Univ. of Ireland, Galway (Ireland); Kirill V. Larin, Univ. of Houston (USA); Martin J. Leahy, National Univ. of Ireland, Galway (Ireland) . . . . . [8580-11]

11:20 am: **PCA-based polarized fluorescence study for detecting human cervical dysplasia**, Anita H. Gharekhan, C. U. Shah Science College (India); Seema Devi Khainchi, Jaidip M. Jagtap, Indian Institute of Technology Kanpur (India); Prasanta K. Panigrahi, Indian Institute of Science Education and Research Kolkata (India); Asima Pradhan, Indian Institute of Technology Kanpur (India) . . . . . [8580-22]

11:40 am: **Delineating breast ductal carcinoma using combined dye-enhanced wide-field polarization imaging and optical coherence tomography**, Anna N. Yaroslavsky, Rakesh Patel, Univ. of Massachusetts Lowell (USA); Ashraf Khan, Robert Quinlan, Univ. Massachusetts Memorial Medical Ctr. (USA) . . . . . [8580-23]

Lunch Break . . . . . Sun 12:00 pm to 1:30 pm

**SESSION 5**

**Room: 112 (Exhibit Level) . . . . .Sun 1:30 pm to 3:30 pm**

**Optical Clearing and Biomechanics**

Session Chairs: **Donald D. Duncan**, Portland State Univ. (USA);

**Igor V. Meglinski**, Univ. of Otago (New Zealand)

1:30 pm: **Optical clearing technology for in vivo tissue imaging** (*Invited Paper*), Dan Zhu, Britton Chance Ctr. for Biomedical Photonics (China) . . . . . [8580-24]

2:10 pm: **Analysis of spontaneous fluctuations of optical signals in humans**, Vladislav Toronov, Ryerson Univ. (Canada) . . . . . [8580-25]

2:30 pm: **Optical clearing for enhanced in utero mouse embryonic imaging**, Narendran Sudheendran, Maleeha Mashitulla, Univ. of Houston (USA); Mohamad G. Ghosn, Baylor College of Medicine (USA); Valery V. Tuchin, N.G. Chernyshevsky Saratov State Univ. (Russian Federation); Mary E. Dickinson, Irina V. Larina, Baylor College of Medicine (USA); Kirill V. Larin, Univ. of Houston (USA) . . . . . [8580-26]

2:50 pm: **Sample entropy of light transmission as a blood flow indicator**, Jing Dong, Renzhe Bi, Kijoon Lee, Nanyang Technological Univ. (Singapore) . . . . . [8580-27]

3:10 pm: **Automatic soft tissue tumor margin detection with multiple analyses of optical coherence tomography images**, Shang Wang, Narendran Sudheendran, Univ. of Houston (USA); Davis R. Ingram, Alexander J. Lazar M.D., Dina C. Lev, Raphael E. Pollock, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Kirill V. Larin, Univ. of Houston (USA) and Baylor College of Medicine (USA) . . . . . [8580-28]

Coffee Break . . . . . Sun 3:30 pm to 4:00 pm

**SESSION 6**

**Room: 112 (Exhibit Level) . . . . .Sun 4:00 pm to 5:20 pm**

**Functional Imaging and Spectroscopy I**

Session Chairs: **Ruikang K. Wang**, Univ. of Washington (USA);

**Vladimir P. Zharov**, Univ. of Arkansas for Medical Sciences (USA)

4:00 pm: **Evaluating image contrast in optical coherence elastography using finite element analysis** (*Invited Paper*), Kelsey M. Kennedy, The Univ. of Western Australia (Australia); Chris Ford, Curtin Univ. (Australia); Brendan F. Kennedy, Robert A. McLaughlin, Mark B. Bush, David D. Sampson, The Univ. of Western Australia (Australia) . . . . . [8580-29]

4:40 pm: **Structured illumination fluorescence correlation spectroscopy for velocimetry in Zebrafish embryos**, Paolo Pozzi, Leone Rossetti, Laura Sironi, Stefano Freddi, Laura D'Alfonso, Maddalena Collini, Giuseppe Chirico, Univ. degli Studi di Milano-Bicocca (Italy) . . . . . [8580-30]

5:00 pm: **Fluorimetry of ischemia reperfused rat lungs in vivo**, Reyhaneh Sepehr, Kevin Staniszewski, Univ. of Wisconsin-Milwaukee (USA); Said Audi, Marquette Univ. (USA); Elizabeth R. Jacobs, VA Medical Ctr. (USA); Mahsa Ranji, Univ. of Wisconsin-Milwaukee (USA) . . . . . [8580-31]

**Monday 4 February**

**SESSION 7**

**Room: 112 (Exhibit Level) . . . . . Mon 8:30 am to 10:30 am**

**Functional Imaging and Spectroscopy II**

Session Chairs: **Ruikang K. Wang**, Univ. of Washington (USA);

**Vladimir P. Zharov**, Univ. of Arkansas for Medical Sciences (USA)

8:30 am: **Spectral encoding of spatial frequency approach for characterization of 3D structures**, Sergey A. Alexandrov, National Univ. of Ireland, Galway (Ireland); Shikhar Uttam, Rajan K. Bista, Kevin D. Staton, Yang Liu, Univ. of Pittsburgh (USA) . . . . . [8580-32]

8:50 am: **High-speed full-range spectral-domain correlation mapping optical coherence tomography**, Hreesh M. Subhash, Roshan I. Dsouza, Martin J. Leahy, National Biophotonics & Imaging Platform (Ireland) . . [8580-33]

9:10 am: **Depth selective flowmetry based on diffuse optical speckle analysis**, Renzhe Bi, Jing Dong, Kijoon Lee, Nanyang Technological Univ. (Singapore) . . . . . [8580-34]

9:30 am: **Doppler and photothermal optical coherence tomography for quantifying microvessel hemodynamics**, Devin R. McCormack, Chetan A. Patil, Jason M. Tucker-Schwartz, Melissa C. Skala, Vanderbilt Univ. (USA) . . . . . [8580-39]

9:50 am: **Screening of molecular probes: optical and photophysical properties of new porphyrin**, Grigor V. Gyulkhandanyan, Institute of Biochemistry (Armenia); Robert K. Ghazaryan, Yerevan State Medical Univ. (Armenia); Anna G. Gyulkhandanyan, Institute of Biochemistry (Armenia); Valery N. Kryuksho, Alexander S. Stasheuski, Boris M. Dzhagarov, Institute of Physics (Belarus) . . . . . [8580-43]

10:10 am: **Optimum polarimeter training sets for liquid crystal variable retarders**, James C. Gladish, Donald D. Duncan, Portland State Univ. (USA) . . . . . [8580-37]

Coffee Break . . . . . Mon 10:30 am to 11:00 am

**SESSION 8**

**Room: 112 (Exhibit Level) . . . . . Mon 11:00 am to 12:00 pm**

**Cerebral Hemodynamics I**

Session Chairs: **Valery V. Tuchin**, N.G. Chernyshevsky Saratov State Univ. (Russian Federation), Univ. of Oulu (Finland);  
**Anna N. Yaroslavsky**, Univ. of Massachusetts Lowell (USA)

11:00 am: **Modelling cerebral blood oxygenation using Monte Carlo XYZ-PA**, Azhar Zam, Martin J. Leahy, National Univ. of Ireland, Galway (Ireland) . . . . . [8580-38]

11:20 am: **Functional evaluation of the fast and slow response in neural activation using a multi-modality optical imaging system**, Jia Qin, Lin An, Suzan Dziennis, Lei Shi, Roberto Reif, Siavash Yousefi, Ruikang Wang, Univ. of Washington (USA) . . . . . [8580-40]

11:40 am: **Functional connectivity patterns in spontaneous cerebral blood flow of mice**, Karla M. Bergonzi, Adam Q. Bauer, Joseph P. Culver, Washington Univ. in St. Louis (USA) . . . . . [8580-36]

Lunch Break . . . . . Mon 12:00 pm to 1:30 pm

**SESSION 9**

**Room: 112 (Exhibit Level) . . . . . Mon 1:30 pm to 2:50 pm**

**Cerebral Hemodynamics II**

Session Chair: **Valery V. Tuchin**, N.G. Chernyshevsky Saratov State Univ. (Russian Federation), Univ. of Oulu (Finland)

1:30 pm: **Bed-side monitoring of hemodynamics in ischemic stroke patients with diffuse correlation spectroscopy** (*Invited Paper*), Turgut Durduran, ICFO - Institut de Ciències Fotòniques (Spain) . . . . . [8580-11]

2:10 pm: **Characterization of the contributions of systemic physiology to functional NIRS data using single-channel ICA decomposition of fNIRS signals**, Ardalan Aarabi, Theodore J. Huppert, UPMC Presbyterian (USA) . . . . . [8580-14]

2:30 pm: **Full-scale blood flow response in functional electrical stimulation in mouse model evaluated by variable-range Doppler OCT**, Lei Shi, Jia Qin, Siavash Yousefi, Suzan Dziennis, Ruikang K. Wang, Univ. of Washington (USA) . . . . . [8580-41]

**PANEL DISCUSSION**

**Room: 112 (Exhibit Level) . . . . . Mon 2:50 pm to 3:20 pm**

**Harnessing Biophotonics to study Tissue Biomechanics**

*Moderator:* **Martin Leahy**, National Univ. of Ireland, Galway (Ireland)

Participants: **Ruikang Wang**, Univ. of Washington (USA);

**Kirill Larin**, Univ. of Houston (USA);

**Donald Duncan**, Portland State Univ. (USA);

**Valery Tuchin**, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) and Univ. of Oulu (Finland);

**Claude Boccara**, Institut Langevin (France),

**Brendan Kennedy, David Sampson**,  
The Univ. of Western Australia (Australia);

**Sean Kirkpatrick**, Michigan Technological Univ. (USA);

**Sergey Alexandrov**, National Univ. of Ireland, Galway (Ireland)

Our understanding of health and disease is fundamentally dependent on knowledge of structure and function of tissues in living organisms. Biophotonics has delivered extraordinary advances in molecular and cellular imaging which have been translated for in vivo imaging. This has been augmented by functional imaging of blood flow and oxygen delivery. Structural imaging and sensing has perhaps gotten less attention, partly because of the lack of techniques appropriate to in vivo applications. However, several recent advances, by the panelists among others, make it possible to extract more structural information than ever from tissue. The panel will discuss these advances and their applications such as measurements of the viscoelastic properties of skin, blood vessel and eye.

**POSTERS-MONDAY**

**Room: 103 (Exhibit Level) . . . . . Mon 5:30 pm to 7:30 pm**

Conference attendees are invited to attend the BIOS poster session on Monday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

**Validation and measurement of the positional floating reference point by near-Infrared (NIR) spectroscopy**, Jingying Jiang, XuZheng Rong, Hao Zhang, Kexin Xu, Tianjin Univ. (China) . . . . . [8580-44]

**Computer vision localization-based in vivo measurement by NIR spectroscopy**, Jingying Jiang, Hao Zhang, Xuzheng Rong, Kexin Xu, Tianjin Univ. (China) . . . . . [8580-45]

**Simulation on how to customize glucose adjustment method for noninvasive blood glucose sensing by NIRS**, Jingying Jiang, Xiaolin Min, Da Zou, Kexin Xu, Tianjin Univ. (China) . . . . . [8580-46]

**Monte Carlo simulation on the effect of dermal thickness variances on noninvasive blood glucose sensing**, Jingying Jiang, Da Zou, Xiaolin Min, Tianjin Univ. (China); Zhenhe Ma, Northeastern Univ. (China); Kexin Xu, Tianjin Univ. (China) . . . . . [8580-47]

**Wavelet-based recognition of oscillatory EEG-patterns**, Alexey I. Nazimov, Alexey N. Pavlov, Alexander E. Hramov, Vadim V. Grubov, Alexey A. Koronovskii, N.G. Chernyshevsky Saratov State Univ. (Russian Federation); Evgenia Sitnikova, Institute of Higher Nervous Activity and Neurophysiology of RAS (Russian Federation) . . . . . [8580-48]

**On-off intermittency of thalamo-cortical neuronal network oscillations in the electroencephalogram of rodents with genetic predisposition to absence epilepsy**, Alexander E. Hramov, Vadim V. Grubov, Alexey N. Pavlov, N.G. Chernyshevsky Saratov State Univ. (Russian Federation); Evgenia Sitnikova, Institute of Higher Nervous Activity and Neurophysiology of RAS (Russian Federation); Alexey A. Koronovskii, N.G. Chernyshevsky Saratov State Univ. (Russian Federation); Anastasija E Runnova, REC "Nonlinear Dynamics of Complex System", Saratov State Technical University (Russian Federation); Svetlana A Shurugina, NG Chernyshevsky Saratov State University (Russian Federation); Alexey Ivanov, REC "Nonlinear Dynamics of Complex System", Saratov State Technical University (Russian Federation) . . . . . [8580-49]

**An approach for identification of early pathological changes in cerebral blood flow**, Alexey N. Pavlov, Oxana V. Semyachkina-Glushkovskaya, Vladislav V. Lychagov, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) . . . . . [8580-50]

**4D display of outflow track of embryonic-chick-heart (HH 14-19) using a high-speed streak mode OCT**, Siyu Ma, Rui Wang, Clemson Univ. (USA); Richard L. Goodwin, Univ. of South Carolina School of Medicine (USA); Roger R. Markwald, Thomas K. Borg, Medical Univ. of South Carolina (USA); Raymond B. Runyan, The Univ. of Arizona (USA); Bruce Z. Gao, Clemson Univ. (USA) . . . . . [8580-51]

**Reflectance spectroscopy of optical clearing of skin in vivo**, Xiewei Zhong, Jing Wang, Xiang K. Wen, Dan Zhu, Britton Chance Ctr. for Biomedical Photonics (China) . . . . . [8580-52]

**Scaling of photothermal effects accounting for localization of CW and pulse laser radiation within plasmonic nanoparticles**, Alexander N. Yakunin, Yuri A. Avetisyan, Institute of Precision Mechanics and Control (Russian Federation); Valery V. Tuchin, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) and Institute of Precision Mechanics and Control (Russian Federation) . . . . . [8580-53]

**Optical properties of the human finger nail**, Alexey N. Bashkatov, Eliina A. Genina, Valery V. Tuchin, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) . . . . . [8580-54]

**Structural change of adipose tissue at photodynamic treatment: in vivo study using OCT**, Irina Y. Yanina, Valery V. Tuchin, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) . . . . . [8580-55]

**Structural change of adipose tissue at photodynamic and photothermal treatment using encapsulated ICG**, Irina Y. Yanina, Valery V. Tuchin, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) . . . . . [8580-56]



# Photons Plus Ultrasound: Imaging and Sensing 2013

*Conference Chairs:* **Alexander A. Oraevsky**, TomoWave Laboratories, Inc. (USA); **Lihong V. Wang**, Washington Univ. in St. Louis (USA)

*Program Committee:* **Mark A. Anastasio**, Washington Univ. in St. Louis (USA); **Paul C. Beard**, Univ. College London (United Kingdom); **A. Claude Boccara**, Ecole Supérieure de Physique et de Chimie Industrielles (France); **Gerald J. Diebold**, Brown Univ. (USA); **Charles A. DiMarzio**, Northeastern Univ. (USA); **Stanislav Y. Emelianov**, The Univ. of Texas at Austin (USA); **Rinat O. Esenaliev**, The Univ. of Texas Medical Branch (USA); **Martin Frenz**, Univ. Bern (Switzerland); **Steven L. Jacques**, Oregon Health & Science Univ. (USA); **Robert A. Kruger**, OptoSonics, Inc. (USA); **Pai-Chi Li**, National Taiwan Univ. (Taiwan); **Andreas Mandelis**, Univ. of Toronto (Canada); **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany); **Matthew O'Donnell**, Univ. of Washington (USA); **Günther Paltauf**, Karl-Franzens-Universität Graz (Austria); **Wiendelt Steenbergen**, Univ. Twente (Netherlands); **William M. Whelan**, Univ. of Prince Edward Island (Canada); **Vladimir P. Zharov**, Univ. of Arkansas for Medical Sciences (USA); **Qifa Zhou**, The Univ. of Southern California (USA); **Quing Zhu**, Univ. of Connecticut (USA)

## Sunday 3 February

### SESSION 1

Room: 309 (Esplanade) .....Sun 8:00 am to 10:00 am

#### Translational Research and Clinical Applications

Session Chair: **Alexander A. Oraevsky**, TomoWave Laboratories, Inc. (USA)

8:00 am: **Photoacoustic intra-operative nodal staging using clinically approved superparamagnetic iron oxide nanoparticles**, Diederik J. Grootendorst, Raluca M. Fratila, Martijn Visscher, Bennie Ten Haken, Univ. Twente (Netherlands); Richard J. A. Van Wezel, Radboud Univ. Nijmegen (Netherlands); Wiendelt Steenbergen, Srirang Manohar, Univ. Twente (Netherlands); Theo J. M. Ruers M.D., The Netherlands Cancer Institute (Netherlands) ..... [8581-1]

8:15 am: **Real-time opto-acoustic imaging system for clinical assessment of breast lesions**, Jason Zalev, Bryan Clingman, Remie Smith, Tom Miller, A. Thomas Stavros, Seno Medical Instruments, Inc. (USA); Sergey A. Ermilov, Dmitri Tsyboulski, Andre Conjusteau, Alexander A. Oraevsky, TomoWave Laboratories, Inc. (USA); Kenneth Kist, N. Carol Dornbluth, The Univ. of Texas Health Science Ctr. at San Antonio (USA); Pamela Otto, The Univ. of Texas Health Science Ctr. at Houston (USA) ..... [8581-2]

8:30 am: **Clinical prototype of portable photoacoustic flow cytometer for early diagnosis of multiple diseases**, Vladimir P. Zharov, Ekaterina I. Galanzha, Mustafa Sarimollaoglu, Dmitry A. Nedosekin, Mazen A. Juratli M.D., Yulian A. Menyaeov, Univ. of Arkansas for Medical Sciences (USA) ..... [8581-3]

8:45 am: **Photoacoustic tomography through an intact adult human skull**, Liming Nie, Xin Cai, Chao Huang, Alejandro Garcia-Urbe, Mark A. Anastasio, Lihong V. Wang, Washington Univ. in St. Louis (USA) ..... [8581-4]

9:00 am: **Image reconstruction in photoacoustic tomography with heterogeneous media using an iterative method**, Chao Huang, Kun Wang, Liming Nie, Lihong V. Wang, Mark A. Anastasio, Washington Univ. in St. Louis (USA) ..... [8581-5]

9:15 am: **Noninvasive optoacoustic monitoring of cerebral venous blood oxygenation in rats with blast-induced traumatic brain injury**, Karon E. Wynne, Douglas S. DeWitt, Yuriy Y. Petrov, Irene Y. H. Petrova, Andrey Petrov, Margaret A. Parsley, Rinat O. Esenaliev, Donald S. Prough, The Univ. of Texas Medical Branch (USA) ..... [8581-6]

9:30 am: **Noninvasive optoacoustic monitoring of cerebral venous blood oxygenation in patients with traumatic brain injury**, Yuriy Y. Petrov, Donald S. Prough, The Univ. of Texas Medical Branch (USA); Claudia S. Robertson, Baylor College of Medicine (USA); Irene Y. H. Petrov, The Univ. of Texas Medical Branch (USA); Luciano L. Ponce Mejia, Santosh Sadasivan, Baylor College of Medicine (USA); Andrey Petrov, Rinat O. Esenaliev, The Univ. of Texas Medical Branch (USA) ..... [8581-7]

9:45 am: **Real-time photoacoustic imaging system for clinical burn diagnosis**, Taiichiro Ida, Yasushi Kawaguchi, Advantest Corp. (Japan); Satoko Kawachi, Daizoh Saitoh, Shunichi Sato, National Defense Medical College (Japan); Toshiaki Iwai, Tokyo Univ. of Agriculture and Technology (Japan) ..... [8581-8]

Coffee Break ..... Sun 10:00 am to 10:30 am

### SESSION 2

Room: 309 (Esplanade) .....Sun 10:30 am to 12:00 pm

#### Intravascular Imaging and Endoscopy

Session Chair: **Matthew O'Donnell**, Univ. of Washington (USA)

10:30 am: **Three-dimensional intravascular imaging of plaques by a vibrational photoacoustic endoscope in probe-scanning manner**, Pu Wang, Purdue Univ. (USA); Wei Wei, Univ. of California, Irvine (USA); Michael Sturek, Indiana Univ.-Purdue Univ. Indianapolis (USA); Zhongping Chen, Univ. of California, Irvine (USA); Ji-Xin Cheng, Purdue Univ. (USA) ..... [8581-9]

10:45 am: **Differentiating lipid types using intravascular photoacoustic spectroscopy**, Krista Jansen, Antonius F. W. van der Steen, Erasmus MC (Netherlands) and Interuniversity Cardiology Institute (Netherlands); Geert Springeling, Min Wu, Adrie J. M. Verhoeven, Monique T. Mulder, Erasmus MC (Netherlands); Xiang Li, Qifa Zhou, K. Kirk Shung, The Univ. of Southern California (USA); Dominique P. V. de Kleijn, Univ. Medical Ctr. Utrecht (Netherlands); Gijs van Soest, Erasmus MC (Netherlands) ..... [8581-10]

11:00 am: **Optical-resolution photoacoustic micro-endoscopy with ultrasound array system detection**, Tyler Harrison, Parsin HajiReza, Roger J. Zemp, Univ. of Alberta (Canada) ..... [8581-11]

11:15 am: **Photoacoustic endoscopy of rat colorectal tumor in vivo**, Chiye Li, Joon-Mo Yang, Washington Univ. in St. Louis (USA); Yu Zhang, Younan Xia, Georgia Institute of Technology (USA); Lihong V. Wang, Washington Univ. in St. Louis (USA) ..... [8581-12]

11:30 am: **Integrated intravascular catheter for high-resolution ultrasound and photoacoustic imaging**, Andrei B. Karpiouk, Douglas E. Yeager, The Univ. of Texas at Austin (USA); James H. Amirian M.D., Richard W. Smalling M.D., The Univ. of Texas Health Science Ctr. at Houston (USA); Stanislav Y. Emelianov, The Univ. of Texas at Austin (USA) ..... [8581-13]

11:45 am: **Photoacoustic imaging of the human carotid artery: simulations, phantom studies, and practical considerations**, Pieter Kruizinga, Frits Mastik, Erasmus MC (Netherlands); Nico de Jong, Erasmus MC (Netherlands) and Interuniversity Cardiology Institute (Netherlands) and Delft Univ. of Technology (Netherlands); Antonius F. W. van der Steen, Erasmus MC (Netherlands) and Interuniversity Cardiology Institute (Netherlands); Gijs van Soest, Erasmus MC (Netherlands) ..... [8581-14]

Lunch Break ..... Sun 12:00 pm to 1:30 pm

### SESSION 3

Room: 309 (Esplanade) .....Sun 1:30 pm to 3:00 pm

#### Preclinical Research in Animal Models

Session Chair: **Vasilis Ntziachristos**, Helmholtz Zentrum München GmbH (Germany)

1:30 pm: **A brain tumor molecular imaging strategy using a new triple-modality MRI-photoacoustic-Raman nanoparticle**, Adam de la Zorda, Stanford Univ. (USA); Moritz F. Kircher, Memorial Sloan-Kettering Cancer Ctr. (USA); Jesse V. Jokerst, Stanford Univ. (USA); Cristina L. Zavaleta, Stanford Univ. School of Medicine (USA); Paul J. Kempen, Erik Mittra, Stanford Univ. (USA); Ken Pitter, Ruimin Huang, Carl Campos, Memorial Sloan-Kettering Cancer Ctr. (USA); Frezghi Habte, Robert Sinclair, Stanford Univ. (USA); Cameron W. Brennan, Ingo K. Mellinghoff, Eric C. Holland, Memorial Sloan-Kettering Cancer Ctr. (USA); Sanjiv S. Gambhir, Stanford Univ. (USA) ..... [8581-15]

1:45 pm: **Photoacoustic tomography to identify angiogenesis for diagnosis and treatment monitoring of inflammatory arthritis**, Xueding Wang, Univ. of Michigan Health System (USA); Justin R. Rajan, Univ. of Michigan Medical School (USA); Gandikota Girish, Univ. of Michigan Health System (USA); David L. Chamberland, Univ. of Michigan (USA) ..... [8581-16]

2:00 pm: **Nanosensor aided photoacoustic measurement of pH in vivo**, Aniruddha Ray, Hyung Ki Yoon, Univ. of Michigan (USA); Xueding Wang, Univ. of Michigan Health System (USA); Raoul Kopelman, Univ. of Michigan (USA) . . . . . [8581-17]

2:15 pm: **High resolution photoacoustic imaging of microvasculature in normal and cancerous bladders**, Zhixing Xie, William W. Roberts, Paul L. Carson, Univ. of Michigan Medical School (USA); Xiaojun Liu, Chao Tao, Nanjing Univ. (China); Xueding Wang, Univ. of Michigan Medical School (USA). [8581-18]

2:30 pm: **Anatomical and molecular small-animal whole-body imaging using ring-shaped confocal photoacoustic computed tomography**, Jun Xia, Muhammad R. Chatni, Konstantin I. Maslov, Lihong V. Wang, Washington Univ. in St. Louis (USA). . . . . [8581-19]

2:45 pm: **Three-dimensional single-shot photoacoustic visualization of excised mouse organs with model-based reconstruction**, Xosé Luis Deán-Ben, Andreas Buehler, Vasilis Ntziachristos, Daniel Razansky, Helmholtz Zentrum München GmbH (Germany) . . . . . [8581-20]

Coffee Break . . . . . Sun 3:00 pm to 3:30 pm

#### SESSION 4

Room: 309 (Esplanade) . . . . . Sun 3:30 pm to 5:15 pm

##### Laser/Ultrasound and Dual-Modality Systems

Session Chair: **Martin Frenz**, Univ. Bern (Switzerland)

3:30 pm: **A photoacoustic tomography and ultrasound combined system for proximal interphalangeal joint imaging**, Guan Xu, Justin R. Rajian, Gandikota Girish, Xueding Wang, Univ. of Michigan Medical School (USA) . . . . . [8581-21]

3:45 pm: **3D laser photoacoustic ultrasonic imaging system**, Sergey A. Ermilov, André Conjusteau, Travis Hernandez, TomoWave Laboratories, Inc. (USA); Richard Su, TomoWave Laboratories, Inc. (USA) and Univ. of Houston (USA); Vyacheslav V. Nadvoretzkiy, Dmitri Tsybouski, TomoWave Laboratories, Inc. (USA); Fatima Anis, Mark A. Anastasio, Washington Univ. in St. Louis (USA); Alexander A. Oraevsky, TomoWave Laboratories, Inc. (USA) and Univ. of Houston (USA). . . . . [8581-22]

4:00 pm: **Accurate photoacoustic tomography using acoustic velocity maps in reconstruction**, Srirang Manohar, Jithin Jose, Rene G. H. Willemink, Cornelis H. Slump, Univ. Twente (Netherlands); Ton G. Van Leeuwen, Univ. Twente (Netherlands) and Academisch Medisch Ctr. (Netherlands); Wiendelt Steenbergen, Univ. Twente (Netherlands). . . . . [8581-23]

4:15 pm: **Dual-modality section imaging system with optical ultrasound detection for photoacoustic and ultrasound imaging**, Robert Nuster, Gerhild Wurzing, Sibylle Gratt, Günther Paltauf, Karl-Franzens-Univ. Graz (Austria) . . . . . [8581-24]

4:30 pm: **Simultaneous photoacoustic and optically mediated ultrasound microscopy: phantom study**, Pavel V. Subochev, Alexey R. Katichev, Andrey N. Morozov, Anna G. Orlova, Vladislav A. Kamensky, Ilya V. Turchin, Institute of Applied Physics (Russian Federation). . . . . [8581-25]

4:45 pm: **Development of a hybrid fluorescence-photoacoustic imaging platform for in vivo diagnosis and interventional guidance in breast cancer**, Jiachuan Bu, Ontario Cancer Institute (Canada); Azusa Maeda, Ontario Cancer Institute (Canada) and Univ. of Toronto (Canada); Bryce Nelson, Terrence Donnelly Ctr. for Cellular and Biomolecular Research (Canada); James Pan, Terrence Donnelly Ctr for Cellular and Biomolecular Research (Canada); Wey-Liang Leong, Ontario Cancer Institute (Canada) and Princess Margaret Hospital (Canada); Alexandra M. Easson, Ontario Cancer Institute (Canada); Susan J. Done, Univ. of Toronto (Canada) and Princess Margaret Hospital (Canada); Gang Zheng, Brian C. Wilson, Ontario Cancer Institute (Canada) and Univ. of Toronto (Canada); Sachdev Sidhu, Terrence Donnelly Ctr. for Cellular and Biomolecular Research (Canada); Ralph S. DaCosta, Ontario Cancer Institute (Canada) and Univ. of Toronto (Canada). . . . . [8581-26]

5:00 pm: **Doppler photoacoustic and Doppler ultrasound in blood with optical contrast**, Adi Sheinfeld, Avishay Eyal, Tel Aviv Univ. (Israel) . . . [8581-27]

#### SESSION 5

Room: 309 (Esplanade) . . . . . Sun 5:15 pm to 6:00 pm

##### Towards Quantitative Imaging

Session Chair: **Paul C. Beard**, Univ. College London (United Kingdom)

5:15 pm: **Calibration-free absolute quantification of oxygen saturation based on the dynamics of photoacoustic signals**, Jun Xia, Amos Danielli, Lidai Wang, Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . [8581-28]

5:30 pm: **Fluence mapping inside highly scattering media using reflection mode acousto-optics**, Altaf Hussain, Khalid Daoudi, Erwin Hondebrink, Wiendelt Steenbergen, Univ. Twente (Netherlands) . . . . . [8581-29]

5:45 pm: **Quantitative photoacoustic tomography: acoustic and optical inversions**, Teedah Saratoon, Univ. College London (United Kingdom); Tanja Tarvainen, Univ. of Eastern Finland (Finland) and Univ. College London (United Kingdom); Benjamin T. Cox, Simon R. Arridge, Univ. College London (United Kingdom) . . . . . [8581-30]

#### POSTERS-SUNDAY

Room: 103 (Exhibit Level) . . . . . Sun 5:30 pm to 7:30 pm

Conference attendees are invited to attend the BiOS poster session on Sunday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/x27476.xml>.

**Handset pulsed laser probe for portable high frame photoacoustic imaging system**, Khalid Daoudi, Univ. Twente (Netherlands); Olivier Rabot, Quantel Laser Diodes (France); Andreas Kohl, Quantel Group (France); Stéphane Tisserand, Silius Technologies (France); Peter J. Brands, Esaote Europe B.V. (Netherlands); Wiendelt Steenbergen, Univ. Twente (Netherlands) . . . . [8581-49]

**Efficient framework for optoacoustic image reconstruction using wavelet packets**, Amir Rosenthal, Daniel Razansky, Vasilis Ntziachristos, Helmholtz Zentrum München GmbH (Germany) . . . . . [8581-89]

**Thermoacoustic imaging of fresh prostates up to 6-cm diameter**, Sarah K. Patch, Univ. of Wisconsin-Milwaukee (USA); Eric Hanson, McGill Univ. (Canada); Majorca Thomas, Holly Kelly, Kenneth Jacobsohn, William A. See, Medical College of Wisconsin (USA). . . . . [8581-91]

**Characterizing microscopic morphology in biological tissue with photoacoustic spectrum analysis: feasibility study with simulations and experiments**, Guan Xu, Univ. of Michigan Medical School (USA); Irfaan Dar, Univ. of Michigan (USA); Chao Tao, Xiaojun Liu, Nanjing Univ. (China); Xueding Wang, Univ. of Michigan Health System (USA). . . . . [8581-92]

**Low-cost parallelization of optical fiber based detectors for photoacoustic imaging**, Johannes Bauer-Marschallinger, Hubert Grün, Peter Burgholzer, Thomas Berer, RECENDT GmbH (Austria) . . . . . [8581-93]

**Phase modulated influences of curved trajectories in monte carlo simulations**, Jacob W. Staley, Wiendelt Steenbergen, Univ. Twente (Netherlands) . . . . . [8581-94]

**Millisecond-pulse Alexandrite laser for more sensitive acousto-optic imaging**, Emilie Benoit, Francois Ramaz, Ecole Supérieure de Physique et de Chimie Industrielles (France); Baptiste Jayet, Institut Langevin (France) [8581-95]

**Joint acousto-optic and ultrasound images of small animals**, Emilie Benoit, Jean-Luc Gennisson, Salma Farahi, Ecole Supérieure de Physique et de Chimie Industrielles (France); Alexander A. Grabar, Uzhgorod National Univ. (Ukraine); Mickael Tanter, Francois Ramaz, Ecole Supérieure de Physique et de Chimie Industrielles (France); Baptiste Jayet, Institut Langevin (France) . . . . . [8581-96]

**Recognizing ovarian cancer from co-registered ultrasound and photoacoustic images**, Umar S. Alqasemi, Patrick D. Kumavor, Andres Aguirre, Quing Zhu, Univ. of Connecticut (USA). . . . . [8581-97]

**Two-photon photoacoustics ultrasound measurement by a loss modulation technique**, Yu-Hung Lai, Chieh-Feng Chang, National Taiwan Univ. (Taiwan); Yu-Hsiang Cheng, Graduate Institute of Photonics and Optoelectronics, National Taiwan University (Taiwan); Chi-Kuang Sun, National Taiwan Univ. (Taiwan) and Academia Sinica (Taiwan) . . . . . [8581-98]

**A novel design for small animal PAT system**, Zijian Deng, Changhui Li, Peking Univ. (China) . . . . . [8581-100]

- Evaluation of tissue microstructure with a narrowband and low frequency photoacoustic tomography system**, Yiqun Yang, Shaohua Wang, Chao Tao, Nanjing Univ. (China); Xueding Wang, Univ. of Michigan Health System (USA); Xiaojun Liu, Nanjing Univ. (China) . . . . . [8581-101]
- Acoustic-resolution photoacoustic imaging system with simple fiber illumination**, Yasuyuki Tsunoi, Keio Univ. (Japan); Shunichi Sato, Satoko Kawauchi, Hiroshi Ashida, National Defense Medical College (Japan); Mitsuhiro Terakawa, Keio Univ. (Japan) . . . . . [8581-102]
- Measuring non-radiative relaxation time of fluorophores by intensity-modulated laser induced photoacoustic effect**, Behrouz Soroushian, Xinmai Yang, The Univ. of Kansas (USA) . . . . . [8581-103]
- Photoacoustic microscopy with 7.6- $\mu$ m axial resolution**, Chi Zhang, Konstantin I. Maslov, Junjie Yao, Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-104]
- Exploring ultrasound-modulated optical tomography at clinically useful depth using the photorefractive effect**, Puxiang Lai, Yuta Suzuki, Xiao Xu, Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-105]
- Simultaneous multispectral coded excitation using periodic and unipolar M-sequences for photoacoustic imaging**, Haichong Zhang, Kengo Kondo, Makoto Yamakawa, Tsuyoshi Shina, Kyoto Univ. (Japan) . . . . . [8581-106]
- Dual-modal photoacoustic and optical coherence tomography using one single near-infrared supercontinuum**, Changho Lee, SeungHoon Han, Sehui Kim, Kyungpook National Univ. (Korea, Republic of); Mansik Jeon, Univ. at Buffalo (USA); Min Yong Jeon, Chungnam National Univ. (Korea, Republic of); Chulhong Kim, Univ. at Buffalo (USA); Jeehyun Kim, Kyungpook National Univ. (Korea, Republic of) . . . . . [8581-107]
- Microring resonator aided vibrational photoacoustic tomography**, Cheng Zhang, Sung-Liang Chen, Tao Ling, L. Jay Guo, Univ. of Michigan (USA) . . . . . [8581-108]
- A dynamic image reconstruction method with spatio-temporal constraints**, Hyun-Keol Kim, Michael A. Khalil, Jacqueline E. Gunther, Ludguier D. Montejo, Andreas H. Hielscher, Columbia Univ. (USA) . . . . . [8581-109]
- in vivo photoacoustic tomography of the human anterior neck region**, Alexander Dima, Vasilis Ntziachristos, Helmholtz Zentrum München GmbH (Germany) . . . . . [8581-110]
- Functional photoacoustic micro-imaging of cerebral hemodynamic changes in single blood vessels after photo-induced brain stroke**, Lun-De Liao, National Univ. of Singapore (Singapore) and National Chiao Tung Univ. (Taiwan); You-Yin Chen, National Yang-Ming Univ. (Taiwan); Chin-Teng Lin, National Chiao Tung Univ. (Taiwan); Meng-Lin Li, National Tsing Hua Univ. (Taiwan) . . . . . [8581-111]
- Remote photoacoustic imaging on non-flat surfaces and appropriate reconstruction algorithms**, Thomas Berer, Armin Hochreiner, Heinz Roitner, Hubert Grün, Peter Burgholzer, RECENDT GmbH (Austria) . . . . . [8581-112]
- Reconstruction of the optical properties of inhomogeneous medium from photoacoustic signal with lp sparsity regularization**, Shinpei Okawa, Takeshi Hirasawa, Toshihiro Kushibiki, Miya Ishihara, National Defense Medical College (Japan) . . . . . [8581-113]
- Analysis of laser parameters in the solution of photoacoustic wave equation**, Hakan Erkol, Mustafa U. Arabul, Esra Aytac Kipergil, Burcin M. Unlu, Bogaziçi Üniv. (Turkey) . . . . . [8581-114]
- Deconvolution algorithms for photoacoustic tomography to reduce blurring caused by finite sized detectors**, Peter Burgholzer, Heinz Roitner, Thomas Berer, Hubert Grün, RECENDT GmbH (Austria); Robert Nuster, Günther Paltauf, Karl-Franzens-Univ. Graz (Austria) . . . . . [8581-115]
- Measurement of the Grueneisen coefficient of tissue by photoacoustic spectrometry**, Da-Kang Yao, Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-116]
- Photoacoustic imaging of a genetically encoded photoswitchable fluorescent probe**, Arie Krumholz, Washington Univ. in St. Louis (USA); Kiryl Piatkevich, Vladislav V. Verkhusa, Albert Einstein College of Medicine of Yeshiva Univ. (USA); Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-117]
- Quantitative imaging of bilirubin by photoacoustic microscopy**, Yong Zhou, Chi Zhang, Da-Kang Yao, Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-118]
- Novel micromachined silicon acoustic delay line systems for real-time photoacoustic tomography applications**, Cheng-Chung Chang, Young Cho, Texas A&M Univ. (USA); Lihong V. Wang, Washington Univ. in St. Louis (USA); Jun Zou, Texas A&M Univ. (USA) . . . . . [8581-119]
- in vitro and ex vivo evaluation of silica-coated super paramagnetic iron oxide nanoparticles (SPION) as biomedical photoacoustic contrast agent**, Rudolf Alwi, Sergey A. Telenkov, Andreas Mandelis, Univ. of Toronto (Canada); Timothy Leshuk, Frank Gu, Univ. of Waterloo (Canada); Sulayman Oladepo, Kirk H. Michaelian, Natural Resources Canada (Canada) . . . . . [8581-120]
- Combined photoacoustic and ultrasound imaging of human breast in vivo in the mammographic geometry**, Zhixing Xie, Won-Mean Lee, Fong Ming Hooi, J. Brian Fowlkes, Renee W. Pinsky, Dean A. Mueller, Xueding Wang, Paul L. Carson, Univ. of Michigan Medical School (USA) . . . . . [8581-121]
- Acousto-optic effect with audible sound and its application in classifying hidden colours**, Terence S. Leung, Shihong Jiang, Univ. College London (United Kingdom) . . . . . [8581-122]
- Photoacoustic imaging in the evaluation of laser controlled drug release using gold nanostructure agents**, Yao Sun, King C. P. Li, Wake Forest Baptist Medical Ctr. (USA) and The Methodist Hospital Research Institute (USA); Brian E. O'Neill, The Methodist Hospital Research Institute (USA) . . . . . [8581-123]
- Viewing individual cells and ambient microvasculature using two molecular contrasts**, Zhixing Xie, Sung-Liang Chen, Univ. of Michigan Medical School (USA); Xunbin Wei, Shanghai Jiao Tong Univ. (China); Paul L. Carson, Univ. of Michigan Medical School (USA); Xueding Wang, Univ. of Michigan Health System (USA) . . . . . [8581-124]
- Multispectral photoacoustic imaging of tissue denaturation induced by high-intensity focused ultrasound treatment**, Yao Sun, King C. P. Li, Wake Forest Baptist Medical Ctr. (USA) and The Methodist Hospital Research Institute (USA); Brian E. O'Neill, The Methodist Hospital Research Institute (USA) . . . . . [8581-125]
- Continuous high-speed volumetric photoacoustic microscopy via a field programmable gate array**, Scott P. Mattison, Ryan L. Shelton, Brian E. Applegate, Texas A&M Univ. (USA) . . . . . [8581-126]
- Nonionizing photoacoustic cystography with near-infrared absorbing gold nanostructures as optical opaque tracers**, Mansik Jeon, Chulhong Kim, Univ. at Buffalo (USA); Jingyi Chen, Univ. of Arkansas (USA) . . . . . [8581-127]
- High resolution functional photoacoustic computed tomography of the mouse brain during electrical stimulation**, MohammadReza NasiriAvanaki, Jun Xia, Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-128]
- Transvaginal photoacoustic imaging probe and system based on a multiport fiber-optic beamsplitter and a real time imager for ovarian cancer detection**, Patrick D. Kumavor, Umar S. Alqasemi, Behnoosh Tavakoli, Hai Li, Yi Yang, Qing Zhu, Univ. of Connecticut (USA) . . . . . [8581-129]
- Estimating oxygen saturation in vivo with photoacoustic imaging: a system developer's perspective**, Andrew Needles, James Mehi, Minalini Lakshman, Andrew Heinmiller, Catherine Theodoropoulos, Desmond Hirson, VisualSonics Inc. (Canada) . . . . . [8581-130]
- Deep tissue fluorescence imaging using digitally time-reversed ultrasound-encoded light**, Benjamin Judkewitz, Ying Min Wang, California Institute of Technology (USA); Charles A. DiMarzio, Northeastern Univ. (USA); Changhui Yang, California Institute of Technology (USA) . . . . . [8581-131]
- Modification of a commercially available photoacoustic imaging system for the use of 1064-nm and 532-nm wavelengths to assess photoacoustic contrast agents**, Andrew Heinmiller, VisualSonics Inc. (Canada); Kimberly A. Homan, Stanislav Y. Emelianov, The Univ. of Texas at Austin (USA); Adam J. Cole, Sanjiv S. Gambhir, Stanford Univ. (USA); Andrew Needles, Catherine Theodoropoulos, Desmond Hirson, VisualSonics Inc. (Canada) . . . . . [8581-132]
- Temperature-modulated fluorescence tomography: modulating tissue temperature using HIFU for high-resolution in vivo fluorescence tomography**, Tiffany C. Kwong, Yuting Lin, Univ. of California, Irvine (USA); Uma Sampathkumaran, Shaaz Ahmed, InnoSense LLC (USA); Gultekin Gulsen, Univ. of California, Irvine (USA) . . . . . [8581-133]
- Reconstruction in 2D nonhomogeneous photoacoustic tomography**, Cornelis H. Slump, Univ. Twente (Netherlands); Bernhard J. Hoenders, Univ. of Groningen (Netherlands) . . . . . [8581-134]



## Monday 4 February

## SESSION 6

Room: 309 (Esplanade) ..... Mon 8:15 am to 10:00 am

## Molecular Imaging and Nano Probes

Session Chair: **Stanislav Emelianov**, The Univ. of Texas at Austin (USA)8:15 am: **Nanoparticle-augmented photoacoustics: signal generation and optimization**, Stanislav Y. Emelianov, The Univ. of Texas at Austin (USA) ..... [8581-31]8:30 am: **Evaluation of genetically expressed absorbing proteins using photoacoustic spectroscopy**, Jan G. Laufer, Charité Universitätsmedizin Berlin (Germany); Amit Jathoul, Martin Pule, Paul C. Beard, Univ. College London (United Kingdom) ..... [8581-32]8:45 am: **Quantitative imaging of molecular targets using photoacoustic microscopy**, Jason R. Cook, Wolfgang Frey, Stanislav Y. Emelianov, The Univ. of Texas at Austin (USA) ..... [8581-33]9:00 am: **The influence of particle size on the photoacoustic conversion of gold nanorods embedded in biopolymeric scaffold**, Lucia Cavigli, Marella de Angelis, Fulvio Ratto, Paolo Matteini, Francesca Rossi, Istituto di Fisica Applicata Nello Carrara (Italy); Sonia Centi, Univ. degli Studi di Firenze (Italy); Roberto Pini, Istituto di Fisica Applicata Nello Carrara (Italy) ..... [8581-34]9:15 am: **A study on magnetic porous nano-silica beads with pore-filled gold nanorods as novel multi-functional contrast agents of photoacoustic imaging**, Chih-Tai Fan, National Tsing Hua Univ. (Taiwan); Po-Jung Chen, National Chiao Tung Univ. (Taiwan); You-Yin Chen, National Yang-Ming Univ. (Taiwan); Tzu-Chen Yen, Chang-Gung Memorial Hospital (Taiwan); Dean-Mo Liu, San-Yuan Chen, National Chiao Tung Univ. (Taiwan); Meng-Lin Li, National Tsing Hua Univ. (Taiwan) ..... [8581-35]9:30 am: **Photoacoustic signal enhancement using optical vaporization of ICG-loaded nanodroplets**, Alexander Hannah, Katheryne E. Wilson, Kimberly A. Homan, Stanislav Y. Emelianov, The Univ. of Texas at Austin (USA) ..... [8581-36]9:45 am: **Contrast enhancement by simultaneous ultrasound/laser pulse probing of gold nanosphere encapsulated emulsion beads**, Kjersta Larson Smith, Chen-Wei Wei, Univ. of Washington (USA); Ivan Pelivanov, Univ. of Washington (USA) and Moscow State Univ. (Russian Federation); Jinjun Xia, Danilo Pozzo, Thomas J. Matula, Matthew O'Donnell, Univ. of Washington (USA) ..... [8581-37]

Coffee Break ..... Mon 10:00 am to 10:30 am

## SESSION 7

Room: 309 (Esplanade) ..... Mon 10:30 am to 12:15 pm

## Novel Detectors and Techniques

Session Chair: **Lihang Wang**, Washington Univ. in St. Louis (USA)10:30 am: **Design considerations for ultrasound detectors in photoacoustic breast imaging**, Wenfeng Xia, Daniele Piras, Univ. Twente (Netherlands); Spiridon van Veldhoven, Christian Prins, Oldelft Ultrasound B.V. (Netherlands); Ton G. van Leeuwen, Wiendelt Steenbergen, Srirang Manohar, Univ. Twente (Netherlands) ..... [8581-38]10:45 am: **Microstructured polymer optical fiber interferometric sensor for photoacoustic endoscopic applications**, Daniel C. Gallego, Horacio L. Rivera, Univ. Carlos III de Madrid (Spain); Alessio Stefani, Ole Bang, Technical Univ. of Denmark (Denmark) ..... [8581-39]11:00 am: **Optical micromachined ultrasound transducer (OMUT) for high frequency imaging**, Mohammad Amin Tadayon, Univ. of Minnesota (USA); Shai Ashkenazi, Univ. of Minnesota, Twin Cities (USA) ..... [8581-40]11:15 am: **Optimized high-frequency ultrasonic transducer design for laser-scanning photoacoustic ophthalmoscopy**, Teng Ma, The Univ. of Southern California (USA); Xiangyang Zhang, Univ. of Southern California (USA); Ruimin Chen, K. Kirk Shung, Shuliang Jiao, Qifa Zhou, The Univ. of Southern California (USA) ..... [8581-41]11:30 am: **Optical detection of ultrasound using AFC-based quantum memory technique in cryogenic rare earth ion doped crystals**, Luke R. Taylor, Univ. of Otago (New Zealand); David L. McAuslan, Univ. of Queensland (Australia); Jevon J. Longdell, Univ. of Otago (New Zealand) ..... [8581-42]11:45 am: **Single-cell photoacoustic thermometry**, Liang S. Gao, Lidai Wang, Chiye Li, Haixin Ke, Lihong V. Wang, Washington Univ. in St. Louis (USA) ..... [8581-43]12:00 pm: **Wideband robust optical detector of ultrasound for intravascular applications**, Amir Rosenthal, Stephan Kellnberger, Miguel Angel Araque Caballero, Daniel Razansky, Vasilis Ntziachristos, Helmholtz Zentrum München GmbH (Germany) ..... [8581-44]

Lunch Break ..... Mon 12:15 pm to 1:30 pm

## SESSION 8

Room: 309 (Esplanade) ..... Mon 1:30 pm to 6:00 pm

## New Imaging Methods

Session Chairs: **Günther Paltauf**, Karl-Franzens-Univ. Graz (Austria); **A. Claude Boccara**, Institut Langevin (France)1:30 pm: **Fundamental limitations on the sensitivity of photoacoustics**, Amy M. Winkler, Konstantin I. Maslov, Lihong V. Wang, Washington Univ. in St. Louis (USA) ..... [8581-45]1:45 pm: **All-optical ultrasound detection using glancing angle deposited (GLAD) nano-structured films**, Parsin Haji Reza, Kathleen M. Krause, Michael J. Brett, Roger J. Zemp, Univ. of Alberta (Canada) ..... [8581-46]2:00 pm: **Photoacoustic tomography using parallel acoustic delay lines**, Murat Yapici, Khalifa Univ. of Science, Technology and Research (United Arab Emirates); Chulhong Kim, Univ. at Buffalo (USA); Cheng-Chung Chang, Texas A&M Univ. (USA); Mansik Jeon, Univ. at Buffalo (USA); Zijian Guo, Xin Cai, Washington Univ. in St. Louis (USA); Jun Zou, Texas A&M Univ. (USA); Lihong V. Wang, Washington Univ. in St. Louis (USA) ..... [8581-47]2:15 pm: **Photoacoustic imaging with orthogonal reflecting detector arrays**, Benjamin T. Cox, Univ. College London (United Kingdom); Leonid Kunyansky, The Univ. of Arizona (USA) ..... [8581-48]2:30 pm: **Functional photoacoustic ocular imaging**, Shuoqi Ye, Peking Univ. (China) and Shanghai Jiaotong Univ. (China); Ning Wu, Peking Univ. (China); Qiushi Ren, Peking Univ. (China) and Shanghai Jiaotong Univ. (China); Changhui Li, Peking Univ. (China) ..... [8581-99]2:45 pm: **Light emitting diodes as an excitation source for photoacoustic imaging**, Thomas J. Allen, Paul C. Beard, Univ. College London (United Kingdom) ..... [8581-50]

Coffee Break ..... Mon 3:00 pm to 3:30 pm

3:30 pm: **High-efficiency time-reversed ultrasonically encoded optical focusing using a large area photorefractive polymer**, Yuta Suzuki, Xiao Xu, Puxiang Lai, Lihong V. Wang, Washington Univ. in St. Louis (USA) ..... [8581-51]3:45 pm: **Frequency domain photoacoustic tomography with a near-IR laser diode**, Sergey A. Telenkov, Andreas Mandelis, Univ. of Toronto (Canada) ..... [8581-52]4:00 pm: **X-ray induced photoacoustic tomography**, Liangzhong Xiang, Bin Han, Stanford Univ. (USA); Colin M. Carpenter, Stanford Univ. School of Medicine (USA); Lei Xing, Stanford Univ. (USA) ..... [8581-53]4:15 pm: **in vivo universal flow cytometry integrating photoacoustic and fluorescence detection schematics**, Dmitry A. Nedosekin, Mustafa Sarimollaoglu, Stephen B. Foster, Ekaterina I. Galanzha, Vladimir P. Zharov, Univ. of Arkansas for Medical Sciences (USA) ..... [8581-54]4:30 pm: **Negative dynamic photoacoustic contrast: principle and application**, Ekaterina I. Galanzha, Mustafa Sarimollaoglu, Dmitry A. Nedosekin, Vladimir P. Zharov, Univ. of Arkansas for Medical Sciences (USA) ..... [8581-55]4:45 pm: **Investigation into alternative sources of positive and negative contrast for thermoacoustic imaging**, Olumide Ogunlade, Paul C. Beard, Univ. College London (United Kingdom) ..... [8581-56]5:00 pm: **Vibrational photoacoustic imaging with a Ba(NO<sub>3</sub>)<sub>2</sub> crystal based Raman laser**, Rui Li, Mikhail N. Slipchenko, Purdue Univ. (USA) ..... [8581-57]5:15 pm: **Optical phase conjugation applied to acousto-optic imaging of thick scattering media with a Nd:YVO<sub>4</sub> gain medium**, Baptiste Jayet, Institut Langevin (France); Jean-Pierre Huignard, Jphopto (France); Francois Ramaz, Institut Langevin (France) ..... [8581-58]5:30 pm: **Photoacoustic thermal diffusion flowmetry in tissue-mimicking phantoms**, Adi Sheinfeld, Avishay Eyal, Tel Aviv Univ. (Israel) ..... [8581-59]5:45 pm: **Bayesian-based weighted photoacoustic tomographic reconstruction in acoustic scattering media**, Xosé Luis Deán-Ben, Vasilis Ntziachristos, Daniel Razansky, Helmholtz Zentrum München GmbH (Germany) ..... [8581-60]

**POSTERS-MONDAY**

**Room: 103 (Exhibit Level) . . . . . Mon 5:30 pm to 7:30 pm**

Conference attendees are invited to attend the BiOS poster session on Monday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

**Modeling detector effects on optical phase conjugation of an ultrasonically encoded signal**, Joseph L. Hollmann, Charles A. DiMarzio, Northeastern Univ. (USA) . . . . . [8581-135]

**A novel fiber laser development for photoacoustic microscopy**, Seydi Yavas, Bilkent Univ. (Turkey); Esra Aytac Kiperoglu, Bogaziçi Univ. (Turkey); Burcin M. Unlu, Bogaziçi Univ. (Turkey); Fatih Ö. Ilday, Bilkent Univ. (Turkey) . . . . . [8581-136]

**Photoacoustic assessment of oxygen saturation: effect of red blood cell aggregation**, Eno Hysi, Ryerson Univ. (Canada) and Louisiana State Univ. (USA); Ratan K. Saha, Saha Institute of Nuclear Physics (India); Michael C. Kolios, Ryerson Univ. (Canada) . . . . . [8581-138]

**Model-based tomographic photoacoustic reconstruction in media with small speed of sound variations**, Xosé Luis Deán-Ben, Daniel Razansky, Vasilis Ntziachristos, Helmholtz Zentrum München GmbH (Germany) . . . . . [8581-139]

**Photoacoustic endoscopic imaging of the rabbit mediastinum**, Joon-Mo Yang, Christopher P. Favazza, Washington Univ. in St. Louis (USA); Ruimin Chen, The Univ. of Southern California (USA); Junjie Yao, Xin Cai, Chiye Li, Konstantin I. Maslov, Washington Univ. in St. Louis (USA); Qifa Zhou, K. Kirk Shung, The Univ. of Southern California (USA); Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-140]

**Photoacoustic radiofrequency spectroscopy (PA-RFS): a technique for monitoring absorber size and concentration**, Eno Hysi, Ryerson Univ. (Canada) and Louisiana State Univ. (USA); Dustin Dopsa, Michael C. Kolios, Ryerson Univ. (Canada) . . . . . [8581-141]

**Optoacoustic monitoring of cutting and heating processes during laser ablation**, Erwin Bay, Helmholtz Zentrum München GmbH (Germany); Alexandre Douplik, Ryerson Univ. (Canada); Daniel Razansky, Helmholtz Zentrum München GmbH (Germany) . . . . . [8581-142]

**Improving the quality of photoacoustic images using short-lag spatial coherence imaging technique**, Behnaz Pourebrahimi, Dustin Dopsa, Michael C. Kolios, Ryerson Univ. (Canada) . . . . . [8581-143]

**Application of a new sensing principle for photoacoustic imaging of point absorbers**, Zafer Doğan, Ivana Jovanovic, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Thierry Blu, The Chinese Univ. of Hong Kong (China); Dimitri Van De Ville, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8581-144]

**Carbon nanoparticles as a multimodal thermoacoustic and photoacoustic contrast agent**, Xin Cai, Lina Wu, Wenxin Xing, Jun Xia, Liming Nie, Ruiying Zhang, Samuel A. Wickline M.D., Gregory M. Lanza, Dipanjan Pan, Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-145]

**Classifying vascular tissues using photoacoustic signals**, Behnaz Pourebrahimi, Ryerson Univ. (Canada); Jason Zalev, Seno Medical Instruments, Inc. (USA); Joris Nofiele, Azza Al-Mahrouki, Gregory J. Czarnota, Sunnybrook Health Sciences Ctr. (Canada); Michael C. Kolios, Ryerson Univ. (Canada) . . . . . [8581-146]

**Combined optical- and acoustic-resolution photoacoustic microscopy based on an optical fiber bundle**, Wenxin Xing, Washington Univ. in St. Louis (USA); Lidai Wang, Washington Univ. in St. Louis (USA); Konstantin I. Maslov, Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-147]

**Combined 3D photoacoustic and 2D fluorescence imaging of indocyanine green (ICG) contrast agent flow**, Ivan Kosik, Astrid Chamson-Reig, Jeffrey J. L. Carson, The Univ. of Western Ontario (Canada) . . . . . [8581-148]

**On the sensor influence in photoacoustic signal produced by point-like source**, Carlos A. Bravo-Miranda, Arturo Gonzalez-Vega, Gerardo Gutierrez-Juarez, Univ. de Guanajuato (Mexico) . . . . . [8581-149]

**Iterative algorithm for multiple illumination photoacoustic tomography (MIPAT) using transducer channel data**, Peng Shao, Roger J. Zemp, Univ. of Alberta (Canada) . . . . . [8581-150]

**Development of a neonatal skull mimicking phantom for photoacoustic imaging of the infant brain**, Pantea Tavakolian, Jeffrey J. L. Carson, Lawson Health Research Institute (Canada) and The Univ. of Western Ontario (Canada); Astrid Chamson-Reig, Lawson Health Research Institute (Canada); Fartash Vasefi, SMI (USA) and Lawson Health Research Institute (Canada); Rhiannon Todd, Lawson Health Research Institute (Canada); Keith St. Lawrence, Ivan Kosik, Lawson Health Research Institute (Canada) and The Univ. of Western Ontario (Canada) . . . . . [8581-151]

**Potential for photoacoustic imaging of the neonatal brain**, Pantea Tavakolian, Jeffrey J. L. Carson, Lawson Health Research Institute (Canada) and The Univ. of Western Ontario (Canada); Astrid Chamson-Reig, Lawson Health Research Institute (Canada); Keith St. Lawrence, Lawson Health Research Institute (Canada) and The Univ. of Western Ontario (Canada); Ivan Kosik, Lawson Health Research Institute (USA) and The Univ. of Western Ontario (Canada) . . . . . [8581-152]

**A photoacoustic endoscope designed for human urogenital imaging**, Chiye Li, Joon-Mo Yang, Washington Univ. in St. Louis (USA); Ruimin Chen, The Univ. of Southern California (USA); Konstantin I. Maslov, Washington Univ. in St. Louis (USA); Qifa Zhou, K. Kirk Shung, The Univ. of Southern California (USA); Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-153]

**Intravascular Imaging using a frequency domain photoacoustic method**, Robin F. Castellino, Univ. of Toronto (Canada) and Sunnybrook Research Institute (Canada); Michael Hynes, Sunnybrook Research Institute (Canada); Chelsea E. Munding, Univ. of Toronto (Canada) and Sunnybrook Research Institute (Canada); Sergey A. Telenkov, Andreas Mandelis, Univ. of Toronto (Canada); F. Stuart Foster, Univ. of Toronto (Canada) and Sunnybrook Research Institute (Canada) . . . . . [8581-154]

**Noninvasive photoacoustic computed tomography of mouse brain metabolism in vivo**, Junjie Yao, Jun Xia, Konstantin I. Maslov, MohammadReza NasiriAvanaki, Washington Univ. in St. Louis (USA); Vassiliy Tsytarev, Univ. of Maryland School of Medicine (USA); Alexei Demchenko, Univ. of Missouri-St. Louis (USA); Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-155]

**Improving photoacoustic imaging contrast of brachytherapy seeds**, Leo L. J. Pan, Ali Baghani, Robert N. Rohling, Purang Abolmaesumi, Septimiu E. Salcudean, Shuo Tang, The Univ. of British Columbia (Canada) . . . . . [8581-156]

**Acoustic and the photoacoustic scattering from transverse isotropic tissues**, Yae-lin Sheu, I-Ching Ho, Pai-Chi Li, National Taiwan Univ. (Taiwan) . . . . . [8581-157]

**A photoacoustic technique to measure the properties of single cells**, Eric M. Stroh, Elizabeth Berndt, Michael C. Kolios, Ryerson Univ. (Canada) . . . . . [8581-158]

**Simulating the phenomenon of digitally time-reversed ultrasound-encoded light**, Snow H. Tseng, Wei-Lun Ting, Yi-An Huang, National Taiwan Univ. (Taiwan) . . . . . [8581-159]

**Flow measurement by temporal-correlation laser scanning photoacoustic microscopy**, Wenzhong Liu, Wei Song, Qing Wei, Hao F. Zhang, Northwestern Univ. (USA) . . . . . [8581-160]

**Feasibility study of two-photon absorption-dependent photoacoustic microscopy**, Dongyuan Chen, Northwestern Univ. (USA); Shuliang Jiao, The Univ. of Southern California (USA); Hao F. Zhang, Northwestern Univ. (USA) . . . . . [8581-161]

**Monitoring of the degradation in the rat's articular cartilage inducing osteoarthritis using 128 channel real time photoacoustic tomography**, Chul-Gyu Song, Dong Ho Shin, Sang Hun Ryu, Yong Kyun Oh, Jeong Hwan Seo, Chonbuk National Univ. (Korea, Republic of) . . . . . [8581-162]

**Study of sickle blood cells by integrated photoacoustic and photothermal confocal microscopy**, Dmitry A. Nedosekin, Stephen B. Foster, Univ. of Arkansas for Medical Sciences (USA); Mikhail A. Proskurnin, Lomonosov Moscow State Univ. (Russian Federation); Ekaterina I. Galanzha, Vladimir P. Zharov, Univ. of Arkansas for Medical Sciences (USA) . . . . . [8581-163]

**in vitro universal flow cytometry integrating photoacoustic, fluorescent, and scattering techniques**, Dmitry A. Nedosekin, Mustafa Sarimollaoglu, Stephen B. Foster, Ekaterina I. Galanzha, Vladimir P. Zharov, Univ. of Arkansas for Medical Sciences (USA) . . . . . [8581-164]

**Improvement in quantifying optical absorption coefficients based on continuous wavelet-transform by correcting distortions in temporal photoacoustic waveforms**, Takeshi Hirasawa, Masanori Fujita M.D., Shinpei Okawa, Toshihiro Kushibiki, Miya Ishihara, National Defense Medical College (Japan) . . . . . [8581-165]

**A surprisingly simple analytic reconstruction formula for photoacoustic computed tomography in a spherical geometry**, Kun Wang, Mark A. Anastasio, Washington Univ. in St. Louis (USA) . . . . . [8581-166]

## Tuesday 5 February

## SESSION 9

Room: 309 (Esplanade) ..... Tue 8:00 am to 10:15 am

## Functional Imaging of Blood and Oxygenation

Session Chair: Rinat O. Esenaliev,  
The Univ. of Texas Medical Branch (USA)8:00 am: **in vivo oxygen sensing using lifetime based photoacoustic measurements**, Aniruddha Ray, Univ. of Michigan (USA); Justin R. Rajian, Univ. of Michigan Medical School (USA); Yong-Eun Lee Koo, Univ. of Michigan (USA); Xueding Wang, Univ. of Michigan Health System (USA); Raoul Kopelman, Univ. of Michigan (USA) ..... [8581-61]8:15 am: **Real-time photoacoustic imaging of rat deep brain: hemodynamic responses to hypoxia**, Satoko Kawachi, National Defense Medical College (Japan); Taiichiro Ida, Tomoya Hosaka, Yasushi Kawaguchi, Advantest Corp. (Japan); Hiroshi Nawashiro, Tokorozawa Central Hospital (Japan); Shunichi Sato, National Defense Medical College (Japan) ..... [8581-62]8:30 am: **Mapping tissue oxygen in vivo by photoacoustic lifetime imaging (PALI)**, Qi Shao, Ekaterina Morgounova, Jeung-Hwan Choi, Chunlan Jiang, Univ. of Minnesota (USA); John C. Bischof, Univ. of Minnesota, Twin Cities (USA); Shai Ashkenazi, Univ. of Minnesota (USA) ..... [8581-63]8:45 am: **Video-rate functional photoacoustic microscopy of mouse cardiovascular dynamics**, Lidai Wang, Konstantin I. Maslov, Wenxin Xing, Alejandro Garcia-Urbe, Washington Univ. School of Medicine in St. Louis (USA); Lihong V. Wang, Washington Univ. in St. Louis (USA) ..... [8581-64]9:00 am: **Acoustic resolution photoacoustic Doppler blood flow measurements using time-domain cross-correlation**, Joanna Bruncker, Paul C. Beard, Univ. College London (United Kingdom) ..... [8581-65]9:15 am: **Real-time multispectral 3D photoacoustic imaging of blood phantoms**, Ivan Kosik, Jeffrey J. L. Carson, The Univ. of Western Ontario (Canada) ..... [8581-66]9:30 am: **Vessel filtering of photoacoustic images**, Tanmayi Oruganti, Australian National Univ. (Australia); Jan G. Lauffer, Charite Universitätsmedizin Berlin (Germany); Bradley E. Treeby, Australian National Univ. (Australia) ..... [8581-67]9:45 am: **Frequency-based photoacoustic characterization of vascular architecture in an in vivo murine model**, Michelle Patterson, Univ. of Prince Edward Island (Canada); Christopher Riley, Atlantic Veterinary College (Canada); Michael C. Kolios, Ryerson Univ. (Canada); William M. Whelan, Univ. of Prince Edward Island (Canada) ..... [8581-68]10:00 am: **Silica-coated gold nanorods for enhanced sensitivity of temperature mapping during photothermal therapy**, Yun-Sheng Chen, Wolfgang Frey, Salavat Aglyamov, Stanislav Y. Emelianov, The Univ. of Texas at Austin (USA) ..... [8581-69]

Coffee Break ..... Tue 10:15 am to 10:45 am

## SESSION 10

Room: 309 (Esplanade) ..... Tue 10:45 am to 12:00 pm

## Thermal and HIFU Therapy Monitoring

Session Chair: **Wiendelt Steenbergen**, Univ. Twente (Netherlands)10:45 am: **Photoacoustic thermal-strain temperature imaging for plasmonic photothermal therapy**, Chia-Chin Li, National Tsing Hua Univ. (Taiwan); Chia-Yu Li, Churng-Ren C. Wang, National Chung Cheng Univ. (Taiwan); Tzu-Chen Yen, Chang-Gung Memorial Hospital (Taiwan); Meng-Lin Li, National Tsing Hua Univ. (Taiwan) ..... [8581-70]11:00 am: **Visualization of focused ultrasound and its cavitation behaviors depending on surface boundary conditions**, Taehwa Lee, Hyoung won Baac, Jong G. Ok, L. Jay Guo, Univ. of Michigan (USA) ..... [8581-71]11:15 am: **Thermal treatment monitoring using a novel dual-wavelength photoacoustic technique**, Yi-Sing Hsiao, Univ. of Michigan (USA); Xueding Wang, Univ. of Michigan Health System (USA); Cheri X. Deng, Univ. of Michigan (USA) ..... [8581-72]11:30 am: **High-precision targeted cell therapy by laser-generated focused ultrasound**, Hyoung Won Baac, Yu-Chih Chen, John Frampton, Jong G. Ok, Taehwa Lee, Kyu-Tae Lee, Euisik Yoon, Shuichi Takayama, L. Jay Guo, Univ. of Michigan (USA) ..... [8581-73]11:45 am: **Enhanced delivery of gold nanoparticles by acoustic cavitation for photoacoustic imaging and photothermal therapy**, Yu-Hsin Wang, Ai-Ho Liao, National Taiwan Univ. (Taiwan); Jia-Yu Lin, Cheng-ru Lee, National Chung Cheng Univ. (Taiwan); Tzu-Ming Liu, National Taiwan Univ. (Taiwan); Churng-Ren Wang, National Chung Cheng Univ. (Taiwan); Pai-Chi Li, National Taiwan Univ. (Taiwan) ..... [8581-74]

Lunch Break ..... Tue 12:00 pm to 1:30 pm

**Photoacoustic spectromicroscopy beyond the diffraction and spectral limits**, Vladimir P. Zharov, Dmitry A. Nedosekin, Ekaterina I. Galanzha, Univ. of Arkansas for Medical Sciences (USA); Alexandru S. Biris, Univ. of Arkansas at Little Rock (USA) ..... [8581-167]**Photoacoustic microscopy for ovarian tissue characterization**, Tianheng Wang, Yi Yang, Univ. of Connecticut (USA); Molly Brewer, Univ. of Connecticut Health Ctr. (USA); Qing Zhu, Univ. of Connecticut (USA) ..... [8581-168]**Iterative reconstruction method for photoacoustic section imaging with integrating cylindrical detectors**, Günther Paltauf, Robert Nuster, Gerhild Wurzing, Sibylle Gratt, Karl-Franzens-Univ. Graz (Austria) ..... [8581-169]**Photoacoustic monitoring of circulating tumor cells released during medical procedures**, Mazen A. Juratli M.D., Ekaterina I. Galanzha, Mustafa Sarimollaoglu, Dmitry A. Nedosekin, James Y. Suen M.D., Vladimir P. Zharov, Univ. of Arkansas for Medical Sciences (USA) ..... [8581-170]**Fluctuation photoacoustic cytometry with high speed spectral signal analysis**, Mustafa Sarimollaoglu, Yulian A. Menyayev, Univ. of Arkansas for Medical Sciences (USA); Coskun Bayrak, Univ. of Arkansas at Little Rock (USA); Ekaterina I. Galanzha, Vladimir P. Zharov, Univ. of Arkansas for Medical Sciences (USA) ..... [8581-171]**Photoacoustic monitoring of clot formation during surgery and blood disorders**, Mazen A. Juratli M.D., Ekaterina I. Galanzha, Mustafa Sarimollaoglu, Dmitry A. Nedosekin, James Y. Suen M.D., Vladimir P. Zharov, Univ. of Arkansas for Medical Sciences (USA) ..... [8581-172]**Single wall carbon nanotube/bis carboxylic acid-ICG as a sensitive contrast agent for in vivo tumor imaging in photoacoustic tomography**, Saeid Zanganeh, Hai Li, Patrick D. Kumavor, Umar S. Alqasemi, Andres Aguirre, Innus Mohammad, Michael B. Smith, Qing Zhu, Univ. of Connecticut (USA) ..... [8581-173]**Real-time interlaced ultrasound and photoacoustic system for in vivo ovarian imaging**, Umar S. Alqasemi, Hai Li, Guangqian Yuan, Patrick D. Kumavor, Qing Zhu, Univ. of Connecticut (USA) ..... [8581-174]**Image reconstruction and system optimization for three-dimensional speed of sound tomography using laser-induced ultrasound**, Fatima Anis, Washington Univ. in St. Louis (USA); Travis Hernandez, Vyacheslav V. Navrotsky, André Conjusteau, Sergey A. Ermilov, Alexander A. Oraevsky, TomoWave Laboratories, Inc. (USA); Mark A. Anastasio, Washington Univ. in St. Louis (USA) ..... [8581-175]**Generation of wide-directivity broadband ultrasound by short laser pulses**, André Conjusteau, Vyacheslav V. Navrotsky, Sergey A. Ermilov, Alexander A. Oraevsky, TomoWave Laboratories, Inc. (USA) ..... [8581-176]**Towards non-invasive in vivo measurements of nanoparticle concentrations using 3D photoacoustic tomography**, Dmitri Tsyboulski, Anton Liopo, Richard Su, Sergey A. Ermilov, André Conjusteau, Vyacheslav V. Navrotsky, Alexander A. Oraevsky, TomoWave Laboratories, Inc. (USA) ..... [8581-177]**Magnetic trapping with simultaneous photoacoustic detection of molecularly targeted rare circulating tumor cells**, Chen-Wei Wei, Jinjun Xia, Univ. of Washington (USA); Ivan Pelivanov, Univ. of Washington (USA) and Moscow State Univ. (Russian Federation); Xiaoge Hu, Xiaohu Gao, Matthew O'Donnell, Univ. of Washington (USA) ..... [8581-178]**Iterative image reconstruction in photoacoustic tomography using Kaiser-Bessel windows**, Robert W. Schoonover, Kun Wang, Mark A. Anastasio, Washington Univ. in St. Louis (USA) ..... [8581-179]**Noninvasive photoacoustic system for rapid diagnosis and management of circulatory shock**, Irene Y. H. Petrov, Michael Kinsky, Yuriy Y. Petrov, Andrey Petrov, Sheryl N. Henkel, Roger Seeton, Rinat O. Esenaliev, Donald S. Prough, The Univ. of Texas Medical Branch (USA) ..... [8581-180]**Cerebral venous blood oxygenation monitoring during hyperventilation in healthy volunteers with a novel photoacoustic system**, Andrey Petrov, Donald S. Prough, Irene Y. H. Petrova, Yuriy Y. Petrov, Sheryl N. Henkel, Roger Seeton, Rinat O. Esenaliev, The Univ. of Texas Medical Branch (USA) ..... [8581-181]**Contour-scanning optical-resolution photoacoustic microscopy**, Brian T. Soetikno, Chenghung Yeh, Song Hu, Qiaonan Zhong, Konstantin I. Maslov, Lihong V. Wang, Washington Univ. in St. Louis (USA) ..... [8581-182]**Translation of magnetomotive optical coherence tomography to magnetomotive ultrasound for imaging SPIO labeled platelets**, Ava G. Pope, Gongting Wu, Elizabeth Merricks, Timothy Nichols, Tomek Czernuszewicz, Caterina Gallippi, Amy L. Oldenburg, The Univ. of North Carolina at Chapel Hill (USA) ..... [8581-183]**Dynamic contrast enhanced 3D photoacoustic imaging**, Philip Wong, The Univ. of Western Ontario (Canada); Jeffrey J. L. Carson, Lawson Health Research Institute (Canada); Ivan Kosik, The Univ. of Western Ontario (Canada) ..... [8581-184]



**SESSION 11**

**Room: 309 (Esplanade) . . . . . Tue 1:30 pm to 5:30 pm**

**Microscopy**

Session Chair: **Lihong V. Wang**, Washington Univ. in St. Louis (USA)

1:30 pm: **Identification of rolling circulating tumor cells using photoacoustic time-of-flight method**, Mustafa Sarimollaoglu, Dmitry A. Nedosekin, Ekaterina I. Galanzha, Vladimir P. Zharov, Univ. of Arkansas for Medical Sciences (USA) . . . . . [8581-75]

1:45 pm: **Laser-scanning photoacoustic microscopy with ultrasonic phased array transducer**, Xiaojing Liu, Fan Zheng, Chi-Tat Chiu, Bill L. Zhou, K. Kirk Shung, The Univ. of Southern California (USA); Hao F. Zhang, Northwestern Univ. (USA); Shuliang Jiao, The Univ. of Southern California (USA) . . . . [8581-76]

2:00 pm: **Reflection-mode multifocal optical-resolution photoacoustic microscopy**, Guo Li, Konstantin I. Maslov, Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-77]

2:15 pm: **Water-Immersion MEMS scanning mirror designed for wide-field fast-scanning photoacoustic microscopy**, Junjie Yao, Washington Univ. in St. Louis (USA); Chih-Hsien Huang, Texas A&M Univ. (USA); Catherine Martel, Washington Univ. School of Medicine in St. Louis (USA); Konstantin I. Maslov, Washington Univ. in St. Louis (USA); Lidai Wang, Washington Univ. School of Medicine in St. Louis (USA); Joon-Mo Yang, Liang S. Gao, Washington Univ. in St. Louis (USA); Gwendalyn Randolph, Washington Univ. School of Medicine in St. Louis (USA); Jun Zou, Texas A&M Univ. (USA); Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-78]

2:30 pm: **Photoacoustic microscopy of neovascularization in three-dimensional porous scaffolds in vivo**, Xin Cai, Washington Univ. in St. Louis (USA); Yu Zhang, Georgia Institute of Technology (USA) and Emory Univ. (USA); Li Li, Massachusetts General Hospital (USA) and Harvard Medical School (USA); Sung-Wook Choi, The Catholic Univ. of Korea (Korea, Republic of); Matthew R. MacEwan, Junjie Yao, Washington Univ. in St. Louis (USA); Chulhong Kim, Univ. at Buffalo (USA); Younan Xia, Georgia Institute of Technology (USA) and Emory Univ. (USA); Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . [8581-79]

2:45 pm: **in vivo multi-wavelength optical-resolution photoacoustic microscopy with stimulated Raman scattering fiber-laser source**, Parsin Haji Reza, Alexander Forbrich, Wei Shi, Roger J. Zemp, Univ. of Alberta (Canada) . . . . . [8581-80]

Coffee Break . . . . . Tue 3:00 pm to 3:30 pm

3:30 pm: **Volumetric imaging of single red blood cells using multiphoton photoacoustic microscopy**, Ryan L. Shelton, Scott P. Mattison, Brian E. Applegate, Texas A&M Univ. (USA) . . . . . [8581-81]

3:45 pm: **Non-linear photoacoustic microscopy with optical sectioning**, Amos Danielli, Konstantin I. Maslov, Alejandro Garcia-Urbe, Amy M. Winkler, Chiye Li, Lidai Wang, Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-82]

4:00 pm: **Photoacoustic microscopy of blood pulse wave**, Chenghung Yeh, Song Hu, Konstantin I. Maslov, Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-83]

4:15 pm: **Optical-resolution photoacoustic microscopy with dual scanning modes**, Song Hu, Chenghung Yeh, Konstantin I. Maslov, Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-84]

4:30 pm: **FRET photoacoustic microscopy**, Yu Wang, Lihong V. Wang, Washington Univ. in St. Louis (USA) . . . . . [8581-85]

4:45 pm: **Focus-free optical-resolution photoacoustic microscopy using an all-fiber Bessel beam generator**, Chulhong Kim, Univ. at Buffalo (USA); Sung-Jo Park, Kyungpook National Univ. (Korea, Republic of); Jongki Kim, Sungrae Lee, Yonsei Univ. (Korea, Republic of); Mansik Jeon, Univ. at Buffalo (USA); Jeehyun Kim, Kyungpook National Univ. (Korea, Republic of); Kyunghwan K. Oh, Yonsei Univ. (Korea, Republic of) . . . . . [8581-86]

5:00 pm: **All-optical photoacoustic microscopy using a MEMS scanning mirror**, Sung-Liang Chen, Univ. of Michigan (USA); Zhixing Xie, Univ. of Michigan Medical School (USA); Tao Ling, Univ. of Michigan (USA); Xunbin Wei, Shanghai Jiao Tong Univ. (China); L. Jay Guo, Univ. of Michigan (USA); Xueding Wang, Univ. of Michigan Health System (USA) . . . . . [8581-87]

5:15 pm: **Multimodal optoacoustic and multiphoton fluorescence microscopy**, Gali Sela, Technion-Israel Institute of Technology (Israel); Daniel Razansky, Technische Univ. München (Germany); Shy Shoham, Technion-Israel Institute of Technology (Israel) . . . . . [8581-88]

**BEST PAPER AWARD**

**Room: 309 (Esplanade) . . . . . 5:30 pm to 6:00 pm**

**Seno Medical Best Paper Award**

Session Chairs: **Alexander A. Oraevsky**, TomoWave Laboratories, Inc. (USA); **Lihong V. Wang**, Washington Univ. in St. Louis (USA)

Seno Medical will sponsor two awards for this conference: best paper and best poster presented. Authors: to compete for these awards, please e-mail a 3-page summary of your accepted paper, along with the abstract, to the conference Chairs by 16 January 2012 (Alexander Oraevsky: aao@tomowave.com and Lihong Wang: lhwang@wustl.edu).

Prize donated by **Seno Medical** (USA).

# Biophotonics and Immune Responses VIII

Conference Chair: **Wei R. Chen**, Univ. of Central Oklahoma (USA)

Program Committee: **Yuncheng Ge**, Beijing Glass Research Institute (China); **Sandra O. Gollnick**, Roswell Park Cancer Institute (USA); **Yueqing Gu**, China Pharmaceutical Univ. (China); **Michael R. Hamblin**, Wellman Ctr. for Photomedicine (USA); **Tomas Hode**, Immunophotonics, Inc. (USA); **Yih-Chih Hsu**, Chung Yuan Christian Univ. (Taiwan); **Zheng Huang**, Univ. of Colorado Denver (USA); **Mladen Korbelik**, The BC Cancer Agency Research Ctr. (Canada); **Mark Naylor**, Dermatology Associates of San Antonio (USA); **Karl-Goran Tranberg**; **Valery V. Tuchin**, N.G. Chernyshevsky Saratov State Univ. (Russian Federation); **Xunbin Wei**, Fudan Univ. (China); **Da Xing**, South China Normal Univ. (China); **Vladimir P. Zharov**, Univ. of Arkansas for Medical Sciences (USA)



## Monday 4 February

### SESSION 1

Room: 200 (Mezzanine) . . . . . Mon 8:50 am to 10:00 am

#### Immune Responses in PDT

Session Chairs: **Mladen Korbelik**, The BC Cancer Agency Research Ctr. (Canada); **Zheng Huang**, Univ. of Colorado Denver (USA)

8:50 am: **Novel insights in photodynamic therapy-generated cancer vaccines** (*Invited Paper*), Mladen Korbelik, The BC Cancer Agency Research Ctr. (Canada) . . . . . [8582-5]

9:15 am: **Photodynamic therapy stimulates anti-tumor immune response in mouse models: role of regulatory T-cells, anti-tumor antibodies, and immune attack on brain metastases.** (*Invited Paper*), Michael R. Hamblin, Hoon Chung, Masayoshi Kawakubo M.D., Pawel A. Mroz M.D., Wellman Ctr. for Photomedicine (USA) . . . . . [8582-6]

9:40 am: **Immune responses in topical photodynamic therapy of skin carcinomas in a hairless mouse model**, Hongwei Wang, Jingjing Li, Ting Lv, Qingfeng Tu, Xiu-li Wang, Shanghai Skin Diseases and STD Hospital (China); Zheng Huang, Univ. of Colorado Denver (USA) . . . . . [8582-7]

Coffee Break . . . . . Mon 10:00 am to 10:30 am

### SESSION 2

Room: 200 (Mezzanine) . . . . . Mon 10:30 am to 11:10 am

#### in situ Immunotherapy: Clinical Studies

Session Chairs: **Michael R. Hamblin**, Wellman Ctr. for Photomedicine (USA); **Mark Naylor**, Dermatology Associates of San Antonio (USA)

10:30 am: **In situ photoimmunotherapy for melanoma**, Mark F. Naylor M.D., Dermatology Associates of San Antonio (USA); Robert E. Nordquist, Wound Healing of Oklahoma, Inc. (USA); John A. Lunn M.D., Commonwealth Medical Research Institute (Bahamas); Orn Adalsteinsson, International Strategic Cancer Alliance (USA); Tomas Hode, Immunophotonics, Inc. (USA); Hong Liu, The Univ. of Oklahoma (USA); Wei R. Chen, Univ. of Central Oklahoma (USA) . . . . [8582-9]

10:50 am: **Survival of late-stage breast cancer patients after the treatment of laser immunotherapy**, Tomas Hode, Immunophotonics, Inc. (USA); Orn Adalsteinsson, International Strategic Cancer Alliance (USA); Gabriela L. Ferrel M.D., Hospital Nacional Edgardo Rebagliati Martins (Peru); John A. Lunn M.D., Commonwealth Medical Research Institute (Bahamas); Xiaosong Li, Chinese PLA General Hospital (China); Robert E. Nordquist, Wound Healing of Oklahoma, Inc. (USA); Wei R. Chen, Univ. of Central Oklahoma (USA) . [8582-10]

### SESSION 3

Room: 200 (Mezzanine) . . . . . Mon 11:10 am to 12:10 pm

#### Selective Photothermal Effects

Session Chairs: **Melville B. Vaughan**, Univ. of Central Oklahoma (USA); **Tomas Hode**, Immunophotonics, Inc. (USA)

11:10 am: **Interstitial laser immunotherapy: a preliminary in vivo study**, Cody Bahavar, Jessica D. Goddard, Jessnie Jose, Univ. of Central Oklahoma (USA); Roman F. Wolf D.V.M., Eric Howard, The Univ. of Oklahoma Health Sciences Ctr. (USA); Hong Liu, The Univ. of Oklahoma (USA); Tomas Hode, Immunophotonics, Inc. (USA); Robert E. Nordquist, Wound Healing of Oklahoma, Inc. (USA); Wei R. Chen, Univ. of Central Oklahoma (USA) . [8582-11]

11:30 am: **Biological effects of near-infrared lasers on myofibroblast cellular differentiation and contraction**, Melville B. Vaughan, Jessica D. Goddard, Jessnie Jose, Chelsea Spencer, Joseph R. Acquaviva, Wei R. Chen, Univ. of Central Oklahoma (USA) . . . . . [8582-12]

11:50 am: **Monitoring tissue temperature distribution for photothermal cancer therapy based on photoacoustic imaging: a simulated analysis**, Zhifang Li, Hui Li, Fujian Normal Univ. (China); Wei R. Chen, Univ. of Central Oklahoma (USA) . . . . . [8582-13]

Lunch Break . . . . . Mon 12:10 pm to 1:30 pm

### SESSION 4

Room: 200 (Mezzanine) . . . . . Mon 1:30 pm to 2:50 pm

#### Laser-Nanotechnology in Cancer Treatment

Session Chairs: **Yueqing Gu**, China Pharmaceutical Univ. (China); **Yih-Chih Hsu**, Chung Yuan Christian Univ. (Taiwan)

1:30 pm: **Folate receptor-mediated tumor-targeted upconversion nanocomplex for photodynamic therapy triggered by near-infrared light**, Sisi Cui, Haiyan Chen, China Pharmaceutical Univ. (China); Zhiyu Qian, Nanjing Univ. of Aeronautics and Astronautics (China); Wei R. Chen, Univ. of Central Oklahoma (USA); Yueqing Gu, China Pharmaceutical Univ. (China) . . . [8582-14]

1:50 pm: **Combined photothermal therapy and chemotherapy in cancer using HER-2 targeted PLGA nanoparticles**, Anthony J. McGoron, Supriya Srinivasan, Tingjun Lei, Florida International Univ. (USA); Yuan Tang, Temple Univ. (USA); Romila Manchanda, Florida International Univ. (USA) . . . . [8582-15]

2:10 pm: **Photothermal effects of immunologically modified carbon nanotubes**, Wei R. Chen, Univ. of Central Oklahoma (USA); Xiaosong Li M.D., Chinese PLA General Hospital (China); Okhil Kumar Nag, Jessica D. Goddard, Joseph Acquaviva, Univ. of Central Oklahoma (USA); Yongqiang Tan, Southwest NanoTechnologies Inc. (USA); Tomas Hode, Immunophotonics, Inc. (USA); Hong Liu, The Univ. of Oklahoma (USA) . . . . . [8582-16]

2:30 pm: **in vitro study of combination therapy using specific RNAi and PDT**, Yih-Chih Hsu, Chung Yuan Christian Univ. (Taiwan); Leaf Huang, UNC Eshelman School of Pharmacy (USA) . . . . . [8582-8]

**SESSION 5**

**Room: 200 (Mezzanine) . . . . . Mon 2:50 pm to 4:20 pm**

**In vivo Imaging of Immune Activities**

Session Chairs: **Ekaterina I. Galanzha**, Univ. of Arkansas for Medical Sciences (USA); **Xunbin Wei**, Fudan Univ. (China)

2:50 pm: **in vivo universal flow cytometry for detection of circulating tumor cells in blood, lymph, and cerebrospinal fluid** (*Invited Paper*), Ekaterina I. Galanzha, Univ. of Arkansas for Medical Sciences (USA). . . . . [8582-17]

Coffee Break . . . . . Mon 3:15 pm to 3:35 pm

3:35 pm: **in vivo flow cytometry visualizes the effects of tumor resection on metastasis by real-time monitoring of rare circulating cancer cells** (*Invited Paper*), Xunbin Wei, Shanghai Jiao Tong Univ. (China). . . . . [8582-18]

4:00 pm: **Real-time monitoring of drug carrier pharmacokinetics with ultra-fast photoacoustic flow cytometry**, Mustafa Sarimollaoglu, Dmitry A. Nedosekin, Ekaterina I. Galanzha, Vladimir P. Zharov, Univ. of Arkansas for Medical Sciences (USA) . . . . . [8582-19]

**SESSION 6**

**Room: 200 (Mezzanine) . . . . . Mon 4:20 pm to 5:40 pm**

**Novel Detection Techniques**

Session Chair: **Hong Liu**,  
The Univ. of Oklahoma Bioengineering Ctr. (USA)

4:20 pm: **Quantitative analysis of contrast to noise ratio using a phase contrast x-ray imaging prototype**, Muhammad U. Ghani, Di Wu, Minhua Kang, Yuhua Li, The Univ. of Oklahoma (USA); Wei R. Chen, Univ. of Central Oklahoma (USA); Xizeng Wu, The Univ. of Alabama at Birmingham (USA); Hong Liu, The Univ. of Oklahoma (USA). . . . . [8582-1]

4:40 pm: **The impact of the motion blur on pathological chromosome image quality: a preliminary study**, Yuchen Qiu, Yuhua Li, The Univ. of Oklahoma (USA); Bin Zheng, Univ. of Pittsburgh (USA); Shibo Li M.D., Univ. of Oklahoma Health Sciences Ctr. (USA); Wei R. Chen, Univ. of Central Oklahoma (USA); Hong Liu, The Univ. of Oklahoma (USA). . . . . [8582-2]

5:00 pm: **An intrinsic method in characterizing the potential and imaging quality of a phase-contrast tomosynthesis prototype by using phantoms**, Di Wu, Hui Miao, Yuhua Li, The Univ. of Oklahoma (USA); Wei R. Chen, Univ. of Central Oklahoma (USA); Xizeng Wu, The Univ. of Alabama at Birmingham (USA); Hong Liu, The Univ. of Oklahoma (USA) . . . . . [8582-3]

5:20 pm: **Application of multi-exposure time laser speckle imaging in mouse ear swelling test for weak allergens**, Vyacheslav Kalchenko, Yuri Kuznetsov, Weizmann Institute of Science (Israel); Igor V. Meglinski, Univ. of Otago (New Zealand); Alon Harmelin, Weizmann Institute of Science (Israel) . . . . . [8582-4]

**POSTERS-MONDAY**

**Room: 103 (Exhibit Level) . . . . . Mon 5:30 pm to 7:30 pm**

Conference attendees are invited to attend the BIOS poster session on Monday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Immune responses induced by immunologically modified carbon nanotube under NIR laser irradiation**, Wei R Chen, Univ. of Central Oklahoma (USA); Feifan Zhou, MOE Key Lab. of Laser Life Science & Institute of Laser Life Science (China); Xiaosong Li M.D., Chinese PLA General Hospital (USA); Jessica D. Goddard, Jessnie Jose, Univ. of Central Oklahoma (USA); Roman F. Wolf D.V.M., Eric Howard, The Univ. of Oklahoma Health Sciences Ctr. (USA); Tomas Hode, ImmunoPhotonics, Inc. (USA); Hong Liu, The Univ. of Oklahoma (USA) . . . . . [8582-20]

**Synthesis and aggregation-mediated optical properties of pH-responsive novel conjugated polyampholytes**, Okhil K. Nag, The Univ. of Oklahoma Health Sciences Ctr. (USA) . . . . . [8582-21]

**Assessments of urine cofilin-1 in patients hospitalized in the intensive care units with acute kidney injury**, Yi-Jang Lee, National Yang-Ming Univ. (Taiwan); Cheng-Han Chao, National Taiwan Univ. Hospital (Taiwan); Ying-Feng Chang, Chien Chou, Molecular Medicine Research Ctr., Chang Gung Univ. (Taiwan) . . . . . [8582-22]

**Gemcitabine induces caspase-dependent apoptosis in A549 cells**, Chubiao Zhao, Weijie Gao, Tong-Sheng Chen, South China Normal Univ. (China) . . . . . [8582-23]

**Paclitaxel crystal in Paclitaxel injection aqueous solution**, Tong-Sheng Chen, Jingqin Chen, South China Normal Univ. (China) . . . . . [8582-24]

**Sodium nitroprusside induces apoptosis of rabbit chondrocytes**, Qian Liang, Xiao-ping Wang, The First Affiliated Hospital of Jinan Univ. (China); Tong-Sheng Chen, South China Normal Univ. (China) . . . . . [8582-25]

**Using immunoadjuvant agent glycated chitosan to enhance anti-tumor immunity induced by HIFU**, Ying-Ling Chen, National Yang-Ming Univ. (Taiwan); Wei R. Chen, Univ. of Central Oklahoma (USA); Fang-Yi Yang, National Yang-Ming Univ. (Taiwan); Chung-Yi Wang, Cheng Hsin General Hospital (Taiwan); Yi-Jang Lee, National Yang-Ming Univ. (Taiwan) . . . . . [8582-26]

**Inhibitory efficacy of the quantified prunellae spica extract on H22 tumor bearing mice**, Zhiping Wang, Guangdong Pharmaceutical Univ. (China); Tong-Sheng Chen, South China Normal Univ. (China) . . . . . [8582-27]

**A bispecific peptide based near-infrared probe for in vivo tumor diagnosis**, Yueqing Gu, China Pharmaceutical Univ. (China); Li Ding, China Pharmaceutical Univ. (China); Wei R. Chen, Univ. of Central Oklahoma (USA) . . . . . [8582-28]

**The preparation and characteristic of a drug carrier for hepatocellular carcinoma-selective targeting**, Yuxiang Ma, Yuqi Chen, Sisi Cui, China Pharmaceutical Univ. (China); Wei R. Chen, Univ. of Central Oklahoma (USA); Yueqing Gu, China Pharmaceutical Univ. (China) . . . . . [8582-29]

**Novel 2DG-based harmine derivatives for targeted cancer therapy**, Aqin Wang, Yuqi Chen, China Pharmaceutical Univ. (China); Wei R. Chen, Univ. of Central Oklahoma (USA); Yueqing Gu, China Pharmaceutical Univ. (China) . . . . . [8582-30]

**Role of macrophages in circulating prostate cancer cells studied by in vivo flow cytometry**, Xunbin Wei, Shanghai Jiao Tong Univ. (China) . . . . . [8582-31]

**Intravital optical imaging of leucocytes dynamics during the delayed type hypersensitivity reaction**, Meijie Luo, Sha Qiao, Qingming Luo, Zhihong Zhang, Britton Chance Ctr. for Biomedical Photonics (China) . . . . . [8582-32]

**Macrophage phagocytosis of cells undergoing HF-LPLI-induced apoptosis**, Cuixia Lu, Da Xing, South China Normal Univ. (China) . . . . . [8582-33]



# Design and Performance Validation of Phantoms Used in Conjunction with Optical Measurement of Tissue V

Conference Chair: **Robert J. Nordstrom**, National Institutes of Health (USA)

Program Committee: **Anant Agrawal**, U.S. Food and Drug Administration (USA); **Jean-Pierre Bouchard**, INO (Canada); **Gerald T. Fraser**, National Institute of Standards and Technology (USA); **Rongguang Liang**, College of Optical Sciences, The Univ. of Arizona (USA); **Ramesh Raghavachari**, U.S. Food and Drug Administration (USA); **Heidrun Wabnitz**, Physikalisch-Technische Bundesanstalt (Germany)

## Saturday 2 February

### SESSION 1

Room: 274 (Mezzanine) ..... Sat 8:30 am to 10:00 am

#### Optical Properties and Simulations I

Session Chair: **Robert J. Nordstrom**, National Institutes of Health (USA)

8:30 am: **Development of a Qdots 800 based fluorescent solid phantom for validation of NIRF imaging platforms** (*Invited Paper*), Banghe Zhu, Eva M. Sevick-Muraca, The Univ. of Texas Health Science Ctr. at Houston (USA) ..... [8583-1]

9:00 am: **Simulations of light propagation in biological tissues by considering the modelling of light sources and sensors**, David Klinger, Jens Kraitl, Hartmut Ewald, Univ. Rostock (Germany) ..... [8583-2]

9:20 am: **Reconstructing optical parameters from double integrating sphere measurements using a genetic algorithm**, Christoph Böcklin, Dirk Baumann, Jan Klohs, Markus Rudin, Jürg Fröhlich, ETH Zurich (Switzerland) ..... [8583-3]

9:40 am: **Dependent scattering effects as measured in high concentration silica beads suspensions**, Ton G. van Leeuwen, Duc V. Nguyen, Jeroen Kalkman, Academisch Medisch Ctr. (Netherlands) ..... [8583-4]

Coffee Break ..... Sat 10:00 am to 10:30 am

### SESSION 2

Room: 274 (Mezzanine) ..... Sat 10:30 am to 12:10 pm

#### Optical Properties and Simulations II

Session Chair: **Jean-Pierre Bouchard**, INO (Canada)

10:30 am: **Optical properties of tissue-like phantoms based on Intralipid and India ink accurately assessed by means of a multi-center study**, Lorenzo Spinelli, Consiglio Nazionale delle Ricerche Istituto di Fotonica e Nanotecnologie (Italy); Marcin Botwicz, Norbert Zolek, Michal Kacprzak, Daniel Milej, Piotr Sawosz, Adam Liebert, Institute of Biocybernetics and Biomedical Engineering (Poland); Udo Weigel, Turgut Durduran, ICFO - Institut de Ciències Fotòniques, Parc Mediterrani de la Tecnologia (Spain); Florian Foschum, Alwin Kienle, Institut für Lasertechnologien in der Medizin und Messtechnik, Univ. Ulm (Germany); François Baribeau, Sébastien Leclair, Jean-Pierre Bouchard, Isabelle Noiseux, Pascal Gallant, Ozzy Mermut, INO (Canada); Andrea Farina, Consiglio Nazionale delle Ricerche Istituto di Fotonica e Nanotecnologie (Italy); Antonio Pifferi, Alessandro Torricelli, Rinaldo Cubeddu, Politecnico di Milano (Italy); Hsin-Chia Ho, Industrial Technology Research Institute (Taiwan); Mikhail Mazurenka, Heidrun Wabnitz, Katy Klauenberg, Olha Bodnar, Clemens Elster, Physikalisch-Technische Bundesanstalt (Germany); Magali Bénazech-Lavoué, Yves Bérubé-Lauzière, Univ. de Sherbrooke (Canada); Frédéric Lesage, Ecole Polytechnique de Montréal (Canada); Dmitry Khoptyar, Arman A. Subash, Stefan Andersson-Engels, Lund Univ. (Sweden); Paola Di Ninni, Fabrizio Martelli, Giovanni Zaccanti, Univ. degli Studi di Firenze (Italy) ..... [8583-5]

10:50 am: **A tissue mimicking phantom model for applications combining light and ultrasound**, Avihai Ron, Ilan Breskin, Noam Racheli, Yaakov Metzger, Revital Shechter, Ornim Medical Ltd. (Israel) ..... [8583-6]

11:10 am: **Stable phantoms for characterization of photoacoustic tomography (PAT) systems**, Sarah E. Bohndiek, Dominique Van De Sompel, Sandhya Bodapati, Sri-Rajasekhar Kothapalli, Sanjiv S. Gambhir, Stanford Univ. (USA) ..... [8583-7]

11:30 am: **Spectrally resolved digital cell phantoms for quantitative blood analysis of malaria infection**, Jeesoong Hwang, David W. Allen, National Institute of Standards and Technology (USA); Fuyuki Tokumasu, National Institute of Allergy and Infectious Diseases (USA); Do-Hyun Kim, U.S. Food and Drug Administration (USA); Ji Youn Lee, Maritoni Litorja, Joseph P. Rice, National Institute of Standards and Technology (USA) ..... [8583-8]

11:50 am: **OCT phantoms initiative**, Anant Agrawal, U.S. Food and Drug Administration (USA); Brendan F. Kennedy, The Univ. of Western Australia (Australia); Guy Lamouche, Conseil National de Recherches Canada (Canada); Peter H. Tomlins, Queen Mary, Univ. of London (United Kingdom); Bobby Mote, Krishan M. Agrawal, Virginia State Univ. (USA) ..... [8583-9]

Lunch/Exhibition Break ..... Sat 12:10 pm to 1:50 pm

### SESSION 3

Room: 274 (Mezzanine) ..... Sat 1:50 pm to 3:10 pm

#### Phantom Design and Construction

Session Chair: **Heidrun Wabnitz**, Physikalisch-Technische Bundesanstalt (Germany)

1:50 pm: **Air Force test chart-like phantom for measuring axial and lateral resolution in optical coherence tomography**, Ruo Yu Gu, Kristen L. Lurie, Audrey K. Ellerbee, Stanford Univ. (USA) ..... [8583-10]

2:10 pm: **Realistic phantoms for diffuse optical imaging using totally absorbing objects**, Antonio Pifferi, Politecnico di Milano (Italy) and Consiglio Nazionale delle Ricerche (Italy); Fabrizio Martelli, Univ. degli Studi di Firenze (Italy); Davide Contini, Politecnico di Milano (Italy); Lorenzo Spinelli, Consiglio Nazionale delle Ricerche (Italy); Alessandro Torricelli, Politecnico di Milano (Italy); Heidrun Wabnitz, Rainer Macdonald, Physikalisch-Technische Bundesanstalt (Germany); Angelo Sassaroli, Tufts Univ. (USA); Giovanni Zaccanti, Univ. degli Studi di Firenze (Italy) ..... [8583-11]

2:30 pm: **Spectroscopic measurements and characterization of soft tissue phantoms**, Efrain Solarte-Rodriguez, Erick Ipus, Univ. del Valle (Colombia) ..... [8583-13]

2:50 pm: **A heterogeneous liquid scattering optical phantom for confocal microscopy**, Danni Wang, Ye Chen, Jonathan T. C. Liu, Stony Brook Univ. (USA) ..... [8583-14]

Coffee Break ..... Sat 3:10 pm to 3:40 pm

### SESSION 4

Room: 274 (Mezzanine) ..... Sat 3:40 pm to 5:20 pm

#### Tissue Mimicking Phantoms

Session Chair: **Robert J. Nordstrom**, National Institutes of Health (USA)

3:40 pm: **Synthetic esophagus phantom with calibrated fluorescent targets for image-based fluorescence quantification**, Chenying Yang, Leonard Y. Nelson, Eric J. Seibel, Univ. of Washington (USA) ..... [8583-15]

4:00 pm: **Fabrication of a multilayered solid optical skin phantom mimicking human epidermal thin layer and texture**, Yunjin Bae, Yonsei Univ. (Korea, Republic of); Youngwoo Bae, Gumi Electronics & Information Technology Research Institute (Korea, Republic of); Heesung Kang, Byungjo Jung, Yonsei Univ. (Korea, Republic of) ..... [8583-16]

4:20 pm: **Fabrication of a skin phantom for OCT imaging using two-photon absorption microstereolithography**, Stephen J. Matcher, Piotr Geca, Frederick Claeysens, The Univ. of Sheffield (United Kingdom) ..... [8583-17]

4:40 pm: **Development of a corneal tissue phantom for anterior chamber optical coherence tomography (AC-OCT)**, T. Scott Rowe, Rowe Technical Design (USA); Robert J. Zawadzki, UC Davis Medical Ctr. (USA) ..... [8583-18]

5:00 pm: **Tissue simulating phantoms for optical coherence tomography**, Brendan F. Kennedy, The Univ. of Western Australia (Australia); Guy Lamouche, Charles-Etienne Bisailon, Conseil National de Recherches Canada (Canada); Kelsey M. Kennedy, The Univ. of Western Australia (Australia); Andrea Curatolo, Univ. of Western Australia (Australia); Gord Campbell, Conseil National de Recherches Canada (Canada); David D. Sampson, The Univ. of Western Australia (Australia) ..... [8583-19]

**BiOS Hot Topics**

Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

**Sunday 3 February**

**SESSION 5**

**Room: 274 (Mezzanine) . . . . .Sun 8:30 am to 10:30 am**

Joint Session with Conferences 8573 and 8583

Session Chairs: **Robert J. Nordstrom**,  
National Institutes of Health (USA);

**Ramesh Raghavachari**, U.S. Food and Drug Administration (USA)

8:30 am: **Calibration of fluorescence reflectance reference phantoms** (*Invited Paper*), Jean-Pierre Bouchard, François Baribeau, Ozzy Mermut, INO (Canada) . . . . . [8583-20]

9:00 am: **Performance assessment of time-domain optical brain imagers: a multi-laboratory study** (*Invited Paper*), Heidrun Wabnitz, Alexander Jelzow, Mikhail Mazurenka, Oliver Steinkellner, Dieter R. Taubert, Rainer Macdonald, Physikalisches Technische Bundesanstalt (Germany); Antonio Pifferi, Politecnico di Milano (Italy) and Consiglio Nazionale delle Ricerche (Italy); Alessandro Torricelli, Davide Contini, Lucia M. G. Zucchelli, Politecnico di Milano (Italy); Lorenzo Spinelli, Consiglio Nazionale delle Ricerche Istituto di Fotonica e Nanotecnologie (Italy); Rinaldo Cubeddu, Politecnico di Milano (Italy) and Consiglio Nazionale delle Ricerche (Italy); Daniel Milej, Norbert Zolek, Michal Kacprzak, Piotr Sawosz, Adam Liebert, Institute of Biocybernetics and Biomedical Engineering (Poland); Salavat Magazov, Jeremy C. Hebden, Univ. College London (United Kingdom); Fabrizio Martelli, Paola Di Ninni, Giovanni Zaccanti, Univ. degli Studi di Firenze (Italy) . . . . . [8583-21]

9:20 am: **Multi-system comparison of optical coherence tomography performance with point spread function phantoms** (*Invited Paper*), Joshua Pfefer, U.S. Food and Drug Administration (USA); Chao-Wei Chen, Anthony Fouad, Univ. of Maryland, College Park (USA); Wei Gong, Univ. of Maryland, Baltimore (USA) and Fujian Normal Univ. (China); Peter Tomlins, Queen Mary, Univ. of London (United Kingdom); Peter Woolliams, National Physical Lab. (United Kingdom); Rebekah Drezek, Rice Univ. (USA); Anant Agrawal, U.S. Food and Drug Administration (USA); Yu Chen, Univ. of Maryland, College Park (USA) . . . . . [8573-11]

9:50 am: **A one step vs. a multi step geometric calibration of an optical coherence tomography**, Jesús Díaz Díaz, Maik Rahlves, Leibniz Univ. Hannover (Germany); Omid Majdani, Medizinische Hochschule Hannover (Germany); Eduard Reithmeier, Tobias Ortmaier, Leibniz Univ. Hannover (Germany) . . . . . [8573-12]

10:10 am: **A quantitative evaluation of digital tissue phantoms for oximetry**, David W. Allen, National Institute of Standards and Technology (USA); Ronald Xu, The Ohio State Univ. (USA); Joseph P. Rice, Maritoni Litorja, Jeeseong Hwang, National Institute of Standards and Technology (USA) . . . . . [8573-13]

# Energy-Based Treatment of Tissue and Assessment VII

Conference Chair: **Thomas P. Ryan**, ArthroCare (USA)

Program Committee: **James E. Coad M.D.**, West Virginia Univ. (USA); **Chris J. Diederich**, Univ. of California, San Francisco (USA); **Paul J. Hoopes**, Dartmouth Medical School (USA); **Paul R. Stauffer**, Duke Univ. (USA); **Sharon L. Thomsen**, Pathology Consultant to Engineers and Physicists (USA); **John A. Pearce**, The Univ. of Texas at Austin (USA)



## Sunday 3 February

### SESSION 1

Room: 274 (Mezzanine) .....Sun 8:00 am to 9:30 am

#### Nanoparticles and Nanotherapy for Cancer I

Session Chair: **Thomas Ryan**, ArthroCare Corp. (USA)

8:00 am: **The relationship of thermal dose and morphologic tissue injury for conventional and magnetic nanoparticle hyperthermia** (*Keynote Presentation*), Sharon L. Thomsen, Consultant (USA); Alicia A. Petryk, Rachel E. Gottesman, Dartmouth College (USA); P. Jack Hoopes, Dartmouth Medical School (USA) ..... [8584-1]

8:30 am: **Modification of the tumor vascular barrier to improve magnetic nanoparticle uptake and hyperthermia treatment efficacy** (*Keynote Presentation*), P. Jack Hoopes, Andrew J. Giustini, Alicia A. Petryk, Sarah G. Thappa, Radu V. Stan, Rendall R. Strawbridge, Lionel L. Lewis, Geisel School of Medicine (USA) ..... [8584-2]

9:00 am: **New iron-oxide particles for magnetic nanoparticle hyperthermia: An in vivo pilot study of nanoparticle hyperthermia in a mouse xenograft model of a human prostate cancer** (*Invited Paper*), Mohammad Hedayati, Anilchandra Attaluri, Michael Armour, Haoming Zhou, Christine Cornejo, Michele Wabler, Yonggang Zhang, Johns Hopkins Univ. School of Medicine (USA); Robert Ivkov, Johns Hopkins Univ. (USA) ..... [8584-37]

### Q&A DISCUSSION

Room: 274 (Mezzanine) .....Sun 9:30 am to 10:00 am

Coffee Break ..... Sun 10:00 am to 10:30 am

### SESSION 2

Room: 274 (Mezzanine) .....Sun 10:30 am to 12:00 pm

#### Ablation and Tissue Effects

Session Chair: **Christopher L. Brace**, Univ. of Wisconsin-Madison (USA)

10:30 am: **Microwave tumor ablation: Cooperative academic-industry development of a high-power gas-cooled system with early clinical results** (*Invited Paper*), Christopher L. Brace, Timothy J. Ziemlewicz, James L. Hinshaw, Meghan G. Lubner, Fred T. Lee Jr., Univ. of Wisconsin-Madison (USA); Rick Schefelker, Neuwave Medical (USA) ..... [8584-5]

11:00 am: **Thermotolerance of human myometrium: Implications for minimally invasive uterine therapies.**, Brian T. Grisez, West Virginia Univ. (USA); Kathleen McMillan, gRadiant Research, LLC (USA); Nicholas Chill, Tyler P. Harclerode, Rebecca Radabaugh, James E. Coad, West Virginia Univ. (USA) ..... [8584-6]

11:20 am: **Determination of the ablation efficiencies of the laser irradiated tissues via rate of temperature change over time**, Burcu Tunç, Murat Gülsoy, Bogaziçi Üniv. (Turkey) ..... [8584-7]

11:40 am: **Incisional effects of 1940 nm thulium fiber laser on oral soft tissues**, Melike Güney, Bogaziçi Üniv. (Turkey) and Istanbul Medeniyet Univ. (Turkey); Burcu Tunç, Murat Gülsoy, Bogaziçi Üniv. (Turkey) ..... [8584-8]

Lunch Break ..... Sun 12:00 pm to 1:30 pm

### SESSION 3

Room: 274 (Mezzanine) .....Sun 1:30 pm to 2:40 pm

#### Numerical Modeling and Tissue Effects

Session Chair: **Dieter Haemmerich**, Medical Univ. of South Carolina (USA)

1:30 pm: **Numerical models of cell death in RF ablation with monopolar and bipolar probes**, Ben M. Bright, John A. Pearce, The Univ. of Texas at Austin (USA) ..... [8584-9]

1:55 pm: **Predicting tissue division rates for TURP systems using finite element simulations**, Arlen K. Ward, Covidien Surgical Solutions (USA); George J. Collins, Colorado State Univ. (USA) ..... [8584-10]

2:15 pm: **Numerical model of RF monopolar cutting in heterogeneous tissues** (*Invited Paper*), Dimitry E. Protsenko, Brian Wong, Beckman Laser Institute and Medical Clinic (USA) ..... [8584-11]

### SESSION 4

Room: 274 (Mezzanine) .....Sun 2:40 pm to 3:10 pm

#### Nanoparticles and Nanotherapy for Cancer II

Session Chair: **John A. Pearce**, The Univ. of Texas at Austin (USA)

2:40 pm: **Targeting of systemically delivered magnetic nanoparticle hyperthermia using a noninvasive static external magnetic field** (*Invited Paper*), B. Stuart Trembly, Grayson Zulauf, Andrew J. Giustini, Rendall R. Strawbridge, P. Jack Hoopes, Dartmouth College (USA) ..... [8584-12]

Coffee Break ..... Sun 3:10 pm to 3:40 pm

### SESSION 5

Room: 274 (Mezzanine) .....Sun 3:40 pm to 6:00 pm

#### Nanoparticles and Nanotherapy for Cancer III

Session Chair: **John A. Pearce**, The Univ. of Texas at Austin (USA)

3:40 pm: **Preclinical Investigation of Magnetic Fluid Hyperthermia for Thermochemotherapy of Bladder Cancer**, Tiago R. Oliveira, Kelly Lee, Etienne Wiguins, Chelsea Landon, Mark W. Dewhirst, Paul R. Stauffer, Duke Univ. (USA) ..... [8584-4]

4:00 pm: **Understanding mNP hyperthermia for cancer treatment at the cellular scale**, Robert V. Stigliano, Fridon Shubitidze, Dartmouth College (USA); P. Jack Hoopes, Dartmouth Medical School (USA) ..... [8584-13]

4:20 pm: **Oxygen microenvironment affects the in vitro uptake and therapeutic response of head and neck tumor cells to magnetic nanoparticle hyperthermia**, Sasson Hodge, Katherine Tai, Geisel School of Medicine (USA); Eunice Y. Chen, Dartmouth Hitchcock Medical Ctr. (USA); Kimberley S. Samkoe, Geisel School of Medicine (USA) ..... [8584-14]

4:40 pm: **Biodistribution of antibody-targeted and non-targeted iron oxide nanoparticles in a breast cancer mouse model**, Jennifer A. Tate, Warren Kett, Christian NDong, Karl E. Griswold, P. Jack Hoopes, Dartmouth College (USA) ..... [8584-15]

5:00 pm: **Cell cycle influence on magnetic nanoparticle uptake**, Sarah G. Thappa, Jennifer A. Tate, Dartmouth College (USA); P. Jack Hoopes, Dartmouth Medical School (USA) ..... [8584-16]

5:20 pm: **Influence of cancer cell intracellularization on iron oxide nanoparticle hyperthermia cytotoxicity**, Jennifer A. Tate, Dartmouth College (USA); P. Jack Hoopes, Dartmouth Medical School (USA) ..... [8584-17]

5:40 pm: **Iron oxide nanoparticles as a radiation enhancer**, Courtney Mazur, Jennifer A. Tate, Dartmouth College (USA); Rendall R. Strawbridge, P. Jack Hoopes, Dartmouth Medical School (USA) and Dartmouth Hitchcock Medical Ctr. (USA) ..... [8584-18]



**Monday 4 February**

**SESSION 6**

**Room: 274 (Mezzanine) . . . . . Mon 8:00 am to 10:00 am**

**Tissue Death, Survival, and Assessment**

Session Chair: **Sharon L. Thomsen**,  
Pathology Consultant to Engineers and Physicists (USA)

8:00 am: **Hypothesis for thermal activation of the caspase cascade in apoptotic cell death at elevated temperatures** (*Keynote Presentation*), John A. Pearce, The Univ. of Texas at Austin (USA) . . . . . [8584-19]

8:40 am: **Evolution of pathology techniques for evaluating energy-based tissue effects** (*Keynote Presentation*), James E. Coad, Brian T. Grisez, West Virginia Univ. (USA) . . . . . [8584-20]

9:15 am: **Tissue fusion bursting pressure and the role of tissue water content**, James D. Cezo, Univ. of Colorado at Boulder (USA); Kenneth D. Taylor, ConMed Electrosurgery (USA); Virginia L. Ferguson, Mark E. Rentschler, Univ. of Colorado at Boulder (USA). . . . . [8584-21]

9:35 am: **Thermal spread associated with tissue sealing devices: a comparison of histologic methods for detecting adventitial collagen denaturation**, Ryan H. Livengood, Brian T. Grisez, James E. Coad, West Virginia Univ. (USA) . . . . . [8584-22]

Coffee Break . . . . . Mon 10:00 am to 10:30 am

**SESSION 7**

**Room: 274 (Mezzanine) . . . . . Mon 10:30 am to 11:50 am**

**Plasma Medicine: Physics and Clinical Applications**

Session Chair: **E. Clif Burdette**, Acoustic Medsystems, Inc. (USA)

10:30 am: **Overview of plasma technology used in medicine** (*Invited Paper*), Thomas P. Ryan, Kenneth R. Stalder, Jean Woloszko, ArthroCare Corp. (USA) . . . . . [8584-23]

10:55 am: **Some physics and chemistry of Coblation electrosurgical plasma devices** (*Invited Paper*), Kenneth R. Stalder, ArthroCare Corp. (USA) . . [8584-24]

11:25 am: **Clinical applications of plasma based electrosurgical systems** (*Invited Paper*), Jean Woloszko, Thomas Ryan, Kenneth R. Stalder, ArthroCare Corp. (USA) . . . . . [8584-25]

Lunch Break . . . . . Mon 11:50 am to 1:20 pm

**SESSION 8**

**Room: 274 (Mezzanine) . . . . . Mon 1:20 pm to 3:00 pm**

**Image Guidance, Navigation, and Monitoring for Thermal Therapy**

Session Chair: **Chris J. Diederich**,  
Univ. of California, San Francisco (USA)

1:20 pm: **Stable microwave radiometry system for long term monitoring of deep tissue temperature** (*Invited Paper*), Paul R. Stauffer, Sara Salahi, Dario B. Rodrigues, Duke Univ. (USA); Erdem Topsakal, Mississippi State Univ. (USA); Tiago Ribeiro, Aniruddh Prakash, Duke Univ. (USA); Douglas Reudink, Thermimage Corp. (USA); Brent W. Snow, The Univ. of Utah (USA); Paolo F. Maccarini, Duke Univ. (USA) . . . . . [8584-26]

1:50 pm: **Numerical 3D modeling of heat transfer in human tissues for microwave radiometry monitoring of brown fat metabolism**, Dario B. Rodrigues, Duke Univ. (USA) and Univ. Nova de Lisboa (Portugal); Paolo F. Maccarini, Duke Univ. (USA); Sara Louie, ANSYS, Inc. (USA); Tiago R. Oliveira, Duke Univ. (USA); Pedro J. S. Pereira, Instituto Superior de Engenharia de Lisboa (Portugal); Paulo Limao-Vieira, Univ. Nova de Lisboa (Portugal); Paul R. Stauffer, Duke Univ. (USA) . . . . . [8584-27]

2:10 pm: **in situ treatment of liver using catheter based therapeutic ultrasound with combined imaging and GPS tracking system** (*Invited Paper*), E. Clif Burdette, Goutam Ghoshal, Tamas Heffter, Acoustic Medsystems, Inc. (USA); Laurie Rund, John M. Ehrhardt, Univ. of Illinois (USA); Chris J. Diederich, Univ. of California, San Francisco (USA) . . . . . [8584-28]

2:40 pm: **Targeted hyperthermia in prostate with an MR-guided endorectal ultrasound phased array: patient specific modeling and preliminary experiments**, Vasant A. Salgaonkar, Punit Prakash, Viola Rieke, John Kurhanewicz, I. C. J. Hsu, Chris J. Diederich, Univ. of California, San Francisco (USA) . . . . . [8584-29]

Coffee Break . . . . . Mon 3:00 pm to 3:30 pm

**SESSION 9**

**Room: 274 (Mezzanine) . . . . . Mon 3:30 pm to 5:20 pm**

**Ultrasound Modeling and Thermal Therapy**

Session Chair: **Douglas A. Christensen**, The Univ. of Utah (USA)

3:30 pm: **Preliminary experimental and theoretical assessment of MR-guided thermal therapy of pancreatic tumors with endogastric and transgastric catheter-based ultrasound devices**, Punit Prakash, Vasant A. Salgaonkar, Serena J. Scott, Univ. of California, San Francisco (USA); Graham Sommer, Stanford Univ. School of Medicine (USA); Chris J. Diederich, Univ. of California, San Francisco (USA) . . . . . [8584-30]

3:50 pm: **Non-invasive estimation of thermal tissue properties by high-intensity focused ultrasound** (*Invited Paper*), Sunil Appanaboyina, Medical Univ. of South Carolina (USA); Ari Partanen, Philips Medical Systems (Finland); Dieter Haemmerich, Medical Univ. of South Carolina (USA). . . . . [8584-31]

4:10 pm: **Incorporating tissue absorption and scattering in rapid ultrasound beam modeling** (*Invited Paper*), Douglas A. Christensen, Univ. of Utah (USA); Scott Almqvist, The Univ. of Utah (USA). . . . . [8584-32]

4:40 pm: **Catheter-based therapeutic ultrasound treatment of urinary tract disorders** (*Invited Paper*), E. Clif Burdette, Acoustic Medsystems, Inc. (USA); Chris J. Diederich, Jeffrey Wooton, Univ. of California, San Francisco (USA); Emery M. Williams, Paul Neubauer, Lance Frith, Bruce Komadina, Acoustic Medsystems, Inc. (USA) . . . . . [8584-33]

5:00 pm: **Interstitial ultrasound ablation of tumors within or adjacent to bone: contribution of preferential heating at the bone surface**, Serena J. Scott, Punit Prakash, Peter D. Jones, Richard N. Cam, Univ. of California, San Francisco (USA); E. Clif Burdette, Acoustic Medsystems, Inc. (USA); Chris J. Diederich, Univ. of California, San Francisco (USA) . . . . . [8584-34]

**SESSION 10**

**Room: 274 (Mezzanine) . . . . . Mon 5:20 pm to 6:20 pm**

**Nanoparticles and Nanotherapy for Cancer IV**

Session Chair: **James E. Coad M.D.**, West Virginia Univ. (USA)

5:20 pm: **Magnetic nanoparticle hyperthermia: predictive model for temperature distribution**, Robert V. Stigliano, Fridon Shubitidze, Dartmouth College (USA); P. Jack Hoopes, Dartmouth Medical School (USA) . . . [8584-35]

5:40 pm: **Development of a biodegradable iron oxide nanoparticle gel for tumor bed therapy**, Benjamin P. Cunkelman, Dartmouth College (USA); P. Jack Hoopes, Dartmouth Medical School (USA); Sarah G. Thappa, Jennifer A. Tate, Alicia A. Petryk, Dartmouth College (USA) . . . . . [8584-3]

6:00 pm: **Infrared thermography analysis of thermal diffusion induced by RF magnetic field on agar phantoms loaded with magnetic nanoparticles**, Jose Bante-Guerra, Ctr. de Investigación y de Estudios Avanzados (Mexico) . . . . . [8584-36]

# Terahertz and Ultrashort Electromagnetic Pulses for Biomedical Applications

Conference Chairs: **Gerald J. Wilmink**, Air Force Research Lab. (USA); **Bennett L. Ibey**, Air Force Research Lab. (USA)

Program Committee: **Hope T. Beier**, Air Force Research Lab. (USA); **Benjamin P. Born**, Weizmann Institute of Science (Israel); **Patrick O. Bradshaw**, Air Force Office of Scientific Research (USA); **Elliott R. Brown**, Wright State Univ. (USA); **Ibtissam Echchgadda**, National Academy of Sciences (USA); **Yuri Feldman**, The Hebrew Univ. of Jerusalem (Israel); **Gian Piero Gallerano**, ENEA (Italy); **Martina Havenith**, Ruhr-Univ. Bochum (Germany); **Peter Uhd Jepsen**, Technical Univ. of Denmark (Denmark); **Kodo Kawase**, Nagoya Univ. (Japan); **Martin Koch**, Technische Univ. Braunschweig (Germany); **Richard Nuccitelli**, BioElectroMed Corp. (USA); **Gun-Sik Park**, Seoul National Univ. (Korea, Republic of); **Emma Pickwell-MacPherson**, Hong Kong Univ. of Science and Technology (Hong Kong, China); **W. Pat Roach**, Air Force Research Lab. (USA); **Peter H. Siegel**, Jet Propulsion Lab. (USA); **Joo-Hiuk Son**, The Univ. of Seoul (Korea, Republic of); **Koichiro Tanaka**, Kyoto Univ. (Japan); **Robert J. Thomas**, Air Force Research Lab. (USA); **P. Thomas Vernier**, The Univ. of Southern California (USA); **Shu Xiao**, Old Dominion Univ. (USA); **Hao Xin**, The Univ. of Arizona (USA)

Sponsored by



**LONGWAVE**  
PHOTONICS



**BIOS**

## Wednesday 6 February

### SESSION 1

Room: 220 (Mezzanine) ..... Wed 8:00 am to 11:40 am

#### Terahertz Technologies

Session Chair: **Gerald J. Wilmink**, Air Force Research Lab. (USA)

8:00 am: **THz photoconductive devices: tried and true** (*Keynote Presentation*), Elliott R. Brown, Wright State Univ. (USA) ..... [8585-1]

8:30 am: **Nonlinear optical THz generations and applications** (*Invited Paper*), Kodo Kawase, Nagoya Univ. (Japan); Shin'ichiro Hayashi, Hiroaki Minamide, RIKEN (Japan) ..... [8585-2]

8:50 am: **Potential for biomedical sensing using broadband terahertz devices** (*Invited Paper*), René Beigang, Fraunhofer-Institut für Physikalische Messtechnik (Germany); Michael Theuer, Technische Univ. Kaiserslautern (Germany); Garik Torosyan, Fraunhofer-Institut für Physikalische Messtechnik (Germany); Daniel Molter, Marco Rahm, Benjamin Reinhard, Technische Univ. Kaiserslautern (Germany) ..... [8585-3]

9:10 am: **Biological applications of terahertz near-field microscope** (*Invited Paper*), Koichiro Tanaka, Kyoto Univ. (Japan) ..... [8585-4]

9:30 am: **Development of terahertz (THz) microfluidic devices for lab-on-a-chip applications** (*Invited Paper*), Hao Xin, The Univ. of Arizona (USA) ..... [8585-5]

9:50 am: **Terahertz sensing with meta-surfaces and integrated circuits** (*Invited Paper*), Marco Rahm, Benjamin Reinhard, Klemens Schmitt, Tassilo Fip, Martin Volk, Jens Neu, Anna-Katharina Mahro, René Beigang, Technische Univ. Kaiserslautern (Germany) ..... [8585-6]

10:40 am: **Terahertz quantum cascade laser based optical coherence tomography** (*Invited Paper*), Alan W. M. Lee, LongWave Photonics LLC (USA); Tsung-Yu Kao, Qing Hu, Massachusetts Institute of Technology (USA) ..... [8585-7]

11:00 am: **Terahertz and mid-infrared photoexpansion nanospectroscopy** (*Invited Paper*), Mikhail A. Belkin, Feng Lu, The Univ. of Texas at Austin (USA); Mohammed Salih, Paul Dean, Suraj P. Khanna, Lianhe H. Li, Giles Davies, Edmund H. Linfield, Univ. of Leeds (United Kingdom) ..... [8585-8]

11:20 am: **Hydration dynamics in biomolecules probed by time-domain spectroscopy** (*Invited Paper*), Gun-Sik Park, Da-Hye Choi, Heyjin Son, Seoul National Univ. (Korea, Republic of) ..... [8585-9]

Lunch Break ..... Wed 11:40 am to 12:50 pm

### SESSION 2

Room: 220 (Mezzanine) ..... Wed 12:50 pm to 3:00 pm

#### Spectroscopy and Theory

Session Chair: **Bennett L. Ibey**, Air Force Research Lab. (USA)

12:50 pm: **Watching the dance of ions and molecules in the THz** (*Keynote Presentation*), Martina Havenith, Ruhr-Univ. Bochum (Germany) ..... [8585-10]

1:20 pm: **Terahertz-frequency transition from disorder to order in amorphous condensed matter** (*Keynote Presentation*), Peter U. Jepsen, Technical Univ. of Denmark (Denmark) ..... [8585-11]

1:50 pm: **Molecular modeling of membrane modifications after exposure to nanosecond, pulsed electric fields** (*Keynote Presentation*), Paul T. Vernier, The Univ. of Southern California (USA) ..... [8585-12]

2:20 pm: **Protein-water network dynamics during metalloenzyme hydrolysis observed by kinetic THz absorption (KITA)** (*Invited Paper*), Benjamin P. Born, Weizmann Institute of Science (Israel) ..... [8585-13]

2:40 pm: **Determination of the optical properties of melanin-pigmented human skin equivalents using terahertz time-domain spectroscopy**, Dawn Lipsomb, Ibtissam Echchgadda, Air Force Research Lab. (USA); Xomalin G. Peralta, The Univ. of Texas at San Antonio (USA); Gerald J. Wilmink, Air Force Research Lab. (USA) ..... [8585-14]

Coffee Break ..... Wed 3:00 pm to 3:30 pm

### SESSION 3

Room: 220 (Mezzanine) ..... Wed 3:30 pm to 5:40 pm

#### nSEP and THz Biomedical Applications

Session Chair: **M. Hassan Arbab**, Univ. of Washington (USA)

3:30 pm: **Nano-electroablation for human carcinoma therapy** (*Keynote Presentation*), Richard Nuccitelli, Mark Kreis, Brian Athos, Ryan Wood, Kaying Lui, Joanne Huynh, Pamela Nuccitelli, BioElectroMed Corp. (USA) ..... [8585-15]

4:00 pm: **Understanding terahertz data for medical applications**, Emma Pickwell-MacPherson, Hong Kong Univ. of Science and Technology (Hong Kong, China); Vincent P. Wallace, Anthony Fitzgerald, The Univ. of Western Australia (Australia) ..... [8585-16]

4:20 pm: **Hemorrhage control by short electrical pulses**, Yossi Mandel M.D., Stanford Univ. (USA); Guy Malki, Eid Adawi, Tel Aviv Univ. (Israel); Richard Manivanh, Stanford Univ. School of Medicine (USA); Ofer Barnea, Tel Aviv Univ. (Israel); Daniel V. Palanker, Stanford Univ. (Israel) ..... [8585-17]

4:40 pm: **Using a portable terahertz spectrometer to measure the optical properties of in vivo human skin**, Gerald J. Wilmink, Jessica E. Grundt, Air Force Research Lab. (USA) ..... [8585-18]

5:00 pm: **Identification of tissue interaction of terahertz radiation toward functional tissue imaging**, William Baughman, Ho-Yun Won, Hamdullah Yokus, David S. Wilbert, Patrick Kung, Seongsin M. Kim, Univ. of Alabama (USA) ..... [8585-19]

5:20 pm: **In vivo assessment of skin burns using terahertz radiation** (*Invited Paper*), M. Hassan Arbab, Dale P. Winebrenner, Trevor C. Dickey, Antao Chen, Matthew B. Klein, Pierre D. Mourad, Univ. of Washington (USA) ..... [8585-20]

**Thursday 7 February**

**SESSION 4**

**Room: 220 (Mezzanine) . . . . . Thu 8:40 am to 10:00 am**

**Nerve Stimulation**

Session Chair: **Peter Uhd Jepsen**,  
Technical Univ. of Denmark (Denmark)

8:40 am: **Electric stimulation using subnanosecond pulses** (*Invited Paper*),  
Shu Xiao, Old Dominion Univ. (USA) . . . . . [8585-21]

9:00 am: **Reversible modulation of neuronal activity in the leech ganglion  
by focal 60 GHz irradiation** (*Invited Paper*), Sergii Romanenko, Peter H. Siegel,  
California Institute of Technology (USA); Victor Pikov, Huntington Medical  
Research Institutes (USA) . . . . . [8585-22]

9:20 am: **Effects of nanosecond electrical pulses (nsEPs) on cell cycle  
progression and susceptibility at various phases**, Megan Mahlke, U.S. Air  
Force (USA); Bennett L. Ibey, Air Force Research Lab. (USA); Christopher  
Navara, U.S. Air Force (USA) . . . . . [8585-23]

9:40 am: **The effects of terahertz radiation on cellular bioenergetics  
and mitochondrial respiration**, Cesario Z. Cerna, Kimberly Greer, Ibtissam  
Echchgadda, Bennett L. Ibey, Jessica E. Grundt, Gerald J. Wilmink, Air Force  
Research Lab. (USA) . . . . . [8585-25]

Coffee Break . . . . . Thu 10:00 am to 10:30 am

**SESSION 5**

**Room: 220 (Mezzanine) . . . . . Thu 10:30 am to 12:10 pm**

**Biological Effects**

Session Chair: **Gerald J. Wilmink**, Air Force Research Lab. (USA)

10:30 am: **Intense picosecond THz pulses affect DNA and alter gene  
expression in human skin tissue in vivo**, Lyubov Titova, Ayesheshim  
Ayesheshim, Frank A. Hegmann, Univ. of Alberta (Canada); Dawson Fogen,  
Andrey Golubov, Rocio Rodriguez-Juarez, Jody Filkowski, Anna Kovalchuk,  
Emmanuel Ojefua, Olga Kovalchuk, Univ. of Lethbridge (Canada) . . . . [8585-26]

10:50 am: **Changes in protein expression of U937 and Jurkat cells exposed  
to nanosecond pulsed electric fields**, Erick K. Moen, The Univ. of Southern  
California (USA); Caleb C. Roth, General Dynamics Information Technology  
(USA); Bennett L. Ibey, Larry Estalck, Caesar Z. Cerna, Gerald J. Wilmink, Air  
Force Research Lab. (USA) . . . . . [8585-27]

11:10 am: **Measurement of changes in plasma membrane phospholipid  
polarization following nanosecond pulsed electric field exposure**, Samantha  
K. Franklin, Univ. of Texas at San Antonio (USA); Kelly L. Nash, The Univ. of  
Texas at San Antonio (USA); Hope T. Beier, Bennett L. Ibey, Air Force Research  
Lab. (USA) . . . . . [8585-28]

11:30 am: **Role of cytoskeleton and elastic moduli in cellular response to  
nanosecond pulsed electric fields**, Gary L. Thompson, National Research  
Council (USA); Caleb C. Roth, General Dynamics Information Technology (USA);  
Gleb Tolstykh, National Research Council (USA); Marjorie Kuipers, Bennett L.  
Ibey, Air Force Research Lab. (USA) . . . . . [8585-29]

11:50 am: **T-ray nerve stimulation: a novel approach to trigger neural  
activity using terahertz radiation**, Theodore E. Schomay, Robert J. Thomas,  
Gerald J. Wilmink, Air Force Research Lab. (USA) . . . . . [8585-30]

Lunch Break . . . . . Thu 12:10 pm to 1:10 pm

**SESSION 6**

**Room: 220 (Mezzanine) . . . . . Thu 1:10 pm to 3:30 pm**

**Enhancement of Applications**

Session Chair: **Paul Thomas Vernier**,  
The Univ. of Southern California (USA)

1:10 pm: **The penetration depth enhancement method of the THz wave  
in fresh tissue using a THz tissue-clearing agent**, Seung Jae Oh, Sang-  
Hoo Kim, Yong-Min Huh, Kiyoung Jeong, Yeonji Park, Yonsei Univ. College  
of Medicine (Korea, Republic of); Joo-Hiuk Son, The Univ. of Seoul (Korea,  
Republic of); Jin-Suck Suh, Yonsei Univ. College of Medicine (Korea,  
Republic of) . . . . . [8585-31]

1:30 pm: **Reflective terahertz (THz) imaging: system calibration using  
hydration phantoms**, Yoon Kyung Lee, Univ. of California, Los Angeles (USA);  
Neha Bajwa, Ctr. for Advanced Surgical and Interventional Technology  
(USA) . . . . . [8585-32]

1:50 pm: **Reflectivity measurements of water and dioxane mixtures using  
a GHz Gunn diode source**, Ashkan Maccabi, Univ. of California, Los Angeles  
(USA) . . . . . [8585-33]

2:10 pm: **Terahertz metamaterials perfect absorbers for sensing and  
imaging**, David S. Wilbert, Mohammad Parvinnezhad Hokmabadi, Joshua  
Martinez, Patrick Kung, Seongsin M. Kim, Univ. of Alabama (USA) . . . [8585-34]

2:30 pm: **Terahertz spectroscopy of methemoglobin: implications for novel  
medical imaging and therapeutics**, Ogan Gurel M.D., Samsung Advanced  
Institute of Technology (Korea, Republic of) and Sungkyunkwan Univ. (Korea,  
Republic of); Jaehun Park, Pohang Accelerator Lab. (Korea, Republic of); Seong  
Eon Ryu, Hanyang Univ. (Korea, Republic of) . . . . . [8585-35]

2:50 pm: **High resolution field distributions in metamaterial structures  
using apertureless terahertz near-field imaging**, William Baughman, Zachary  
Smithson, David S. Wilbert, Patrick Kung, Seongsin M. Kim, Univ. of Alabama  
(USA) . . . . . [8585-36]

3:10 pm: **Water revisited: unifying a myriad of beliefs**, Paul Ben Ishai, The  
Hebrew Univ. of Jerusalem (Israel); Eugene Mamontov, Oak Ridge National Lab.  
(USA); Alexei Sokolov, Oak Ridge National Lab. (USA) and Univ. of Tennessee  
(USA); Jon Nickels, Univ. of Tennessee (USA); Kodo Kawase, Nagoya Univ.  
(Japan); Yuri Feldman, The Hebrew Univ. of Jerusalem (Israel) . . . . . [8585-36]



# Optogenetics and Hybrid-Optical Control of Cells

Conference Chairs: **Samarendra K. Mohanty**, The Univ. of Texas at Arlington (USA); **Nitish V. Thakor**, Johns Hopkins Univ. (USA)

Program Committee: **Anna W. Roe**, Vanderbilt Univ. (USA); **Elizabeth M. Hillman**, Columbia Univ. (USA); **Isaac Clements**, Plexon Inc. (USA); **John Welsh**, Univ. of Washington (USA); **Rafael Yuste M.D.**, Columbia Univ. (USA); **Xue Han**, Boston Univ. (USA); **George J. Augustine**, Duke Univ. (USA); **Richard Kramer**, Univ. of California, Berkeley (USA); **Klaus Gerwert**, Ruhr-Univ. Bochum (Germany); **Alfred L. Nuttall**, Oregon Health & Science Univ. (USA)

Sponsored by



## Saturday 2 February

### SESSION 1

Room: 111 (Exhibit Level) . . . . . Sat 9:00 am to 12:30 pm

#### Optogenetics: Technology

Session Chair: **Ulrich T. Schwarz**, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany)

9:00 am: **Optogenetics: development and application** (*Keynote Presentation*), Karl Deisseroth, Stanford Univ. (USA) . . . . . [8586-1]

9:50 am: **High-speed optogenetic circuit mapping** (*Invited Paper*), George Augustine, Duke Univ. School of Medicine (Singapore) . . . . . [8586-2]

Coffee Break . . . . . Sat 10:20 am to 10:50 am

10:50 am: **Near-infrared in vivo optogenetic stimulation**, Kamal Dhakal, The Univ. of Texas at Arlington (USA); Ling Gu, The Univ. of Texas at Arlington (USA) and Univ. of Texas (USA); Torry Dennis, The Univ. of Texas at Arlington (USA); Ting Li, Univ. of Electronic Science and Technology of China (China); Linda Perrotti, Samarendra K. Mohanty, The Univ. of Texas at Arlington (USA) [8586-3]

11:10 am: **GaN-based micro-LED arrays on flexible substrates for optical cochlear implants**, Christian Göbner, Colin Bierbrauer, Rüdiger Moser, Katarzyna Holc, Wilfried Pletschen, Klaus Köhler, Joachim H. Wagner, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany); Michael Schwärzle, Patrick Ruther, Oliver Paul, Albert-Ludwigs-Univ. Freiburg (Germany); Victor Hernandez, Gerhard Hoch, Georg-August-Univ. Göttingen (Germany); Tobias Moser, Univ. Göttingen (Germany); Ulrich T. Schwarz, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany) and Univ. of Freiburg (Germany) . . . . . [8586-4]

11:30 am: **Label free optical detection of optogenetic activation of cells**, Niloy Choudhury, Michigan Technological Univ. (USA) and GE India Technology Ctr. (India); Zhaoqiang Zhang, Feng Zhao, Michigan Technological Univ. (USA); Ling Gu, Samarendra K. Mohanty, The Univ. of Texas at Arlington (USA) [8586-5]

11:50 am: **Distributed light delivery and detection for fluorescence recording and optical stimulation**, Ramin Pashaie, Ehsan Majidi, Univ. of Wisconsin-Milwaukee (USA) . . . . . [8586-6]

12:10 pm: **Multifractal detrended fluctuation analysis of optogenetic modulation of neural activity**, Satish Kumar, Indian Institute of Science Education and Research Kolkata (India); Ling Gu, The Univ. of Texas at Arlington (USA); Nirmalya Ghosh, Indian Institute of Science Education and Research Kolkata (India); Samarendra K. Mohanty, The Univ. of Texas at Arlington (USA) . . . . . [8586-7]

Lunch/Exhibition Break . . . . . Sat 12:30 pm to 1:30 pm

### SESSION 2

Room: 111 (Exhibit Level) . . . . . Sat 1:30 pm to 5:00 pm

#### In Vivo Optogenetics

Session Chair: **Anna W. Roe**, Vanderbilt Univ. (USA)

1:30 pm: **in vivo optical stimulation of and electrical read-out from neural circuits in non-human primates and rodents by chronically implanted devices** (*Invited Paper*), Arto V. Nurmikko, Jing Wang, Travis May, Ilker Ozden, Carlos Vargas, Brown Univ. (USA) . . . . . [8586-8]

2:00 pm: **A precise and minimally invasive approach to optogenetics in the awake primate**, Jonathan J. Nassi, Ali H. Cetin, The Salk Institute for Biological Studies (USA); Anna W. Roe, Vanderbilt Univ. (USA); Edward M. Callaway, The Salk Institute for Biological Studies (USA); Karl Deisseroth, Stanford Univ. (USA); John H. Reynolds, The Salk Institute for Biological Studies (USA) . . . . . [8586-9]

2:20 pm: **A combinatorial optogenetic approach to medial habenula function**, Yun-Wei Hsu, Seattle Children's Research Institute (USA); Si Wang, Seattle Children's Research Institute (USA); Glenn Morton, Seattle Childrens Research Institute (USA); Aguan Wei, Seattle Children's Research Institute (USA); Hatim Zariwala, Univ. of Washington (USA); Hongkui Zeng, Allen Institute for Brain Science (USA); Eric E. Turner, Seattle Childrens Research Institute (USA) . . . . . [8586-10]

2:40 pm: **Evaluating cerebellar functions using optogenetic transgenic mice**, John P. Welsh, Seattle Children's Research Institute (USA) and Univ. of Washington (USA); Josef Turecek, Seattle Children's Research Institute (USA) and Univ. of Washington (USA) . . . . . [8586-11]

Coffee Break . . . . . Sat 3:00 pm to 3:30 pm

3:30 pm: **Two-photon optogenetics of dendritic spines and neuronal circuits in three dimensions** (*Invited Paper*), Rafael Yuste M.D., Columbia Univ. (USA) . . . . . [8586-12]

4:00 pm: **Optogenetic stimulation of the auditory nerve for cochlear implants with increased number of frequency channels and dynamic range**, Ulrich T. Schwarz, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany) and Univ. of Freiburg (Germany); Christian Göbner, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany); Michael Schwärzle, Patrick Ruther, Oliver Paul, Albert-Ludwigs-Univ. Freiburg (Germany); Victor Hernandez, Gerhard Hoch, Kirsten Reuter, Georg-August-Univ. Göttingen (Germany) and Bernstein Focus for Neurotechnology, Univ. Göttingen (Germany); Nicola Strenzke, Georg-August-Univ. Göttingen (Germany); Tobias Moser, Univ. Göttingen (Germany) and Bernstein Focus for Neurotechnology, Univ. Göttingen (Germany) . . . . . [8586-13]

4:20 pm: **Laser speckle contrast reveals cerebral blood flow dynamics evoked by optogenetically controlled neuronal activity**, Nan Li, F.M. Kirby Research Ctr. for Functional Brain Imaging, Kennedy Krieger Institute (USA) and Johns Hopkins Univ. (USA); Nitish V. Thakor, Johns Hopkins Univ. (USA); Galit Pelled, F.M. Kirby Research Ctr. for Functional Brain Imaging, Kennedy Krieger Institute (USA) and Johns Hopkins Univ. (USA) . . . . . [8586-14]

4:40 pm: **Comparison between Bessel and Gaussian beam propagation for in-depth optogenetic stimulation**, Ting Li, Univ. of Electronic Science and Technology of China (China); Samarendra K. Mohanty, The Univ. of Texas at Arlington (USA) . . . . . [8586-15]

**BIOS Hot Topics**  
Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

## Sunday 3 February

### SESSION 3

Room: 111 (Exhibit Level) . . . . .Sun 8:30 am to 11:55 am

#### Cellular Optogenetics

Session Chair: **George J. Augustine**, Duke Univ. (Singapore)

8:30 am: **Light-gated ion channels and pumps as optogenetic tools in neuro- and cell biology** (*Keynote Presentation*), Ernst Bamberg, Max-Planck-Institut für Biophysik (Germany) . . . . . [8586-16]

9:15 am: **Expression and function of channelrhodopsin 2 in mouse outer hair cells**, Fangyi Chen, Tao Wu, Teresa Wilson, Oregon Health & Science Univ. (USA); Hrebesh M. Subhash, National Univ. of Ireland, Galway (Ireland); Irina Omelchenko, Michael Bateschell, Lingyan Wang, John Brigande, Zhigen Jiang, Alfred L. Nuttall, Oregon Health & Science Univ. (USA) . . . . . [8586-17]

9:35 am: **Temporally precise control of intracellular calcium activity in non-excitabile cells by optogenetic techniques**, Chao Wang, Yue Zhuo, Jihye Seong, Yingxiao Wang, Stephen A. Boppart, Univ. of Illinois at Urbana-Champaign (USA) . . . . . [8586-18]

9:55 am: **Optical control in microbial rhodopsins, especially channelrhodopsin** (*Invited Paper*), Klaus B. Gerwert, Ruhr-Univ. Bochum (Germany) . . . . . [8586-19]

Coffee Break . . . . . Sun 10:25 am to 10:55 am

10:55 am: **Optogenetic control of ATP release**, Matthew Lewis, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Bipin Joshi, Ling Gu, The Univ. of Texas at Arlington (USA); Andrew Feranchak, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Samarendra K. Mohanty, The Univ. of Texas at Arlington (USA) . . . . . [8586-20]

11:15 am: **The spatial pattern of light determines the kinetics and guide backpropagation of optogenetic action potentials**, Nir Grossman, Imperial College London (United Kingdom) . . . . . [8586-21]

11:35 am: **Adrenergic modulation of gamma cortical oscillations**, Jevin J. Jackson, The Univ. of Texas at Dallas (USA); Hector D. Tejeda, Kamal Dhakal, Samarendra K. Mohanty, The Univ. of Texas at Arlington (USA); Marco Atzori, The Univ. of Texas at Dallas (USA) . . . . . [8586-22]

Lunch/Exhibition Break . . . . . Sun 11:55 am to 1:30 pm

### SESSION 4

Room: 111 (Exhibit Level) . . . . .Sun 1:30 pm to 2:50 pm

#### Hybrid-Optical Control of Cells I

Session Chair: **Rafael Yuste M.D.**, Columbia Univ. (USA)

1:30 pm: **Optogenetics without the genetics: photochemical tools for biomedical manipulation of endogenous ion channels and neuronal firing** (*Invited Paper*), Richard Kramer, Univ. of California, Berkeley (USA) . . . [8586-28]

2:20 pm: **Photothermal control of cellular systems**, Samarendra K. Mohanty, The Univ. of Texas at Arlington (USA) . . . . . [8586-29]

### POSTER SESSION AND COFFEE BREAK

Room: Hall A, BIOS Expo . . . . .Sun 3:00 pm to 4:00 pm

Attendees are invited to view the conference posters, which will be available on Saturday and Sunday. The poster session, with authors present, will be held from 3:00 to 4:00 PM on Sunday afternoon, in conjunction with the coffee break.

**POSTER AUTHORS:** Poster setup is scheduled from 10:00 to 11:30 AM on Saturday and Sunday in South Hall A. Please plan to stand with your poster during the poster session on Sunday from 3:00 to 4:00 PM. Posters may remain on the boards both Saturday and Sunday but must be removed following the Sunday afternoon poster session/coffee break. Posters left on the boards after this time will be discarded.

**Design and implementation of a high performance fluorescence tomography system for brain studies**, Ramin Pashaie, Mehdi Azimipour, Univ. of Wisconsin-Milwaukee (USA) . . . . . [8586-30]

**Miniaturized LED sources for in vivo optogenetic experimentation**, Isaac P. Clements, Plexon Inc. (USA) . . . . . [8586-31]

**TBA**, Bishorup Banjara, Nelson Cardenas, Samarendra K. Mohanty, The Univ. of Texas at Arlington (USA) . . . . . [8586-32]

### SESSION 5

Room: 111 (Exhibit Level) . . . . .Sun 4:00 pm to 5:40 pm

#### Hybrid-Optical Control of Cells II

Session Chair: **John P. Welsh**, Univ. of Washington (USA)

4:00 pm: **Development of optics with micro-LED arrays for improved opto-electronic neural stimulation**, Lionel Chaudet, Mark Neil, Patrick Degenaar, Imperial College London (United Kingdom); Kamyar Mehran, Rolando Berlinguer-Palmini, Newcastle Univ. (United Kingdom); Brian Corbet, Pleun Maaskant, Tyndall National Institute (Ireland); David Rogerson, Peter Lanigan, Scientifica Ltd. (United Kingdom); Ernst Bamberg, Max-Planck-Institut für Biophysik (Germany); Boton Roska, Friedrich Miescher Institute (Switzerland) . . . . . [8586-23]

4:20 pm: **Optogenetics to target actin-mediated synaptic loss in Alzheimer's**, Atena Zahedi, Iryna Ethell, Univ. of California, Riverside (USA) . . . . . [8586-24]

4:40 pm: **Optofluidic control of axonal guidance**, Ling Gu, Bryan Black, Simon Ordóñez, Samarendra K. Mohanty, The Univ. of Texas at Arlington (USA) . . . . . [8586-25]

5:00 pm: **Micro mirror arrays as high-resolution spatial light modulators for photoactivation and optogenetics**, Florian Ruckerl, Jean-Yves Tinevez, Institut Pasteur (France); Jörg Heber, Fraunhofer-Institut für Photonische Mikrosysteme (Germany); Spencer L. Shorte, Institut Pasteur (France) . . . . . [8586-26]

5:20 pm: **Glass optrode array for optical neural stimulation**, Tanya Vanessa F. Abaya, Melany Moras, Mohit Diwekar, Steve Blair, Loren Rieth, Prashant Tathireddy, Gregory A. Clark, Florian Solzbacher, Univ. of Utah (USA) . [8586-27]

# Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues XI

*Conference Chairs:* **Daniel L. Farkas**, The Univ. of Southern California (USA); **Dan V. Nicolau**, McGill Univ. (Canada); **Robert C. Leif**, Newport Instruments (USA)

*Conference Co-Chairs:* **James F. Leary**, Purdue Univ. (USA); **Attila Tarnok**, Univ. Leipzig (Germany)

*Program Committee:* **Christopher H. Contag**, Stanford Univ. School of Medicine (USA); **Ewa M. Goldys**, Macquarie Univ. (Australia); **Charles P. Lin**, Wellman Ctr. for Photomedicine (USA); **Ramesh Raghavachari**, U.S. Food and Drug Administration (USA); **Markus Sauer**, Univ. Bielefeld (Germany); **J. Paul Robinson**, Purdue Univ. (USA); **Robert M. Zucker**, U.S. Environmental Protection Agency (USA)



## Saturday 2 February

### SESSION 1

Room: 300 (Esplanade) ..... Sat 8:00 am to 11:50 am

#### Functional Imaging of Biomolecules, Live Cells, and Tissues I

Session Chair: **Daniel L. Farkas**, The Univ. of Southern California (USA)

8:00 am: **Multimodality imaging in an orthotopic mammary window chamber mouse model**, Rachel Schafer, The Univ. of Arizona (USA); Hui Min Leung, College of Optical Sciences, The Univ. of Arizona (USA); Arthur F. Gmitro, The Univ. of Arizona (USA) ..... [8587-1]

8:20 am: **Synthesis, calibration, and application of a novel tissue-permeable phosphorescence lifetime-based near-infrared ratiometric optical oxygen sensor with single-cell resolution**, Alexander J. Nichols, Harvard Univ. (USA) and Massachusetts Institute of Technology (USA) ..... [8587-2]

8:40 am: **Quantitative analysis of three-dimensional in vitro ovarian cancer model by optical coherence tomography**, Yookyung Jung, Wellman Ctr. for Photomedicine (USA) and Harvard Medical School (USA) and Massachusetts General Hospital (USA); Oliver J. Klein, Wellman Ctr for Photomedicine (USA) and Massachusetts General Hospital (USA); Conor L. Evans, Wellman Ctr. for Photomedicine (USA) and Harvard Medical School (USA) and Massachusetts General Hospital (USA) ..... [8587-3]

9:00 am: **The effect of copper on eumelanin photophysics and morphology**, David J. Birch, Jens Sutter, Univ. of Strathclyde (United Kingdom) ..... [8587-4]

9:20 am: **Single shot white light interference microscopy with color fringe analysis for quantitative phase imaging of biological cells**, Vishal Srivastava, Dalip S. Mehta, Indian Institute of Technology Delhi (India) ..... [8587-5]

9:40 am: **Ophthalmic adaptive optics by digital holography**, Myung K. Kim, Changgeng Liu, Univ. of South Florida (USA) ..... [8587-6]

Coffee Break ..... Sat 10:00 am to 10:30 am

10:30 am: **Lensless imaging system to quantify cell proliferation**, Srikanth Vinjimore Kesavan, Cédric P. Allier, Fabrice P. Navarro Y Garcia, Frédérique Mittler, CEA-LETI (France); Bernard Chalmond, ETIS/ENSEA Univ. de Cergy-Pontoise-CNRS (France); Jean-Marc Dinten, CEA-LETI (France) ..... [8587-7]

10:50 am: **Internal and external fingerprint reconstruction using optical coherence tomography (OCT)**, Richelle Hoveling, Maurice C. Aalders, Academisch Medisch Ctr. (Netherlands) ..... [8587-8]

11:10 am: **Multimodal in vitro toxicity testing by quantitative phase digital holographic imaging**, Christina E. Rommel, Christian Dierker, Angelika Vollmer, Steffi Ketelhut, Björn Kemper, Jürgen Schneckeburger, Westfälische Wilhelms- Univ. Münster (Germany) ..... [8587-9]

11:30 am: **Label free quantitative imaging of the effects of estrogen on breast cancer cell growth**, Mustafa A. Mir, Anna Bergamaschi, Benita S. Katzenellenbogen, Gabriel Popescu, Univ. of Illinois at Urbana-Champaign (USA) ..... [8587-10]

Lunch/Exhibition Break ..... Sat 11:50 am to 1:20 pm

### SESSION 2

Room: 300 (Esplanade) ..... Sat 1:20 pm to 4:50 pm

#### Functional Imaging of Biomolecules, Live Cells, and Tissues II

Session Chair: **Daniel L. Farkas**, The Univ. of Southern California (USA)

1:20 pm: **Label free imaging of human neural progenitor differentiation**, Mustafa A. Mir, Univ. of Illinois at Urbana-Champaign (USA); Anirban Majumder, The Univ. of Georgia (USA); Steven Stice, Univ. of Georgia (USA); Gabriel Popescu, Univ. of Illinois at Urbana-Champaign (USA) ..... [8587-11]

1:40 pm: **Microscopic analysis of cell death by metabolic stress-induced autophagy in prostate cancer**, Austin Changou, UC Davis Medical Ctr. (USA); Balpreet S. Ahluwalia, Univ. of Tromsø (Norway); R. Holland Cheng, Univ. of California, Davis (USA); Richard Bold, Hsing-Jien Kung, Frank Y. Chuang, UC Davis Medical Ctr. (USA) ..... [8587-12]

2:00 pm: **Fast spatial light interference microscopy (fSLIM) for dynamic biomedical imaging**, Basanta Bhaduri, David Wickland, Gabriel Popescu, Univ. of Illinois at Urbana-Champaign (USA) ..... [8587-13]

2:20 pm: **Measuring uptake dynamics of multiple identifiable carbon nanotube species via high-speed confocal Raman imaging of live cells**, Jeon Woong Kang, Massachusetts Institute of Technology (USA); Freddy T. Nguyen, Univ. of Illinois at Urbana-Champaign (USA); Niyom Lue, Ramachandra R. Dasari, Peter T. C. So, Massachusetts Institute of Technology (USA); Daniel A. Heller, Memorial Sloan-Kettering Cancer Ctr. (USA) ..... [8587-14]

2:40 pm: **Cantilever-assisted two-beam interference microscopy for the observation of stratum corneum swelling**, Shin-ichiro Yanagiya, Hiroshi Katayama, Hiroshi Katayama, Nobuo Goto M.D., Nobuo Goto M.D., Univ. of Tokushima (Japan) ..... [8587-15]

Coffee Break ..... Sat 3:00 pm to 3:30 pm

3:30 pm: **Characterization and validation of an optical platform for in vivo circulating cell quantification in adult zebrafish**, Li Zhang, Massachusetts General Hospital (USA) and Fudan Univ. (China); Vera Binder, Harvard Medical School (USA) and Children's Hospital Boston (USA); Clemens Alt, Wellman Ctr. for Photomedicine (USA); Pulin Li, Richard M. White, Leonard I. Zon, Harvard Medical School (USA) and Children's Hospital Boston (USA); Xunbin Wei, Shanghai Jiao Tong Univ. (China); Charles P. Lin, Wellman Ctr. for Photomedicine (USA) ..... [8587-16]

3:50 pm: **Label-free volume determination using differential interference contrast microscopy: quantification of in vitro platelet aggregate and thrombus volumes under physiological shear rates**, Sandra M. Baker, Kevin G. Phillips, Owen J. T. McCarty, Oregon Health & Science Univ. (USA) [8587-17]

4:10 pm: **Cell cycle imaging with quantitative differential interference contrast microscopy**, Piotr Kostyk, Shelley Phelan, Min Xu, Fairfield Univ. (USA) ..... [8587-18]

4:30 pm: **Dynamic spectroscopic phase microscopy for red blood cells**, Jaeduck Jang, Yunhun Jang, YongKeun Park, KAIST (Korea, Republic of) ..... [8587-19]



**SESSION 3**

**Room: 300 (Esplanade) . . . . . Sat 4:50 pm to 5:30 pm**

**Optical Manipulation of Cells and Tissues**

Session Chair: **Daniel L. Farkas**, The Univ. of Southern California (USA)

4:50 pm: **Manipulating freely diffusing single 20-nm particles in an anti-Brownian electrokinetic trap (ABELtrap)**, Michael Börsch, Friedrich-Schiller-Univ. Jena (Germany); Nawid Zarrabi, Monika G. Düser, Univ. Stuttgart (Germany) . . . . . [8587-20]

5:10 pm: **Activation of cell signaling via optical manipulation of gold-coated liposomes encapsulating signaling molecules**, Gabriel V. Orsinger, Sarah J. Leung, Marek Romanowski, The Univ. of Arizona (USA) . . . . . [8587-21]

**BiOS Hot Topics**  
Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

**Sunday 3 February**

**SESSION 4**

**Room: 300 (Esplanade) . . . . . Sun 8:00 am to 12:00 pm**

**Spectral and Multiparameter Imaging I**

Session Chair: **Dan V. Nicolau**, McGill Univ. (Canada)

8:00 am: **Classification of atherosclerotic patients with different Gensini score by cytochrome data from polychromatic (10-color) flow cytometry immunophenotyping (Invited Paper)**, Jozsef Bocsi, Frank Beutner, Kay Olischer, Aniko Szabo, Gerhard Schuler, Joachim Thiery, Ingo Dähnert, Attila Tarnok, Univ. Leipzig (Germany) . . . . . [8587-22]

8:30 am: **Label-free imaging of fatty acid content within fungal samples using stimulated Raman scattering microscopy**, Natalie Garrett, Julian J. Moger, Univ. of Exeter (United Kingdom) . . . . . [8587-23]

8:50 am: **Ball lens hollow Raman probe and Fourier transform infrared applied for studying non-clinic samples colorectal tumor models**, Bibin B. Andriana, Kwansai Gakuin Univ. (Japan); Norio Miyoshi, Univ. of Fukui (Japan); C. Linda R. Soeratan, The Univ. of Tokyo (Japan); Mika Ishigaki, Yashuhiro Maeda, Akinori Taketani, Kwansai Gakuin Univ. (Japan); Leenawaty Limantara, Univ. Ma Chung (Indonesia); Hidetoshi Sato, Kwansai Gakuin Univ. (Japan) . . . . . [8587-24]

9:10 am: **Raman-based in vitro and in vivo visualization of heat and radiation-induced damage in collagen**, Iwan W. Schie, UC Davis Medical Ctr. (USA); Cindy Thomas, Lawrence Livermore National Lab. (USA); Paul F. Wilson Jr., Brookhaven National Lab. (USA); Thomas R. Huser, Univ. Bielefeld (Germany) and Univ. of California at Davis (USA); Matthew A. Coleman, Lawrence Livermore National Lab. (USA) and Univ. of California at Davis (USA) . . . . . [8587-25]

9:30 am: **Diagnosis and subclassification of breast pathologies using mosaicked large-field two-photon microscopy**, Yuankai K. Tao, Osman O. Ahsen, Massachusetts Institute of Technology (USA); Dejun Shen, The Univ. of Alabama at Birmingham (USA); Yury Sheykin, Beth Israel Deaconess Medical Ctr. (USA); Alex E. Cable, Thorlabs Inc. (USA); James L. Connolly, Beth Israel Deaconess Medical Ctr. (USA); James G. Fujimoto, Massachusetts Institute of Technology (USA) . . . . . [8587-26]

9:50 am: **Hyperspectral angular domain imaging for ex vivo breast tumor detection**, Fartash Vasefi, SMI (USA); Bozena Kaminska, Simon Fraser Univ. (Canada); Muriel Brackstone, Jeffrey J. L. Carson, Univ. of Western Ontario (Canada) . . . . . [8587-27]

Coffee Break . . . . . Sun 10:10 am to 10:40 am

10:40 am: **Interplay between inflammatory cells and demyelination in a model of multiple sclerosis**, Benoit Aubé, Ctr. de Recherche de l'Univ. Laval Robert-Giffard (Canada) and Ctr. d'optique, photonique et laser (Canada) and Univ. Laval (Canada); Yves De Koninck, Steve Lacroix, Ctr. de Recherche de l'Univ. Laval Robert-Giffard (Canada) and Univ. Laval (Canada); Daniel Côté, Ctr. de Recherche de l'Univ. Laval Robert-Giffard (Canada) and Ctr. d'optique, photonique et laser (Canada) and Univ. Laval (Canada) . . . . . [8587-28]

11:00 am: **In vivo skin chromophore mapping using a multimode imaging dermoscope (SkinSpec™)**, Nicholas B. MacKinnon, Fartash Vasefi, Eugene Gussakovsky, Gregory H. Bearman, Daniel L. Farkas, SMI (USA) . . . . . [8587-29]

11:20 am: **In vivo hyperspectral imaging in the extended near infrared (800 -1600 nm)**, Mikhail Y. Berezin, Qian Cao, Steven Wang, Natalia Zhegalova, Walter J. Akers, Washington Univ. School of Medicine in St. Louis (USA) . . . . . [8587-30]

11:40 am: **An aberration free spectrograph for improved imaging and spectra of biological samples**, Brian C. Smith, Jason McClure, Princeton Instruments (USA) . . . . . [8587-31]

Lunch/Exhibition Break . . . . . Sun 12:00 pm to 1:30 pm

**SESSION 5**

**Room: 300 (Esplanade) . . . . . Sun 1:30 pm to 3:10 pm**

**Spectral and Multiparameter Imaging II**

Session Chair: **Dan V. Nicolau**, McGill Univ. (Canada)

1:30 pm: **Single-shot multispectral quantitative phase microscopy**, Niyom Lue, Jeon Woong Kang, Timothy R. Hillman, Ramachandra R. Dasari, Zahid Yaqoob, Massachusetts Institute of Technology (USA) . . . . . [8587-32]

1:50 pm: **Stoichiometric FRET imaging by fluorescence lifetime excitation-emission matrix confocal microscopy**, Ming Zhao, College of Optical Sciences, The Univ. of Arizona (USA); Sung-Eun Kim, Boston Children's Hospital (USA) and Harvard Medical School (USA); Xi He, Children's Hospital Boston (USA) and Harvard Medical School (USA); Leilei L. Peng, College of Optical Sciences, The Univ. of Arizona (USA) . . . . . [8587-33]

2:10 pm: **Quantifying the optical properties and chromophore concentrations of turbid media using polarization sensitive hyperspectral imaging: optical phantom studies**, Fartash Vasefi, SMI (USA); Rolf B. Saager, Anthony J. Durkin, Beckman Laser Institute and Medical Clinic (USA); Nicholas B. MacKinnon, Eugene Gussakovsky, Daniel L. Farkas, SMI (USA) . . . . . [8587-34]

2:30 pm: **High throughput 3D widefield spectral imaging based on HiLo microscopy and imaging fourier transform spectrometer**, Heejin Choi, Peter T. C. So, Massachusetts Institute of Technology (USA) . . . . . [8587-35]

2:50 pm: **Quantitative functional assessment of tumor microenvironment using photoacoustic imaging in pre-clinical breast tumor model**, Melissa Yin, Sunnybrook Health Sciences Ctr. (Canada); Minalini Lakshman, VisualSonics Inc. (Canada); F. Stuart Foster, Sunnybrook Health Sciences Ctr. (Canada) and Univ. of Toronto (Canada) . . . . . [8587-36]

Coffee Break . . . . . Sun 3:10 pm to 3:40 pm

**SESSION 6**

**Room: 300 (Esplanade) . . . . . Sun 3:40 pm to 4:40 pm**

**Rare Events**

Session Chair: **Dan V. Nicolau**, McGill Univ. (Canada)

3:40 pm: **Mesenchymal stem cell interactions with 3D ECM modules fabricated via multiphoton excited photochemistry**, Paul J. Campagnola, Ping-Jung Su, Quyen A. Tran, Jimmy Fong, Kevin W. Eliceiri, Univ. of Wisconsin-Madison (USA); Brenda M. Ogle, Univ. of Wisconsin-Madison (USA) . . . . . [8587-37]

4:00 pm: **Real-time image processor for detection of rare cells and particles in flow at 37 million line scans per second**, Ali Ayazi, Keisuke Goda, Cejo K. Lonappan, Jost Adam, Jagannath Sadasivama, Daniel R. Gossett, Elodie Sollier, Ali M. Fard, Soojung Claire Hur, Coleman Murray, Chao Wang, Nora Brackbill, Dino Di Carlo, Bahram Jalali, Univ. of California, Los Angeles (USA) . . . . . [8587-38]

4:20 pm: **Dual wavelength diffuse fluorescence flow cytometer for detecting and localizing rare circulating cells in mice in vivo**, Noah Pestana, Vivian E. Pera, Dwayne Vickers, Shashi K. Murthy, Northeastern Univ. (USA); Charles P. Lin, Massachusetts General Hospital (USA) and Harvard Medical School (USA); Mark J. Niedre, Northeastern Univ. (USA) . . . . . [8587-39]

## Monday 4 February

## SESSION 7

Room: 300 (Esplanade) ..... Mon 8:00 am to 12:10 pm

**Advanced Quantitation in Cells (Cytomics) and Tissues (Histomics)**Session Chair: **Attila Tarnok**, Univ. Leipzig (Germany)8:00 am: **High-speed multispectral confocal imaging** (*Invited Paper*), Gary E. Carver, Sarah A. Locknar, William A. Morrison, Omega Optical, Inc. (USA); Daniel L. Farkas, SMI (USA) ..... [8587-40]8:30 am: **Mesoporous silica nanoparticles for treating spinal cord injury at the single cell level** (*Invited Paper*), Desiree White, Riyi Shi, James F. Leary, Purdue Univ. (USA) ..... [8587-41]9:00 am: **AFM combined with near field techniques for probing trans-membrane protein dynamics**, Sina Amini, Texas A&M Univ. (USA); Zhe Sun, Gerald A. Meininger, Univ. of Missouri-Columbia (USA); Kenith E. Meissner, Texas A&M Univ. (USA) ..... [8587-42]9:20 am: **Large-field-of-view chip-scale Talbot fluorescence microscopy**, Shuo Pang, Chao Han, Changhui Yang, California Institute of Technology (USA) ..... [8587-43]9:40 am: **Optical quantification of cellular mass, volume, and density of circulating tumor cells identified in an ovarian cancer patient**, Kevin G. Phillips, Oregon Health & Science Univ. (USA); Carmen Ruiz Valesco, Julia Li, Anand Kolatkar, Madelyn Luttgren, The Scripps Research Institute (USA); Kelly Bethel, Bridgette Duggan, Scripps Health (USA); Peter Kuhn, The Scripps Research Institute (USA); Owen J. T. McCarty, Oregon Health & Science Univ. (USA) ..... [8587-44]10:00 am: **Nano-confined protein anchors structured by STED lithography probed by dSTORM**, Jaroslav Jacak, Richard Wollhofen, Johannes Kepler Univ. Linz (Austria); Kurt Schilcher, Upper Austria Univ. of Applied Sciences (Austria); Thomas A. Klar, Johannes Kepler Univ. Linz (Austria) ..... [8587-45]

Coffee Break ..... Mon 10:20 am to 10:50 am

10:50 am: **In situ 3D monitoring of collagen fibrillogenesis using SHG microscopy**, Stéphane Bancelin, Ecole Polytechnique (France) and Ctr. National de la Recherche Scientifique (France) and INSERM (France); Vaia Machairas, Etienne Decencière, Mines ParisTech (France); Claire Albert, Univ. Pierre et Marie Curie (France) and Collège de France (France) and CNRS (France); Thibaud Coradin, Carole Aimé, Univ. Pierre et Marie Curie (France) and Collège de France (France) and Ctr. National de la Recherche Scientifique (France); Marie-Claire Schanne-Klein, Ecole Polytechnique (France) and Ctr. National de la Recherche Scientifique (France) and INSERM (France) ..... [8587-46]11:10 am: **Real time blood testing using quantitative phase imaging**, Hoa V. Pham, Univ. of Illinois at Urbana-Champaign (USA); Krishnarao V. Tangella, Christie Clinic (USA) and Univ. of Illinois at Urbana-Champaign (USA); Gabriel Popescu, Univ. of Illinois at Urbana-Champaign (USA) ..... [8587-47]11:30 am: **Quantitative birefringence imaging using quadra-wave interferometry**, Sherazade Aknoun, Institut Fresnel (France) and PHASICS S.A. (France); Pierre Bon, Serge Monneret, Institut Fresnel (France); Benoit F. Wattellier, PHASICS S.A. (France) ..... [8587-48]11:50 am: **Immunolabeling of latent fingermarks**, Annemieke van Dam, Academisch Medisch Ctr. (Netherlands); Maurice C. Aalders, Univ. van Amsterdam (Netherlands); Ton G. Leeuwen, S.A.G. Lambrechts, Academisch Medisch Ctr. (Netherlands) ..... [8587-49]

Lunch Break ..... Mon 12:10 pm to 1:40 pm

## SESSION 8

Room: 300 (Esplanade) ..... Mon 1:40 pm to 4:30 pm

**Image and Data Processing, Quantification, and Standards**1:40 pm: **Quantitative segmentation of fluorescence microscopy images of heterogeneous tissue: application to the detection of residual disease in tumor margins**, Jenna L. Mueller, Zachary T. Harmany, Jeffrey K. Mito, Joseph Geradts, David G. Kirsch, Rebecca M. Willett, Duke Univ. (USA); J. Quincy Brown, Tulane Univ. (USA); Nirmala Ramanujam, Duke Univ. (USA) ... [8587-51]2:00 pm: **Feature-based algorithms for predicting tissue necrosis using near-infrared fluorescence angiography**, Gabriel Brat, Johns Hopkins Univ. (USA); Ravi Starzl, Carnegie Mellon Univ. (USA) and Johns Hopkins Univ. (USA); Alexandros Afthinos, Joani M. Christensen, Kate J. Burette, Damon S. Cooney, W.P. Andrew Lee M.D., Gerald Brandacher, Justin M. Sacks M.D., Johns Hopkins Univ. (USA) ..... [8587-52]2:20 pm: **Image processing for drift compensation in fluorescence microscopy**, Steffen B. Petersen, International Iberian Nanotechnology Lab. (Portugal) and Aalborg Univ. (Denmark); Thiagarajan Viruthachalam, Isabel Coutinho, Gnana P. Gajula, International Iberian Nanotechnology Lab. (Portugal); Maria Teresa Neves-Petersen, International Iberian Nanotechnology Lab. (Portugal) and Aalborg Univ. (Portugal) ..... [8587-53]2:40 pm: **Automated segmentation of laser irradiated engineered skin in 3D OCT**, Taeho Kim, Ulsan National Institute of Science and Technology (Korea, Republic of) and Univ. of Ulsan (Korea, Republic of); Jungbin Ahn, Areun Kim, Ulsan National Institute of Science and Technology (Korea, Republic of); Jeehyun Kim, Kyungpook National Univ. (Korea, Republic of); Woonggyu Jung, Ulsan National Institute of Science and Technology (Korea, Republic of) ..... [8587-54]

Coffee Break ..... Mon 3:00 pm to 3:20 pm

3:20 pm: **Automatic cell nuclei counting: a protocol to acquire images and to compare results between color and multispectral images**, Mohamed Bouzid, Univ. de Bourgogne (France) and Institut Supérieur de Biotechnologie de Sfax (Tunisia); Ali Khalfallah, Institut Supérieur de Biotechnologie de Sfax (Tunisia); André Bouchot, Univ. de Bourgogne (France); Mohamed-Salim Bouhleh, Institut Supérieur de Biotechnologie de Sfax (Tunisia); Franck S. Marzani, Univ. de Bourgogne (France) ..... [8587-55]3:50 pm: **Retrieving spatio-temporal resolved Jones matrix using polarization holographic microscopy**, Jaeduck Jang, YoungChan Kim, Joonwoo Jung, Mahn Won Kim, YongKeun Park, KAIST (Korea, Republic of) ..... [8587-57]4:10 pm: **An XML based systems approach to a shared standard for cytometry and pathology**, Robert C. Leif, Stephanie H. Leif, Newport Instruments (USA) ..... [8587-50]

## SESSION 9

Room: 300 (Esplanade) ..... Mon 4:50 pm to 5:10 pm

**Microarrays for Biomolecules, Cells, and Tissues**4:50 pm: **Phase relief imaging with confocal laser scanning system**, Tong Peng, Hao Xie, Yichen Ding, Peking Univ. (China); Weichao Wang, Shanghai Jiao Tong Univ. (China); Zhiming Li, Wenzhou Medical College (China); Dayong Jin, Macquarie Univ. (Australia); Yuanhe Tang, Xi'an Univ. of Technology (China); Qiushi Ren, Peng Xi, Peking Univ. (China) ..... [8587-58]

## POSTERS-MONDAY

Room: 103 (Exhibit Level) ..... Mon 5:30 pm to 7:30 pm

Session Chair: **Robert Leif**, Newport Instruments (USA)Conference attendees are invited to attend the BIOS poster session on Monday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.**The development of high-speed confocal laser scanning microscopy**, Sanghoon Choi, Yong J. Lee, Donghyeon Kwak, Ho Lee, Kyungpook National Univ. (Korea, Republic of) ..... [8587-56]**Differences in activity profile of bacterial cultures studied by dynamic speckle patterns**, Evelio E. Ramirez Miquet, Isabel Otero, Dania Rodriguez, Juan G. Darias, Andres Combarro, Orestes R. Contreras, Ctr. de Aplicaciones Tecnológicas y Desarrollo Nuclear (Cuba) ..... [8587-59]**Observation of silicon-mediated alleviation of cadmium stress in maize (Zea mays L.) seedlings via LED-induced chlorophyll fluorescence**, Artur S. Gouveia-Neto, Elias A. Silva Jr., Airon J. da Silva, Clístenes W. A. Nascimento, Univ. Federal Rural de Pernambuco (Brazil) ..... [8587-60]**Determining the influence of age and diabetes on the second-harmonic generation strength of dermal collagen fibers in vivo**, Wei-Chun Hung, Chi-Kuang Sun, Argon Chen, National Taiwan Univ. (Taiwan) ..... [8587-62]**Tumor-stem cells interactions by fluorescence imaging**, Aleksandra V. Meleshina, Elena Cherkasova, Nizhny Novgorod State Univ. (Russian Federation); Marina V. Shirmanova, Nizhny Novgorod State Medical Academy (Russian Federation); Ekaterina A. Sergeeva, Institute of Applied Physics (Russian Federation); Ekaterina Kiseleva, Erdem Dashinimaev, Koltzov Institute of Developmental Biology (Russian Federation); Ilya V. Turchin, Institute of Applied Physics (Russian Federation); Elena V. Zagaynova M.D., Nizhny Novgorod State Medical Academy (Russian Federation) ..... [8587-63]

**Water content distribution imaging of skin tissue using near-infrared camera and measurement depth analysis**, Hidenobu Arimoto, National Institute of Advanced Industrial Science and Technology (Japan); Mariko Egawa, Shiseido Co., Ltd. (Japan) . . . . . [8587-64]

**Investigation of the mechanical property of individual cell using axial optical tweezers**, Mary-Clare C. Dy, Tadao Sugiura, Kotaro Minato, Nara Institute of Science and Technology (Japan) . . . . . [8587-65]

**Kinetic identification of protein ligands in a 50,000 small-molecule library using microarrays and label-free ellipsometric scanning microscopes**, James P. Landry, Andrew P. Proudian, Galina Malovichko, Xiangdong Zhu, Univ. of California, Davis (USA) . . . . . [8587-66]

**TPEF-SHG study of myofibril disassembly in live adult cardiomyocytes during dedifferentiation**, Honghai Liu, Clemson Univ. (USA); Yonghong Shao, Shenzhen Univ. (China); Wan Qin, Zhonghai Wang, Huaxiao Yang, Clemson Univ. (USA); Thomas K. Borg, Medical Univ. of South Carolina (USA); Bruce Z. Gao, Clemson Univ. (USA) . . . . . [8587-67]

**Study of virus by micro-Raman spectroscopy**, Kamila Moor, Yusuke Nishimoto, Masanori Sawa, Hodaka Kitamura, Kiyoshi Ohtani, Hidetoshi Sato, Kwansai Gakuin Univ. (Japan) . . . . . [8587-68]

**Automated in vivo sensing and tracking of rare circulating cells in wide-field macroscopic fluorescence image sequences with high background Autofluorescence**, Stacey Markovic, Binlong Li, Mario Sznajder, Octavia I. Camps, Mark J. Nieder, Northeastern Univ. (USA) . . . . . [8587-69]

**Synthesize dye-bioconjugates to visualize cancer cells using fluorescence microscopy**, Yang Pu, Wubao Wang, The City College of New York (USA); Rui Tang, Baogang Xu, Duanwen Shen, Sharon Bloch, Mingzhou Zhou, Washington Univ. in St. Louis (USA); Samuel Achilefu, Washington Univ. School of Medicine in St. Louis (USA); Robert R. Alfano, The City College of New York (USA) . . . . . [8587-73]

**Polarised Raman imaging of living cells for chemical contrast manipulation**, Liang-da Chiu, Almar F. Palonpon, Keisaku Hamada, Satoshi Kawata, Osaka Univ. (Japan); Mikiko Sodeoka, RIKEN (Japan); Katsumasa Fujita, Osaka Univ. (Japan) . . . . . [8587-74]

**The microstructure of collagen hydrogels has a very strong effect on differentiation of embryonic stem cells**, Yu Jer Hwang, Julia G. Lyubovitsky, Univ. of California, Riverside (USA) . . . . . [8587-75]

**Actin motility confinement on micro/nanostructured surfaces**, Jenny L. Aveyard, Joanna Hajne, Univ. of Liverpool (United Kingdom); Alf Mansson, Malin Persson, Linnaeus Univ. (Sweden); Falco C. M. van Delft, J. van Zijl, Jaap Snijder, Eric Van Den Heuvel, MiPlaza, Philips Research (Netherlands); Dan V. Nicolau, Univ. of Liverpool (United Kingdom) . . . . . [8587-76]

**Multiple parallel actin/myosin motility assays on a microfluidic platform**, Jenny L. Aveyard, Harm van Zalinge, Univ. of Liverpool (United Kingdom); Alf Mansson, Malin Persson, Linnaeus Univ. (Sweden); Falco C. M. van Delft, M. M. den Dekker, MiPlaza, Philips research (Netherlands); Dan V. Nicolau, Univ. of Liverpool (United Kingdom) . . . . . [8587-77]

**The application of motile microorganisms and microfluidics to solve complex simulations**, Ben Libberton, Marie Binz, Univ. of Liverpool (United Kingdom); Falco C. M. van Delft, A. F. Jos J. van de Ven, Jaap Snijder, Harold H. A. J. Roosen, Philips Innovation Services (Netherlands); Harm van Zalinge, Dan V. Nicolau, Univ. of Liverpool (United Kingdom) . . . . . [8587-78]

**Microscopic imaging of glyceraledehydes-induced tissue glycation with intrinsic second harmonic generation and two-photon fluorescence contrasts**, Yu Jer Hwang, Joseph Granelli, Univ. of California, Riverside (USA); Manasa Tirumalasetty, Univ. of California Riverside (USA); Julia G. Lyubovitsky, Univ. of California, Riverside (USA) . . . . . [8587-79]

**Tuesday 5 February**

**SESSION 10**

**Room: 310 (Esplanade) . . . . . Tue 8:30 am to 10:00 am**

**NOTE ROOM CHANGE**

**Biomedical Imaging and Cell Manipulation using a DMD or MEMS Array I**

Joint Session with Conferences 8587 and 8618

Session Chairs: **Sara L. Best**, Univ. of Wisconsin School of Medicine and Public Health (USA); **James F. Leary**, Purdue Univ. (USA)

8:30 am: **Medical applications of real-time 3D camera in image-guided radiotherapy** (*Invited Paper*), Shidong Li, Temple Univ. Hospital (USA); Tuotuo Li, Jason Geng, Xigen, LLC (USA) . . . . . [8618-1]

9:00 am: **Performance assessment of 3D surface imaging technique for medical imaging applications**, Tuotuo Li, Jason Geng, Xigen, LLC (USA); Shidong Li, Temple Univ. Hospital (USA) . . . . . [8618-2]

9:20 am: **Automatic respiration tracking for radiotherapy using optical 3D camera**, Tuotuo Li, Xigen, LLC (USA); Shidong Li, Temple Univ. Hospital (USA); Zheng Geng, Xigen, LLC (USA) . . . . . [8618-3]

9:40 am: **Spectral light source distribution variations to enhance discrimination of the common bile duct from surroundings in reflectance hyperspectral images**, Maritoni Litorja, Mira Fein, National Institute of Standards and Technology (USA); Eleanor F. Wehner, The Univ. of Texas at Arlington (USA); Edward Livingston, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Karel J. Zuzak, Digital Light Innovations (USA) . . . . . [8618-4]

Coffee Break . . . . . Tue 10:00 am to 10:20 am

**SESSION 11**

**Room: 310 (Esplanade) . . . . . Tue 10:20 am to 12:10 pm**

**NOTE ROOM CHANGE**

**Biomedical Imaging and Cell Manipulation using a DMD or MEMS Array II**

Joint Session with Conferences 8587 and 8618

Session Chairs: **Karel J. Zuzak**, Digital Light Innovations (USA); **James F. Leary**, Purdue Univ. (USA)

10:20 am: **Utility of active DLP hyperspectral illumination in characterizing DIEP flap perfusion: characterization of perforators and clinical validity** (*Invited Paper*), Michel Saint-Cyr, Mayo Clinic (USA); Chrisovalantis Lakhiani, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Angela Cheng M.D., Emory Univ. (USA); Sumeet Teotia, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Karel J. Zuzak, Digital Light Innovations (USA) . . . . . [8618-5]

10:50 am: **Hyperspectral image segmentation of the common bile duct in pancreatoduodenectomies**, Maritoni Litorja, Daniel V. Samarov, National Institute of Standards and Technology (USA); Eleanor F. Wehner, The Univ. of Texas at Arlington (USA); Edward Livingston, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA) . . . . . [8618-6]

11:10 am: **Fluorescence image detection and reconstruction by subtractive light illumination using a digital micromirror device**, Jong-Ryul Choi, Donghyun Kim, Yonsei Univ. (Korea, Republic of) . . . . . [8618-7]

11:30 am: **Attenuation corrected fluorescence extraction using spatial frequency domain imaging**, Bin Yang, Manu Sharma, Youmin Wang, James W. Tunnell, The Univ. of Texas at Austin (USA) . . . . . [8618-8]

11:50 am: **Sparse-sampling parallel Raman/SERS microspectroscopy for high-throughput molecular analysis of micro and nanoparticles**, Wei-Chuan Shih, Univ. of Houston (USA) . . . . . [8587-72]



# Multiphoton Microscopy in the Biomedical Sciences XIII

Conference Chairs: **Ammasi Periasamy**, Univ. of Virginia (USA); **Karsten König**, JenLab GmbH (Germany); **Peter T. C. So**, Massachusetts Institute of Technology (USA)

Program Committee: **Wolfgang Becker**, Becker & Hickl GmbH (Germany); **Alberto Diaspro**, Istituto Italiano di Tecnologia (Italy); **Chen-Yuan Dong**, National Taiwan Univ. (Taiwan); **Kevin W. Eliceiri**, Univ. of Wisconsin-Madison (USA); **Scott E. Fraser**, California Institute of Technology (USA); **Paul M. W. French**, Imperial College London (United Kingdom); **Hans Gerritsen**, Utrecht Univ. (Netherlands); **Enrico Gratton**, Univ. of California, Irvine (USA); **Min Gu**, Swinburne Univ. of Technology (Australia); **Stefan W. Hell**, Max-Planck-Institut für biophysikalische Chemie (Germany); **Brian A. Herman**, The Univ. of Texas Health Science Ctr. at San Antonio (USA); **Satoshi Kawata**, Osaka Univ. (Japan); **Fu-Jen Kao**, National Yang-Ming Univ. (Taiwan); **Arnd K. Krueger**, Spectra-Physics®, a Newport Corp. Brand (USA); **Joseph R. Lakowicz**, Univ. of Maryland School of Medicine (USA); **Steve M. McDonald**, Coherent, Inc. (USA); **Angelika C. Rueck**, Univ. Ulm (Germany); **Junle Qu D.D.S.**, Shenzhen Univ. (China); **Steven S. Vogel**, National Institutes of Health (USA); **Paul W. Wiseman**, McGill Univ. (Canada); **X. Sunney Xie**, Harvard Univ. (USA); **Bernhard Zimmermann**, Carl Zeiss Jena GmbH (Germany); **Warren R. Zipfel**, Cornell Univ. (USA)

## Sunday 3 February

### OPENING REMARKS

Room: 308 (Esplanade) ..... 8:00 am to 8:15 am

Session Chair: **Ammasi Periasamy**, Univ. of Virginia (USA)

### KEYNOTE SESSION

Room: 308 (Esplanade) ..... 8:15 am to 9:45 am

Session Chair: **Ammasi Periasamy**, Univ. of Virginia (USA)

8:15 am: **Enhanced resolution and sensitivity in fluorescence fluctuation measurements using multi-modal data acquisition and global analysis (Keynote Presentation)**, Keith M. Berland, Neil R. Anthony, Emory Univ. (USA) ..... [8588-1]

8:45 am: **Promising new wavelengths for multi-photon microscopy: thinking outside the Ti:Sapphire box (Keynote Presentation)**, Gail McConnell, Greg Norris, Rumelo C. Amor, John Dempster, Univ. of Strathclyde (United Kingdom); William B. Amos, MRC Lab. of Molecular Biology (United Kingdom) ..... [8588-2]

9:15 am: **Stimulated Raman scattering microscopy: coming of age (Keynote Presentation)**, X. Sunney Xie, Harvard Univ. (USA) ..... [8588-3]

### SESSION 1

Room: 308 (Esplanade) ..... Sun 9:45 am to 12:05 pm

#### CRS Technology

Session Chair: **Ji-Xin Cheng**, Purdue Univ. (USA)

9:45 am: **Functional broadband coherent Raman imaging (Invited Paper)**, Marcus T. Cicerone, Charles H. Camp, Evangelos Gatzogiannis, Christopher Hartshorn, Young Jong Lee, National Institute of Standards and Technology (USA) ..... [8588-4]

10:05 am: **Quantitative vibrational imaging by pulse shaping based hyperspectral stimulated Raman scattering microscopy and multivariate curve resolution analysis**, Delong Zhang, Ping Wang, Mikhail N. Slipchenko, Dor Ben-Amotz, Andrew M. Weiner, Ji-Xin Cheng, Purdue Univ. (USA) . [8588-5]

Coffee Break ..... Sun 10:20 am to 10:35 am

10:35 am: **Label-free observation of tissues by high-speed stimulated Raman spectral microscopy and independent component analysis (Invited Paper)**, Yasuyuki Ozeki, Osaka Univ. (Japan) and Japan Science and Technology Agency (Japan); Yoichi Otsuka, Shuya Sato, Hiroyuki Hashimoto, Canon Inc. (Japan); Wataru Umemura, Kazuhiko Sumimura, Osaka Univ. (Japan); Norihiko Nishizawa, Nagoya Univ. (Japan); Kiichi Fukui, Kazuyoshi Itoh, Osaka Univ. (Japan) ..... [8588-6]

10:55 am: **When is stimulated Raman scattering microscopy more sensitive than spontaneous Raman scattering microscopy?**, Wei Min, Columbia Univ. (USA) ..... [8588-7]

11:10 am: **Nonlinear nearfield microscopy (Invited Paper)**, Annika M. Enejder, Henning Hagman, Juris Kiskis, Chalmers Univ. of Technology (Sweden) [8588-8]

11:30 am: **Circularly polarized coherent anti-Stokes Raman scattering microscopy for background-free tissue imaging**, Jian Lin, Paul Kumar Upputuri, Gong Li, Haifeng Wang, Zhiwei Huang, National Univ. of Singapore (Singapore) ..... [8588-9]

11:45 am: **Surface selective coherent Raman scattering microscopy (Invited Paper)**, Eric O. Potma, Yong Wang, Xuejun Liu, Univ. of California, Irvine (USA) ..... [8588-10]

Lunch/Exhibition Break ..... Sun 12:05 pm to 1:05 pm

### SESSION 2

Room: 308 (Esplanade) ..... Sun 1:05 pm to 2:20 pm

#### Laser Sources for CRS Microscopy

Session Chair: **Eric O. Potma**, Univ. of California, Irvine (USA)

1:05 pm: **Spectroscopic SRS imaging with a time-lens source synchronized to a femtosecond pulse shaper**, Ke Wang, Cornell Univ. (USA); Delong Zhang, Purdue Univ. (USA); Kriti Charan, Cornell Univ. (USA); Mikhail N. Slipchenko, Ping Wang, Ji-Xin Cheng, Purdue Univ. (USA); Chris Xu, Cornell Univ. (USA) ..... [8588-11]

1:20 pm: **Development of CARS spectrometer using dual-wavelength electronically tuned laser**, Yasuhiro Maeda, Yusuke Nishimoto, Hidetoshi Sato, Kwansai Gakuin Univ. (Japan) ..... [8588-12]

1:35 pm: **All-fiber laser system for CRS microscopy by optical synchronization of two power-amplifiers**, Christian W. Freudiger, Harvard Univ. (USA) and Invenio Imaging, Inc. (USA); Wenlong Yang, Gary R. Holtom, Harvard Univ. (USA); Nasser N. Peyghambarian, The Univ. of Arizona (USA); X. Sunney Xie, Harvard Univ. (USA); Khanh Q. Kieu, The Univ. of Arizona (USA) ..... [8588-13]

Conference sponsored by:



BIOS

1:50 pm: **Broadly tunable high-energy spectrally focused CARS microscopy with chemical specificity and high resolution for biological samples**, Craig Brideau, Kelvin W. Poon, Peter K. Stys, Univ. of Calgary (Canada) . . . . . [8588-14]

2:05 pm: **Fiber bundle based probe with polarization for coherent anti-Stokes Raman scattering microendoscopy imaging**, Zhengfan Liu, Beijing Institute of Technology (China) and The Methodist Hospital Research Institute (USA); Zhiyong Wang, Xi Wang, Xiaoyun Xu, Xu Chen, Jie Cheng, Xiaoyan Li, The Methodist Hospital Research Institute (USA); Shufen Chen, Beijing Institute of Technology (China); Jianguo Xin, Stephen T. C. Wong, The Methodist Hospital Research Institute (USA) . . . . . [8588-15]

**SESSION 3**

**Room: 308 (Esplanade) . . . . . Sun 2:20 pm to 5:30 pm**

**Applications of CARS Microscopy**

Session Chair: **Annika M. Enejder**, Chalmers Univ. of Technology (Sweden)

2:20 pm: **Seeing the unseen in cell machinery based on multiplex SRS microscopy (Invited Paper)**, Ji-Xin Cheng, Mikhail N. Slipchenko, Purdue Univ. (USA) . . . . . [8588-17]

2:40 pm: **Integrated stimulated Raman scattering, two-photon fluorescence, and third harmonic generation microscopy revealed acetowhitening mechanistic phenomenon in living cells**, Jianan Y. Qu, Seng Khoon Teh, Hong Kong Univ. of Science and Technology (Hong Kong, China) . . . . . [8588-18]

2:55 pm: **Agrochemical application of stimulated Raman scattering (SRS) microscopy**, Julian J. Moger, Jessica C. Mansfield, Univ. of Exeter (United Kingdom) . . . . . [8588-19]

Coffee Break . . . . . Sun 3:10 pm to 3:40 pm

3:40 pm: **Visualizing cold treatment response of sebaceous glands in vivo with CARS microscopy**, Yookyung Jung, H. Ray Jalian, Joshua Tam, R. Rox Anderson M.D., Conor L. Evans, Wellman Ctr. for Photomedicine (USA) . . . . . [8588-20]

3:55 pm: **Label-free detection of microscopic brain tumor boundaries using stimulated Raman scattering microscopy (Invited Paper)**, Daniel A. Orringer M.D., Univ. of Michigan Health System (USA); Minbiao Ji, Christian W. Freudiger, Harvard Univ. (USA); Shakti Ramkissoon M.D., Dana Farber/Harvard Cancer Ctr. (USA); Alexandra Golby M.D., Nathalie Agar, Brigham and Women's Hospital (USA); Marika Hayashi, Dana Farber/Harvard Cancer Ctr. (USA); Darryl Lau, Univ. of Michigan Medical School (USA); X. Sunney Xie, Harvard Univ. (USA); Oren Sagher M.D., Univ. of Michigan Health System (USA) . . . . [8588-21]

4:15 pm: **Local myelin in vivo health analysis in a multiple sclerosis mouse model with a two-dimensional Fourier approach**, Steve Begin, Erik Belanger, Sophie Laffray, Ctr. de Recherche de l'Univ. Laval Robert-Giffard (Canada); Steve Lacroix, Ctr. de Recherche de l'Univ. Laval (Canada); Yves De Koninck, Daniel Côté, Ctr. de Recherche de l'Univ. Laval Robert-Giffard (Canada) . . . . . [8588-22]

4:30 pm: **A microfluidic platform for high-throughput label-free cellular imaging and screening**, Aaron M. Streets, Tao Chen, YanYi Huang, Peking Univ. (China) . . . . . [8588-23]

4:45 pm: **Combining multiphoton and CARS microscopy for skin imaging**, Hans G. Breunig, Univ. des Saarlandes (Germany) and JenLab GmbH (Germany); Martin Weinigel, Marcel Kellner-Höfer, Rainer Bückle, JenLab GmbH (Germany); Maxim E. Darvin M.D., Jürgen M. Lademann, Charité Universitätsmedizin Berlin (Germany); Karsten König, Univ. des Saarlandes (Germany) and JenLab GmbH (Germany) . . . . . [8588-24]

5:00 pm: **Applications of hyperspectral coherent Raman scattering microscopy**, Erik T. Garbacik, Andrew L. Fussell, Roza P. Korai, Jeroen P. Korterik, Cornelis Otto, Jennifer L. Herek, Herman L. Offerhaus, Univ. Twente (Netherlands) . . . . . [8588-25]

5:15 pm: **Raman microspectroscopy for visualization of peripheral nerves**, Takeo Minamikawa, Yoshinori Harada, Noriaki Koizumi, Tetsuro Takamatsu, Kyoto Prefectural Univ. of Medicine (Japan) . . . . . [8588-26]

**POSTERS-SUNDAY**

**Room: 103 (Exhibit Level) . . . . . Sun 5:30 pm to 7:30 pm**

Session Chairs: **Aisada Uchugonova**, Univ. des Saarlandes (Germany); **Holly L. Aaron**, Univ. of California, Berkeley (USA); **Dusan Chorvat**, International Laser Centre in Bratislava (Slovakia); **Kevin W. Eliceiri**, Univ. of Wisconsin-Madison (USA)

Conference attendees are invited to attend the BIOS poster session on Sunday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/x27476.xml>.

**Chemical-contrast imaging with pulse-shaping based pump-probe spectroscopy**, Daniel C. Flynn, Amar R. Bhagwat, Jennifer P. Ogilvie, Univ. of Michigan (USA) . . . . . [8588-59]

**Optical metabolic imaging of macro-suspension tumor cultures predicts tumor therapeutic response**, Alex J. Walsh, Rebecca S. Cook, Carlos L. Arteaga, Melissa C. Skala, Vanderbilt Univ. (USA) . . . . . [8588-73]

**Stimulated Raman microscopy without ultrafast lasers**, Zhaokai Meng, Georgi I. Petrov, Vladislav V. Yakovlev, Texas A&M Univ. (USA) . . . . . [8588-74]

**Second harmonic imaging to distinguish grana and starch inside an intact leaf**, Mei-Yu Chen, Guan-Yu Zhuo, Po-Fu Chen, Pei-Chun Wu, Yuan Tsung Hsieh, Tzu-Ming Liu, Shi-Wei Chu, National Taiwan Univ. (Taiwan) . . . . [8588-75]

**Imaging molecular structure with Stokes-polarimeter based second harmonic generation microscopy**, Nirmal Mazumder, Jianjun Qiu, Chih-Wei Hu, Fu-Jen Kao, National Yang-Ming Univ. (Taiwan) . . . . . [8588-76]

**Ultra-deep penetration and remote scanning of temporally-focused two-photon excitation**, Gali Sela, Hod Dana, Shy Shoham, Technion-Israel Institute of Technology (Israel) . . . . . [8588-77]

**Maximum imaging depth comparison in porcine vocal folds using 780-nm vs. 1550-nm excitation wavelengths**, Murat Yildirim, Onur Ferhanoglu, The Univ. of Texas at Austin (USA); James B. Kobler, Steven M. Zeitels M.D., Massachusetts General Hospital (USA); Adela Ben-Yakar, The Univ. of Texas at Austin (USA) . . . . . [8588-78]

**Two-photon-based structured illumination microscopy applied for superresolution optical biopsy**, Chia-Hua Yeh, Szu-Yu Chen, National Central Univ. (Taiwan) . . . . . [8588-79]

**Auto-balancing detector for fiber laser based stimulated Raman scattering (SRS) imaging**, Wenlong Yang, Christian W. Freudiger, Gary R. Holtom, X. Sunney Xie, Harvard Univ. (USA) . . . . . [8588-80]

**Label-free detection of microscopic brain tumor boundaries using stimulated Raman scattering microscopy**, Minbiao Ji, Harvard Univ. (USA); Daniel A. Orringer, Univ. of Michigan Medical School (USA) . . . . . [8588-81]

**Rapid multi-color stimulated Raman scattering microscopy using OPO with electro-optical Lyot filter**, Lingjie Kong, Minbiao Ji, Gary R. Holtom, Christian W. Freudiger, X. Sunney Xie, Harvard Univ. (USA) . . . . . [8588-82]

**Two-photon fluorescence imaging of intracellular reactive oxygen species H2O2**, Hengchang Guo, Univ. of Maryland, College Park (USA) and Weill Cornell Medical College (USA); Hossein Aleyasin, Burke Medical Research Institute (USA); Scott S. Howard, Cornell Univ. (USA); Vivian Lin, Univ. of California, Berkeley (USA); Chao-Wei Chen, Jianting Wang, Univ. of Maryland, College Park (USA); Renee E. Haskew-Layton, Burke Medical Research Institute (USA); Christopher J. Chang, Univ. of California, Berkeley (USA) and Howard Hughes Medical Institute (USA); Chris Xu, Cornell Univ. (USA); Rajiv R. Ratan, Burke Medical Research Institute (USA); Yu Chen, Univ. of Maryland, College Park (USA) . . . . . [8588-83]

**Coherent Raman scattering microscopy with a compact Er:fiber laser**, Adil T. Gorgulu, Rabia Gorgulu, Andreas Zumbusch, Claudius Riek, Alfred Leitenstorfer, Univ. Konstanz (Germany) . . . . . [8588-84]

**Random addressing FLIM with acousto-optic deflectors**, Jing Qi, Yonghong Shao, Wang Yan, Kaige Wang, Junle Qu, Niu Hanben, Shenzhen Univ. (China) . . . . . [8588-85]

**Evaluation of the oxidative stress of psoriatic fibroblasts based on spectral two-photon fluorescence lifetime imaging**, Dimitrios Kapsokalyvas, Victoria Barygina, Univ. degli Studi di Firenze (Italy); Riccardo Cicchi, Univ. degli Studi di Firenze (Italy) and Consiglio Nazionale delle Ricerche (Italy); Claudia Fiorillo, Consiglio Nazionale delle Ricerche (Italy); Francesco S. Pavone, European Lab. for Non-linear Spectroscopy (Italy) . . . . . [8588-86]

**Clinical multiphoton endoscopy with FLIM capability**, Martin Weinigel, Hans G. Breunig, Peter Fischer, Marcel Kellner-Höfer, Rainer Bückle, JenLab GmbH (Germany); Karsten König, Univ. des Saarlandes (Germany) and JenLab GmbH (Germany) . . . . . [8588-87]

**Next generation TCSPC detection**, Uwe Ortmann, Hans-Jürgen Rahn, Felix Koberling, Benedikt Krämer, Marcelle König, PicoQuant GmbH (Germany); Samantha Fore, PicoQuant Photonics North America, Inc. (USA); Peter Kapusta, Michael Wahl, Rainer Erdmann, PicoQuant GmbH (Germany) . . . . . [8588-88]

**Two-photon raster image cross-correlation spectroscopy (RICCS) with a supercontinuum light source and pulse phase control**, David J. Graham, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); George Alexandrakis, The Univ. of Texas at Arlington (USA) . . . . . [8588-89]

**The development of fluorescence lifetime imaging microscopy system based on a streak camera**, Lixin Liu, Xidian Univ. (China); Heng Li, Shenzhen Univ. (China); Yahui Li, Xidian Univ. (China); Yonghong Shao, Junle Qu, Shenzhen Univ. (China) . . . . . [8588-90]

**Multi-color femtosecond source for simultaneous excitation of multiple fluorescent proteins in two-photon fluorescence microscopy**, Ke Wang, Cornell Univ. (USA); Tzu-Ming Liu, Juwell Wu, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA); Nicholas G. Horton, Cornell Univ. (USA); Charles P. Lin, Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA); Chris Xu, Cornell Univ. (USA) . . . [8588-91]

**Analysis of spectrally resolved autofluorescence images by support vector machines**, Anton Mateasik, Dusan Chorvat Jr., Alzbeta Chorvatova, International Laser Ctr. (Slovakia) . . . . . [8588-92]

**Two photon fluorescence stereomicroscopy with Bessel beams**, Yan Long Yang, Juanjuan Zheng, Runze Li, Tong Ye, Xi'an Institute of Optics and Precision Mechanics (China) . . . . . [8588-93]

**Two-photon microscopy for real-time monitoring of focused ultrasound-mediated drug delivery to the brain in a mouse model of Alzheimer's disease**, Alison Burgess, Naomi B. Eterman, Sunnybrook Research Institute (Canada); Isabelle Aubert, Kullervo H. Hynynen, Sunnybrook Research Institute (Canada) and Univ. of Toronto (Canada) . . . . . [8588-94]

**Detection of calcium waves in mice heart tissue with multiphoton imaging**, Claudio de Mauro, Carlo A. Cecchetti, Domenico Alfieri, Light4Tech Firenze S.r.l. (Italy); Giulia Borile, Andrea Urbani, Marco Mongillo M.D., Venetian Institute of Molecular Medicine (Italy); Francesco S. Pavone, Univ. degli Studi di Firenze (Italy) . . . . . [8588-95]

**Visualization of pathological development for Alzheimer's model using multiphoton-excited multi-mode microscope**, Gaixia Xu, Ming Ying, Hanben Niu, Jiazuan Ni, Shenzhen Univ. (China) . . . . . [8588-96]

**Two-photon microscopy and Spectral phasor to monitor intrinsic fluorophores in normal and cancer 3D culture**, Hoa H. Truong, Helene Knaus, Farzad Fereidouni, Gerhard A. Blab, Hans C. Gerritsen, Utrecht Univ. (Netherlands) . . . . . [8588-97]

**Demonstration of near-bandwidth-limited 7-fs pulses at the foci of high-NA microscope objectives**, Gabriel Tempea, FEMTOLASERS Produktions GmbH (Austria); Stefan Gomes da Costa, Wan Hui, Hilton B. de Aguiar, Andreas Volkmer, Univ. Stuttgart (Germany) . . . . . [8588-98]

**Wide dynamic range intensity sensitive SPR imaging biosensor based on the wavelength-scanning technique**, Yan Li, Kai Zhang, Junle Qu, Shenzhen Univ. (China); Ho-Pui A. Ho, The Chinese Univ. of Hong Kong (China); Hanben Niu, Yonghong Shao, Shenzhen Univ. (China); Dayong Gu, Health Care Ctr. of Shenzhen International Travel (China) . . . . . [8588-99]

**A study on the application of chirped photonic crystal fiber in multiphoton microscopy**, Jiali Yu, The Univ. of British Columbia (Canada); Haishan Zeng, Harvey Lui M.D., The Univ. of British Columbia (Canada) and The BC Cancer Agency Research Ctr. (Canada) and Vancouver Coastal Health Research Institute (Canada); Julia S. Skibina, N.G. Chernyshevsky Saratov State Univ. (Russian Federation); Günther Steinmeyer, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Shuo Tang, The Univ. of British Columbia (Canada) . . . . . [8588-100]

**Corneal refractive index measurement using a combined multiphoton microscopy and optical coherence tomography system**, Tom Lai, Shau Poh Chong, Yifeng Zhou, Gregory Moloney, Shuo Tang, The Univ. of British Columbia (Canada) . . . . . [8588-101]

**Two-photon imaging in Z axis without moving the objective lens**, Long Yan, Zaki Moustafa, Jason M. Christie, James Schummers, Max Planck Florida Institute (USA) . . . . . [8588-102]

**Monitoring glucose oxidase immobilization processes by means of two-photon microscopy**, Ines Delfino, Univ. degli Studi della Toscana (Italy); Marianna Portaccio, Gianluigi Manzo, Mario De Rosa, Maria Lepore, Seconda Univ. degli Studi di Napoli (Italy) . . . . . [8588-103]

**3D microrheology using wide-field two photon microscopy**, Naveen K. Balla, National Univ. of Singapore (Singapore) and Singapore MIT Alliance for Research and Technology (Singapore); Elijah Y. Yew, Singapore-MIT Alliance (Singapore); Hayden K. Taylor, Nanyang Technological Univ. (Singapore); Peter T. C. So, SMART-Singapore MIT Alliance for Research & Technology (Singapore) and Massachusetts Institute of Technology (USA) . . . . . [8588-104]

**in vivo imaging of dermal collagen in skin burn by collagen-sensitive second-harmonic-generation microscopy**, Takeshi Yasui, Univ. of Tokushima (Japan) and Osaka Univ. (Japan); Ryosuke Tanaka, Osaka Univ. (Japan); Eiji Hase, Univ. of Tokushima (Japan); Shuichiro Fukushima, Tsutomu Araki, Osaka Univ. (Japan) . . . . . [8588-106]

**in vivo imaging of collagen fiber orientation with rapid polarization-resolved SHG microscopy**, Yuji Tanaka, Osaka Univ. (Japan); Eiji Hase, Univ. of Tokushima (Japan); Shuichiro Fukushima, Osaka Univ. (Japan); Takeshi Yasui, Univ. of Tokushima (Japan); Tsutomu Araki, Osaka Univ. (Japan) . . . . . [8588-107]

**Noninvasive polarization second harmonic generation of oral epithelial dysplasia**, Gracie Vargas, Kert Edward, Jinping Yang, Siumin Qiu, The Univ. of Texas Medical Branch (USA) . . . . . [8588-108]

**Applying tattoo dye as third-harmonic generation contrast agent for in vivo optical biopsy of human skin**, Ming-Rung Tsai, National Taiwan Univ. (Taiwan); Yi-Hua Liao M.D., National Taiwan Univ. Hospital (Taiwan); Chi-Kuang Sun, National Taiwan Univ. (Taiwan) . . . . . [8588-109]

**Stimulated emission reduced fluorescence microscopy for high-resolution deep-tissue imaging**, Wei Min, Lu Wei, Zhixing Chen, Columbia Univ. (USA) . . . . . [8588-111]

**Study of aging-related photosynthesis pathway change in the plant**, Yongjoon Joo, Taejun Wang, Eunjo Lee, Yumi Kim, HongGil Nam, Ki Hean Kim, Pohang Univ. of Science and Technology (Korea, Republic of) . . [8588-112]

**Fluorescence lifetime imaging with pulsed diode laser enabled stimulated emission**, Jianhong Ge, Cuifang Kuang, Zhejiang Univ. (China); Shin-Shian Lee, National Yang-Ming Univ. (USA); Fu-Jen Kao, National Yang-Ming Univ. (Taiwan) . . . . . [8588-114]

**Multiphoton phosphorescence lifetime imaging microscopy (MP-PLIM): tissue-friendly lifetime imaging on the microsecond domain with platinum (II) complexes**, Elizabeth Baggaley, Univ. of Sheffield (United Kingdom); Stanley Walter Botchway, Rutherford Appleton Lab. (United Kingdom); John W. Haycock, The Univ. of Sheffield (United Kingdom); Igor V. Sazanovich, Univ. of Sheffield (United Kingdom); J. A. Gareth Williams, Durham Univ. (United Kingdom); Julia A. Weinstein, The Univ. of Sheffield (United Kingdom) [8588-115]

**Fluorescence Lifetime Imaging (FLIM) for mapping intracellular polarity**, James A. Levitt, Pei-Hua Chung, Gilbert O. Fruhwirth, Klaus Suhling, King's College London (United Kingdom) . . . . . [8588-116]

## Monday 4 February

### SESSION 4

Room: 308 (Esplanade) . . . . . Mon 8:15 am to 9:30 am

#### FRET/FLIM/FCS Microscopy-I

Session Chair: **Angelika C. Rueck**, Univ. Ulm (Germany)

8:15 am: **Monitoring subunit rotation in single FRET-labeled FOF1-ATP synthase in an anti-Brownian electrokinetic trap** (*Invited Paper*), Michael Börsch, Hendrik Sielaff, Anja Korn, Marc Renz, Friedrich-Schiller-Univ. Jena (Germany); Nawid Zarrabi, Univ. Stuttgart (Germany) . . . . . [8588-27]

8:35 am: **FLIM with near-infrared dyes** (*Invited Paper*), Wolfgang Becker, Vladislav I. Shcheslavskiy, Becker & Hickl GmbH (Germany) . . . . . [8588-28]

8:55 am: **Two photon fluorescence imaging of lipid membrane domains and potentials using advanced fluorescent probes**, Yves Mely, Zeinab Darwich, Olexandr Kucherak, Pascal Didier, Andrey Klymchenko, Univ. de Strasbourg (France) . . . . . [8588-29]

9:10 am: **Polarization resolved confocal imaging to study rotation dynamics, clustering and absolute orientations in biological sample** (*Invited Paper*), Volker Buschmann, Benedikt Krämer, PicoQuant GmbH (Germany); Samantha Fore, PicoQuant Photonics North America, Inc. (USA); Felix Koberling, PicoQuant GmbH (Germany); Joerg Nikolaus, Humboldt Univ. (Germany); Uwe Ortmann, PicoQuant GmbH (Germany); Roland Schwarzer, Joanna Ziomkowska, Humboldt Univ. (Germany); Andreas Herrmann, Humboldt-Univ. zu Berlin (Germany); Rainer Erdmann, PicoQuant GmbH (Germany) . . . . . [8588-30]



**JenLab Young Investigator Award Papers Presentation**

**Room: 308 (Esplanade) ..... 9:30 am to 10:00 am**

Coffee Break ..... Mon 10:00 am to 10:30 am

**SESSION 5**

**Room: 308 (Esplanade) ..... Mon 10:30 am to 12:10 pm**

**FRET/FLIM/FCS Microscopy-II**

Session Chair: **Michael Börsch**,  
Friedrich-Schiller-Univ. Jena (Germany)

10:30 am: **Improving fluorescence guided diagnosis using spectral and time resolved methods** (*Invited Paper*), Angelika C. Rueck, Univ. Ulm (Germany) ..... [8588-31]

10:50 am: **Time-resolved spectroscopy of endogenous NAD(P)H in *Gluconobacter oxydans*** (*Invited Paper*), Julia Horilova, Katarina Kromkova, International Laser Ctr. (Slovakia) and Comenius Univ. in Bratislava (Slovakia); Marek Bucko, Aniko Illesova, Slovak Academy of Sciences (Slovakia); Anton Mateasik, Dusan Chorvat Jr., International Laser Ctr. (Slovakia); Alica Vikartovska, Institute of Chemistry, Slovak Academy of Sciences (Slovakia); Vladimir Stefuca, Axxence Slovakia s.r.o (Slovakia); Alzbeta Chorvatova, International Laser Ctr. (Slovakia) ..... [8588-32]

11:10 am: **A freely triggerable picosecond supercontinuum laser source for fluorescence lifetime spectroscopy**, Kristian Lauritsen, Thomas Schönau, Torsten Siebert, Sebastian Tannert, Romano Haertel, Thomas Eckhardt, Rainer Erdmann, PicoQuant GmbH (Germany) ..... [8588-33]

11:25 am: **Development of a fast TCSPC FLIM-FRET imaging system**, Simon P. Poland, Simao Coelho, King's College London (United Kingdom); Nikola Krstajic, David Tyndall, Richard Walker, The Univ. of Edinburgh (United Kingdom); David U. Li, Univ. of Sussex (United Kingdom); Robert K. Henderson, The Univ. of Edinburgh (United Kingdom); Simon M. Ameer-Beg, King's College London (United Kingdom) ..... [8588-34]

11:40 am: **A fiber-laser-based stimulated Raman scattering spectral microscope**, Keisuke Nose, Yasuyuki Ozeki, Tatsuya Kishi, Kazuhiko Sumimura, Yasuo Kanematsu, Kazuyoshi Itoh, Osaka Univ. (Japan) ... [8588-35]

11:55 am: **Sensitive NDD-FLIM and multidimensional fluorescence analysis for laser scanning microscopes**, Benedikt Krämer, Uwe Ortmann, PicoQuant GmbH (Germany); Samantha Fore, PicoQuant Photonics North America, Inc. (USA); Ingo Gregor, Georg-August-Univ. Göttingen (Germany); Marcelle König, Volker Buschmann, Steffen Ruettinger, Michael Wahl, PicoQuant GmbH (Germany); Jörg Enderlein, Georg-August-Univ. Göttingen (Germany); Felix Koberling, Rainer Erdmann, PicoQuant GmbH (Germany) ..... [8588-36]

Lunch Break ..... Mon 12:10 pm to 1:30 pm

**SESSION 6**

**Room: 308 (Esplanade) ..... Mon 1:30 pm to 2:45 pm**

**Technology Development-I**

Session Chair: **Peter T. C. So**,  
Massachusetts Institute of Technology (USA)

1:30 pm: **Ultra-deep imaging of turbid samples by enhanced photon harvesting** (*Invited Paper*), Enrico Gratton, Viera Crosignani, Alexander S. Dvornikov, Univ. of California, Irvine (USA) ..... [8588-37]

1:50 pm: **Investigation of the tumor microenvironment in live tumor-bearing mice by in vivo multiphoton tomography** (*Invited Paper*), Aisada Uchugonova, Univ. des Saarlandes (Germany); Robert M. Hoffman, Anticancer, Inc. (USA); Karsten König, Univ. des Saarlandes (Germany) and JenLab GmbH (Germany) ..... [8588-38]

2:10 pm: **Clinical studies of pigmented lesions in human skin by using a multiphoton tomograph** (*Invited Paper*), Mihaela Balu, Beckman Laser Institute and Medical Clinic (USA); Kristen M. Kelly M.D., Univ. of California, Irvine School of Medicine (USA); Christopher B. Zachary M.D., Ronald M. Harris M.D., Univ. of California, Irvine (USA); Tatiana B. Krasieva, Beckman Laser Institute and Medical Clinic (USA); Karsten König, JenLab GmbH (Germany) and Univ. des Saarlandes (Germany); Bruce J. Tromberg, Beckman Laser Institute and Medical Clinic (USA) ..... [8588-39]

2:30 pm: **Optical clearing and multiphoton imaging of paraffin-embedded specimens**, Jesse W. Wilson, Simone Degan, Martin C. Fischer, Warren S. Warren, Duke Univ. (USA) ..... [8588-40]

**AWARD PRESENTATION**

**Room: 308 (Esplanade) ..... Mon 2:45 pm to 3:00 pm**

Session Chair: **Ammasi Periasamy**, Univ. of Virginia (USA)

**Student Poster Session Competition**

Prize donated by:

**Becker and Hickl/Boston Electronics, Carl Zeiss Microscopy, LLC, Chroma Tech, Coherent Inc., ISS Inc., JenLab GmbH, Leica Microsystems, Newport Corporation, Omega Optical, Princeton Instruments, Semrock**

Graduate students and postdoctoral fellows with accepted posters can participate in the poster session competition of the conference on Multiphoton Microscopy in the Biomedical Sciences. There is a cash award for the winner(s). The participants should mention that their submission is for the "Students Poster Session Competition (SPSCMP)." The participants should follow the rules and regulations of SPIE or submission of their abstract and manuscript.

**JenLab Young Investigator Award**

Prize donated by: **Jen Lab GmbH**, Germany)

We are pleased to announce that a price in the amount of \$2000.00 will be awarded to a graduate student, postdoc, or scientist under the age of 32 within conference 8588: Multiphoton Microscopy in the Biomedical Sciences XIII. To receive award, participants must 1) be both the primary author and presenter of an accepted abstract, and 2) the associated proceedings paper must be submitted at least 2 weeks prior to the meeting start dates for review by the selection committee.

Coffee Break ..... Mon 3:00 pm to 3:30 pm

**SESSION 7**

**Room: 308 (Esplanade) ..... Mon 3:30 pm to 5:25 pm**

**Technology Development-II**

Session Chair: **Peter T. C. So**,  
Massachusetts Institute of Technology (USA)

3:30 pm: **High contrast in vivo bioimaging using multiphoton upconversion in novel rare-earth-doped fluoride upconversion nanoparticles** (*Invited Paper*), Chunhui Yang, Harbin Institute of Technology (China); Guanying Chen, Paras N. Prasad, Univ. at Buffalo (USA) ..... [8588-41]

3:50 pm: **Latest advances in ultra-fast laser sources for multi photon microscopy**, Philip G. Smith, Spectra-Physics®, a Newport Corp. Brand (USA) ..... [8588-42]

4:05 pm: **Advanced ultrafast lasers for nonlinear microscopy**, Marco F. Arrigoni, Coherent, Inc. (USA); Darryl McCoy, Coherent, Inc. (United Kingdom) ..... [8588-43]

4:20 pm: **Multibeam multiphoton microscopy with adaptive optical correction**, Simao Coelho, Simon P. Poland, King's College London (United Kingdom); David U. Li, Univ. of Sussex (United Kingdom); Nikola Krstajic, Robert K. Henderson, The Univ. of Edinburgh (United Kingdom); Simon M. Ameer-Beg, King's College London (United Kingdom) ..... [8588-44]

4:35 pm: **In vivo multiphoton microscopy with low power continuous wave sources using dendritic upconverting nanoparticles**, Sergei A. Vinogradov, Tatiana V. Esipova, Univ. of Pennsylvania (USA); Sava Sakadzic, Massachusetts General Hospital (USA); Xingchen Ye, Univ. of Pennsylvania (USA); Josh E. Collins, Intelligent Material Solutions Inc. (USA); Emiri T. Mandeville, Massachusetts General Hospital (USA); Christopher B. Murray, Univ. of Pennsylvania (USA) ..... [8588-45]

4:50 pm: **Multiphoton cryo microscope with sample temperature control**, Hans G. Breunig, Univ. des Saarlandes (Germany) and JenLab GmbH (Germany); Aisada Uchugonova, Univ. des Saarlandes (Germany); Karsten König, Univ. des Saarlandes (Germany) and JenLab GmbH (Germany) ..... [8588-46]

5:05 pm: **in vivo reactive neural plasticity investigation by means of correlative two photon: electron microscopy** (*Invited Paper*), Francesco S. Pavone, Anna Letizia Allegra Mascaro, European Lab. for Non-linear Spectroscopy (Italy); Paolo Cesare, Istituto Nazionale di Neuroscienze (Italy); Leonardo Sacconi, European Lab. for Non-linear Spectroscopy (Italy); Giorgio Grasselli, Georgia Mandolesi, Fondazione Santa Lucia (Italy); Bohumil Maco, Graham Knott, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Vincenzo De Paola, Imperial College London (United Kingdom); Piergiorgio Strata, Istituto Nazionale di Neuroscienze (Italy) ..... [8588-47]

## Tuesday 5 February

## SESSION 8

Room: 308 (Esplanade) ..... Tue 8:45 am to 12:15 pm

## Technology Development-III

Session Chair: **Karsten König**, Univ. des Saarlandes (Germany)

8:45 am: **Probing the spatiotemporal relationship between intracellular Ca<sup>2+</sup> release and action potential propagation in cardiomyocytes by ultrafast multi-photon random access microscopy** (*Invited Paper*), Leonardo Sacconi, Claudia Crocini, European Lab. for Non-linear Spectroscopy (Italy); Raffaele Coppini, Cecilia Ferrantini, Chiara Tesi, Elisabetta Cerbai, Corrado Poggesi, Univ. degli Studi di Firenze (Italy); Francesco S. Pavone, European Lab. for Non-linear Spectroscopy (Italy) ..... [8588-48]

9:05 am: **Extending the fundamental imaging-depth limit of two-photon fluorescence microscopy by imaging with photo-activatable fluorophores and fluorescent proteins**, Wei Min, Zhixing Chen, Lu Wei, Xinxin Zhu, Columbia Univ. (USA) ..... [8588-49]

9:20 am: **Combined two-photon microscopy and angiography optical coherence tomography for in vivo tissue study**, Bumju Kim, Ki Hean Kim, Qingyun Li, Yeoreum Yoon, Taejun Wang, Yongjoon Joo, Jun Ho Lee, Peng Xiao, Pohang Univ. of Science and Technology (Korea, Republic of) ..... [8588-51]

9:35 am: **New developments in clinical CARS**, Martin Weinigel, Hans G. Breunig, Peter Fischer, Marcel Kellner-Höfer, Rainer Bücke, JenLab GmbH (Germany); Jürgen M. Lademann, Charité Universitätsmedizin Berlin (Germany); Karsten König, JenLab GmbH (Germany) and Univ. des Saarlandes (Germany) ..... [8588-52]

9:50 am: **Temporally focused wide-field two-photon microscopy: From the paraxial to the vectorial** (*Invited Paper*), Elijah Y. Yew, Singapore-MIT Alliance (Singapore); Peter T. C. So, Massachusetts Institute of Technology (USA) ..... [8588-53]

Coffee Break ..... Tue 10:10 am to 10:40 am

10:40 am: **Photon reassignment of scattered emission photons in multifocal multiphoton microscopy (MMM)** (*Invited Paper*), Vijay Raj Singh, Singapore-MIT Alliance (Singapore); Jae Won Cha, Elly Nedivi, Peter T. C. So, Massachusetts Institute of Technology (USA) ..... [8588-54]

11:00 am: **Multiphoton microscopy of cleared human tissue for 3D histology**, Michael J. Levene, Sam Vesuna, Richard Torres M.D., Yale Univ. (USA) ..... [8588-55]

11:15 am: **Photon number absorption in step-wise multi-photon activation of melanin and graphite**, Zhenhua Lai, Josef Kerimo, Charles A. DiMarzio, Northeastern Univ. (USA) ..... [8588-56]

11:30 am: **Multimodal nonlinear optical microscopy used to discriminate human colon cancer**, Javier F. Adur M.D., Univ. Estadual de Campinas (Brazil) and Univ. Nacional de Entre Rios (Argentina); Vitor B. Pelegati, Univ. Estadual de Campinas (Brazil); Mariana Bianchi, Univ. Nacional de Entre Rios (Argentina); André A. de Thomaz, Mariana O. Baratti, Fernandes F. Carvalho, Univ. Estadual de Campinas (Brazil); Victor H. Casco, Univ. Nacional de Entre Rios (Argentina); Carlos Lenz-Cesar, Univ. Estadual de Campinas (Brazil) ..... [8588-57]

11:45 am: **Nonlinear spectral imaging of fungal metabolism**, Helene Knaus, Farzad Fereidouni, Gerhard A. Blab, Hans C. Gerritsen, Han A. B. Wösten, Utrecht Univ. (Netherlands) ..... [8588-58]

12:00 pm: **Two-photon excited endogenous fluorescence for label-free in vivo imaging ingestion of disease-causing bacteria by human leukocytes**, Yan Zeng, Hong Kong Univ. of Science and Technology (Hong Kong, China); Bo Yan, Hong Kong Univ. of Science and Technology (China); QiQi Sun, Seng Khoon Teh, Wei Zhang, Zilong Wen, Jianan Y. Qu, Hong Kong Univ. of Science and Technology (Hong Kong, China) ..... [8588-110]

Lunch/Exhibition Break ..... Tue 12:15 pm to 1:30 pm

## SESSION 9

Room: 308 (Esplanade) ..... Tue 1:30 pm to 2:55 pm

## SHG/THG Microscopy-I

Session Chair: **Francesco Saverio Pavone**, European Lab. for Non-linear Spectroscopy (Italy)

1:30 pm: **Directional and polarization resolved SHG as a robust means to quantify changes in collagen architecture and isoform distribution in ovarian cancer: a translation approach of human tissues, animal models, and in vitro models** (*Invited Paper*), Paul J. Campagnola, Karissa B. Tilbury, Chi-Hsiang Lien, Manish Patankar, Univ. of Wisconsin-Madison (USA) ..... [8588-60]

1:50 pm: **The arrangement of fibrous collagen in cornea using second harmonic generation (SHG) microscopy** (*Invited Paper*), Yair J. Mega, Charles A. DiMarzio, James P. McLean, Northeastern Univ. (USA) ..... [8588-61]

2:10 pm: **Hierarchical model of fibrillar collagen distribution for polarization-resolved SHG microscopy**, Adam E. Tuer, Univ. of Toronto Mississauga (Canada) and Institute for Optical Sciences (Canada); Margarete K. Akens, Sunnybrook Health Sciences Ctr. (Canada); Serguei Krouglov, Univ. of Toronto Mississauga (Canada); Daaf Sandkuij, Univ. of Toronto Mississauga (Canada) and Institute for Optical Sciences (Canada); Brian C. Wilson, Ontario Cancer Institute (Canada); Cari M. Whyne, Sunnybrook Health Sciences Ctr. (Canada); Virginijus Barzda, Univ. of Toronto Mississauga (Canada) and Institute for Optical Sciences (Canada) ..... [8588-62]

2:25 pm: **SHG quantitative imaging of collagen fibrillogenesis**, Stéphane Bancelin, Ecole Polytechnique (France) and CNRS (France) and INSERM (France); Carole Aimé, Thibaud Coradin, Univ. Pierre et Marie Curie (France) and Collège de France (France) and CNRS (France); Marie-Claire Schanne-Klein, Ecole Polytechnique (France) and CNRS (France) and INSERM (France) ..... [8588-63]

2:40 pm: **Multiphoton microscopy based cryo-imaging of inflated frozen human lung sections at -60C in healthy and COPD lungs**, Thomas Abraham, Damian Kayra, Masaru Suzuki M.D., John McDonough, W. Mark Elliott, The Univ. of British Columbia (Canada); Joel Cooper, Univ. of Pennsylvania (USA); James C. Hogg M.D., The Univ. of British Columbia (Canada) ..... [8588-64]

Coffee Break ..... Tue 3:00 pm to 3:30 pm

## SESSION 10

Room: 308 (Esplanade) ..... Tue 3:30 pm to 5:30 pm

## SHG/THG Microscopy-II

Session Chair: **Paul J. Campagnola**, Univ. of Wisconsin-Madison (USA)

3:30 pm: **Imaging leukocytes in vivo with third harmonic generation microscopy**, Cheng-Kun Tsai, Chien-Kuo Chen, Yu-Shing Chen, Pei-Chun Wu, Yuan Tsung Hsieh, Han-Wen Liu, Chiou-Yueh Yeh, Win-Li Lin, Jean-San Chia, Tzu-Ming Liu, National Taiwan Univ. (Taiwan) ..... [8588-65]

3:45 pm: **Determination of the origin of SHG from starch granules by PIP0 SHG microscopy and ab initio calculations**, Richard Cisek, Danielle B. Tokarz, Adam E. Tuer, Virginijus Barzda, Univ. of Toronto (Canada) and Univ. of Toronto Mississauga (Canada) ..... [8588-66]

4:00 pm: **Multicolor two-photon and multimodal tissue imaging using synchronized pulses**, Emmanuel Beaufreire, Pierre Mahou, Maxwell Zimmerley, Ecole Polytechnique (France); Karine Loulier, Katherine Matho, Institut de la Vision (France); Guillaume Labroille, Ecole Polytechnique (France); Xavier Morin, Ecole Normale Supérieure (France); Willy Supatto, Ecole Polytechnique (France); Jean Livet, Institut de la Vision (France); Delphine Débarre, Ecole Polytechnique (France) ..... [8588-67]

4:15 pm: **Nonlinear optical microscopy and microspectroscopy of oral precancers and early cancer**, Gracie Vargas, Kert Edward, Liang Ma, Suimin Qiu, Vicente Resto M.D., Susan McCammon M.D., The Univ. of Texas Medical Branch (USA) ..... [8588-68]

4:30 pm: **Towards the label-free purification of stem cell-derived cardiomyocytes using second harmonic generation**, Samir Awasthi, NSF Ctr. for Biophotonics Science and Technology (USA); Dennis L. Matthews, NSF Ctr. for Biophotonics Science and Technology (USA) and Lawrence Livermore National Lab. (USA); Ronald A. Li, Mount Sinai School of Medicine (USA) and The Univ. of Hong Kong (Hong Kong, China); Nipavan Chiamvimonvat M.D., Deborah K. Lieu, Univ. of California, Davis (USA); James W. Chan, NSF Ctr. for Biophotonics Science and Technology (USA) and Univ. of California, Davis (USA) ..... [8588-69]

4:45 pm: **Chirality study inside biological tissue by second harmonic generation circular dichroism**, Kuo-Jen Hsu, Hsuan Lee, Guan-Yu Zhuo, Shi-Wei Chu, National Taiwan Univ. (Taiwan) ..... [8588-70]

5:00 pm: **Adaptive multiphoton and harmonic generation microscopy for whole tissue imaging**, Marie Caroline Muellenbroich, Univ. of Strathclyde (United Kingdom); Ewan J. McGhee, The Beatson Institute for Cancer Research (United Kingdom); Niall McAlinden, Univ. of Strathclyde (United Kingdom); Kurt I. Anderson, The Beatson Institute for Cancer Research (United Kingdom); Keith Mathieson, Univ. of Strathclyde (United Kingdom) ..... [8588-71]

5:15 pm: **3D quantitative Fourier analysis of second harmonic generation microscopy images of collagen structure in cartilage**, Elisabeth I. Romijn, Magnus B. Lilledahl, Norwegian Univ. of Science and Technology (Norway) ..... [8588-72]

# Three-Dimensional and Multidimensional Microscopy: Image Acquisition and Processing XX

*Conference Chairs:* **Carol J. Cogswell**, Univ. of Colorado at Boulder (USA); **Thomas G. Brown**, Univ. of Rochester (USA); **Jose-Angel Conchello**, Harvard Univ. (USA); **Tony Wilson**, Univ. of Oxford (United Kingdom)

*Program Committee:* **Martin Booth**, Univ. of Oxford (United Kingdom); **G. J. Brakenhoff**, Univ. van Amsterdam (Netherlands); **Charles A. DiMarzio**, Northeastern Univ. (USA); **Raimund J. Ober**, The Univ. of Texas at Dallas (USA); **Chrysanthe Preza**, The Univ. of Memphis (USA); **Monika Ritsch-Marte**, Innsbruck Medical Univ. (Austria)

## Tuesday 5 February

### SESSION 1

Room: 300 (Esplanade) .....Tue 8:30 am to 10:10 am

#### Computational Microscopy I

Session Chair: **Chrysanthe Preza**, Univ. of Memphis (USA)

8:30 am: **Imaging properties of an extended depth of field microscopy system based on the single-shot focus scanning technique**, Sheng- Huei D. Lu, Hong Hua, College of Optical Sciences, The Univ. of Arizona (USA) ..... [8589-1]

8:50 am: **A new expanded point information content design approach for 3D live-cell microscopy at video rates**, Ramzi N. Zahreddine, Robert H. Cormack, Carol J. Cogswell, Univ. of Colorado at Boulder (USA) ..... [8589-2]

9:10 am: **Fuzzy logic components for iterative deconvolution systems**, Brian M. Northan, True North Image Processing (USA) ..... [8589-3]

9:30 am: **Heavy atom optics solving the inverse problem of optical imaging**, Aaron Lewis, The Hebrew Univ. of Jerusalem (Israel) ..... [8589-4]

9:50 am: **A low light imaging method that enables parameter estimation with near-best accuracies**, Jerry Chao, Sripad Ram, The Univ. of Texas at Dallas (USA); Elizabeth S. Ward, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Raimund J. Ober, The Univ. of Texas at Dallas (USA) .. [8589-5]

Coffee Break ..... Tue 10:10 am to 10:40 am

### SESSION 2

Room: 300 (Esplanade) .....Tue 10:40 am to 12:20 pm

#### Computational Microscopy II

Session Chair: **Raimund J. Ober**, The Univ. of Texas at Dallas (USA)

10:40 am: **Intensity-based segmentation and visualization of cells in 3D microscopic images using GPU**, Misun Kang, Ewha Womans Univ. (Korea, Republic of); Jeong-Eom Lee, Korea Institute of Science and Technology (Korea, Republic of); Woong-Ki Jeon, Heung-Kook Choi, Inje Univ. (Korea, Republic of); Myoung-Hee Kim, Ewha Womans Univ. (Korea, Republic of) ..... [8589-6]

11:00 am: **GPU Based image registration in aperture correlation microscopy and reflection mode correlation microscopy**, Lionel Faichamps, Mark A. Neil, Imperial College London (United Kingdom); Rimas Juskaitis, Univ. of Oxford (United Kingdom) ..... [8589-7]

11:20 am: **Phasor analysis for pump-probe microscopy**, Francisco E. Robles, Jesse W. Wilson, Martin C. Fischer, Warren S. Warren, Duke Univ. (USA) ..... [8589-8]

11:40 am: **High numerical aperture (NA=0.9) and wide-field on-chip microscopy**, Wei Luo, Alon Greenbaum, Ahmet F. Coskun, Uzair Y. Sikora, Aydogan Ozcan, Univ. of California, Los Angeles (USA) ..... [8589-9]

12:00 pm: **Comparison of computational methods developed to address depth-variant imaging in fluorescence microscopy**, Muhammad Mizanur Rahman, Univ. of Memphis (USA); Lutz Schaefer, Advanced Imaging Methodology Consultation (Canada); Dietwald Schuster, Univ. of Applied Sciences (Germany); Chrysanthe Preza, Univ. of Memphis (USA) ..... [8589-10]

Lunch Break ..... Tue 12:20 pm to 1:50 pm

### SESSION 3

Room: 300 (Esplanade) .....Tue 1:50 pm to 3:10 pm

#### Computational Microscopy III

Session Chair: **Martin Booth**, Univ. of Oxford (United Kingdom)

1:50 pm: **Gigavoxel imaging with a single beam laser scanning microscope**, Urs Utzinger, The Univ. of Arizona (USA) ..... [8589-11]

2:10 pm: **Assessment of robust reconstruction algorithms for compressive sensing spectral-domain optical coherence tomography**, Daguang Xu, Jin U. Kang, Johns Hopkins Univ. (USA) ..... [8589-12]

2:30 pm: **Modeling and optimization of pupils for line-scanning confocal microscopy**, Christopher Glazowski, Milind Rajadhyaksha, Memorial Sloan-Kettering Cancer Ctr. (USA) ..... [8589-13]

2:50 pm: **Modeling coherent effects in optical phase conjugation of ultrasonically encoded signal**, Joseph L. Hollmann, Charles A. DiMarzio, Northeastern Univ. (USA) ..... [8589-14]

Coffee Break ..... Tue 3:10 pm to 3:40 pm

### SESSION 4

Room: 300 (Esplanade) .....Tue 3:40 pm to 5:40 pm

#### Structured Illumination Microscopy

Session Chair: **G. J. Brakenhoff**, Univ. van Amsterdam (Netherlands)

3:40 pm: **Single-shot optical sectioning using polarised illumination coded Structured Illumination Microscopy (picoSIM)**, Daniel Appelt, King's College London (United Kingdom); Kai Wicker, Friedrich-Schiller-Univ. Jena (Germany) and Institut für Photonische Technologien e.V. (Germany); Rainer Heintzmann, Friedrich-Schiller-Univ. Jena (Germany) and Institut für Photonische Technologien e.V. (Germany) and Randall Div of Cell & Molecular Biophysics, King's College London (United Kingdom) ..... [8589-15]

4:00 pm: **Structured oblique illumination microscopy for enhanced resolution imaging of non-fluorescent, scattering samples**, Shwetadwip Chowdhury, Hafeez Dhalla, Joseph A. Izatt, Duke Univ. (USA) ..... [8589-17]

4:20 pm: **Time-resolved wide-field optically sectioned fluorescence microscopy**, Guillaume Dupuis, Univ. Paris-Sud 11 (France) and CNRS (France); Nadia Benabdallah, Aurélien Chopinaud, Univ. Paris-Sud 11 (France); Sandrine Lévêque-Fort, Univ. Paris-Sud 11 (France) and CNRS (France) ..... [8589-18]

4:40 pm: **A comparison of methods for optical sectioning using structured illumination microscopy**, Peter A. Kner, Benjamin Thomas, The Univ. of Georgia (USA) ..... [8589-19]

5:00 pm: **Total-variation constrained image reconstruction for structure illumination microscopy**, Kaiqin Chu, Stephen M. Lane, NSF Ctr. for Biophotonics Science and Technology (USA); Jay Yin, Paul C. Goodwin, Applied Precision, Inc. (USA) ..... [8589-20]

5:20 pm: **Phase imaging with partially coherent light**, Laura Waller, Univ. of California, Berkeley (USA) ..... [8589-58]



## Wednesday 6 February

## SESSION 5

Room: 300 (Esplanade) ..... Wed 8:30 am to 10:30 am

## Holographic and Quantitative Microscopy

Session Chair: **Charles A. DiMarzio**, Northeastern Univ. (USA)

8:30 am: **Stochastic near field 3D microscopy using Brownian metallic nanoparticles**, Ariadna Martinez Marrades, Institut Langevin (France); Nathalie Bardou, Stéphane Collin, Lab. de Photonique et de Nanostructures (France); Michel Gross, L2C, CNRS (France); Gilles Tessier, Institut Langevin, ESPCI, CNRS (France). ..... [8589-21]

8:50 am: **Improved quantitative phase contrast in self-interference digital holographic microscopy and sensing dynamic refractive index changes of the cytoplasm using internalized microspheres as probes**, Björn Kemper, Robin Schubert, Sebastian Dartmann, Angelika Vollmer, Steffi Ketelhut, Gert von Bally, Westfälische Wilhelms-Universität Münster (Germany). ..... [8589-22]

9:10 am: **Digital holographic confocal microscope**, Alexandre S. Goy, Demetri Psaltis, Ecole Polytechnique Fédérale de Lausanne (Switzerland) ..... [8589-23]

9:30 am: **Quantitative phase reconstruction and holographic volume imaging with diffuse illumination**, Walter H. Harm, Alexander Jesacher, Stefan Bernet, Monika Ritsch-Marte, Innsbruck Medical Univ. (Austria) [8589-24]

9:50 am: **Molecular specificity and digital coherence gating in quantitative phase spectroscopy**, Matthew T. Rinehart, Adam Wax, Duke Univ. (USA) ..... [8589-25]

10:10 am: **Spatial filter encoded volume holographic gratings in PQ-PMMA for spatial-spectral imaging**, Yuan Luo, National Taiwan Univ. (Taiwan); Jui-Chang Tsai M.D., National Taiwan Univ. Hospital (Taiwan); George Barbastathis, Massachusetts Institute of Technology (USA) and Singapore-MIT Alliance for Research and Technology Ctr. (Singapore); SeBaek Oh, KLA-Tencor Corp. (USA) ..... [8589-26]

Coffee Break ..... Wed 10:30 am to 11:00 am

## SESSION 6

Room: 300 (Esplanade) ..... Wed 11:00 am to 12:20 pm

## Multi-spectral and Hyper-spectral Microscopy

Session Chair: **Monika Ritsch-Marte**, Innsbruck Medical Univ. (Austria)

11:00 am: **Tunable thin-film optical filters for hyperspectral microscopy**, Peter F. Favreau, Thomas C. Rich, Univ. of South Alabama (USA); Prashant Prabhat, Semrock, Inc. (USA); Silas J. Leavesley, Univ. of South Alabama (USA) ..... [8589-27]

11:20 am: **Lensfree multispectral holographic microscopy using sunlight**, Ikbai Sencan, Uzair Y. Sikora, Aydogan Ozcan, Univ. of California, Los Angeles (USA) ..... [8589-28]

11:40 am: **Spatial-spectral coupling in hyperspectral CARS microscopy image formation**, Aaron M. Barlow, Steacie Institute for Molecular Sciences (Canada) and Univ. of Ottawa (Canada); Marco Andreana, Steacie Institute for Molecular Sciences (Canada) and Univ. of Ottawa (Canada); Konstantin Popov, Univ. of Ottawa (Canada); Douglas J. Moffatt, Andrew Ridsdale, Steacie Institute for Molecular Sciences (Canada); Aaron D. Slepkov, Trent Univ. (Canada); Adrian F. Pegoraro, Harvard Univ. (USA); Rune Lausten, Benjamin J. Sussman, Steacie Institute for Molecular Sciences (Canada); Albert Stolow, Steacie Institute for Molecular Sciences (Canada) and Univ. of Ottawa (Canada) and Queen's Univ. (Canada) ..... [8589-29]

12:00 pm: **Application of non-negative matrix factorization to multispectral FLIM data analysis**, Paritosh Pande, Javier A. Jo, Texas A&M Univ. (USA) ..... [8589-30]

Lunch Break ..... Wed 12:20 pm to 1:50 pm

## SESSION 7

Room: 300 (Esplanade) ..... Wed 1:50 pm to 3:10 pm

## Wavefront Sensing and Shaping

Session Chair: **Carol J. Cogswell**, Univ. of Colorado at Boulder (USA)

1:50 pm: **Rapid wavefront corrections for deep tissue imaging**, Reto P. Fiolka, Ke Si, Meng Cui, HHMI Janelia Farm Research Campus (USA) ..... [8589-31]

2:10 pm: **Light sheet adaptive optics microscope for 3D live imaging**, Cyril J. T. Bourgenot, Jonathan M. Taylor, Christopher D. Saunter, John M. Girkin, Gordon D. Love, Durham Univ. (United Kingdom) ..... [8589-32]

2:30 pm: **Adaptive optics device for improvement of the spinning disk imaging**, Audrius Jasaitis, Grégory Clouvel, Xavier Levecq, Imagine Optic SA (France); Vincent Fraisier, Jean Salameo, Institut Curie (France) ..... [8589-33]

2:50 pm: **Superresolution microscopy through thick tissue using adaptive optics**, Brian Patton, Daniel Burke, Univ. of Oxford (United Kingdom); Travis J. Gould, Joerg Bewersdorf, Yale Univ. (USA); Martin Booth, Univ. of Oxford (United Kingdom) ..... [8589-34]

Coffee Break ..... Wed 3:10 pm to 3:40 pm

## SESSION 8

Room: 300 (Esplanade) ..... Wed 3:40 pm to 5:00 pm

## New Methods of Light Microscopy

Session Chair: **Thomas G. Brown**, Univ. of Rochester (USA)

3:40 pm: **Wide-field microscopy using microcamera arrays**, Daniel L. Marks, David S. Kittle, Seo Ho Youn, Jungsang Kim, David J. Brady, Duke Univ. (USA) ..... [8589-35]

4:00 pm: **Photothermal imaging of melanin**, Josef Kerimo, Charles A. DiMarzio, Zhenhua Lai, Northeastern Univ. (USA) ..... [8589-36]

4:20 pm: **Supercritical self-interference fluorescence microscopy for full-field membrane imaging**, Thomas Barroca, Institut Langevin (France); Pierre Bon, Institut Langevin, Ctr. d'Imageries Plasmoniques Appliquées (France) and Institut des Sciences Moléculaires d'Orsay (France); Sandrine Lévêque-Fort, Institut des Sciences Moléculaires d'Orsay and Centre de photonique Biomédicale (CLUPS) (France); Emmanuel Fort, Institut Langevin, Ctr. d'Imageries Plasmoniques Appliquées (France) ..... [8589-37]

4:40 pm: **Wide field high resolution light sheet microscopy using Airy beams**, Tom Vettenburg, Heather I. C. Dalgarno, Tomáš Cizmar, Frank J. Gunn-Moore, Kishan Dholakia, Univ. of St. Andrews (United Kingdom) ..... [8589-38]

## POSTERS-WEDNESDAY

Room: 304 (Esplanade) ..... Wed 6:00 pm to 8:00 pm

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

**Dual detection confocal fluorescence microscopy: depth imaging without depth scanning**, Dong-Ryoung Lee, Young-Duk Kim, Hyeon-Jun Jeong, KAIST (Korea, Republic of); Jong-Min Lee, Hanyang Univ. (Korea, Republic of); DaeGab Gweon, KAIST (Korea, Republic of); Hongki Yoo, Hanyang Univ. (Korea, Republic of) ..... [8589-53]

**An optimized two-photon method for in vivo lung imaging reveals intimate cell collaborations during infection**, Daniel Fiole, Pierre Deman, Institut de Recherche Biomédicale des Armées (France); Julien Douady, Lab. Interdisciplinaire de Physique (France); Jean-Nicolas Tournier, Institut de Recherche Biomédicale des Armées (France) ..... [8589-54]

**Using liquid crystal variable retarders for fast modulation of bias and shear direction in quantitative differential interference contrast (DIC) microscope**, Michael I. Shribak, Marine Biological Lab. (USA) ..... [8589-55]

**Quantitative phase analysis through scattering media by depth-filtered digital holography**, Sebastian R. Goebel, Technische Fachhochschule Georg Agricola Bochum (Germany); Volker Jaedicke, Nektarios Koukourakis, Helge Wiethoff, Adamou Adinda-Ougba, Nils C. Gerhardt, Ruhr-Universität Bochum (Germany); Hubert Welp, Technische Fachhochschule Georg Agricola Bochum (Germany); Martin R. Hofmann, Ruhr-Universität Bochum (Germany) ..... [8589-56]

**In vivo deep tissue FRET imaging with multi-color fluorescence lifetime excitation-emission matrix optical projection tomography**, Ming Zhao, College of Optical Sciences, The Univ. of Arizona (USA); Weibin Zhou, Univ. of Michigan (USA); Leilei L. Peng, College of Optical Sciences, The Univ. of Arizona (USA) ..... [8589-57]

## Thursday 7 February

### SESSION 9

**Room: 300 (Esplanade) ..... Thu 8:50 am to 10:10 am**

#### Phase and Interference Microscopy I

Session Chair: **Tony Wilson**, Univ. of Oxford (United Kingdom)

8:50 am: **Portable low-coherence interferometer for quantitative phase microscopy of live cells**, Natan T. Shaked, Pinhas Girshovitz, Tel Aviv Univ. (Israel) ..... [8589-39]

9:10 am: **Three-dimensional intracellular phase imaging**, Frank Helderma, Vrije Univ. Amsterdam (Netherlands); Bryan Haslam, Massachusetts Institute of Technology (USA); Mattijs de Groot, Johannes F. de Boer, Vrije Univ. Amsterdam (Netherlands) ..... [8589-40]

9:30 am: **Interferometric phase imaging with multiple broadband sources for increasing measurement range**, Jae Seok Park, In Hee Shin, Hyeong Ju Park, Joo Beom Eom, Byeong Il Lee, Korea Photonics Technology Institute (Korea, Republic of) ..... [8589-42]

9:50 am: **Supercritical scattering microscopy for quantitative phase imaging in the vicinity of a lamella**, Pierre Bon, Institut Langevin, ESPCI, CNRS (France) and Institut des Sciences Moléculaires d'Orsay (France); Thomas Barocca, Institut Langevin, ESPCI, CNRS (France); Sandrine Lévêque-Fort, Univ. Paris-Sud 11 (France); Emmanuel Fort, Institut Langevin, ESPCI, CNRS (France) ..... [8589-43]

Coffee Break ..... Thu 10:10 am to 10:40 am

### SESSION 10

**Room: 300 (Esplanade) ..... Thu 10:40 am to 12:00 pm**

#### Phase and Interference Microscopy II

Session Chair: **José-Angel Conchello**, Harvard Univ. (USA)

10:40 am: **Swept-source phase microscopy based on wavelength-swept laser beam**, Hyojin Kim, Hyung Seok Lee, Myung-Yong Jeong, Chang-Seok Kim, Pusan National Univ. (Korea, Republic of) ..... [8589-44]

11:00 am: **Tomographic incoherent phase imaging, a diffraction tomography alternative for any white-light microscope**, Pierre Bon, Institut Fresnel - CNRS (France) and Institut Langevin - CNRS (France); Sherazade Aknoun, Institut Fresnel - CNRS (France) and Phasics S.A. (France); Julien Savatier, Institut Fresnel - CNRS (France); Benoit F. Wattellier, PHASICS S.A. (France); Serge Monneret, Institut Fresnel - CNRS (France) ..... [8589-45]

11:20 am: **Stain-free 3D imaging flow cytometry**, Yongjin Sung, Niyom Lue, Ramachandra R. Dasari, Zahid Yaqoob, Massachusetts Institute of Technology (USA) ..... [8589-46]

11:40 am: **Processing improvements in dynamic quantitative phase microscope**, Katherine Creath, Goldie L. Goldstein, 4D Technology Corp. (USA) and The Univ. of Arizona (USA) ..... [8589-47]

Lunch Break ..... Thu 12:00 pm to 1:30 pm

### SESSION 11

**Room: 300 (Esplanade) ..... Thu 1:30 pm to 3:10 pm**

#### Sundry Topics in Light Microscopy

Session Chair: **José-Angel Conchello**, Harvard Univ. (USA)

1:30 pm: **Parallel localization of multiple emitters for fast localization microscopy**, Yina Wang, Tingwei Quan, Shaoqun Zeng, Zhen-li Huang, Huazhong Univ. of Science and Technology (China) ..... [8589-48]

1:50 pm: **Nonphoto-bleachable, 3D-organized, sub-micron fluorescent patterns for the calibration and the alignment of fluorescence microscopes**, Arnaud Royon, Argolight (France); Philippe Legros, Bordeaux Imaging Ctr. (France); Gautier Papon, Argolight (France); Thierry Cardinal, Institut de Chimie de la Matière Condensée de Bordeaux (France); Lionel S. Canioni, Univ. Bordeaux 1 (France) ..... [8589-49]

2:10 pm: **Polarization sensitive full-field optical coherence tomography based on bi-stable polarization switch**, Kwan Seob Park, Byeong Ha Lee, Gwangju Institute of Science and Technology (Korea, Republic of); Woo June Choi, Korea Basic Science Institute (Korea, Republic of); Tae Joong Eom, Gwangju Institute of Science and Technology (Korea, Republic of) ..... [8589-50]

2:30 pm: **Towards diabetes imaging based on optical coherence microscopy and confocal fluorescence imaging**, Corinne Berclaz, Christophe Pache, Arno Bouwens, Antonio Lopez, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Anne Grapin-Botton, The Danish Stem Cell Ctr. (Denmark); Theo Lasser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) ..... [8589-51]

2:50 pm: **Z-microscopy for parallel axial imaging with micro mirror array**, Chuan Yang, Kebin Shi, Mingda Zhou, Siyang Zheng, Shizhuo Yin, Zhiwen Liu, The Pennsylvania State Univ. (USA) ..... [8589-52]

# Single Molecule Spectroscopy and Superresolution Imaging VI

**Conference Chairs:** Jörg Enderlein, Georg-August-Univ. Göttingen (Germany); Ingo Gregor, Georg-August-Univ. Göttingen (Germany); Zygmunt Karol Gryczynski, Texas Christian Univ. at Fort Worth (USA), Univ. of North Texas Health Science Ctr. at Fort Worth (United States); Rainer Erdmann, PicoQuant GmbH (Germany); Felix Koberling, PicoQuant GmbH (Germany)

**Program Committee:** Michael Börsch, Friedrich-Schiller-Univ. Jena (Germany); Christian Eggeling, Max-Planck-Institut für biophysikalische Chemie (Germany); Paul M. W. French, Imperial College London (United Kingdom); Ewa M. Goldys, Macquarie Univ. (Australia); Johan Hofkens, Katholieke Univ. Leuven (Belgium); Thomas R. Huser, Univ. Bielefeld (Germany); Gabor Laczko, Maria Teresa Neves-Petersen, Aalborg Univ. (Denmark); Markus Sauer, Univ. Bielefeld (Germany); Sohail Ahmed, A\*STAR Institute of Medical Biology (Singapore); Shimon Weiss, Univ. of California, Los Angeles (USA); Andong Xia, Institute of Chemistry (China)

## Saturday 2 February

### WELCOME AND INTRODUCTION

Room: 307 (Esplanade) ..... 9:00 am to 9:10 am

Session Chair: Rainer Erdmann, PicoQuant GmbH (Germany)

### SESSION 1

Room: 307 (Esplanade) ..... Sat 9:10 am to 10:30 am

#### FCS

Session Chair: Rainer Erdmann, PicoQuant GmbH (Germany)

9:10 am: **Optimization of multiplexed fluorescence correlation spectroscopy confinement and application using an array of optical fibers**, Fiona Quinlan-Pluck, Mouhamadou Sy, Emmanuel Fort, Institut Langevin (France); Neso Sojic, Univ. Bordeaux 1 (France); Sandrine Lévêque-Fort, Univ. Paris-Sud 11 (France); Catherine K. Marqué, Ctr. de Recherche de l'Institut du Cerveau et de la Moelle (France); Marie-Claude Potier, Ctr. de Recherche de l'Institut du Cerveau et de la Moelle (France); Samuel Gresillon, Institut Langevin (France) ..... [8590-4]

9:30 am: **Dynamics of protein folding revealed by fluorescence lifetime correlation spectroscopy**, Ingo Gregor, Phillip Kroehn, Qui Van, Jörg Enderlein, Georg-August-Univ. Göttingen (Germany) ..... [8590-5]

9:50 am: **Detection of Hyaluronidase activity using fluorescence lifetime correlation spectroscopy to separate diffusing species and eliminate autofluorescence**, Ryan M. Rich, Mark Mummert, Univ. of North Texas Health Science Ctr. at Fort Worth (USA); Zygmunt K. Gryczynski, Univ. of North Texas Health Science Ctr. at Fort Worth (USA) and Texas Christian Univ. (USA); Julian Borejdo, Ignacy Gryczynski, Univ. of North Texas Health Science Ctr. at Fort Worth (USA); Thomas J. Sorensen, Bo W. Laursen, Univ. of Copenhagen (Denmark); Rafal Fudala, Univ. of North Texas Health Science Ctr. at Fort Worth (USA) ..... [8590-6]

10:10 am: **Exploring the physics of single molecules of charged macromolecules by fluorescence correlation spectroscopy**, Jiang Zhao, Shuangjiang Luo, Qingbo Yang, Institute of Chemistry (China) ..... [8590-7]

Coffe Break ..... Sat 10:30 am to 11:00 am

### SESSION 2

Room: 307 (Esplanade) ..... Sat 11:00 am to 1:00 pm

#### FCS/FRET

Session Chair: Ingo Gregor, Georg-August-Univ. Göttingen (Germany)

11:00 am: **Optical coherence correlation spectroscopy (OCCS)**, Stephane Broillet, Lab. d'Optique Biomédicale, École Polytechnique Fédérale de Lausanne (Switzerland); Stefan Geissbühler, Akihiro Sato, Christophe Pache, Arno Bouwens, Daniel Szlag, Theo Lasser, Marcel Leutenegger, Ecole Polytechnique Fédérale de Lausanne (Switzerland) ..... [8590-8]

11:20 am: **Correction of bleaching artifacts in high content fluorescence correlation spectroscopy (HCS-FCS) data**, Jeffrey J. Lange, Christopher J. Wood, William A. Marshall, Lucinda E. Maddera, Qingfeng E. Yu, William D. Bradford, Brian R. Slaughter, Jay R. Unruh, Winfried Wieggraeb, Stowers Institute for Medical Research (USA) ..... [8590-9]

11:40 am: **Detecting molecular interactions at distances larger than 100 Å. Application of FRET to study dynamics of Annexin A2 complexing with plasminogens**, Zygmunt K. Gryczynski, Univ. of North Texas Health Science Ctr. at Fort Worth (USA) and Texas Christian Univ. (USA); Ryan M. Rich, Univ. of North Texas Health Science Ctr. at Fort Worth (USA); Dmytro Shumilov, Texas Christian Univ. (USA); Anindita Mukerjee, Amalendu P. Ranjan, Julian Borejdo, Ignacy Gryczynski, Rafal Fudala, Univ. of North Texas Health Science Ctr. at Fort Worth (USA); Badri P. Malival, Univ. of North Texas Health Science Ctr. at Fort Worth (USA); Sangram Raut, Jamboor K. Vishwanatha, Univ. of North Texas Health Science Ctr. at Fort Worth (USA) ..... [8590-10]

12:00 pm: **Subunit rotation in single FRET-labeled F1-ATPase hold in solution by an anti-Brownian electrokinetic trap**, Michael Börsch, Thomas Heitkamp, Marc Renz, Friedrich-Schiller-Univ. Jena (Germany); Nawid Zarrabi, Univ. Stuttgart (Germany) ..... [8590-11]

12:20 pm: **Effect of the HIV-1 nucleocapsid protein on reverse transcriptase pause sites revealed by single molecule microscopy**, Yves Mely, Armelle Jouonang, Frédéric Przybilla, Julien Godet, Univ. de Strasbourg (France); Tobias Restlé, Univ. zu Lübeck (Germany); Hugues de Rocquigny, Cyril Kenfack, Pascal Didier, Univ. de Strasbourg (France) ..... [8590-12]

12:40 pm: **Single molecule FRET using the FRET pair DRONPA/PhotoActivable mCherry**, Viviane Devauges, Elena Ortiz-Zapater, Christina Efthymiou, Melanie D. Keppler, Jody Barbeau, King's College London (United Kingdom); Daniel R. Matthews, The Univ. of Queensland (Australia); James Monypenny of Pittmilly, King's College London (United Kingdom); Daniel Rolfe, Science and Technology Facilities Council (United Kingdom); Tony C. Ng, Simon M. Ameer-Beg, King's College London (United Kingdom) ..... [8590-13]

Lunch Break ..... Sat 1:00 pm to 2:15 pm

### SESSION 3

Room: 307 (Esplanade) ..... Sat 2:15 pm to 3:40 pm

#### FRET

Session Chair: Zygmunt Karol Gryczynski, Univ. of North Texas Health Science Ctr. at Fort Worth (USA)

2:15 pm: **Förster resonance energy transfer between fluorescent proteins at single-molecule resolution (Invited Paper)**, Alexander P. Savitsky, A.N. Bach Institute of Biochemistry (Russian Federation); Maria G. Khrenova, Lomonosov Moscow State Univ. (Russian Federation); Alexander S. Goryashenko, A.N. Bach Institute of Biochemistry (Russian Federation); Alexander V. Nemukhin, Lomonosov Moscow State Univ. (Russian Federation) ..... [8590-1]

2:40 pm: **Biodegradable molecular photoswitches for super-resolution fluorescent imaging**, Ming-Qiang Zhu, Guofeng Zhang, Chong Li, Wen-Liang Gong, Huazhong Univ. of Science and Technology (China) ..... [8590-23]

3:00 pm: **Single-molecule FRET experiments with the new red-enhanced custom technology SPADs**, Francesco Panzeri, Politecnico di Milano (Italy); Niusha Sarkhosh, Antonino Ingargiola, Ron R. Lin, Univ. of California, Los Angeles (USA); Angelo Gulinatti, Ivan Rech, Massimo Ghioni, Sergio Cova, Politecnico di Milano (Italy); Shimon Weiss, Xavier Michalet, Univ. of California, Los Angeles (USA) ..... [8590-2]

3:20 pm: **8-spot single diffusing molecule FRET analysis using two 8-pixel SPAD arrays**, Antonino Ingargiola, Niusha Sarkhosh, Univ. of California, Los Angeles (USA); Francesco Panzeri, Angelo Gulinatti, Ivan Rech, Massimo Ghioni, Politecnico di Milano (Italy); Shimon Weiss, Xavier Michalet, Univ. of California, Los Angeles (USA) ..... [8590-3]

Coffee Break ..... Sat 3:40 pm to 4:10 pm



**SESSION 4**

**Room: 307 (Esplanade) . . . . . Sat 4:10 pm to 5:35 pm**

**New Developments in Methods and Systems I**

Session Chair: **Rainer Erdmann**, PicoQuant GmbH (Germany)

4:10 pm: **Role of the amyloid region in the formation and propagation of A $\beta$  adhesive nanodomains on *Candida albicans*** (*Invited Paper*), David A. Alsteens, Univ. Catholique de Louvain (Belgium) . . . . . [8590-14]

4:35 pm: **Expanding the excitation range of confocal microscopy from UV to IR**, Felix Koberling, Marcelle König, Steffen Ruettinger, Benedikt Krämer, Sebastian Tannert, Thomas Schönau, PicoQuant GmbH (Germany); Ingo Gregor, Georg-August-Univ. Göttingen (Germany); Michael Wahl, Marcus Sackrow, Kristian Lauritsen, PicoQuant GmbH (Germany); Jörg Enderlein, Georg-August-Univ. Göttingen (Germany); Rainer Erdmann, PicoQuant GmbH (Germany) . . . . . [8590-15]

4:55 pm: **Enhancement of single molecule fluorescence using conical micromirrors**, Annette C. Grot, Aaron J. Rulison, Janice Yujuan Cheng, Austin Tomaney, Pei-Lin Hsiung, Ravi Saxena, Mathieu E. Foquet, Paul Lundquist, Joyce Y. Huang, Mark McDonald, Pacific BioSciences (USA) . . . . . [8590-17]

5:15 pm: **Comparison of Gaussian and Poisson noise models in a hybrid spectrum and principal component analysis algorithm for Raman spectroscopy**, Dominique Van de Sompel, Ellis Garai, Cristina L. Zavaleta, Sanjiv S. Gambhir, Stanford Univ. (USA) . . . . . [8590-18]

**BiOS Hot Topics**

Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

**Sunday 3 February**

**SESSION 5**

**Room: 307 (Esplanade) . . . . . Sun 8:40 am to 9:00 am**

**New Developments in Methods and Systems II**

Session Chair: **Ingo Gregor**, Georg-August-Univ. Göttingen (Germany)

8:40 am: **Development of an integrated Raman scanned probe microscope for TERS imaging**, Aaron Lewis, The Hebrew Univ. of Jerusalem (Israel); Yossi Bar-David, Rimma Dekhter, Hesham Taha, Nanonics Imaging Ltd. (Israel) . . . . . [8590-16]

**SESSION 6**

**Room: 307 (Esplanade) . . . . . Sun 9:00 am to 10:25 am**

**Nanoscopy and Superresolution Microscopy I**

Session Chair: **Ingo Gregor**, Georg-August-Univ. Göttingen (Germany)

9:00 am: **Localization, structure and dynamics: exploring live bacteria cells at the single molecule level** (*Invited Paper*), Julie S. Biteen, Univ. of Michigan (USA) . . . . . [8590-19]

9:25 am: **The double-helix point spread function enables precise and accurate measurement of 3D single-molecule localization and orientation**, Mikael P. Backlund, Matthew D. Lew, Adam S. Backer, Stanford Univ. (USA); Ginni Grover, Rafael Piestun, Univ. of Colorado at Boulder (USA); W. E. Moerner, Stanford Univ. (USA) . . . . . [8590-20]

9:45 am: **New approach to double-helix point spread function design for 3D super-resolution microscopy**, Ginni Grover, Rafael Piestun, Univ. of Colorado at Boulder (USA) . . . . . [8590-21]

10:05 am: **SOFI of GABA-B neurotransmitter receptors in hippocampal neurons elucidates intracellular receptor trafficking and assembly**, Anja Huss, Georg-August-Univ. Göttingen (Germany); Omar Ramírez, Felipe Santibáñez, Andrés Couve, Steffen Härtel, Univ. de Chile (Chile); Jörg Enderlein, Georg-August-Univ. Göttingen (Germany) . . . . . [8590-22]

Coffee Break . . . . . Sun 10:25 am to 10:55 am

**KEYNOTE SPEECH**

**Room: 307 (Esplanade) . . . . . 10:55 am to 11:40 am**

Session Chair: **Rainer Erdmann**, PicoQuant GmbH (Germany)

10:55 am: **Nanoscopy with focussed light** (*Keynote Presentation*), Stefan W. Hell, Max-Planck-Institut für Biophysikalische Chemie (Germany) . . . . . [8590-44]

**SESSION 7**

**Room: 307 (Esplanade) . . . . . Sun 11:40 am to 12:40 pm**

**Nanoscopy and Superresolution Microscopy II**

Session Chair: **Felix Koberling**, PicoQuant GmbH (Germany)

11:40 am: **Two-color 3D super-resolution imaging of bacterial protein ultrastructures with the double-helix point-spread function microscope**, Andreas Gahlmann, Stanford Univ. (USA); Ginni Grover, Univ. of Colorado at Boulder (USA); Jerod L. Ptacin, Lucy Shapiro, Stanford Univ. (USA); Rafael Piestun, Univ. of Colorado at Boulder (USA); W. E. Moerner, Stanford Univ. (USA) . . . . . [8590-24]

12:00 pm: **Fiber amplified and frequency doubled gain-switched diode laser at 766 nm as a depletion source for high resolution STED microscopy**, Kristian Lauritsen, Thomas Schönau, Torsten Siebert, Romano Haertel, Thomas Eckhardt, Dietmar Klemme, Rainer Erdmann, PicoQuant GmbH (Germany) . . . . . [8590-25]

12:20 pm: **Confocal spinning disk image scanning microscopy**, Olaf Schulz, Christoph M. Pieper, Jörg Enderlein, Georg-August-Univ. Göttingen (Germany) . . . . . [8590-26]

Lunch Break . . . . . Sun 12:40 pm to 1:55 pm

**SESSION 8**

**Room: 307 (Esplanade) . . . . . Sun 1:55 pm to 3:20 pm**

**Nanoscopy and Superresolution Microscopy III**

Session Chair: **Felix Koberling**, PicoQuant GmbH (Germany)

1:55 pm: **Low power super resolution fluorescence microscopy** (*Invited Paper*), Angus J. Bain, Richard J. Marsh, Siân Culley, Univ. College London (United Kingdom) . . . . . [8590-27]

2:20 pm: **Plasmon-enhanced fluorescence intensities and rates permit super-resolution imaging of enhanced local fields**, Esther Wertz, Jessica E. Donehue, Christopher Hayes, Julie S. Biteen, Univ. of Michigan (USA) . [8590-28]

2:40 pm: **Breaking the diffraction limit in pump-probe microscopy of non-fluorescent species**, Pu Wang, Mikhail N. Slipchenko, James I. Mitchell, Xianfan Xu, Ji-Xin Cheng, Purdue Univ. (USA) . . . . . [8590-29]

3:00 pm: **Nanoscale imaging of heterochromatic proteins in human embryonic stem cells using light sheet microscopy**, Ying S. Hu, Quan Zhu, Inder M. Verma, Hu Cang, The Salk Institute (USA) . . . . . [8590-30]

**Young Investigator Award**

**Room: 307 (Esplanade) . . . . . 3:20 pm to 3:30 pm**

Session Chair: **Zygmunt Karol Gryczynski**, Univ. of North Texas Health Science Ctr. at Fort Worth (USA)

We are pleased to announce that a prize in the amount of \$750.00 will be awarded to the best oral presentation by a presenter under the age of 35 within conference 8590: Single Molecule Spectroscopy and Imaging VI. Participants must be both the primary author and presenter of an accepted abstract to be eligible.

Prize donated by: **PicoQuant GmbH Berlin** (Germany)



**PICOQUANT**  
Unternehmen für optoelektronische  
Forschung und Entwicklung

Coffee Break . . . . . Sun 3:30 pm to 4:00 pm

## SESSION 9

Room: 307 (Esplanade) . . . . .Sun 4:00 pm to 5:40 pm

**Nanoscopy and Superresolution Microscopy IV**Session Chair: **Zygmunt Karol Gryczynski**, Univ. of North Texas Health Science Ctr. at Fort Worth (USA)4:00 pm: **In depth 3D PALM/STORM/SPT adaptive device**, Xavier Leveq, Imagine Optic SA (France); Xavier Darzacq, Ignacio Izeddin, Maxime Dahan, Ecole Normale Supérieure (France); Audrius Jasaitis, Gregory Clouvel, Imagine Optic SA (France) . . . . . [8590-31]4:20 pm: **Super-resolution localization microscopy with an sCMOS camera: opportunities and challenges**, Fan Long, Hongyu Zhu, Hongqiang Ma, Shaoqun Zeng, Huazhong Univ. of Science and Technology (China); Zhen-li Huang, Britton Chance Ctr. for Biomedical Photonics (China) . . . . . [8590-32]4:40 pm: **Multimitter colocalization with likelihood maximization for 3D superresolution fluorescence microscopy**, Yi Sun, Yang Pu, The City College of New York (USA); Mitchell Schaffler, The City Univ. of New York (USA) . . . . . [8590-33]5:00 pm: **Nonlinear structured illumination microscopy with Surface Plasmon Resonance (SPR) enhanced Stimulated Emission Depletion (STED)**, Han Zhang, The Univ. of Arizona (USA) . . . . . [8590-34]5:20 pm: **Fundamental limits to superresolution fluorescence microscopy**, Alex Small, California State Polytechnic Univ., Pomona (USA) . . . . . [8590-35]

## POSTERS-SUNDAY

Room: 103 (Exhibit Level) . . . . .Sun 5:30 pm to 7:30 pm

Conference attendees are invited to attend the BiOS poster session on Sunday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/x27476.xml>.

**Pushing the boundaries of single molecule detection**, Marcelle König, Steffen Ruettinger, Sebastian Tannert, Thomas Schönau, PicoQuant GmbH (Germany); Olaf Schulz, Arizona State Univ. (USA); Michael Wahl, Marcus Sackrow, Kristian Lauritsen, Felix Koberling, PicoQuant GmbH (Germany); Robert Ros, Arizona State Univ. (USA); Rainer Erdmann, PicoQuant GmbH (Germany) . . . . . [8590-36]

**Issues in the benchmarking of image analysis algorithms for superresolution microscopy**, Shane P. Stahlheber, Alex Small, California State Polytechnic Univ., Pomona (USA) . . . . . [8590-37]

**Surface plasmon enhanced spatially activated fluorescence imaging based on optical nanoapertures for super-resolution microscopy**, Wonju Lee, Youngjin Oh, Kyujung Kim, Donghyun Kim, Yonsei Univ. (Korea, Republic of) . . . . . [8590-38]

**Molecular modeling of the Förster resonance energy transfer between FusionRed and Dedushka fluorescent proteins**, Maria G. Khrenova, Lomonosov Moscow State Univ. (Russian Federation) and A.N. Bach Institute of Biochemistry (Russian Federation); Alexander S. Goryashenko, A.N. Bach Institute of Biochemistry (Russian Federation) and Lomonosov Moscow State Univ. (Russian Federation); Alexander V. Nemukhin, Lomonosov Moscow State Univ. (Russian Federation); Alexander P. Savitsky, A.N. Bach Institute of Biochemistry (Russian Federation) . . . . . [8590-39]

**Total internal reflection fluorescence correlation spectroscopy with structured light illumination using a digital micromirror device**, Jong-Ryul Choi, Taewoong Lee, Donghyun Kim, Yonsei Univ. (Korea, Republic of) [8590-41]

**Two-color CW STED nanoscopy**, Yujia Liu, Shanghai Jiao Tong Univ. (China); Eric Alonas, Philip J. Santangelo, Georgia Institute of Technology (USA); Dayong Jin, James A. Piper, Macquarie Univ. (Australia); Qiushi Ren, Peng Xi, Peking Univ. (China) . . . . . [8590-42]

**STED microscopy with nano-axial resolution**, Siddharth Sivankutty, Institut des Sciences Moléculaires d'Orsay (France); Thomas Barroca, Institut Langevin (France); Guillaume Dupuis, Le Ctr. de Photonique BioMedicale (France); Christophe Lefumeux, Institut des Sciences Moléculaires d'Orsay (France); Céline Mayet, Le Ctr. de Photonique BioMedicale (France); Arnaud Dubois, Lab. Charles Fabry (France); Catherine K. Marqué, Ctr. de Recherche de l'Institut du Cerveau et de la Moelle (France); Sandrine Lécart, Le Ctr. de Photonique BioMedicale (France); Marie-Claude Potier, Ctr. de Recherche de l'Institut du Cerveau et de la Moelle (France); Emmanuel Fort, Institut Langevin (France); Sandrine Lévêque-Fort, Institut des Sciences Moléculaires d'Orsay (France) . . . . . [8590-43]

# Optical Diagnostics and Sensing XIII: Toward Point-of-Care Diagnostics

Conference Chair: **Gerard L. Coté**, Texas A&M Univ. (USA)

Program Committee: **Rafat R. Ansari**, NASA Glenn Research Ctr. (USA); **Werner Gellermann**, The Univ. of Utah (USA); **Yuri I. Gurfinkel**, Central Clinical Hospital (Russian Federation); **Jürgen M. Lademann**, Charité Universitätsmedizin Berlin (Germany); **Michael J. McShane**, Texas A&M Univ. (USA); **Kenith E. Meissner**, Texas A&M Univ. (USA); **Risto Myllylä**, Univ. of Oulu (Finland); **Gert E. Nilsson**, Univ. Hospital Linköping (Sweden); **Jeffery S. Reynolds**, Bayer Healthcare LLC (USA); **Kexin Xu**, Tianjin Univ. (China); **Shaoqun Zeng**, Britton Chance Ctr. for Biomedical Photonics (China); **Dmitry A. Zimnyakov**, N.G. Chernyshevsky Saratov State Univ. (Russian Federation)

## Wednesday 6 February

### SESSION 1

Room: 309 (Esplanade) . . . . . Wed 8:50 am to 10:10 am

#### Optical Glucose Monitoring Approaches

Session Chairs: **Michael J. McShane**, Texas A&M Univ. (USA);  
**Brent D. Cameron**, The Univ. of Toledo (USA)

8:50 am: **Polarimetric glucose sensing in vitro: a high frequency approach to improving signal-to-noise ratio**, Casey W. Pirnstill, Daniel T. Grunden, Gerard L. Coté, Texas A&M Univ. (USA) . . . . . [8591-1]

9:10 am: **The development of an integrated Faraday modulator and compensator design for continuous polarimetric glucose monitoring**, Brandon W. Clarke, Brent D. Cameron, The Univ. of Toledo (USA) . . . . . [8591-2]

9:30 am: **Limitations of current fluorescent glucose sensing assays based on competitive binding**, Brian M. Cummins, Javier T. Garza, Gerard L. Coté, Texas A&M Univ. (USA) . . . . . [8591-3]

9:50 am: **Enzymatic glucose sensor compensation for variations in ambient oxygen concentration**, Bradley B. Collier, Texas A&M Univ. (USA); Michael J. McShane, Texas A&M Univ. (USA) and Texas A&M Univ. (USA) . . . . . [8591-4]

Coffee Break . . . . . Wed 10:10 am to 10:40 am

### SESSION 2

Room: 309 (Esplanade) . . . . . Wed 10:40 am to 12:00 pm

#### Blood and Tissue Perfusion and Oxygenation Measurements

Session Chair: **Babak Shadgan M.D.**,  
The Univ. of British Columbia (Canada)

10:40 am: **Non-invasive measurement of blood and tissue parameters based on VIS-NIR spectroscopy**, Jens Kraitl, Ulrich Timm, Univ. Rostock (Germany); Axel Kulcke, Senspec GmbH (Germany); Hartmut Ewald, Univ. Rostock (Germany) . . . . . [8591-6]

11:00 am: **Optical modeling toward optimizing monitoring of intestinal perfusion in trauma patients**, Tony J. Akl, Texas A&M Univ. (USA); Mark A. Wilson M.D., Univ. of Pittsburgh (USA) and VA Pittsburgh Healthcare System (USA); Milton N. Ericson, Oak Ridge National Lab. (USA); Gerard L. Coté, Texas A&M Univ. (USA) . . . . . [8591-7]

11:20 am: **Effects of local cold spray on subcutaneous and intramuscular blood flow and oxygenation**, Babak Shadgan M.D., W. Darlene Reid, The Univ. of British Columbia (Canada) . . . . . [8591-8]

11:40 am: **Portable multiwavelength frequency-domain diffuse optical instrument**, Keunsi No, Bruce J. Tromberg, Albert E. Cerussi, Beckman Laser Institute and Medical Clinic (USA) . . . . . [8591-9]

Lunch/Exhibition Break . . . . . Wed 12:00 pm to 1:30 pm

### SESSION 3

Room: 309 (Esplanade) . . . . . Wed 1:30 pm to 3:10 pm

#### Optical Approaches for Medical Diagnosis

Session Chair: **Jürgen M. Lademann**,  
Charité Universitätsmedizin Berlin (Germany)

1:30 pm: **The study of esophageal cancer in an early stage by using Raman spectroscopy**, Mika Ishigaki, Akinori Taketani, Yasuhiro Maeda, Bibin B. Andriana, Kwansai Gakuin Univ. (Japan); Ryu Ishihara, Osaka Medical Ctr. for Cancer and Cardiovascular Diseases (Japan); Hidetoshi Sato, Kwansai Gakuin Univ. (Japan) . . . . . [8591-10]

1:50 pm: **Label-free identification of single cell-derived vesicles by Raman microspectroscopy**, Edwin van der Pol, Univ. van Amsterdam (Netherlands) and Academisch Medisch Ctr. (Netherlands); Chi M. Hau, Academisch Medisch Ctr. (Netherlands) and Univ. van Amsterdam (Netherlands); Aufried T. M. Lenferink, Univ. Twente (Netherlands); Auguste Sturk, Rienk Nieuwland, Academisch Medisch Ctr. (Netherlands) and Univ. van Amsterdam (Netherlands); Cornelis Otto, Univ. Twente (Netherlands); Ton G. van Leeuwen, Academisch Medisch Ctr. (Netherlands) and Univ. van Amsterdam (Netherlands) . . . . . [8591-11]

2:10 pm: **Urinary tract infection (UTI) multi-bacteria multi-antibiotic testing using surface enhanced Raman spectroscopy (SERS)**, Evdokia Kastanos, Univ. of Nicosia (Cyprus); Katerina Hadjigeorgiou, Costas Pitris, Univ. of Cyprus (Cyprus) . . . . . [8591-12]

2:30 pm: **Cholesterol accumulation in the cornea and in the aorta: imaging using europium chlortetracycline complex fluorescent probe**, Lilia C. Courrol, Univ. Federal de São Paulo (Brazil); Leticia B. Sicchieri, Instituto de Pesquisas Energéticas e Nucleares (Brazil); Daliane C. Silva, Univ. Federal de São Paulo (Brazil) . . . . . [8591-13]

2:50 pm: **Application of optical methods for characterizing the vascular structure in psoriasis patients**, Jürgen M. Lademann, Charité Universitätsmedizin Berlin (Germany); Rami Archid, Charité Universitätsmedizin Berlin (Germany) and Univ. Tübingen (Germany); Bernhard Kleffner, Fraunhofer Institut für Biomedizinische Technik (Germany); Robert M. Lemor, Ctr. de Recherche Public Henri Tudor (Luxembourg) and Kibero GmbH (Germany); Katharina Ossadnik, Wolfram Sterry, Alexa Patzelt M.D., Charité Universitätsmedizin Berlin (Germany) . . . . . [8591-14]

Coffee Break . . . . . Wed 3:10 pm to 3:40 pm



## SESSION 4

Room: 309 (Esplanade) . . . . . Wed 3:40 pm to 5:40 pm

## Remote Optical Diagnosis and Point-of-Care Approaches

Session Chair: **Matthew A. Coleman**,  
Lawrence Livermore National Lab. (USA)3:40 pm: **A novel optical thromboelastography (OTEG) for coagulopathy assessment**, Markandey M. Tripathi, Seemantini K. Nadkarni, Harvard Medical School (USA) and Massachusetts General Hospital (USA) . . . . . [8591-15]4:00 pm: **Sensing cocaine in saliva with infrared laser spectroscopy**, Kerstin M. C. Hans, Michele Gianella, Matthias Müller, ETH Zurich (Switzerland); Philip Wägli, Joab Di Francesco, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Markus W. Sigrist, ETH Zurich (Switzerland) . . . . . [8591-16]4:20 pm: **NANODEM and CAREMAN European projects: continuous therapeutic drug monitoring and sepsis monitoring using the POCT format**, Francesco Baldini, Ambra Giannetti, Cosimo Trono, Istituto di Fisica Applicata Nello Carrara (Italy) . . . . . [8591-17]4:40 pm: **Developing point of care microarray fluidics using stressed polystyrene**, Matthew A. Coleman, Lawrence Livermore National Lab. (USA) and Univ. of California, Davis (USA); Ehson M. Ghandehri, Dennis L. Matthews, Univ. of California, Davis (USA); Jane P. Bearinger, Corporos Inc. (USA); Eric Douss, Lawrence Livermore National Lab. (USA) . . . . . [8591-18]5:00 pm: **A cellphone-based polarizing microscope for in-vitro detection of the malaria-pigment**, Itay Remer, Alberto Bilenca, Ben-Gurion Univ. of the Negev (Israel) . . . . . [8591-19]5:20 pm: **Crowd-sourced biogames toward distributed microscopic image analysis and tele-diagnosis**, Sam Mavandadi, Stoyan Dimitrov, Steve Feng, Frank Yu, Richard Yu, Uzair Y. Sikora, Aydogan Ozcan, Univ. of California, Los Angeles (USA) . . . . . [8591-20]

## POSTERS-WEDNESDAY

Room: 304 (Esplanade) . . . . . Wed 6:00 pm to 8:00 pm

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

**Tunable mid-infrared laser spectroscopy based on fiber-optic sensor for glucose measurement**, Songlin Yu, Dachao Li, Kexin Xu, Tianjin Univ. (China) . . . . . [8591-5]**Blood circulatory system for noninvasive diagnostics**, Dirk Fricke, Jens Kraittl, Hartmut Ewald, Univ. Rostock (Germany) . . . . . [8591-21]**Software-assisted live visualization system for subadjacent blood vessels in endonasal endoscopic approaches**, Peter Hartmann, Christopher Taudt, Benjamin Lempe, Markus Ernstberger, Jeannette Grüning, Ronny Maschke, Fabiola Basan, Tobias Baselt, Westsächsische Hochschule Zwickau (Germany); Ronny Grunnert, Fraunhofer Institut für Werkzeugmaschinen und Umformtechnik (Germany) . . . . . [8591-22]**Direct model for thin wetting film focusing**, Daniel Migliozi, Ecole Polytechnique (France); Cédric P. Allier, Yves Hennequin, Jean-Guillaume Coutard, Jean-Marc Dinten, CEA-LETI-Minatec (France) . . . . . [8591-23]**Novel algorithm for background correction of the quantitative spectroscopic tomography of the biogenic substances**, Pradeep K. W. Abeygunawardhana, Wei Qi, Ichirou Ishimaru, Kagawa Univ. (Japan) . . . . . [8591-24]**A glucose concentration measurement method by surface plasmon resonance with borate polymer binding**, Dachao Li, Peng Wu, Jia Yang, Tianjin Univ. (China) . . . . . [8591-25]**Deep UV Raman spectroscopy of solutions**, Vladislav V. Yakovlev, Maria Troyanova-Wood, Georgi I. Petrov, Texas A&M Univ. (USA) . . . . . [8591-26]**Raman spectroscopy is paving the way towards molecular understanding of drug interaction in malaria research**, Torsten Frosch, Friedrich-Schiller- Univ. Jena (Germany) and Institut für Photonische Technologien e.V. (Germany); Juergen Werner, Stefan Hanf, Jürgen Popp, Institut für Photonische Technologien e.V. (Germany) . . . . . [8591-27]**Optical imaging of oxidative stress in rodent model of retinitis pigmentosa**, Zahra Ghanian, Sepideh Maleki, Reyhaneh Sepehr, Sandeep Gopalakrishnan, Janis T. Eells, Mahsa Ranji, Univ. of Wisconsin-Milwaukee (USA) . . . . . [8591-28]**Determining the amounts of urea and glucose by near-infrared Raman spectroscopy in urine of patients with renal complications from diabetes mellitus and hypertension**, Jeyse A. M. Bispo, Landulfo Silveira Jr., Camilo Castelo Branco Univ. (Brazil); Elzo E. S. Vieira, Adriana B. F. Moretti, Univ. Camilo Castelo Branco (Brazil) . . . . . [8591-29]**Profilometry and subsurface imaging in point of care diagnosis in ocular and meoplastic disease**, Samir I. Sayegh, The Eye Center (USA); Alphonse Taghian, Massachusetts General Hospital (USA) and Harvard Medical School (USA) . . . . . [8591-30]

# Biomedical Applications of Light Scattering VIII

Conference Chairs: **Adam P. Wax**, Duke Univ. (USA); **Vadim Backman**, Northwestern Univ. (USA)

Program Committee: **Irving J. Bigio**, Boston Univ. (USA); **Stephen A. Boppart M.D.**, Univ. of Illinois at Urbana-Champaign (USA); **Bernard Choi**, Beckman Laser Institute and Medical Clinic (USA); **Dirk J. Faber**, Academisch Medisch Ctr. (Netherlands); **Steven L. Jacques**, Oregon Health & Science Univ. (USA); **Lev T. Perelman**, Harvard Univ. (USA); **Brian W. Pogue**, Dartmouth College (USA); **Bruce J. Tromberg**, Beckman Laser Institute and Medical Clinic (USA)

## Saturday 2 February

### SESSION 1

Room: 310 (Esplanade) ..... Sat 8:00 am to 9:00 am

#### Novel Instrumentation

Session Chair: **Bernard Choi**, Beckman Laser Institute and Medical Clinic (USA)

8:00 am: **Myoglobin saturation in free-diving whales: optical sensor development**, Walfre Franco, Enoch Gutierrez-Herrera, Paulino Vacas-Jacques, R. Rox Anderson M.D., Warren M. Zapol, Massachusetts General Hospital (USA) ..... [8592-1]

8:20 am: **Precise sizing of particle suspensions on an unmodified cell phone using elastic light scattering**, Zachary J. Smith, Kaiqin Chu, Sebastian Wachsmann-Hogiu, UC Davis Medical Ctr. (USA) ..... [8592-2]

4:40 pm: **Oblique polarized reflectance spectroscopy for depth sensitive measurements in the epithelial tissue**, Maria Jimenez, Leonid Fradkin, The Univ. of Texas at Austin (USA); Sylvia Lam, The BC Cancer Agency Research Ctr. (Canada); Bobby Knight, The Univ. of Texas at Austin (USA); Calum E. MacAulay, Catherine F. Poh D.D.S., The BC Cancer Agency Research Ctr. (Canada); Konstantin Sokolov, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA) and The Univ. of Texas at Austin (USA) ..... [8592-3]

### SESSION 2

Room: 310 (Esplanade) ..... Sat 9:00 am to 10:10 am

#### Fourier Transform Light Scattering

Session Chair: **Bernard Choi**, Beckman Laser Institute and Medical Clinic (USA)

9:00 am: **In-line holographic Fourier-transform light scattering and its applications on cytometry and biophysical studies**, Kyoohyun Kim, YongKeun Park, KAIST (Korea, Republic of) ..... [8592-4]

9:20 am: **Optical diffraction tomography for the study of malaria-infected human red blood cells and hemozoin crystals**, Kyoohyun Kim, HyeOk Yoon, YongKeun Park, KAIST (Korea, Republic of) ..... [8592-5]

9:40 am: **Solving inverse scattering problems using quantitative phase imaging (Invited Paper)**, Gabriel Popescu, Univ. of Illinois at Urbana-Champaign (USA) ..... [8592-6]

Coffee Break ..... Sat 10:10 am to 10:40 am

### SESSION 3

Room: 310 (Esplanade) ..... Sat 10:40 am to 11:40 am

#### Dynamic Scattering and Speckle Imaging

Session Chair: **Bernard Choi**, Beckman Laser Institute and Medical Clinic (USA)

10:40 am: **Chronic imaging of cortical microcirculation using multi-exposure speckle imaging**, Syed M. S. Kazmi, Andrew K. Dunn, The Univ. of Texas at Austin (USA) ..... [8592-7]

11:00 am: **Tissue dynamic imaging of ex vivo ovarian cancer tumors**, Ran An, John J. Turek, Purdue Univ. (USA); Daniela E. Matei, Indiana Univ. (USA); David D. Nolte, Purdue Univ. (USA) ..... [8592-8]

11:20 am: **Correcting for absorption in laser speckle rheology of blood**, Zeinab Hajjarian Kashany, Seemantini Nadkarni, Harvard Medical School (USA) ..... [8592-9]

Lunch/Exhibition Break ..... Sat 11:40 am to 1:00 pm

### SESSION 4

Room: 310 (Esplanade) ..... Sat 1:00 pm to 3:00 pm

#### Novel Approaches

Session Chair: **Dirk J. Faber**, Academisch Medisch Ctr. (Netherlands)

1:00 pm: **Real-time turbidity compensation of biological tissue in motion by a process of three waves mixing optical phase conjugation**, Fabrice Devaux, Eric Lantz, Univ. de Franche-Comté (France) ..... [8592-10]

1:20 pm: **Real-time quantitative structural imaging of label-free objects**, Yang Liu, Sergey A. Alexandrov, Shikhar Uttam, Rajan K. Bista, Univ. of Pittsburgh (USA); Chengquan Zhao, Univ. of Pittsburgh Medical Ctr. (USA) ..... [8592-11]

1:40 pm: **Assessing axial birefringence heterogeneity in bi-layered turbid media using polarized light imaging**, Sanaz Alali, Rain Wang, I. Alex Vitkin, Univ. of Toronto (Canada) ..... [8592-12]

2:00 pm: **Controlling the spectral properties of light through turbid media**, Jung-Hoon Park, Chunghyun Park, Hyunseung Yu, Yong-Hoon Cho, YongKeun Park, KAIST (Korea, Republic of) ..... [8592-13]

2:20 pm: **Linear classifier and textural analysis of optical scattering images for tumor classification during breast cancer extraction**, Alma Eguizabal, Univ. de Cantabria (Spain); Ashley M. Laughney, Thayer School of Engineering at Dartmouth (USA); Pilar Beatriz Garcia-Allende, Helmholtz Zentrum München GmbH (Germany); Venkataramanan Krishnaswamy, Thayer School of Engineering at Dartmouth (USA); Wendy A. Wells, Dartmouth Hitchcock Medical Ctr. (USA); Keith D. Paulsen, Dartmouth Hitchcock Medical Ctr (USA) and Thayer School of Engineering at Dartmouth (USA); Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA); José M. López-Higuera, Olga M. Conde, Univ. de Cantabria (Spain) ..... [8592-14]

2:40 pm: **Signature of Stokes vector on the Poincare sphere for cancerous and non-cancerous tissues: computer modeling and experiment**, Callum M. Macdonald, Alexander Doronin, Igor V. Meglinski, Univ. of Otago (New Zealand) ..... [8592-15]

Coffee Break ..... Sat 3:00 pm to 3:30 pm

### SESSION 5

Room: 310 (Esplanade) ..... Sat 3:30 pm to 5:10 pm

#### Theory

Session Chair: **Lev T. Perelman**, Harvard Univ. (USA)

3:30 pm: **Modeling microsphere axial displacement in optical projection tomographic microscopy to analyze effects on filtered backprojection reconstruction**, Ryan L. Coe, Eric J. Seibel, Univ. of Washington (USA) ..... [8592-16]

3:50 pm: **FullMonte: a framework for high-performance Monte Carlo simulation of light through turbid media with complex geometry**, Jeffrey Cassidy, Vaughn Betz, Lothar D. Ilge, Univ. of Toronto (Canada) ..... [8592-17]

4:10 pm: **Analytic phase-function corrected diffusion model for diffuse reflectance of an oblique pencil beam incident on a semi-infinite turbid medium**, Roger J. Zemp, Univ. of Alberta (Canada) ..... [8592-18]

4:30 pm: **Illumination area dependent coherent backscattering cone shape**, Renzhe Bi, Jing Dong, Kijoon Lee, Nanyang Technological Univ. (Singapore) ..... [8592-19]

4:50 pm: **Maximal energy transport through disordered media with the implementation of transmission eigenchannels**, Moonseok Kim, Youngwoon Choi, Changhyeng Yoon, Wonjun Choi, Korea Univ. (Korea, Republic of); Jaisoon Kim, Myongji Univ. (Korea, Republic of); Q-Han Park, Wonshik Choi, Korea Univ. (Korea, Republic of) ..... [8592-20]

**BiOS Hot Topics**

Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

**Sunday 3 February****SESSION 6****Room: 310 (Esplanade) . . . . . Sun 9:00 am to 11:50 am****Light Scattering from Cells**Session Chair: **Adam Wax**, Duke Univ. (USA)

9:00 am: **The contribution of specific organelles to side scatter** (*Invited Paper*), Judith R. Mourant, Oana C. Marina, Claire K. Sanders, Los Alamos National Lab. (USA) . . . . . [8592-21]

9:30 am: **Single versus coincidence detection of cell-derived vesicles by flow cytometry**, Edwin van der Pol, Univ. van Amsterdam (Netherlands); Martin J. C. van Gemert, Auguste Sturk, Rienk Nieuwland, Ton G. van Leeuwen, Academisch Medisch Ctr. (Netherlands) . . . . . [8592-22]

9:50 am: **Analyzing the effect of absorption and refractive index on image formation in high numerical aperture transmission microscopy of single cells**, Ryan L. Coe, Eric J. Seibel, Univ. of Washington (USA) . . . . . [8592-23]

Coffee Break . . . . . Sun 10:10 am to 10:40 am

10:40 am: **Optical scatter imaging as an apoptosis assay for cells undergoing ALA-mediated photodynamic therapy in vitro**, Vincent M. Rossi, Oregon State Univ. (USA) and Oregon Health & Science Univ. (USA); Steven L. Jacques, Oregon Health & Science Univ. (USA) . . . . . [8592-24]

11:00 am: **Size- and position-dependent angular scattering interferometry**, Dustin W. Shipp, Ruobing Qian, Andrew J. Berger, Univ. of Rochester (USA) . . . . . [8592-25]

11:20 am: **Analyzing subcellular structure with optical Fourier processing based on Gabor filters** (*Invited Paper*), Nada N. Boustany, Heidi Sierra, Rutgers, The State Univ. of New Jersey (USA) . . . . . [8592-26]

Lunch/Exhibition Break . . . . . Sun 11:50 am to 1:00 pm

**SESSION 7****Room: 310 (Esplanade) . . . . . Sun 1:00 pm to 3:00 pm****Clinical and Pre-Clinical Studies**Session Chair: **Irving J. Bigio**, Boston Univ. (USA)

1:00 pm: **Application of angle-resolved low coherence interferometry to cervical dysplasia** (*Invited Paper*), Tyler K. Drake, Steven K. Yaroska, Duke Univ. (USA); Yizheng Zhu, Virginia Polytechnic Institute and State Univ. (USA); Rex C. Bentley, Fidel A. Valea, Adam Wax, Duke Univ. (USA) . . . . . [8592-27]

1:30 pm: **Diffuse reflectance spectroscopy: a clinical study of tuberculin skin tests reading**, Anne Koenig, Commissariat à l'Énergie Atomique (France); Sophie Grande, Karima Dahel, Unité de recherche Clinique en Immunologie Lyon Sud (France); Anne Planat-Chrétien, Vincent Poher, Commissariat à l'Énergie Atomique (France); Catherine Goujon, Unité de recherche Clinique en Immunologie Lyon Sud (France); Jean-Marc Dinten, Commissariat à l'Énergie Atomique (France) . . . . . [8592-28]

1:50 pm: **In vivo determination of scattering properties of healthy and malignant breast tissue by use of multi-diameter-single fiber reflectance spectroscopy (MDSFR)**, Ute A. Gamm, Erasmus MC (Netherlands) . . [8592-29]

2:10 pm: **Determination of scattering coefficient and anisotropy of scattering of Murine tissues using reflectance-mode confocal microscopy**, Ravikant V. Samatham, Steven L. Jacques, Oregon Health & Science Univ. (USA) . . . . . [8592-30]

2:30 pm: **Multispectral imaging of scatter features to assess feasibility of margin imaging during breast conserving surgery** (*Invited Paper*), Brian W. Pogue, Ashley M. Laughney, Venkataramanan Krishnaswamy, Keith D. Paulsen, Thayer School of Engineering at Dartmouth (USA); Richard J. Barth M.D., Wendy A. Wells M.D., Geisel School of Medicine at Dartmouth (USA); David J. Cuccia, Bruce J. Tromberg, Univ. of California, Irvine (USA) . . . . . [8592-31]

Coffee Break . . . . . Sun 3:00 pm to 3:30 pm

**SESSION 8****Room: 310 (Esplanade) . . . . . Sun 3:30 pm to 5:00 pm****Analysis of Refractive Index**Session Chair: **Ji Yi**, Northwestern Univ. (USA)

3:30 pm: **Spectroscopic microscopy for quantification of nanoscale refractive index fluctuations** (*Invited Paper*), Lusik Cherkezyan, Ilker R. Capoglu, Hariharan Subramanian, Dhwanil Damania, Vadim Backman, Northwestern Univ. (USA) . . . . . [8592-32]

4:00 pm: **On alterations in the refractive index and scattering properties of biological tissue caused by histological processing**, Htet Aung, Bianca DeAngelo, John Soldano, Piotr Kostyk, Braulio Rodriguez, Min Xu, Fairfield Univ. (USA) . . . . . [8592-33]

4:20 pm: **Fractal analysis of scatter imaging signatures to distinguish breast pathologies**, Alma Eguizabal, Univ. de Cantabria (Spain); Ashley M. Laughney, Venkataramanan Krishnaswamy, Thayer School of Engineering at Dartmouth (USA); Wendy A. Wells M.D., Dartmouth Hitchcock Medical Ctr. (USA); Keith D. Paulsen, Dartmouth Hitchcock Medical Ctr. (USA) and Thayer School of Engineering at Dartmouth (USA); Brian W. Pogue, Thayer School of Engineering at Dartmouth (USA); José M. López-Higuera, Olga M. Conde, Univ. de Cantabria (Spain) . . . . . [8592-34]

4:40 pm: **Three models of light transport at subdiffusion lengthscales measured with coherent backscattering spectroscopy**, Andrew J. Radosevich, Nikhil N. Mutyal, Jeremy D. Rogers, Vadim Backman, Northwestern Univ. (USA) . . . . . [8592-35]

**POSTERS-SUNDAY****Room: 103 (Exhibit Level) . . . . . Sun 5:30 pm to 7:30 pm**

Conference attendees are invited to attend the BiOS poster session on Sunday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/x27476.xml>.

**Depolarization of light by rough surface of scattering phantoms**, Lioudmila Tchvialeva, The Univ. of British Columbia (Canada); Tim K. Lee, The BC Cancer Agency Research Ctr. (Canada); Alexander Doronin, Igor V. Meglinski, Univ. of Otago (New Zealand) . . . . . [8592-43]

**Reflection matrix measurement of a highly scattering media**, HyeonSeung Yu, Jung-Hoon Park, YongKeun Park, KAIST (Korea, Republic of) . . . [8592-44]

**Numerical re-evaluation of the McDonald-Vaughan model for Raman depth profiling**, Jacob Caro, Dennis Leenman, Jeroen Heldens, Technische Univ. Delft (Netherlands) . . . . . [8592-45]

**Determination of optical properties of biological tissue through the diffuse reflectance curves using adjustment by Fourier series expansion**, Aaron A. Munoz, Univ. de Carabobo (Venezuela) and Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); Sergio Vázquez-Montiel, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico) . . . . . [8592-46]

**Active polarization control through turbid media**, Jung-Hoon Park, Chunghyun Park, Hyeonseung Yu, Yong-Hoon Cho, YongKeun Park, KAIST (Korea, Republic of) . . . . . [8592-47]

**Fourier-transform light scattering of individual colloidal aggregates**, Hyeonseung Yu, HyunJoo Park, YoungChan Kim, Mahn Won Kim, YongKeun Park, KAIST (Korea, Republic of) . . . . . [8592-48]

**Optical monitoring of photopolymerization for medical hydrogel-implant design**, Andreas Schmocker, Azadeh Khoushabi, Salma Farahi, Pierre-Etienne Bourban, Jan-Anders E. Månson, Christophe Moser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8592-49]



**Monday 4 February**

**SESSION 9**

**Room: 310 (Esplanade) . . . . . Mon 8:00 am to 10:30 am**

**Low Coherence Light Scattering**

Session Chair: **Stephen A. Boppart M.D.**,  
Univ. of Illinois at Urbana-Champaign (USA)

8:00 am: **Low-coherence spectroscopy measurements of scattering and backscattering coefficients**, Nienke Bosschaart, Maurice C. G. Aalders, Ton G. van Leeuwen, Dirk J. Faber, Univ. van Amsterdam (Netherlands) . . . [8592-36]

8:20 am: **Low coherence light scattering from gold micro- and nano- rods to study diffusion using optical coherence tomography**, Raghav K. Chhetri, The Univ. of North Carolina at Chapel Hill (USA); Wei-Chen Wu, Joseph B. Tracy, North Carolina State Univ. (USA); Amy L. Oldenburg, The Univ. of North Carolina at Chapel Hill (USA) . . . . . [8592-37]

8:40 am: **Quantifying the tissue structural changes under the field effect of colorectal cancer by inverse spectroscopic optical coherence tomography**, Ji Yi, Northwestern Univ. (USA); Hemant K. Roy, NorthShore Univ. Health Systems (USA); Vadim Backman, Northwestern Univ. (USA) . . . . . [8592-38]

9:00 am: **Fast high-resolution imaging through turbid media by optical parametric amplification of ballistic photons** (*Invited Paper*), Youbo Zhao, Benedikt W. Graf, Steven G. Adie, Stephen A. Boppart, Univ. of Illinois at Urbana-Champaign (USA) . . . . . [8592-39]

9:30 am: **Detection of hemoglobin in thick scattering samples with multispectral multiple scattering low coherence interferometry**, Thomas E. Matthews, Michael G. Giacomelli, Adam Wax, Duke Univ. (USA) . . . . [8592-40]

9:50 am: **Spectroscopic optical coherence tomography with graphics processing unit based analysis of three dimensional data sets**, Volker Jaedicke, Semih Agcaer, Sebastian R. Goebel, Ruhr-Univ. Bochum (Germany); Helge Wiethoff, Technische Fachhochschule Georg Agricola zu Bochum (Germany); Nils C. Gerhardt, Ruhr-Univ. Bochum (Germany); Hubert Welp, Technische Fachhochschule Georg Agricola zu Bochum (Germany); Martin R. Hofmann, Ruhr-Univ. Bochum (Germany) . . . . . [8592-41]

10:10 am: **Simulating the optical coherence tomography via numerical solutions of Maxwell's equations**, Snow H. Tseng, Yu-Ting Hung, National Taiwan Univ. (Taiwan) . . . . . [8592-42]

**Don't miss  
BIOS EXPO**

See new products, top companies,  
potential collaborators, and the  
best suppliers face-to-face

**2-3 February 2013  
SOUTH HALL A**

Saturday · 12:00 pm to 5:00 pm  
Sunday · 10:00 am to 5:00 pm



# Optical Methods in Developmental Biology

Conference Chairs: **Andrew M. Rollins**, Case Western Reserve Univ. (USA); **Cecilia Lo**, Univ. of Pittsburgh (USA); **Scott E. Fraser**, California Institute of Technology (USA)

Program Committee: **Michael A. Choma M.D.**, Yale School of Medicine (USA); **Anjul M. Davis**, Thorlabs Inc. (USA); **Mary Elizabeth Dickinson**, Baylor College of Medicine (USA); **Robert G. Gourdie**, Virginia Polytechnic Institute and State Univ. (USA); **Michael W. Jenkins**, Case Western Reserve Univ. (USA); **Bradley B. Keller**, Univ. of Louisville (USA); **Kirill V. Larin**, Univ. of Houston (USA); **Kersti Linask**, Univ. of South Florida (USA); **Charles D. Little**, The Univ. of Kansas Medical Center (USA); **David Sedmera M.D.**, Charles Univ. in Prague (Czech Republic); **Ruikang K. Wang**, Univ. of Washington (USA); **Michiko Watanabe**, Case Western Reserve Univ. (USA); **Talât Mesud Yelbuz**, Medizinische Hochschule Hannover (Germany)

## Saturday 2 February

### SESSION 1

Room: 121 (Exhibit Level) . . . . . Sat 8:30 am to 10:10 am

#### Cardiovascular Development I

Session Chair: **Andrew M. Rollins**, Case Western Reserve Univ. (USA)

8:30 am: **Novel role of cardiac function in the development of congenital heart defects associated with Fetal Alcohol Syndrome**, Ganga H. Karunamuni, Shi Gu, Lindsay M. Peterson, Zhao Liu, Yves T. Wang, Quinn McHale, Katherine Mai, Michael W. Jenkins, Michiko Watanabe, Andrew M. Rollins, Case Western Reserve Univ. (USA) . . . . . [8593-1]

8:50 am: **High-resolution time-resolved 3D optical microscopy inside the beating zebrafish heart using prospective optical gating**, Jonathan M. Taylor, Christopher D. Saunter, John M. Girkin, Gordon D. Love, Durham Univ. (United Kingdom). . . . . [8593-2]

9:10 am: **Measurement of contractile wave propagation in the developing heart tube using OCT**, Lindsay M. Peterson, Shi Gu, Ganga H. Karunamuni, Yves T. Wang, Pei Ma, Michael W. Jenkins, Andrew M. Rollins, Case Western Reserve Univ. (USA) . . . . . [8593-3]

9:30 am: **in vivo functional imaging of blood flow and wall strain rate in developing outflow tract using ultrafast spectral domain optical coherence tomography**, Peng Li, Xin Yin, Univ. of Washington (USA); Liang Shi, Sandra Rugonyi, Oregon Health & Science Univ. (USA); Ruikang Wang, Univ. of Washington (USA) . . . . . [8593-4]

9:50 am: **Changes in strain and blood flow in the outflow tract of chicken embryo hearts observed with spectral domain optical coherence tomography after outflow tract banding**, Zhenhe Ma, Linlin Du, Xiaoxiao Jiang, Qiaoyun Wang, Zhongdi Chu, Xuan Zang, Fengwen Wang, Northeastern Univ. at Qinhuangdao (China); Ruikang Wang, Univ. of Washington (USA) . . . . . [8593-5]

Coffee Break . . . . . Sat 10:10 am to 10:40 am

### SESSION 2

Room: 121 (Exhibit Level) . . . . . Sat 10:40 am to 12:00 pm

#### Cardiovascular Development II

Session Chair: **Andrew M. Rollins**, Case Western Reserve Univ. (USA)

10:40 am: **High resolution optical mapping of optically paced embryonic quail hearts**, Yves T. Wang, Shi Gu, Case Western Reserve Univ. (USA); Andreas A. Werdich, MetroHealth Medical Ctr. (USA); Andrew M. Rollins, Michael W. Jenkins, Case Western Reserve Univ. (USA) . . . . . [8593-6]

11:00 am: **Optical mapping of freely beating embryonic hearts**, Pei Ma, Yves T. Wang, Shi Gu, Michael W. Jenkins, Andrew M. Rollins, Case Western Reserve Univ. (USA) . . . . . [8593-7]

11:20 am: **Hemoglobin contrast subtraction angiography reveals quantitative defects in embryo heart function generated by targeted sarcomere gene knockdown**, Engin Deniz M.D., Yale Univ. (USA); Stephan Jonas, Yale School of Medicine (USA) and RWTH Aachen (Germany); Mustafa K. Khokha M.D., Michael A. Choma M.D., Yale School of Medicine (USA) . . . . . [8593-8]

11:40 am: **Ultra-high frequency ultrasound biomicroscopy and high throughput cardiovascular phenotyping in a large scale mouse mutagenesis screen**, Xiaoqin Liu, Richard J. B. Francis, Kimimasa Tobita, Univ. of Pittsburgh (USA); Andrew J. Kim, Univ. of Pittsburgh School of Medicine (USA); Linda Leatherbury, Children's National Medical Ctr. (USA); Cecilia W. Lo, Univ. of Pittsburgh (USA). . . . . [8593-9]

Lunch/Exhibition Break . . . . . Sat 12:00 pm to 1:00 pm

### SESSION 3

Room: 121 (Exhibit Level) . . . . . Sat 1:00 pm to 2:40 pm

#### Whole Embryo and Longitudinal Imaging

Session Chair: **Andrew M. Rollins**, Case Western Reserve Univ. (USA)

1:00 pm: **In vivo imaging of zebrafish from embryo to adult stage with optical projection tomography**, Andrea Bassi, Luca Fieramonti, Cosimo D'Andrea, Gianluca Valentini, Rinaldo Cubeddu, Sandro De Silvestri, Giulio Cerullo, Politecnico di Milano (Italy); Efrem Foglia, Franco Cotelli, Univ. degli Studi di Milano (Italy) . . . . . [8593-10]

1:20 pm: **3D whole animal imaging of zebrafish at cellular resolution using synchrotron microCT**, Keith C. Cheng, Xuying Xin, Penn State Hershey (USA); Darin P. Clark, Penn State Hershey (USA) and Duke Univ. (USA); Xianghui Xiao, Francesco De Carlo, Argonne National Lab. (USA); Gordon Kindlmann, The Univ. of Chicago (USA); Patrick J. La Riviere, The Univ. of Chicago Medical Ctr. (USA) . . . . . [8593-11]

1:40 pm: **Confocal episcopic fluorescence image capture (CEFIC) provides unparalleled 3D imaging of both anatomical development and molecular signaling within the developing embryo**, Richard J. B. Francis, Univ. of Pittsburgh (USA); Rod Bunn, Vashaw Scientific, Inc. (USA); Andy Reidler, Leica Microsystems Inc. (USA); Cecilia W. Lo, Univ. of Pittsburgh (USA) . . . . . [8593-12]

2:00 pm: **Living pupa imaging with high-resolution FFOCT during the 96 hours of metamorphosis**, Adriano Burcheri, Ecole Supérieure de Physique et de Chimie Industrielles (France); Thomas Riemensperger, Univ. Göttingen (Germany); Serge Birman, A. Claude Boccara, Ecole Supérieure de Physique et de Chimie Industrielles (France) . . . . . [8593-13]

2:20 pm: **OCT guided microinjections for mouse embryonic research**, Kirill V. Larin, Univ. of Houston (USA); Saba H. Syed, Baylor College of Medicine (USA); Andrew J. Coughlin, Duke Univ. (USA); Shang Wang, Univ. of Houston (USA); Jennifer L. West, Duke Univ. (USA); Mary E. Dickinson, Irina V. Larina, Baylor College of Medicine (USA) . . . . . [8593-14]

### SESSION 4

Room: 121 (Exhibit Level) . . . . . Sat 2:40 pm to 4:30 pm

#### Neurological and Respiratory Development

Session Chair: **Andrew M. Rollins**, Case Western Reserve Univ. (USA)

2:40 pm: **Computational recognition and quantification of ciliary beat patterns from high-speed digital videomicroscopy**, Shannon Quinn, John Durkin, Maliha Zahid, Univ. of Pittsburgh (USA); Richard J. B. Francis, Cecilia W. Lo, Univ. of Pittsburgh Medical Ctr. (USA); Chakra Chennubhotla, Univ. of Pittsburgh (USA) . . . . . [8593-15]

3:00 pm: **Quantitative imaging of the development of directional cilia-driven fluid flow using optical coherence tomography (OCT)-based particle tracking velocimetry**, Brendan Huang, Stephan Jonas, Mustafa K. Khokha M.D., Michael A. Choma M.D., Yale School of Medicine (USA) . . . . . [8593-16]

Coffee Break . . . . . Sat 3:20 pm to 3:50 pm

3:50 pm: **Label free quantitative analysis of developing neural networks**, Mustafa A. Mir, Univ. of Illinois at Urbana-Champaign (USA); Anirban Majumder, Steven Stice, The Univ. of Georgia (USA); Gabriel Popescu, Univ. of Illinois at Urbana-Champaign (USA). . . . . [8593-17]

4:10 pm: **Effect of alcohol exposure on fetal brain development**, Narendran Sudheendran, Univ. of Houston (USA); Shameena Bake, Texas A&M Health Science Ctr. (USA); Karishma Prasad, Univ. of Houston (USA); Rajesh C. Miranda, Texas A&M Health Science Ctr. (USA); Kirill V. Larin, Univ. of Houston (USA) . . . . . [8593-18]

SESSION 5

Room: 121 (Exhibit Level) . . . . . Sat 4:30 pm to 5:50 pm

**Lineage Mapping, Fate Profiling, Pregonitor Cell Tracking, and Reproductive Biology**

Session Chair: **Andrew M. Rollins**, Case Western Reserve Univ. (USA)

4:30 pm: **Time-lapse imaging of live embryos reveals tissue movements drive cardiac progenitor displacements during avian heart morphogenesis**, Anastasiia Aleksandrova, Andras Czirok, The Univ. of Kansas Medical Ctr. (USA); Rusty Lansford, Children's Hospital Los Angeles (USA); Charles D. Little, Brenda Rongish, The Univ. of Kansas Medical Ctr. (USA) . . . . . [8593-19]

4:50 pm: **Combined lineage mapping and fate profiling with NLOM-OCM using sub-10-fs pulses**, Holly Gibbs, Colin R. Dodson, Yuqiang Bai, Arne C. Lekven, Alvin T. Yeh, Texas A&M Univ. (USA) . . . . . [8593-20]

5:10 pm: **Tissue dynamic imaging of live porcine cumulus-oocyte complexes**, Ran An, John J. Turek, Zoltan Machaty, David D. Nolte, Purdue Univ. (USA) . . . . . [8593-21]

5:30 pm: **Bioconjugated gold nanomarkers for imaging in cytology and reproduction biology**, Stephan Barcikowski, Christoph Rehbock, Daniel Werner, Lisa Gamrad, Univ. Duisburg-Essen (Germany); Ulrike Taylor, Wilfried Kues, Detlef Rath, Friedrich-Loeffler-Institut (Germany) . . . . . [8593-22]

**BiOS Hot Topics**

Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

Sunday 3 February

POSTERS-SUNDAY

Room: 103 (Exhibit Level) . . . . . Sun 5:30 pm to 7:30 pm

Conference attendees are invited to attend the BiOS poster session on Sunday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/x27476.xml>.

**Computational analysis of the spatial distribution of mitotic spindle angles in mouse developing airway**, Nan Tang, Wallace F. Marshall, Univ. of California, San Francisco (USA) . . . . . [8593-23]

**Birefringence analysis of cultured and imitation pearls using polarization-sensitive swept-source OCT**, Jae Hwi Lee, Eun Jung Min, Kwan Seob Park, Byeong Ha Lee, Gwangju Institute of Science and Technology (Korea, Republic of) . . . . . [8593-24]

**Multicolor two-photon excitation and wavefront control for imaging developing tissues**, Emmanuel Beaurepaire, Pierre Mahou, Maxwell Zimmerley, Jun Zeng, Ecole Polytechnique (France); Karine Loulier, Katherine Matho, Institut de la Vision (France); Marie-Claire Schanne-Klein, Ecole Polytechnique (France); Xavier Morin, Ecole Normale Supérieure (France); Jean Livet, Institut de la Vision (France); Willy Supatto, Delphine Débarre, Ecole Polytechnique (France) . . . . . [8593-25]

**High-throughput phenotyping of structural birth defects using micro-computed tomography and magnetic resonance imaging**, Andrew J. Kim, Richard J. B. Francis, Xiaoqin Liu, George Gabriel, Univ. of Pittsburgh School of Medicine (USA); William A. Devine, Univ. of Pittsburgh School of Medicine (USA) and Childrens Hospital of Pittsburgh (USA); Wendy Shung, Chien-Fu Chang, Deborah R. Farkas, Shane Anderton, Heather Lynn, Youngsil Kim, Li Yin Wong, Univ. of Pittsburgh School of Medicine (USA); Jovenal San Agustin, Gregory J. Pazour, Univ. of Massachusetts Medical School (USA); Linda Leatherbury, Children's National Medical Ctr. (USA); Kimimasa Tobita, Univ. of Pittsburgh School of Medicine (USA) and Children's Hospital of Pittsburgh (USA); Cecilia W. Lo, Univ. of Pittsburgh School of Medicine (USA) . . . . . [8593-26]

**A new method of deep UV LED microscopy using galvano-mirror scanning system for label-free live cell imaging**, Joo Hyun Park, Korea Research Institute of Standards and Science (Korea, Republic of); Sang-Won Lee, Jae Yong Lee, Eun Seong Lee, Korea Research Institute of Standards and Science (Korea, Republic of) . . . . . [8593-27]



# Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications IX

Conference Chairs: **Alexander N. Cartwright**, Univ. at Buffalo (USA); **Dan V. Nicolau**, McGill Univ. (Canada)

Program Committee: **Igal Brener**, Sandia National Labs. (USA); **Vamsy P. Chodavarapu**, McGill Univ. (Canada); **Philippe M. Fauchet**, Vanderbilt Univ. (USA); **Piotr A. Grodzinski**, National Cancer Institute (USA); **Brian D. MacCraith**, Dublin City Univ. (Ireland); **Ammasi Periasamy**, Univ. of Virginia (USA); **Paras N. Prasad**, Univ. at Buffalo (USA); **Weihong Tan**, Univ. of Florida (USA)

## Wednesday 6 February

### SESSION 1

Room: 252 (Mezzanine) ..... Wed 9:00 am to 10:00 am

#### Nanodetection by Active Photonic Devices I

Session Chair: **Alexander N. Cartwright**, Univ. at Buffalo (USA)

9:00 am: **Application of phase shift ring down spectroscopy to microcavities for biosensing** (*Keynote Presentation*), M. Imran Cheema, McGill Univ. (Canada); Usman A. Khan, Tufts Univ. (USA); Andrea M. Armani, The Univ. of Southern California (USA); Andrew G. Kirk, McGill Univ. (Canada) ..... [8594-1]

9:40 am: **Hybrid sensing device using direct plasmon detection**, Hossein Shokri Kojori, Univ. of Miami (USA); Juhyung Yun, Univ. at Buffalo (USA); Joondong Kim, Korea Institute of Machinery & Materials (Korea, Republic of); Wayne A. Anderson, Univ. at Buffalo (USA); Sung Jin Kim, Univ. of Miami (USA) ..... [8594-2]

Coffee Break ..... Wed 10:00 am to 10:30 am

### SESSION 2

Room: 252 (Mezzanine) ..... Wed 10:30 am to 11:50 am

#### Nanodetection by Active Photonic Devices II

Session Chair: **Sharon M. Weiss**, Vanderbilt Univ. (USA)

10:30 am: **Ultra-sensitive nanodetection using a whispering gallery microcavity laser**, Tao Lu, Univ. of Victoria (Canada); Hansuek Lee, Tong Chen, California Institute of Technology (USA); Steven Herchak, Univ. of Victoria (Canada) ..... [8594-3]

10:50 am: **Label-free imaging of live cell using large-scale photonic crystal nanolaser array**, Hiroshi Abe, Michimasa Narimatsu, Shota Kita, Kosuke Nakamura, Satoshi Ota, Yasushi Takemura, Toshihiko Baba, Yokohama National Univ. (Japan) ..... [8594-4]

11:10 am: **Optical sensing characteristics of nanostructures supporting multiple localized surface plasmon resonances**, Neha Nehru, Linliang Yu, Yinan Wei, J. Todd Hastings, Univ. of Kentucky (USA) ..... [8594-5]

11:30 am: **(Ho<sup>3+</sup>, Yb<sup>3+</sup>, Tm<sup>3+</sup>):KLu(WO<sub>4</sub>)<sub>2</sub> nanoparticles, an efficient thermometry sensor in the biological range**, Oleksandr A. Savchuk, Joan Josep Carvajal Marti, E. William Barrera, Maria Cinta Pujol, Xavier Mateos Ferre, Univ. Rovira i Virgili (Spain); Luis Mateos, Maria de la O Ramirez, Luisa E. Bausá, Univ. Autónoma de Madrid (Spain); Rosa M. Solé, Jaume Massons, Magdalena Aguiló Diaz, Francesc Diaz, Univ. Rovira i Virgili (Spain) ..... [8594-6]

Lunch/Exhibition Break ..... Wed 11:50 am to 1:30 pm

### SESSION 3

Room: 252 (Mezzanine) ..... Wed 1:30 pm to 3:00 pm

#### Nanostructures for Sensing

Session Chair: **Dan V. Nicolau**, McGill Univ. (United Kingdom)

1:30 pm: **Porous silicon biosensors using quantum dot signal amplifiers** (*Invited Paper*), Girija Gaur, Dmitry S. Koktysh, Sharon M. Weiss, Vanderbilt Univ. (USA) ..... [8594-7]

2:00 pm: **Enhanced magnetic resonance contrast of iron oxide nanoparticles embedded in a porous silicon nanoparticle host**, Joseph Kinsella, McGill Univ. (Canada); Shalini Ananda, Univ. of California, San Diego (USA); Jennifer Andrew, Univ. of Florida (USA); Joel Grondek, Miao-Ping Chien, Miriam Scandeng, Nathan Gianneschi, Erkki Ruoslahti, Michael Sailor, Univ. of California, San Diego (USA) ..... [8594-8]

2:20 pm: **Self-referenced resonance-based biosensors for multiplexed toxin detection using glycans surface coatings at visible wavelengths**, Farshid Ghasemi, Ali A. Eftekhari, David S. Gottfried, Georgia Institute of Technology (USA); Xuezheng Song, Richard D. Cummings, Emory Univ. (USA); Ali Adibi, Georgia Institute of Technology (USA) ..... [8594-9]

2:40 pm: **Light-activated endosomal escape using upconversion nanoparticles for enhanced delivery of drugs**, Muthu Kumara Gnanasammandhan Jayakumar, Akshaya Bansal, Yong Zhang, National Univ. of Singapore (Singapore) ..... [8594-10]

Coffee Break ..... Wed 3:00 pm to 3:30 pm

### SESSION 4

Room: 252 (Mezzanine) ..... Wed 3:30 pm to 4:50 pm

#### Nanoscale Imaging

Session Chair: **Sung Jin Kim**, Univ. of Miami (USA)

3:30 pm: **Optical microscopy with super-resolution capability by liquid-immersed high-index microspheres**, Arash Darafsheh, The Univ. of North Carolina at Charlotte (USA); Gary F. Walsh, Luca Dal Negro, Boston Univ. (USA); Vasily N. Astratov, The Univ. of North Carolina at Charlotte (USA) ..... [8594-11]

3:50 pm: **Rare Earth doped nanoparticles in imaging and PDT**, Brian G. Yust, Dhiraj K. Sardar, Lawrence C. Mimum, Ajith K. Gangadharan, Andrew Tsin, The Univ. of Texas at San Antonio (USA) ..... [8594-12]

4:10 pm: **Atomic force imaging microscopy investigation of the interaction of ultraviolet radiation with collagen thin films**, Andreas Stylianou, Dido M. Yova, Eleni Alexandratou, Aspasia G. Petri, National Technical Univ. of Athens (Greece) ..... [8594-14]

4:30 pm: **Detection of apoptosis caused by anticancer drug paclitaxel in MCF-7 cells by Confocal Raman Microscopy**, Hamideh Salehi, Elodie Middendorp, Nano Science-Bio Health Lab., Univ. Montpellier 1 (France); Attila-Gergely Végh, Institute of Biophysics (Hungary); Sathish Kumar Ramakrishnan, Csilla Gergely, Lab. Charles Coulomb, Univ. Montpellier 2 (France); Frederic J. G. Cuisinier, Nano Science-Bio Health Lab., Univ. Montpellier 1 (France) ..... [8594-15]

**Thursday 7 February**

**SESSION 5**

**Room: 252 (Mezzanine) . . . . . Thu 8:30 am to 10:10 am**

**Nanodetection by Active Photonic Devices II**

Session Chair: **Alexander N. Cartwright**, Univ. at Buffalo (USA)

8:30 am: **Selective detection of sub-atto-molar streptavidin in 10<sup>13</sup> fold impure sample using nanoslot photonic crystal nanolaser**, Shoji Hachuda, Shota Otsuka, Shota Kita, Yokohama National Univ. (Japan); Toshinari Isono, Yokohama City Univ. (Japan); Keisuke Watanabe, Toshihiko Baba, Yokohama National Univ. (Japan) . . . . . [8594-16]

8:50 am: **DNA nanosensor surface grafting and salt dependence**, Bruna G. Garvalho, Jaciara Fagundes de Souza Martins, Airton A. Martin, Leandro J. Raniero, Priscila P. Favero, Univ. do Vale do Paraiba (Brazil) . . . . . [8594-17]

9:10 am: **Analysis of DNA nanosensors interaction via density function theory**, Aline A. Bidoul, Airton A. Martin, Leandro J. Raniero, Priscila P. Favero, Univ. do Vale do Paraiba (Brazil) . . . . . [8594-18]

9:30 am: **ZnO light-emitting nanoprobe for tumor detection**, Yung-Tsan Chen, Yi-Chun Shen, Sheng-Chieh Yang, National Taiwan Univ. (Taiwan); Tsung-Lin Yang, National Taiwan Univ. (Taiwan) and Research Ctr. for Developmental Biology and Regenerative Medicine, National Taiwan Univ. (Taiwan); Jian-Jang Huang, National Taiwan Univ. (Taiwan) . . . . . [8594-19]

9:50 am: **Partially embedded gold nanoislands in a glass substrate for SERS applications**, Mohammad T. Yaseen, Yia-Chung Chang, Min-Hsiung Shih, Academia Sinica (Taiwan) . . . . . [8594-20]

Coffee Break . . . . . Thu 10:10 am to 10:30 am

**SESSION 6**

**Room: 252 (Mezzanine) . . . . . Thu 10:30 am to 11:50 am**

**Nanospectroscopy**

Session Chair: **Dan V. Nicolau**, McGill Univ. (United Kingdom)

10:30 am: **Colloidal nanostructures characterization via monochromatic x-ray microtomography**, Michael K. Rafailov, Univ. of Alberta (Canada); Victor Asadchikov, Russian Academy of Sciences (Russian Federation); Svetlana Rubtsova, Nano-technology Ctr. (Russian Federation) . . . . . [8594-21]

10:50 am: **Near-field optical fluorescence correlation spectroscopy**, Aaron Lewis, Yosef Y. Kuttner, The Hebrew Univ. of Jerusalem (Israel); Rimma Dekhter, Nanonics Imaging Ltd. (Israel); Mila Polhan, The Hebrew Univ. of Jerusalem (Israel) . . . . . [8594-22]

11:10 am: **Visualization of lipid rafts in normal or AD hippocampus neurons with nano-resolution**, Danni Chen, Lei Liu, Yingdong Huo, Bin Yu, Hanben Niu, Shenzhen Univ. (China) . . . . . [8594-23]

11:30 am: **Bilipid membrane phase characterization by reflectance anisotropy spectroscopy (RAS)**, Priscila P. Favero, Univ. do Vale do Paraiba (Brazil); Armando C. Ferraz, Mauricio S. Baptista, Univ. de São Paulo (Brazil); Ronei Miotto, Univ. Federal do ABC (Brazil) . . . . . [8594-24]

Lunch/Exhibition Break . . . . . Thu 11:50 am to 1:30 pm

**SESSION 7**

**Room: 252 (Mezzanine) . . . . . Thu 1:30 pm to 3:20 pm**

**Nanomanipulation**

Session Chair: **Sung Jin Kim**, Univ. of Miami (USA)

1:30 pm: **Control of molecular motors-driven nano-level motion on thermochips** (*Invited Paper*), Michael Berndt, Till Korten, Max Planck Institute for Molecular Cell Biology and Genetics (Germany); S. Syed, Harm van Zalinge, Univ. of Liverpool (United Kingdom); S. Diez, Max Planck Institute for Molecular Cell Biology and Genetics (Germany); Dan V. Nicolau, Univ. of Liverpool (United Kingdom) . . . . . [8594-25]

2:00 pm: **Optical tweezers based measurement of PLGA-NP interaction with cancer cells**, Argha Mondal, Thea Blesener, Jyothi Menon, Kytai Nguyen, Samarendra K. Mohanty, The Univ. of Texas at Arlington (USA) . . . . . [8594-26]

2:20 pm: **The molecular nanotweezer: nanomanipulation taken to new lows**, Bernardo Cordovez, Robert Hart, David Erickson, Optofluidics (USA) . . . . . [8594-27]

2:40 pm: **Electric field modulation of the motility of actin filaments on myosin-functionalised surfaces**, Laurence C. Ramsey, Jenny Aveyard, Harm van Zalinge, Univ. of Liverpool (United Kingdom); Malin Persson, Alf Mansson, Linnaeus Univ. (Sweden); Dan V. Nicolau, Univ. of Liverpool (United Kingdom) . . . . . [8594-28]

3:00 pm: **Simulation of actin filament motility on myosin-functionalised surface in electric field**, Aleksandr Chichenkov, Laurence Ramsey, Jenny Aveyard, Harm van Zalinge, Univ. of Liverpool (United Kingdom); Dan V. Nicolau, McGill Univ. (Canada) . . . . . [8594-29]

# Colloidal Nanoparticles for Biomedical Applications VIII

Conference Chairs: **Wolfgang J. Parak**, Philipps-Univ. Marburg (Germany); **Marek Osinski**, The Univ. of New Mexico (USA); **Kenji Yamamoto M.D.**, National Ctr. for Global Health and Medicine (Japan)

Program Committee: **Antigoni Alexandrou**, Ecole Polytechnique (France); **Maxime Dahan**, Lab. Kastler Brossel (France); **Niko Hildebrandt**, Institut d'Électronique Fondamentale (France); **Jennifer A. Hollingsworth**, Los Alamos National Lab. (USA); **Thomas M. Jovin M.D.**, Max-Planck-Institut für biophysikalische Chemie (Germany); **Antonios G. Kanaras**, Univ. of Southampton (United Kingdom); **Jesus M. de la Fuente**, Univ. de Zaragoza (Spain); **Hedi Mattoussi**, The Florida State Univ. (USA); **Igor Medintz**, U.S. Naval Research Lab. (USA); **Paul Mulvaney**, The Univ. of Melbourne (Australia); **Jay L. Nadeau**, McGill Univ. (Canada); **Subramanian Tamil Selvan**, A\*STAR Institute of Materials Research and Engineering (Singapore); **Geoffrey F. Strouse**, The Florida State Univ. (USA); **Claudia Tortiglione**, Istituto di Cibernetica Eduardo Caianiello (Italy); **Tania Q. Vu**, Oregon Health & Science Univ. (USA); **Horst Weller**, Univ. Hamburg (Germany)



## Saturday 2 February

### WELCOME

Room: 238 (Mezzanine) ..... 8:20 am to 8:25 am

Session Chair: **Wolfgang J. Parak**, Philipps-Univ. Marburg (Germany)

### SESSION 1

Room: 238 (Mezzanine) ..... Sat 8:25 am to 10:35 am

#### Functionalization of Colloidal Nanoparticles

Session Chair: **Marek Osinski**, The Univ. of New Mexico (USA)

8:25 am: **Colloidal Inorganic Nanoparticles: Functionality and Bio-Applications** (*Invited Paper*), Otto L. Muskens, Antonios G. Kanaras, Dorota Bartczak, Rute Fernandes, Agathi Christofidou, Tracey Newman, Neil Smyth, Timothy M. Millar, Michael R. Ardern-Jones, Univ. of Southampton (United Kingdom); Simone Nitti, Istituto Italiano di Tecnologia (Italy) ..... [8595-1]

8:55 am: **O6-alkylguanine-DNA transferase (SNAP) as capture module for site-specific covalent bioconjugation of targeting protein on nanoparticles**, Serena Mazzucchelli, Sacco Hospital (Italy); Miriam Colombo, Univ. degli Studi di Milano-Bicocca (Italy); Elisabetta Galbiati, Univ. degli Studi di Milano-Bicocca (Italy) and Univ. degli Studi di Milano-Bicocca (Italy); Fabio Corsi, Sacco Hospital (Italy); José M Montenegro, Philipps-Univ. Marburg (Italy) and Philipps-Univ. Marburg (Germany); Wolfgang J. Parak, Philipps-Univ. Marburg (Germany); Davide Prosperi, Univ. degli Studi di Milano-Bicocca (Italy) . [8595-2]

9:15 am: **Tailoring surface biofunctionalization of nanoparticles to improve targeting efficiency** (*Invited Paper*), Davide Prosperi, Univ. degli Studi di Milano-Bicocca (Italy); Serena Mazzucchelli, Luisa Fiandra, Fabio Corsi, Sacco Hospital (Italy); Miriam Colombo, Univ. degli Studi di Milano-Bicocca (Italy) ..... [8595-3]

9:45 am: **Functionalized nanoparticles and negatively charged ligands as inhibitor for viral vectors** (*Invited Paper*), Maria Pelliccia, European School of Molecular Medicine (Italy) and Univ. degli Studi di Milano (Italy); Gianluca Deflorian, IFOM-IEO (Italy); Randy P. Carney, Paulo J. Silva, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Patrizia Andreozzi, Istituto Neurologico Carlo Besta (Italy); Federica Pezzimenti, IFOM-IEO (Italy); Francesco Stellacci, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Silke Krol, Istituto Neurologico Carlo Besta (Italy) . . . . . [8595-5]

10:15 am: **Applying a hydrophobic shield to diminish non-specific interactions of gold nanoparticles**, Timothy A. Larson, Angel Zubieta, The Univ. of Texas at Austin (USA); Konstantin V. Sokolov, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA) ..... [8595-6]

Coffee Break ..... Sat 10:35 am to 10:45 am

### SESSION 2

Room: 238 (Mezzanine) ..... Sat 10:45 am to 12:45 pm

#### Plasmonic Nanoparticles I

Session Chair: **Wolfgang Fritzsche**, Institut für Photonische Technologien e.V. (Germany)

10:45 am: **Plasmonic Gold Nanocrosses with Multi-directional Excitation and Strong Photothermal Effect** (*Invited Paper*), Ming-Yong Han, A\*STAR Institute of Materials Research and Engineering (Singapore) ..... [8595-7]

11:15 am: **Star-like gold nanoparticles as highly active substrate for surface enhanced Raman spectroscopy**, Carlo Morasso, Dora Mehn, Renzo Vanna, Marzia Bedoni, Elena Forvi, Fondazione Don Carlo Gnocchi (Italy); Davide Prosperi, Univ. degli Studi di Milano-Bicocca (Italy); Furio Gramatica, Fondazione Don Carlo Gnocchi (Italy) ..... [8595-8]

11:35 am: **Image theory for plasmon-modified luminescence near nanospheres**, Zhe Zhang, Derrick Lim, Rodolfo E. Diaz, Arizona State Univ. (USA) ..... [8595-9]

11:55 am: **DNA-templated nanoantennas ready for biological applications** (*Invited Paper*), Guillermo P. Acuna, Phil Holzmeister, Friederike Möller, Susanne Beater, Birka Lalkens, Philip Tinnefeld, Technische Univ. Braunschweig (Germany) ..... [8595-10]

12:25 pm: **One phase growth of in-situ functionalized gold and silver nanoparticles and luminescent nanoclusters**, Fadi H. Aldeek, Habeeb M. Muhammed, Xin Ji, Goutam Palui, Naiqian Zhan, Hedi Mattoussi, Florida State Univ. (USA) ..... [8595-11]

Lunch Break ..... Sat 12:45 pm to 1:45 pm

### SESSION 3

Room: 238 (Mezzanine) ..... Sat 1:45 pm to 2:35 pm

#### Plasmonics Nanoparticles II

Session Chair: **Guillermo P. Acuna**, Technische Univ. Braunschweig (Germany)

1:45 pm: **Colloidal gold nanorings for improved photodynamic therapy through field-enhanced generation of reactive oxygen species**, Yue Hu, Yamin Yang, Hongjun Wang, Henry Du, Stevens Institute of Technology (USA) ..... [8595-12]

2:05 pm: **Bioanalytics using single plasmonic nanostructures** (*Invited Paper*), Ondrej Stranik, Dublin City Univ. (Ireland); Thomas Schneider, Norbert Jahr, Janina Wirth, Frank Garwe, Andrea Csaki, Wolfgang Fritzsche, Institut für Photonische Technologien e.V. (Germany) ..... [8595-13]



**SESSION 4**

**Room: 238 (Mezzanine) . . . . . Sat 2:35 pm to 4:45 pm**

**Biocompatibility and Toxicity of Nanoparticles**

Session Chair: **Marc Schneider**, Univ. des Saarlandes (Germany)

2:35 pm: **The biocompatibility of nanosized materials: intracellular nanoparticle stability and effects on toxicity and particle functionality** (*Invited Paper*), Stefaan J. Soenen, Stefaan C. De Smedt, Kevin Braeckmans, Univ. Gent (Belgium) . . . . . [8595-14]

Coffee Break . . . . . Sat 3:05 pm to 3:35 pm

3:35 pm: **Additive-free gold nanoparticles as toxicity reference materials in reproduction biology** (*Invited Paper*), Stephan Barcikowski, Christoph Rehbock, Vivian Merk, Lisa Gamrad, Univ. Duisburg-Essen (Germany); Ulrike Taylor, Wilfried Kues, Detlef Rath, Friedrich-Loeffler-Institut (Germany) [8595-16]

4:05 pm: **Excretion and toxicity of gold-iron nanoparticles**, David L. Halaney, James T. Jenkins, The Univ. of Texas Health Science Ctr. at San Antonio (USA); Konstantin V. Sokolov, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Li Leo Ma, The Univ. of Texas at Austin (USA); Heather J. Shipley, The Univ. of Texas at San Antonio (USA); Smridhi Mahajan, Christopher L. Loudon, Reto Asmis, The Univ. of Texas Health Science Ctr. at San Antonio (USA); Thomas E. Milner, Keith P. Johnston, The Univ. of Texas at Austin (USA); Marc D. Feldman, The Univ. of Texas Health Science Ctr. at San Antonio (USA) . . . . . [8595-17]

4:25 pm: **Antimicrobial photodynamic effect of protoporphyrin IX in the presence of gold nanoparticles and hydrogen peroxide against staphylococcus aureus**, Fathi A. Taha, Anna Univ. Chennai (India); Chandrasekaran Ramprasath, Narayanasamy Mathivanan, Univ. of Madras (India); Prakasarao Aruna, Singaravelu Ganesan, Anna Univ. Chennai (India) . . . . . [8595-18]

**SESSION 5**

**Room: 238 (Mezzanine) . . . . . Sat 4:45 pm to 6:05 pm**

**Synthesis of Colloidal Nanoparticle I**

Session Chair: **Matthias Karg**, Univ. Bayreuth (Germany)

4:45 pm: **Nanoprecipitation versus two step desolvation technique for the preparation of gelatin nanoparticles** (*Invited Paper*), Saeed A. Khan, Univ. des Saarlandes (Germany) and Kohat Univ. of Science and Technology (Pakistan); Marc Schneider, Univ. des Saarlandes (Germany) . . . . . [8595-19]

5:15 pm: **Synthesis and optical trapping of a biocompatible gold nanoparticle/DNA origami hybrid**, Jaekwon Do, Robert Schreiber, Andrey A. Lutich, Tim Liedl, Jessica Rodríguez Fernández, Jochen Feldmann, Ludwig-Maximilians-Univ. München (Germany) . . . . . [8595-20]

5:35 pm: **Self-assembled colloidal nanocrystal clusters for bioseparation** (*Invited Paper*), Yadong Yin, Univ. of California, Riverside (USA) . . . . . [8595-38]

**BiOS Hot Topics**

Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.

**Sunday 3 February**

**SESSION 6**

**Room: 238 (Mezzanine) . . . . . Sun 8:20 am to 9:40 am**

**Synthesis of Colloidal Nanoparticles II**

Session Chair: **Jay L. Nadeau**, McGill Univ. (Canada)

8:20 am: **Inorganic/organic core-shell colloids: synthesis, characterization and potential applications** (*Invited Paper*), Matthias Karg, Univ. Bayreuth (Germany) . . . . . [8595-21]

8:50 am: **Synthesis and application of fluorescent gold nanocluster's probes** (*Invited Paper*), Walter H. Chang, Jih-Liang Li, Po-Wen Lee, To-Yuan Chen, Ching-Ta Chen, Fang-Yu Shao, Chia-Hui Lin, Yu-Yu Wu, Cheng-An J. Lin, Chung Yuan Christian Univ. (Taiwan) . . . . . [8595-22]

9:20 am: **Colloidal ZnO nanoparticles for nonlinear optical probes and selective cell destruction**, Ben E. Urban Jr., Univ. of North Texas (USA) . . . . . [8595-23]

**SESSION 7**

**Room: 238 (Mezzanine) . . . . . Sun 9:40 am to 12:10 pm**

**Imaging with Nanoparticles**

Session Chair: **Thomas A. Klar**, Johannes Kepler Univ. Linz (Austria)

9:40 am: **Raman confocal microscopy studies of biotoxicity and biodistribution of modified magnetic nanoparticles for biomedical applications** (*Invited Paper*), Irantzu Llarena, CIC BiomaGUNE (Spain); Camila Messias, Sebastiao W. Da Silva, Univ. de Brasilia (Brazil); Maria Echeverria, CIC BiomaGUNE (Spain); Sergio E. Moya, CIC BiomaGUNE (Spain) and Lab. of Macromolecular Synthesis and Functionalization, Zhejiang Univ. (China); Paulo C. Do Moraes, Univ. de Brasilia (Brazil) . . . . . [8595-24]

10:10 am: **Multiplexed color encoded nanospheres (MENs) on stepwise encapsulation of nanocrystals into SiO<sub>2</sub>**, Quian Ma, Ivan Castelló-Serrano, Emilio J. Palomares, ICIQ - Institut Català d'Investigació Química (Spain) . . . . . [8595-25]

Coffee Break . . . . . Sun 10:30 am to 10:50 am

10:50 am: **Multiphoton imaging of three-dimensional cancer models using upconverting lanthanide nanoparticles**, Christian F. Gainer, Marek Romanowski, The Univ. of Arizona (USA) . . . . . [8595-26]

11:10 am: **Multifunctional rare-earth vanadate nanoparticles: luminescent probes, hydrogen peroxide sensors, and MRI contrast agents**, Mouna Abdeselem, Markus Schöffel, Isabelle Maurin, Ecole Polytechnique (France); Olivier Clément, Paris Ctr. de Recherche Cardiovasculaire (France); Pierre-Louis Tharaux, Institut National de la Santé et de la Recherche Médicale (France); Jean-Pierre Boilot, Cédric Bouzigues, Antigonis Alexandrou, Ecole Polytechnique (France) . . . . . [8595-28]

11:30 am: **Gold nanosensitisers for dual-modal fluorescent and SERS bioimaging**, Vijaya Raghavan Ayanam Parthasarathy, Hai Ming Fan, Malini C. Olivo, National Univ. of Ireland, Galway (Ireland) . . . . . [8595-29]

11:50 am: **Uptake and processing of semiconductor quantum dots in living cells studied by fluorescence lifetime imaging microscopy (FLIM)**, Jay L. Nadeau, Lina Carlini, McGill Univ. (Canada) . . . . . [8595-30]

Lunch Break . . . . . Sun 12:10 pm to 1:10 pm

## SESSION 8

Room: 238 (Mezzanine) . . . . . Sun 1:10 pm to 3:40 pm

## Sensing with Nano- and Microparticles

Session Chair: **Niko Hildebrandt**,  
Institut d'Électronique Fondamentale (France)1:10 pm: **Capsules-based fluorescent ratiometric sensors to investigate the cellular environment** (*Invited Paper*), Loretta L. del Mercato, Marzia M. Ferraro, Consiglio Nazionale delle Ricerche (Italy); Azhar Z. Abbasi, Markus Ochs, Wolfgang J. Parak, Philipps-Univ. Marburg (Germany); Rosaria Rinaldi, Consiglio Nazionale delle Ricerche (Italy) and Univ. del Salento (Italy). . . . . [8595-31]1:40 pm: **Voltage clamped single gold nanoparticles: sensors for anions and pH** (*Invited Paper*), Thomas A. Klar, Cynthia Vidal, Martin Djiango, Calin Hrelescu, Johannes Kepler Univ. Linz (Austria). . . . . [8595-32]2:10 pm: **Nanoparticle-functionalized microcapsules for delivery and sensing in the context of health and medicine applications**, Wolfgang J. Parak, Philipps-Univ. Marburg (Germany). . . . . [8595-33]2:30 pm: **Optical microscopy and spectroscopy of analyte-sensitive functionalized gold and silver nanoparticles in microfluidic systems** (*Invited Paper*), Martinus Werts, Julien Navarro, Ecole Normale Supérieure de Cachan (France); Vincent Raimbault, Institut de Chimie de la Matière Condensée de Bordeaux (France); Matthieu Loumagne, Ecole Normale Supérieure de Cachan (France) and Lab. Aimé Cotton (France); Anne Débarre, Lab. Aimé Cotton (France); Laurent Griscom, Olivier Français, Bruno Le Plouffe, Ecole Normale Supérieure de Cachan (France) . . . . . [8595-34]3:00 pm: **Sensitive detection of NaYF<sub>4</sub>:Yb/Tm nanoparticles using suspended core microstructured optical fibers**, Erik P. Schartner, The Univ. of Adelaide (Australia); Dayong Jin, Jiangbo Zhao, Macquarie Univ. (Australia); Tanya M. Monro, The Univ. of Adelaide (Australia). . . . . [8595-35]3:20 pm: **Examination of pterins using surface-enhanced Raman spectroscopy using low-volume samples**, Sam Mehigan, Ciarán Smyth, Eithne M. McCabe, Trinity College Dublin (Ireland). . . . . [8595-36]

Coffee Break . . . . . Sun 3:40 pm to 4:00 pm

## SESSION 9

Room: 238 (Mezzanine) . . . . . Sun 4:00 pm to 6:20 pm

## Magnetic Nanoparticles and Separation

Session Chair: **Davide Prosperi**,  
Univ. degli Studi di Milano-Bicocca (Italy)4:00 pm: **Biomedical tools based on magnetic nanoparticles** (*Invited Paper*), Maria F. Casula, Anna R. Saba, Paula M. Castillo, Univ. degli Studi di Cagliari (Italy); Elvira Fantechi, Claudio Sangregorio, Univ. degli Studi di Firenze (Italy); Alessandro Lasciari, Univ. degli Studi di Milano (Italy); Andrea Sbarbati, Univ. degli Studi di Verona (Italy); Alberto Casu, Istituto Italiano di Tecnologia (Italy); Andrea Falqui, Univ. degli Studi di Cagliari (Italy) . . . . . [8595-37]4:30 pm: **Localized magnetic nanoparticle heating for cell stimulation and control** (*Invited Paper*), Arnd Pralle, Heng Huang, Katherine Spoth, Univ. at Buffalo (USA). . . . . [8595-39]4:50 pm: **Water soluble iron oxide nanocubes with high values of specific absorption rate for cancer cell hyperthermia treatment** (*Invited Paper*), Pablo Guardia, Istituto Italiano di Tecnologia (Italy); Riccardo Di Corato, Istituto Italiano di Tecnologia (Italy) and National Nanotechnology Lab. of CNR-NANO (Italy); Leniac Lartigue, Claire Wilhelm, Florence Gazeau, Univ. Paris 7-Denis Diderot (France); Liberato Manna, Istituto Italiano di Tecnologia (Italy); Teresa Pellegrino, Istituto Italiano di Tecnologia (Italy) and National Nanotechnology Lab. of CNR-NANO (Italy) . . . . . [8595-40]5:20 pm: **Cleaning blood: applications of ultra-strong metal nanomagnets in nanomedicine** (*Invited Paper*), Inge K. Herrmann, Andrea A. Schlegel, Martin Urner, Christoph M. Schumacher, Wendelin J. Stark, Beatrice Beck-Schimmer, ETH Zurich (Switzerland). . . . . [8595-41]5:50 pm: **Hybrid magnetic/plasmonic nanocarriers for capture and photoacoustic detection of circulating tumor cells**, Chun-Hsien Wu, Jason R. Cook, Stanislav Y. Emelianov, The Univ. of Texas at Austin (USA); Konstantin V. Sokolov, The Univ. of Texas at Austin (USA) and The Univ. of Texas M.D. Anderson Cancer Ctr. (USA) . . . . . [8595-42]

## Monday 4 February

## SESSION 10

Room: 238 (Mezzanine) . . . . . Mon 8:00 am to 9:50 am

## Quantum Dots and Optically Active Nanoparticles

Session Chair: **Loretta L. del Mercato**,  
Consiglio Nazionale delle Ricerche (Italy)8:00 am: **Quantum dots as versatile biosensors for FRET-based multiplexed diagnostics**, Niko Hildebrandt, David Wegner, Stina Linden, Zongwen Jin, Univ. Paris-Sud 11 (France); W. Russ Algar, The Univ. of British Columbia (Canada); Igor L. Medintz, U.S. Naval Research Lab. (USA) . . . . . [8595-43]8:20 am: **Highly photostable hydrophilic quantum dots prepared with a new family of designer pyridine-appended multidentate polymers** (*Invited Paper*), Kimihiro Susumu, Eunkeu Oh, U.S. Naval Research Lab. (USA) and Sotera Defense Solutions, Inc. (USA); James B. Delehanty, Kelly L. Boeneman-Gemmill, Alan L. Huston, Igor L. Medintz, U.S. Naval Research Lab. (USA) . . . . . [8595-44]8:50 am: **Tailoring lanthanide nanocrystals for nanomedicine**, Timothy T. Tan, Nanyang Technological Univ. (Singapore) . . . . . [8595-45]9:10 am: **Highly efficient MnSe/ZnSeS quantum dots for biomedical applications**, Leisha M. Armijo, Brian A. Akins, John B. Plumley, Antonio C. Rivera, Nathaniel C. Cook, Gennady A. Smolyakov, Marek Osinski, The Univ. of New Mexico (USA) . . . . . [8595-46]9:30 am: **Single molecule quantum confined stark effect measurements of semiconductor nanoparticles at room temperature**, Kyoungwon Park, Univ. of California, Los Angeles (USA); Zvicka Deutsch, Weizmann Institute of Science (Israel); J. Jack Li, Univ. of California, Los Angeles (USA); Dan Oron, Weizmann Institute of Science (Israel); Shimon Weiss, Univ. of California, Los Angeles (USA) . . . . . [8595-47]

Coffee Break . . . . . Mon 9:50 am to 10:15 am

## SESSION 11

Room: 238 (Mezzanine) . . . . . Mon 10:15 am to 12:05 pm

## Delivery with Nano- and Microparticles I

Session Chair: **James B. Delehanty**, U.S. Naval Research Lab. (USA)10:15 am: **Thermolabile molecules on iron oxide nanoparticles: sub-nanometer local temperature probes and drug release modulators** (*Invited Paper*), Andreas Riedinger, Teresa Pellegrino, Pablo Guardia, Liberato Manna, Istituto Italiano di Tecnologia (Italy) . . . . . [8595-48]10:45 am: **Layered double hydroxides as carriers for quantum dots@silica nanospheres** (*Invited Paper*), Georgiana Stoica, Iván Castelló Serrano, Emilio Palomares, ICIQ - Institut Català d'Investigació Química (Spain) . . . . . [8595-49]11:15 am: **A self-assembled DNA nanostructure for the transport of immunostimulatory CpG oligonucleotides** (*Invited Paper*), Verena J. Schueller, Simon Heidegger, Ludwig-Maximilians-Univ. München (Germany); Carole Bourquin, Univ. Fribourg (Switzerland); Tim Liedl, Ludwig-Maximilians-Univ. München (Germany) . . . . . [8595-50]11:45 am: **Effectiveness of Tobramycin conjugated to iron oxide nanoparticles in treating cystic fibrosis**, Yekaterina I. Brandt, Leisha M. Armijo, Nathaniel C. Cook, Gennady A. Smolyakov, The Univ. of New Mexico (USA); Hugh D. Smyth, The Univ. of Texas at Austin (USA); Marek Osinski, The Univ. of New Mexico (USA) . . . . . [8595-51]

Lunch Break . . . . . Mon 12:05 pm to 1:05 pm

## SESSION 12

Room: 238 (Mezzanine) . . . . . Mon 1:05 pm to 1:55 pm

## Delivery with Nano- and Microparticles II

Session Chair: **Subramanian Tamil Selvan**, A\*STAR Institute of  
Materials Research and Engineering (Singapore)1:05 pm: **Targeted delivery of peptide-conjugated biocompatible gold nanoparticles into cancer cell nucleus**, Wei Qian, IMRA America, Inc. (USA); Taeyuana Curry, Univ. of Michigan (USA); Yong Che, IMRA America, Inc. (USA); Raoul Kopelman, Univ. of Michigan (USA) . . . . . [8595-52]1:25 pm: **Fluorescent nanocolloids for differential labeling of the endocytic pathway and drug delivery applications** (*Invited Paper*), James B. Delehanty, Christopher M. Spillmann, Jawad Naciri, W. Russ Algar, Banahalli R. Ratna, Igor L. Medintz, U.S. Naval Research Lab. (USA) . . . . . [8595-53]

**SESSION 13**

**Room: 238 (Mezzanine) . . . . . Mon 1:55 pm to 4:15 pm**

**Characterization of Nanoparticles**

Session Chair: **Maria F. Casula**, Univ. degli Studi di Cagliari (Italy)

1:55 pm: **Methods for the determination of the optical properties and the surface chemistry of fluorescent particles** (*Invited Paper*), Ute Resch-Genger, Christian Würth, Bundesanstalt für Materialforschung und -prüfung (Germany); Andreas Hennig, Thomas Behnke, Soheil Hatami, BAM Federal Institute for Materials Research and Testing (Germany); Katrin Hoffmann, BAM Federal Institute for Material Research and Testing (Germany); Angelika Hoffman, Alexandra Huber, Christian Jaeger, BAM Federal Institute for Materials Research and Testing (Germany); Heike Borchering, Thomas Thiele, Uwe Schedler, PolyAn GmbH (Germany) . . . . . [8595-55]

2:25 pm: **Stiffness measurement of a biomaterial by optical manipulation of microparticle**, Waleed Muhammad, Jung-Dae Kim, Yong-Gu Lee, Gwangju Institute of Science and Technology (Korea, Republic of) . . . . . [8595-56]

2:45 pm: **Opto-acoustic characterization of chitosan based gold nanoparticles (GNPs) synthesized in the presence of monovalent salt**, Samantha K. Franklin, Kelly L. Nash, Zannatul Yasmin, The Univ. of Texas at San Antonio (USA); Saher Maswadi, The Univ. of Texas Health Science Ctr. at San Antonio (USA) . . . . . [8595-57]

Coffee Break . . . . . Mon 3:05 pm to 3:25 pm

3:25 pm: **Thermo-optical properties of magic-sized nanocrystals in aqueous solutions**, Sthanley R. Lima, Viviane Pilla, Acácio A. Andrade, Anielle C. A. Silva, Noelio O. Dantas, Univ. Federal de Uberlândia (Brazil) . . . . [8595-58]

3:45 pm: **Effect of surface modification on protein corona formation and uptake of 5-nm Au NPs** (*Invited Paper*), Blair D. Johnston, Martin J. D. Clift, The Adolphe Merkle Institute (Switzerland); Martin Schäffler, Helmholtz Zentrum München GmbH (Germany); Christian Pfeiffer, Philipps-Univ. Marburg (Germany); Simon Ristig, Univ. Duisburg-Essen (Germany); Jose Maria Montenegro Martos, Philipps-Univ. Marburg (Germany); Stefanie Hauck, Helmholtz Zentrum München GmbH (Germany); Hakan Sarioglu, Helmholtz Zentrum München GmbH (Germany); Alke Petri-Fink, The Adolphe Merkle Institute (Switzerland); Matthias Epple, Univ. Duisburg-Essen (Germany); Pilar Rivera Gil, Philipps-Univ. Marburg (Germany); Wolfgang J. Parak, Philipps-Univ. Marburg (Germany); Peter Wick, Materials-Biology Interactions, EMPA (Switzerland); Wolfgang Kreyling, Helmholtz Zentrum München GmbH (Germany); Barbara Rothen-Rutishauser, The Adolphe Merkle Institute (Switzerland) . . . . . [8595-59]

**SESSION 14**

**Room: 238 (Mezzanine) . . . . . Mon 4:15 pm to 6:15 pm**

**Nanoparticles in Medical Applications**

Session Chair: **Kenji I. Yamamoto M.D.**, National Ctr. for Global Health and Medicine (Japan)

4:15 pm: **Nanoparticles for diagnostics and laser medical treatment of cartilage in orthopaedics**, Olga I. Baum, Yulia Soshnikova, Alexander I. Omelchenko, Emil N. Sobol, Institute on Laser and Information Technologies (Russian Federation) . . . . . [8595-60]

4:35 pm: **Optimizing nanoparticles for brain tumor immunotherapy** (*Invited Paper*), Jacob M. Berlin, Yiming Weng, Huaqing Wang, Anna Carvalho da Fonseca, Anil K. Suresh, Leying Zhang, Ian Zhang, Behnam Badie, City of Hope National Medical Ctr. (USA) . . . . . [8595-61]

4:55 pm: **Magnetized endothelial progenitor cells as angiogenic activators** (*Invited Paper*), Anna Roig, Consejo Superior de Investigaciones Científicas (Spain) . . . . . [8595-62]

5:25 pm: **Multifunctional nanocarriers for biomedical applications** (*Invited Paper*), Michael Maskos, Institut für Mikrotechnik Mainz GmbH (Germany); Regina Bleul, Raphael Thiermann, Bundesanstalt für Materialforschung und -prüfung (Germany); Olga Koshkina, Institut für Mikrotechnik Mainz GmbH (Germany) . . . . . [8595-63]


5:55 pm: **Radiation dose enhancement using lanthanide fluoride nanoparticles on human pancreatic cancer cells in vitro**, Nathan J. Withers, Yekaterina I. Brandt, Jacqueline M. Sugar, Antonio C. Rivera, Nathaniel C. Cook, Leisha M. Armijo, John B. Plumley, Brian A. Akins, Gennady A. Smolyakov, Marek Osinski, The Univ. of New Mexico (USA) . . . . . [8595-64]

**Ocean Optics Young Investigator Award Presentation**

**Room: 238 (Mezzanine) . . . . . Mon 6:15 pm to 6:30 pm**

Ocean Optics Young Investigator Award will be given for the best paper presented by a leading author who is either a graduate student or has graduated within less than five years of the paper submission date. The award consists of a \$1,000 cash prize to the Young Investigator and \$2,000 Ocean Optics equipment credit to the laboratory where the work was performed.

Prize donated by: **Ocean Optics**





# Reporters, Markers, Dyes, Nanoparticles, and Molecular Probes for Biomedical Applications

*Conference Chairs:* **Samuel Achilefu**, Washington Univ. School of Medicine in St. Louis (USA); **Ramesh Raghavachari**, U.S. Food and Drug Administration (USA)

*Program Committee:* **Bohumil Bednar**, Merck & Co., Inc. (USA); **Mikhail Y. Berezin**, Washington Univ. School of Medicine in St. Louis (USA); **Richard B. Dorshow**, Covidien (USA); **Paul M. W. French**, Imperial College London (United Kingdom); **Yueqing Gu**, China Pharmaceutical Univ. (China); **Hisataka Kobayashi**, National Institutes of Health (USA); **Ashok Kumar Mishra**, Indian Institute of Technology Madras (India); **D. Michael Olive**, LI-COR Biosciences (USA); **Gabor Patonay**, Georgia State Univ. (USA); **Attila Tarnok**, Univ. Leipzig (Germany); **Yasuteru Urano**, The Univ. of Tokyo (Japan)

## Monday 4 February

### SESSION 1

Room: 305 (Esplanade) ..... Mon 9:00 am to 10:10 am

#### Molecular Probes for Targeted Imaging and Therapy

Session Chair: **Samuel Achilefu**, Washington Univ. School of Medicine in St. Louis (USA)

9:00 am: **Super-enhanced permeability and retention (SUPR) effect induced by photo-immunotherapy (PIT) can accommodate nano-sized reagents deep into cancer tissue.** (*Invited Paper*), Hisataka Kobayashi, National Institutes of Health (USA) ..... [8596-1]

9:30 am: **ICG-loaded polymeric nanocapsules functionalized with anti-HER2 for targeted fluorescence imaging and photodestruction of ovarian cancer cells**, Baharak Bahmani, Yadir A. Guerrero, Valentine I. Vullev, Univ. of California, Riverside (USA); Sheela P. Singh, Vikas Kundra, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Bahman Anvari, Univ. of California, Riverside (USA) ..... [8596-2]

9:50 am: **Imaging of tumor vascular endothelial cells in living mice**, Dawen Zhao, Jason H. Stafford, Heling Zhou, Philip E. Thorpe, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA) ..... [8596-3]

Coffee Break ..... Mon 10:10 am to 10:40 am

### SESSION 2

Room: 305 (Esplanade) ..... Mon 10:40 am to 12:10 pm

#### NIR Fluorescent Molecular Probes for Biological Imaging

Session Chair: **Hisataka Kobayashi**, National Institutes of Health (USA)

10:40 am: **NIR fluorescent dyes: versatile vehicles for marker and probe applications** (*Invited Paper*), Gabor Patonay, Gala Chapman, Garfield Beckford, Maged Henary, Georgia State Univ. (USA) ..... [8596-4]

11:10 am: **Covalent IR820-PEG diamine conjugates: characterization and in vivo biodistribution**, Alicia Fernandez-Fernandez, Nova Southeastern Univ. (USA) and Florida International Univ. (USA); Romila Manchanda, Florida International Univ. (USA); Denny A. Carvajal, Mount Sinai Medical Ctr. (USA) and Florida International Univ. (USA); Tingjun Lei, Anthony J. McGoron, Florida International Univ. (USA) ..... [8596-5]

11:30 am: **Near-infrared light-triggered dissociation of block copolymer micelles for controlled drug release**, Jie Cao, Shanshan Huang, Yuqi Chen, Siwen Li, Sisi Cui, China Pharmaceutical Univ. (China); Samuel Achilefu, Washington Univ. School of Medicine in St. Louis (USA); Yueqing Gu, China Pharmaceutical Univ. (China); Zhlyu Qian, Nanjing Univ. of Aeronautics and Astronautics (China) ..... [8596-6]

11:50 am: **Near-infrared Imaging (NIR) loaded polymeric nanoparticles: In vitro and In vivo studies**, Tingjun Lei, Romila Manchanda, Yen-Chih Huang, Florida International Univ. (USA); Alicia Fernandez-Fernandez, Karina Bunetska, Karina Bunetska, Andrew Milera, Andrew Milera, Azael Sarmiento, Azael Sarmiento, Anthony J. McGoron, Florida International Univ. (USA); Alicia Fernandez-Fernandez, Florida International Univ. (USA) and Nova Southeastern Univ. (USA) ..... [8596-7]

Lunch Break ..... Mon 12:10 pm to 1:30 pm

### SESSION 3

Room: 305 (Esplanade) ..... Mon 1:30 pm to 3:00 pm

#### Imaging Molecular Processes with Fluorescent Reporters

Session Chair: **Gabor Patonay**, Georgia State Univ. (USA)

1:30 pm: **Evaluation of inflammatory response to acute ischemia using near infrared fluorescent reactive oxygen sensors** (*Invited Paper*), Walter J. Akers, Selena Magalotti, Tiffany P. Gustafson, Mikhail Y. Berezin, Dana Abendschein, Richard Pierce, Washington Univ. School of Medicine in St. Louis (USA) [8596-8]

2:00 pm: **Fluorescent proteins as singlet oxygen photosensitizers: mechanistic studies in photodynamic inactivation of bacteria**, Rubén Ruiz-González, Univ. Ramon Llull (Spain); John H. White, The Univ. of Edinburgh (United Kingdom); Aitziber L. Cortajarena, Instituto Madrileño de Estudios Avanzados (Spain); Montserrat Agut, Santi Nonell, Univ. Ramon Llull (Spain); Cristina Flors, Instituto Madrileño de Estudios Avanzados (Spain) ..... [8596-9]

2:20 pm: **Investigating real-time activation of adenosine receptors by bioluminescence resonance energy transfer technique**, Yimei Huang, Hongqin Yang, Liqin Zheng, Jiangxu Chen, Yuhua Wang, Hui Li, Shusen Xie, Fujian Normal Univ. (China) ..... [8596-10]

2:40 pm: **Assessment of surgical margins in an orthotopic colorectal cancer model by optical imaging**, Tauseef Charanya, Gail P. Sudlow, Washington Univ. in St. Louis (USA); Kyle Gullicksrud, Washington Univ. School of Medicine in St. Louis (USA); Kexian Liang, Washington Univ. in St. Louis (USA); Nalinikanth Kotagiri, Walter J. Akers, Deborah C. Rubin, Samuel Achilefu, Washington Univ. School of Medicine in St. Louis (USA) ..... [8596-11]

Coffee Break ..... Mon 3:00 pm to 3:50 pm

### SESSION 4

Room: 305 (Esplanade) ..... Mon 3:50 pm to 6:00 pm

#### Nonbleaching and Ultrasmall Fluorescent Tags II

Joint Session with Conferences 8596 and 8635

Session Chairs: **Ramesh Raghavachari**, U.S. Food and Drug Administration (USA); **Philip R. Hemmer**, Texas A&M Univ. (USA)

3:50 pm: **Nanodiamond imaging: molecular imaging with optically-detected spin resonance of nitrogen-vacancy centers in nanodiamonds** (*Invited Paper*), Alex Hegyi, Eli Yablonovitch, Univ. of California, Berkeley (USA) [8635-5]

4:20 pm: **The diamond bionic eye** (*Invited Paper*), Steven Praver, Univ. of Melbourne (Australia) ..... [8635-6]

4:50 pm: **Probing intra-cellular drug release event using activatable (OFF/ON) CdS:Mn/ZnS quantum dots** (*Invited Paper*), Swadeshmukul Santra, UCF NanoScience Technology Ctr. (USA) ..... [8596-12]

5:20 pm: **Lanthanide-doped nanoparticles for hybrid x-ray/optical imaging**, Sudheendra Lakshmana, Gautom K. Das, Changqing Li, Simon R. Cherry, Ian M. Kennedy, Univ. of California, Davis (USA) ..... [8596-13]

5:40 pm: **Multimodal microspheres for targeted PET and Cerenkov luminescence-excited fluorescence imaging of angiogenesis**, Joanne Li, Lawrence W. Dobrucki, Marina Marjanovic, Eric J. Chaney, Stephen A. Boppart, Univ. of Illinois at Urbana-Champaign (USA) ..... [8596-15]

**POSTERS-MONDAY**

**Room: 103 (Exhibit Level) . . . . . Mon 5:30 pm to 7:30 pm**

Conference attendees are invited to attend the BiOS poster session on Monday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

**Perfluorinated near-IR dye labeled fluorescent micelle for imaging of tumor hypoxia**, Seong Ho Pahng, Washington Univ. in St. Louis (USA) . . . . . [8596-33]

**Mechanism of the first reversible photobleaching step in red fluorescent proteins**, Mikhail Drobizhev, Thomas E. Hughes, Montana State Univ. (USA); Yuriy Stepanenko, Pawel Wnuk, Institute of Physical Chemistry (Poland); Kieran O'Donnell, J. Nathan Scott, Patrik Callis, Alexander Mikhaylov, Leslie Dokken, Aleksander K. Rebane, Montana State Univ. (USA) . . . . . [8596-34]

**Single molecule interactions studied by using a modified DNA sequencer: a comparison with surface plasmon resonance and microarray data**, Jens Sobek, ETH Zurich (Switzerland). . . . . [8596-35]

**Real-time point-of-care measurement of impaired renal function in a rat acute injury model employing exogenous fluorescent tracer agents**, Richard B. Dorshow, MediBeacon LLC (USA); Sevag Demirjian M.D., Cleveland Clinic Lerner Research Institute (USA); Richard M. Fitch, John N. Freskos, Amruta R. Poreddy, Raghavan Rajagopalan, Jeng J. Shieh, Karen P. Galen, Jollette K. Wojdyla, Covidien (USA) . . . . . [8596-36]

**A molecular dynamics study of phospholipid biomacromolecules using a coarse-grained model**, Olga E. Glukhova, Irina V. Kirillova, Elena L. Kossovich, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) . . . . . [8596-37]

**Development of the terahertz emitter model based on nanopeapod in terms of biomedical applications**, Olga E. Glukhova, Anna S. Kolesnikova, N.G. Chernyshevsky Saratov State Univ. (Russian Federation); Igor S. Nefedov, Aalto Univ. School of Science and Technology (Finland) . . . . . [8596-38]

**Carbon nanotube+graphene quantum dots complex for biomedical applications**, Olga E. Glukhova, Igor N. Saliy, Anna S. Kolesnikova, Michael M. Slepchenkov, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) . . . . . [8596-39]

**Docosahexaenoic acid conjugated near infrared fluorescence probe for in vivo early tumor diagnosis**, Siwen Li, Jie Cao, China Pharmaceutical Univ. (China); Samuel Achilefu, Washington Univ. School of Medicine in St. Louis (USA); Yueqing Gu, China Pharmaceutical Univ. (China) . . . . . [8596-40]

**MUC1 aptamer based near infrared fluorescence probes for tumor diagnosis**, Juan Zhao, China Pharmaceutical Univ. (China); Samuel Achilefu, Washington Univ. School of Medicine in St. Louis (USA); Yueqing Gu, China Pharmaceutical Univ. (China) . . . . . [8596-41]

**Thermal-lens study of semiconductor nanoparticles embedded in restorative dental resin**, Viviane Pilla, Univ. Federal de Uberlândia (Brazil); Leandro P. Alves, Adalberto N. Iwazaki, UNICASTELO (Brazil); Paulo R. Barja, Univ. do Vale do Paraíba (Brazil); Egberto Munin, UNICASTELO (Brazil) [8596-42]

**NIR quantum dots as contrast agents for the detection of colorectal cancer**, Jordan L. Carbary, Jennifer K. Barton, Urs Utzinger, The Univ. of Arizona (USA) . . . . . [8596-43]

**Fluorescence resonance energy transfer in systems of zinc-pthalocyanines in the presence of CdSe quantum dots**, Adamo F. Monte, Univ. Federal de Uberlândia (Brazil); Tamiris S. Souza, Univ. Federal de Uberlândia (Brazil) and Univ. Federal de Uberlândia (Brazil); Arnaldo F. Reis, Djalmir N. Messias, Guilherme A. Alves, Univ. Federal de Uberlândia (Brazil) . . . . . [8596-44]

**Combination of near infrared (808-nm) laser and selective gold nanorods in antimicrobial action on staphylococcus aureus**, Elena S. Tuchina, Pavel O. Petrov, N.G. Chernyshevsky Saratov State Univ. (Russian Federation); Fulvio Ratto, Istituto di Fisica Applicata Nello Carrara (Italy); Sonia Centi, Univ. degli Studi di Firenze (Italy); Roberto Pini, Istituto di Fisica Applicata Nello Carrara (Italy); Valery V. Tuchin, N.G. Chernyshevsky Saratov State Univ. (Russian Federation) . . . . . [8596-46]

**Tuesday 5 February**

**SESSION 5**

**Room: 305 (Esplanade) . . . . . Tue 9:00 am to 10:10 am**

**Nanoparticles Design and Applications**

Session Chair: **Mikhail Y. Berezin**,

Washington Univ. School of Medicine in St. Louis (USA)

9:00 am: **Concept of nanoparticle clustering in biomedical applications (Invited Paper)**, Konstantin V. Sokolov, The Univ. of Texas M.D. Anderson Cancer Ctr. (USA); Justina O. Tam, Avinash Murthy, Soon Joon Yoon, Timothy A. Larson, Bobby Stover, Stanislav Y. Emelianov, Keith P. Johnston, The Univ. of Texas at Austin (USA) . . . . . [8596-16]

9:30 am: **Fast and reliable luminescence quantum yield determination for efficient fluorescent probes development**, Steffen Ruettinger, Felix Koberling, Sebastian Tannert, PicoQuant GmbH (Germany); Christian Würth, Federal Institute for Research and Testing (BAM) (Germany); Katrin Hoffmann, Ute Resch-Genger, Bundesanstalt für Materialforschung und -prüfung (Germany); Rainer Erdmann, PicoQuant GmbH (Germany); Markus Grabolle, Jutta Pauli, Bundesanstalt für Materialforschung und -prüfung (Germany); Ute Resch-Genger, Bundesanstalt für Materialforschung und -prüfung (Germany) . . . . . [8596-17]

9:50 am: **Design and synthesis of novel photoswitchable nanoparticles for imaging**, Ming-Qiang Zhu, Guo-Feng Zhang, Huazhong Univ. of Science and Technology (China) . . . . . [8596-18]

Coffee Break . . . . . Tue 10:10 am to 11:00 am

**SESSION 6**

**Room: 305 (Esplanade) . . . . . Tue 11:00 am to 12:20 pm**

**Nanoparticles for Biological Applications**

Session Chair: **Walter J. Akers**,

Washington Univ. School of Medicine in St. Louis (USA)

11:00 am: **Molecular and nano-thermometers for potential applications in thermal ablation procedures (Invited Paper)**, Mikhail Y. Berezin, Tiffany P. Gustafson, Natalia Zhegalova, Qian Cao, Alex Aydt, Steven Wang, Washington Univ. School of Medicine in St. Louis (USA) . . . . . [8596-19]

11:30 am: **Dendritic up-converting nanoparticles: pH nanosensors**, Sergei A. Vinogradov, Tatiana V. Esipova, Xingchen Ye, Univ. of Pennsylvania (USA); Josh E. Collins, Intelligent Material Solutions Inc. (USA); Christopher B. Murray, Univ. of Pennsylvania (USA) . . . . . [8596-20]

11:50 am: **Integrated in vivo modeling of cancer biology using avian embryos: a role for intravital imaging (Invited Paper)**, John Lewis, Univ. of Alberta (Canada) . . . . . [8596-47]

Lunch/Exhibition Break . . . . . Tue 12:20 pm to 2:00 pm

**SESSION 7**

**Room: 305 (Esplanade) . . . . . Tue 2:00 pm to 3:00 pm**

**Soft Nanoparticles for Biomedical Applications**

Session Chair: **Yasuteru Urano**, The Univ. of Tokyo (Japan)

2:00 pm: **Suppressing inflammation from inside out with novel NIR visible perfluorocarbon nanotheranostics**, Jelena M. Janjic, Sravan K. Patel, Erin DiVito, Michael Cascio, Duquesne Univ. (USA); Michael Patrick, Carnegie Mellon Univ. (USA); John A. Pollock, Duquesne Univ. (USA) . . . . . [8596-21]

2:20 pm: **Core-shell polymeric nanoparticles: spectroscopic assessment of micelle CST, assembly and dye binding**, Tiffany Gustafson, Young Lim, Shiyi Zhang, Gyu-Seong Heo, Alexander T. Lonnecker, Jeffery E. Raymond, Karen L. Wooley, Texas A&M Univ. (USA) . . . . . [8596-22]

2:40 pm: **Time-resolved fluorescence spectroscopy of cationic polymer/DNA complex stained with SYBR Green I**, Cosimo D'Andrea, Daniele Pezzoli, Chiara Malloggi, Andrea Bassi, Giulio Capelli, Alessandro Volonterio, Paola Taroni, Gabriele Candiani, Politecnico di Milano (Italy) . . . . . [8596-24]

Coffee Break . . . . . Tue 3:00 pm to 3:30 pm

## SESSION 8

Room: 305 (Esplanade) . . . . . Tue 3:30 pm to 4:50 pm

**Hybrid Technologies for Molecular Imaging Applications**Session Chair: **Richard B. Dorshow**

3:30 pm: **Engineering a methylene-blue dual activatable probe for photoacoustic imaging**, Ekaterina Morgounova, Qi Shao, Benjamin Hackel, Shai Ashkenazi, Univ. of Minnesota (USA) . . . . . [8596-25]

3:50 pm: **Polyacrylamide based ICG nanocarriers for enhanced fluorescence and photoacoustic imaging**, Aniruddha Ray, Hyung Ki Yoon, HeeJu Ryu, Yong-Eun Koo Lee, Gwangseong Kim, Univ. of Michigan (USA); Xueding Wang, Univ. of Michigan Health System (USA); Raoul Kopelman, Univ. of Michigan (USA) . . . . . [8596-26]

4:10 pm: **Carotenoids as biological labels for third harmonic generation microscopy**, Danielle B. Tokarz, Richard Cisek, Ulrich Fekl, Virginijus Barzda, Univ. of Toronto Mississauga (Canada) . . . . . [8596-27]

4:30 pm: **Photothermal based detection of the contrast properties of polypyrrole nanoparticle using optical coherence tomography**, Deepa K. Kasaragod, Kin Man Au, Zenghai Lu, David Childs, Steven Armes, Stephen J. Matcher, The Univ. of Sheffield (United Kingdom) . . . . . [8596-28]

**Wednesday 6 February**

## SESSION 9

Room: 305 (Esplanade) . . . . . Wed 9:00 am to 10:20 am

**Molecular Approaches and Methods**Session Chair: **Ramesh Raghavachari**,  
U.S. Food and Drug Administration (USA)

9:00 am: **Mechanisms of multiphoton photobleaching of red fluorescent proteins**, Caleb Stoltzfus, Aleksander K. Rebane, Mikhail Drobizhev, Thomas E. Hughes, Kelsey March, Montana State Univ. (USA) . . . . . [8596-29]

9:20 am: **Predicting errors from spectral overlap in multi-probe and multi-laser flow cytometry**, Mary J. Potasek, Simphotek Inc. (USA) and New York Univ. (USA); Gene Parilov, Karl Beeson, Simphotek Inc. (USA) . . . . . [8596-30]

9:40 am: **Intracellular delivery of molecular beacons by PMMA nanoparticles and carbon nanotubes for mRNA sensing**, Sara Tombelli, Francesco Baldini, Istituto di Fisica Applicata Nello Carrara (Italy); Marco Ballestri, Istituto per la Sintesi Organica e la Fotoreattività (Italy); Sara Carpi, Univ. di Pisa (Italy); Silvestro G. Conticello, Fondazione IRCCS Istituto Nazionale dei Tumori (Italy); Giambastiani Giuliano, Istituto di Chimica dei Composti OrganoMetallici (Italy); Ambra Giannetti, Istituto di Fisica Applicata Nello Carrara (Italy); Andrea Guerrini, Istituto per la Sintesi Organica e la Fotoreattività (Italy); Raffaella Mercatelli, Istituto dei Sistemi Complessi (Italy); Paola Nieri, Univ. di Pisa (Italy); Franco Quercioli, Istituto Nazionale di Ottica (Italy); Francesco Severi, Fondazione IRCCS Istituto Nazionale dei Tumori (Italy); Giovanna Sotgiu, Istituto per la Sintesi Organica e la Fotoreattività (Italy); Cosimo Trono, Istituto di Fisica Applicata Nello Carrara (Italy); Giulia Tuci, Istituto di Chimica dei Composti OrganoMetallici (Italy); Greta Varchi, Istituto per la Sintesi Organica e la Fotoreattività (Italy) . . . . . [8596-31]

10:00 am: **Quantified tomographic macro-micro multi-modal molecular imaging of Ber-Ep4 on cutaneous basal cell carcinoma**, Bahar Dasgeb, Memorial Sloan-Kettering Cancer Ctr. (USA); Aleksandr V. Smirnov, Yasaman Ardeshirpour, Amir Gandjbakhche, National Institutes of Health (USA); Allan C. Halpern, Memorial Sloan-Kettering Cancer Ctr. (USA); Jay R. Knutson, Darius Mehregan, National Institutes of Health (USA); Milind Rajadhyaksha, Memorial Sloan-Kettering Cancer Ctr. (USA); Dan L. Sackett, National Institutes of Health (USA) . . . . . [8596-32]

**Don't miss  
BIOS EXPO**

See new products, top companies,  
potential collaborators, and the  
best suppliers face-to-face

**2-3 February 2013  
SOUTH HALL A**

Saturday · 12:00 pm to 5:00 pm  
Sunday · 10:00 am to 5:00 pm



# Plasmonics in Biology and Medicine X

*Conference Chairs:* **Tuan Vo-Dinh**, Duke Univ. (USA); **Joseph R. Lakowicz**, Univ. of Maryland School of Medicine (USA)

*Conference Co-Chair:* **Krishanu Ray**, Univ. of Maryland School of Medicine (USA)

*Program Committee:* **A. Claude Boccara**, Ecole Supérieure de Physique et de Chimie Industrielles (France); **Michael T. Canva**, Lab. Charles Fabry (France); **Volker Deckert**, Institut für Photonische Technologien e.V. (Germany); **Bruce S. Dunn**, Univ. of California, Los Angeles (USA); **Christopher D. Geddes**, Univ. of Maryland, Baltimore (USA); **Zygmunt Karol Gryczynski**, Univ. of North Texas Health Science Ctr. at Fort Worth (USA); **Naomi J. Halas**, Rice Univ. (USA); **Ho-Pui A. Ho**, The Chinese Univ. of Hong Kong (Hong Kong, China); **Jiri Homola**, Institute of Photonics and Electronics of the ASCR, v.v.i. (Czech Republic); **Laura Maria Lechuga**, Ctr. d'Investigacions en Nanociència i Nanotecnologia (Spain); **Boris Mizaikoff**, Univ. Ulm (Germany); **Shuming Nie**, Emory Univ. (USA); **Weihong Tan**, Univ. of Florida (USA); **Andrew Taton**, Univ. of Minnesota, Twin Cities (USA); **Richard P. Van Duyne**, Northwestern Univ. (USA); **Jeffrey I. Zink**, Univ. of California, Los Angeles (USA)

## Sunday 3 February

### SESSION 1

Room: 222 (Mezzanine) .....Sun 8:40 am to 10:00 am

#### SERS and Plasmonics I

Session Chair: **Tuan Vo-Dinh**, Duke Univ. (USA)

8:40 am: **Surface enhanced Raman scattering on grating-type patterned nanoporous gold films**, Yang Jiao, Judson D. Ryckman, Sharon M. Weiss, Vanderbilt Univ. (USA) ..... [8597-1]

9:00 am: **Disposable plasmonic plastic SERS sensor**, Swe Z. Oo, Martin D. B. Charlton, Univ. of Southampton (United Kingdom); Samuli Siitonen, Ville Knotturi, Nanocomp Oy Ltd. (Finland); David Eustace, Renishaw Diagnostics Ltd. (United Kingdom); Jarkko Tuominen, Rousu Sanna, VTT Technical Research Ctr. of Finland (Finland) ..... [8597-2]

9:20 am: **A reliability analysis for molecular diagnostics with multiplexed SERS-coded nanoparticles**, Steven Y. Leigh, Madhura Som, Anushree Srivastava, Jonathan T. C. Liu, Stony Brook Univ. (USA) ..... [8597-3]

9:40 am: **Combined SERS probes and super-resolution imaging for studying molecular interactions**, Albert Lee, The Univ. of Texas at Austin (USA). [8597-4]

Coffee Break ..... Sun 10:00 am to 10:30 am

### SESSION 2

Room: 222 (Mezzanine) .....Sun 10:30 am to 11:50 am

#### SERS and Plasmonics II

Session Chair: **Tuan Vo-Dinh**, Duke Univ. (USA)

10:30 am: **Intracellular SERS probes for distinction of cell phenotypes**, Anna Huefner, William Kuan, Roger A. Barker, Sumeet Mahajan, Univ. of Cambridge (United Kingdom) ..... [8597-5]

10:50 am: **Gold nanoparticle dimers For SERS-based tumor detection and therapy**, A. Swarnapali De Silva Indrasekara, Laura Fabris, Prabhas V. Moghe, Dominik J. Naczynski, Bryan Paladini, Rutgers, The State Univ. of New Jersey (USA) ..... [8597-6]

11:10 am: **Dynamic SERS imaging with gold nanoparticles transported in a living cell**, Katsumasa Fujita, Jun Ando, Nicholas I. Smith, Satoshi Kawata, Osaka Univ. (Japan) ..... [8597-7]

11:30 am: **Plasmonic Coupling Interference** ..... [8597-8]

Lunch Break ..... Sun 11:50 am to 1:20 pm

### SESSION 3

Room: 222 (Mezzanine) .....Sun 1:20 pm to 3:00 pm

#### Plasmonic Structures: Fabrication and Properties

Session Chair: **Tuan Vo-Dinh**, Duke Univ. (USA)

1:20 pm: **Controlling the nanopore fabrication using high energy electron beam exposure**, Seong Soo Choi, Sun Moon Univ. (Korea, Republic of); Myoung Jin Park, Sun Moon Univ (Korea, Republic of); Tokutaro Yamaguchi, Sun Moon Univ. (Korea, Republic of); Namkyoo Park, Seoul National Univ. (Korea, Republic of) ..... [8597-9]

1:40 pm: **Plasmonic properties of weakly interacting silver nanocubes on high refractive index substrates**, Anatoli I. Ianoul, Adam Bottomley, Daniel Prezgot, Alyssa Staff, Carleton Univ. (Canada) ..... [8597-10]

2:00 pm: **Optical properties of strongly interacting supported silver nanocube monolayers**, Daniel Prezgot, Anatoli I. Ianoul, Carleton Univ. (Canada) ..... [8597-11]

2:20 pm: **A plasmonics nanoparticle super-resolution lens**, Hu Cang, The Salk Institute (USA); Yuan Wang, Xiang Zhang, Univ. of California, Berkeley (USA) ..... [8597-12]

2:40 pm: **Single LSPR particle sensor array for single molecule biosensing**, Si Chen, Mikael Käll, Chalmers Univ. of Technology (Sweden) ..... [8597-13]

Coffee Break ..... Sun 3:00 pm to 3:30 pm

### SESSION 4

Room: 222 (Mezzanine) .....Sun 3:30 pm to 5:30 pm

#### Sensing Applications of Plasmonic Structures

Session Chair: **Tuan Vo-Dinh**, Duke Univ. (USA)

3:30 pm: **Monolithic porous gold nanostructures as surface-enhanced Raman spectroscopy substrates for molecular and biosensing**, Wei-Chuan Shih, Univ. of Houston (USA) ..... [8597-14]

3:50 pm: **Biosensor based on degree of coherence of paired surface plasma waves**, Chien Chou, Chang Gung Univ. (Taiwan); Chien-Wa Ho, National United Univ. (Taiwan); Sheng-Yi Chang, Ming Chi Univ. of Technology (Taiwan); Nai-Chuan Chen, Ying-Feng Chang, Chang Gung Univ. (Taiwan); Li-Chen Su, National Central Univ. (Taiwan) ..... [8597-15]

4:10 pm: **Real time monitoring in-vivo micro-environment through the wound heal mechanism**, Jack Yan, AnnA I2P (Canada) ..... [8597-16]

4:30 pm: **An integrated platform for biomolecule interaction analysis**, Pei-I Tsai, National Taiwan Univ. (Taiwan) ..... [8597-17]

4:50 pm: **Aptamer-based surface plasmon resonance sensing of glycosylated human blood proteins**, Nathan Reaver, Rui Zheng, Dong-Shik Kim, Brent D. Cameron, The Univ. of Toledo (USA) ..... [8597-18]

5:10 pm: **Nano-imprint-based on substrate fabrication of bio-conjugated Au nanoring solution for biomedical applications**, Hung-Yu Tseng, Wei-Fan Chen, Yean-Woei Kiang, Chih-Chung Yang, National Taiwan Univ. (Taiwan) ..... [8597-19]

**Monday 4 February****SESSION 5****Room: 222 (Mezzanine) . . . . . Mon 8:00 am to 10:00 am****Plasmonics and Fluorescence**Session Chair: **Joseph R. Lakowicz**,  
Univ. of Maryland School of Medicine (USA)8:00 am: **Plasmon-enhanced emission from single fluorescent proteins, substrates**, Jessica E. Donehue, Esther Wertz, Courtney Taliscka, Julie S. Biteen, Univ. of Michigan (USA) . . . . . [8597-20]8:20 am: **Enhancing fluorescence properties with microhole array substrates**, Hugo-Pierre Poirier Richard, Jean-François Masson, Univ. de Montréal (Canada) . . . . . [8597-21]8:40 am: **Nanometric axial imaging with time-resolved surface plasmon-mediated fluorescence microscopy**, Olivier Loison, Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris (France) and Univ. Paris 7-Denis Diderot (France); Viviane Devauges, Institut des Sciences Moléculaires d'Orsay (France); Emmanuel Fort, Ecole Supérieure de Physique et de Chimie Industrielles (France) and Univ. Paris 7-Denis Diderot (France); Sandrine Lévêque-Fort, Institut des Sciences Moléculaires d'Orsay (France) and CNRS (France) . . . . . [8597-22]9:00 am: **DNA detection using a plasmon-enhanced nanoparticle architecture: synthesis and characterization**, Olivier Ratelle, Univ. Laval (Canada); Danny Brouard, Univ. Laval (Canada) and Héma-Québec (Canada); Félix-Antoine Lavoie, Denis Boudreau, Univ. Laval (Canada) . . . . . [8597-23]9:20 am: **A comprehensive study on metallic nano-hole arrays with a surface plasmon energy matching property**, Mohamadreza Najiminaini, Fartash Vasefi, The Univ. of Western Ontario (Canada); Bozena Kaminska, Simon Fraser Univ. (Canada); Jeffrey J. L. Carson, The Univ. of Western Ontario (Canada) . . . . . [8597-24]9:40 am: **Wide-field interferometric phase imaging of plasmonic nanoparticles at the subcellular level**, Nir A. Turko, Ania Peled, Natan T. Shaked, Tel Aviv Univ. (Israel) . . . . . [8597-25]

Coffee Break . . . . . Mon 10:00 am to 10:30 am

**SESSION 6****Room: 222 (Mezzanine) . . . . . Mon 10:30 am to 11:50 am****Plasmonics and Imaging**Session Chair: **Joseph R. Lakowicz**,  
Univ. of Maryland School of Medicine (USA)10:30 am: **Plasmon saturation induced super-resolution imaging**, Hsuan Lee, Tung-Yu Su, National Taiwan Univ. (Taiwan); Yasuo Yonemaru, Masahito Yamanaka, Osaka Univ. (Japan); Ko-Fan Huang, National Taiwan Univ. (Taiwan); Satoshi Kawata, Katsumasa Fujita, Osaka Univ. (Japan); Shi-Wei Chu, National Taiwan Univ. (Taiwan) and Molecular Imaging Ctr. (Taiwan) . . . . . [8597-26]10:50 am: **Molecularly defined plasmonic engineering to visualize individual binding events by eye**, Alasdair W. Clark, Jonathan M. Cooper, Univ. of Glasgow (United Kingdom) . . . . . [8597-27]11:10 am: **Nanoplasmonic co-localization for highly sensitive surface plasmon resonance detection of molecular interactions**, Youngjin Oh, Yonghwi Kim, Wonju Lee, Donghyun Kim, Yonsei Univ. (Korea, Republic of) . . . . . [8597-28]11:30 am: **ROS-mediated plasmonic killing of malignant cells using femtosecond laser pulses**, Limor Minai, Daniella Yeheeskely-Hayon, Lior Golan, Dvir Yelin, Technion-Israel Institute of Technology (Israel) . . . . . [8597-29]

Lunch/Exhibition Break . . . . . Mon 11:50 am to 1:20 pm

**SESSION 7****Room: 222 (Mezzanine) . . . . . Mon 1:20 pm to 2:40 pm****Plasmonics and Therapy**Session Chair: **Joseph R. Lakowicz**,  
Univ. of Maryland School of Medicine (USA)1:20 pm: **Plasmonic nanosensors in the detection and remedy of cancerous cells**, Saikat Das, Univ. of Eastern Finland (Finland) . . . . . [8597-30]1:40 pm: **Controlled release of rituximab from gold nanoparticles for phototherapy of malignant cells**, Daniella Yeheeskely-Hayon, Gili Bisker, Limor Minai, Dvir Yelin, Technion-Israel Institute of Technology (Israel) . . . . . [8597-31]2:00 pm: **Enhancing antimicrobial action of PDT in Candida albicans cultures by silver-pectin nanoparticles**, Luciana De Melo, Flávio Bonfim, Adriana de Souza, José Filho, Armando Marsden, Renato de Araujo, Univ. Federal de Pernambuco (Brazil) . . . . . [8597-32]2:20 pm: **Selective cell copuling and fusion using gold nanoparticles and femtosecond pulses**, Daniella Yeheeskely-Hayon, Limor Minai, Lior Golan, Eldad J. Dann, Dvir Yelin, Technion-Israel Institute of Technology (Israel) . . . . . [8597-33]2:40 pm: **Combined SERS sensing and photodynamic treatment using gold nanostars**, Hsiangkuo Yuan, Tuan Vo-Dinh, Duke Univ. (USA) . . . . . [8597-34]

Coffee Break . . . . . Mon 3:00 pm to 3:30 pm

**SESSION 8****Room: 222 (Mezzanine) . . . . . Mon 3:30 pm to 6:10 pm****Plasmonics and Sensing**Session Chair: **Joseph R. Lakowicz**,  
Univ. of Maryland School of Medicine (USA)3:30 pm: **Planar chiral metamaterials for biosensing applications**, Sangeeta Murugkar, Israel De Leon, Matthew Horton, Hammam Qassim, Jonathan Leach, Robert W. Boyd, Univ. of Ottawa (Canada) . . . . . [8597-35]3:50 pm: **Tissue radiation dose measurement using viscoelastic shear wave at thermal steady state**, Sheng-Yi Chang, Ming Chi Univ. of Technology (Taiwan); Chien Chou, Chang Gung Univ. (Taiwan); Chien-Wa Ho, National United Univ. (Taiwan); Tong-Sheng Hsieh, Taipei Veterans General Hospital (Taiwan); Li-Ping Yu, Chang Gung Univ. (Taiwan) . . . . . [8597-36]4:10 pm: **Real-time detection of toxins using localized surface plasmon resonance (LSPR) sensing**, Reza Abbaspour, Maysamreza Chamanzar, Mahmoud Mahmoud, Farshid Ghasemi, Georgia Institute of Technology (USA); Yi Lasanajak, Xuezheng Song, Emory Univ. (USA); Mostafa El-Sayed, Georgia Institute of Technology (USA); Richard Cummings, Emory Univ. (USA); Ali Adibi, Georgia Institute of Technology (USA) . . . . . [8597-37]4:30 pm: **Spectro-angular optical biosensor based on surface plasmon resonance operating in the visible spectrum**, Sandrine Filion Côté, Philip J. R. Roche, Andrew G. Kirk, McGill Univ. (Canada) . . . . . [8597-38]4:50 pm: **Surface-enhanced infrared absorption from nano-ellipse arrays fabricated using nanospherical-lens lithography**, Sih-Chen Lu, Yun-Chong Chang, National Cheng Kung Univ. (Taiwan) . . . . . [8597-39]5:10 pm: **Label free plasmonic slot waveguide biosensor for biochemical sensing**, Tuffail Dar, Muttukrishnan Rajarajan, The City Univ. (United Kingdom) . . . . . [8597-40]5:30 pm: **Gold nanocrescents for temperature sensing and local heating**, Michael Levy, Institut Langevin (France); Xuan Hoa Vu, Institut Langevin (France) and Thai Nguyen Univ. (Viet Nam); Thomas Barroca, Emmanuel Fort, Institut Langevin (France) . . . . . [8597-41]5:50 pm: **Transmission resonance of a three-dimensional nanostructure with a localized surface plasmon property**, Mohamadreza Najiminaini, Fartash Vasefi, Lawson Health Research Institute (Canada); Bozena Kaminska, Simon Fraser Univ. (Canada); Jeffrey J. L. Carson, Lawson Health Research Institute (Canada) . . . . . [8597-42]



# Bioinspired, Biointegrated, Bioengineered Photonic Devices

*Conference Chairs:* **Luke P. Lee**, Univ. of California, Berkeley (USA); **John A. Rogers**, Univ. of Illinois at Urbana-Champaign (USA); **Seok-Hyun Yun**, Wellman Ctr. for Photomedicine (USA)

*Program Committee:* **David Erickson**, Cornell Univ. (USA); **Malte Christian Gather**, Technische Univ. Dresden (Germany); **Viktoria Greanya**, Defense Threat Reduction Agency (USA); **Hongrui Jiang**, Univ. of Wisconsin-Madison (USA)

## Saturday 2 February

### SESSION 1

Room: 110 (Exhibit Level) . . . . . Sat 9:00 am to 10:00 am

#### Opening Session Keynote Presentation

Session Chair: **Seok Hyun Yun**, Wellman Ctr. for Photomedicine (USA)

9:00 am: **Digital cameras in bio-inspired designs: from humans to flies** (*Keynote Presentation*), John A. Rogers, Univ. of Illinois at Urbana-Champaign (USA). . . . . [8598-1]

Coffee Break . . . . . Sat 10:00 am to 10:30 am

### SESSION 2

Room: 110 (Exhibit Level) . . . . . Sat 10:30 am to 12:00 pm

#### Biomimetic Photonics

Session Chair: **Luke P. Lee**, Univ. of California, Berkeley (USA)

10:30 am: **Protein-based photonic devices: 1. lasers**, Malte C. Gather, Technische Univ. Dresden (Germany) and Wellman Ctr. for Photomedicine (USA) and Harvard Medical School (USA); **Seok Hyun Yun**, Wellman Ctr. for Photomedicine (USA) and Harvard Medical School (USA). . . . . [8598-2]

10:50 am: **Multi-layered liposomes as optical resonators**, Derrick Yong, A\*STAR Singapore Institute of Manufacturing Technology (Singapore) and Nanyang Technological Univ. (Singapore); **Xia Yu**, A\*STAR Singapore Institute of Manufacturing Technology (Singapore); **Chi Chiu Chan**, Nanyang Technological Univ. (Singapore). . . . . [8598-3]

11:10 am: **Biological photonic structures and their bio-inspired stimuli-responsive adaptive optical counterparts** (*Invited Paper*), Mathias Kolle, Joanna Aizenberg, Harvard Univ. (USA). . . . . [8598-4]

11:40 am: **Study of nano-architecture of the wings of Paris Peacock Butterfly**, Ekata H. Ghate, Gauri R. Kulkarni, Sudha V. Bhoraskar, Univ. of Pune (India). . . . . [8598-5]

Lunch Break . . . . . Sat 12:00 pm to 1:30 pm

### SESSION 3

Room: 110 (Exhibit Level) . . . . . Sat 1:30 pm to 3:20 pm

#### Implantable Biomaterial Devices

Session Chair: **Viktoria Greanya**, Defense Threat Reduction Agency (USA)

1:30 pm: **Biopolymer-based optical waveguides for photochemical tissue bonding**, Sedat Nizamoglu, Myunghwan Choi, Malte C. Gather, Robert W. Redmond, Massachusetts General Hospital (USA); **Seok Hyun Yun**, Wellman Ctr. for Photomedicine (USA). . . . . [8598-6]

1:50 pm: **Implantable optical waveguide for light-controlled cell therapy**, Myunghwan Choi, Harvard Medical School (USA) and KAIST (Korea, Republic of); **Jin Woo Choi**, Wellman Ctr. for Photomedicine (USA); **Sedat Nizamoglu**, Massachusetts General Hospital (USA); **Seok Hyun Yun**, Wellman Ctr. for Photomedicine (USA) and KAIST (Korea, Republic of) and Harvard-MIT Health Sciences and Technology (USA). . . . . [8598-7]

2:10 pm: **Micro-encapsulated implantable bio-markers for assessment of oxidative stress in aquatic organisms in vivo**, Anton V. Sadovoy, Cathleen Teh, A\*STAR Institute of Materials Research and Engineering (Singapore); **Marc Escobar**, A\*STAR Institute of Medical Biology (Singapore); **Vladimir Korzh**, Institute of Molecular and Cell Biology (Singapore); **Igor V. Meglinski**, Univ. of Otago (New Zealand). . . . . [8598-8]

2:30 pm: **Biomolecule microdroplets on superhydrophobic biopolymer substrates: a biomaterial laser**, Sedat Nizamoglu, Malte C. Gather, Massachusetts General Hospital (USA); **Seok Hyun Yun**, Wellman Ctr. for Photomedicine (USA). . . . . [8598-9]

2:50 pm: **Nanoconstructs for biomedical multifunctional imaging** (*Invited Paper*), Paolo Decuzzi, The Methodist Hospital Research Institute (USA). . . . . [8598-10]

Coffee Break . . . . . Sat 3:20 pm to 3:50 pm

### SESSION 4

Room: 110 (Exhibit Level) . . . . . Sat 3:50 pm to 5:30 pm

#### Bioinspired Imaging and Therapy

Session Chair: **Malte C. Gather**, Technische Univ. Dresden (Germany)

3:50 pm: **Bio-inspired microlenses and their biomedical applications** (*Invited Paper*), Hongrui Jiang, Univ. of Wisconsin-Madison (USA). . . . [8598-11]

4:20 pm: **Novel photodynamic therapy based on bioluminescence energy**, Yi Rang Kim, Seonghoon Kim, KAIST (Korea, Republic of); **Jin Woo Choi**, Wellman Ctr. for Photomedicine (USA); **Gou Young Koh**, KAIST (Korea, Republic of); **Seok Hyun Yun**, Wellman Ctr. for Photomedicine (USA) and KAIST (Korea, Republic of). . . . . [8598-12]

4:40 pm: **Biomimetic polydopamine coating on gold nanorods for biofunctionalization, imaging, and photothermal therapy**, Kvar C. Black, Washington Univ. School of Medicine in St. Louis (USA); **Ji Yi**, Jose Rivera, Daria Zelasko-Leon, Phillip B. Messersmith, Northwestern Univ. (USA) [8598-13]

5:00 pm: **Imaging through turbid media** (*Invited Paper*), Wonshik Choi, Dept. of Physics, Korea Univ. (Korea, Republic of). . . . . [8598-14]

### BiOS Hot Topics

Sat. 7:00 to 9:00 pm · Room 134

Hear the latest technical breakthroughs and directions from leading worldwide experts. Access to Hot Topics is included with your registration. See full descriptions on page 18.



## Sunday 3 February

### SESSION 5

Room: 110 (Exhibit Level) . . . . .Sun 9:30 am to 10:00 am

#### Biophotonics in Defense

Session Chair: **David Erickson**, Cornell Univ. (USA)

9:30 am: **Bioinspired photonic materials and technologies at the U.S. Defense Threat Reduction Agency and the U.S. DoD** (*Invited Paper*), Viktoria Greanya, Defense Threat Reduction Agency (USA) . . . . . [8598-17]  
Coffee Break . . . . . Sun 10:00 am to 10:30 am

### SESSION 6

Room: 110 (Exhibit Level) . . . . .Sun 10:30 am to 12:00 pm

#### Biomolecules and Light

Session Chair: **Hongrui Jiang**, Univ. of Wisconsin-Madison (USA)

10:30 am: **Protein-based photonic devices: 2. sensors**, Malte C. Gather, Technische Univ. Dresden (Germany) and Wellman Ctr. for Photomedicine (USA) and Harvard Medical School (USA); Seok Hyun Yun, Wellman Ctr. for Photomedicine (USA) and Harvard Medical School (USA) . . . . . [8598-18]  
10:50 am: **Imaging and analysis of single chromatin molecules** (*Invited Paper*), Harold Craighead, Cornell Univ. (USA) . . . . . [8598-19]  
11:20 am: **Silicon nanophotonic ring resonator sensors integrated in reaction tubes**, Cristina Lerma Arce, Tom Claes, Katarzyna Komorowska, Peter Bienstman, Univ. Gent (Belgium) . . . . . [8598-20]  
11:40 am: **Directed self-assembly of synthetic proteins nanowires: structural control and excited-state dynamics of Pi-conjugate amyloids**, William L. Wilson, Univ. of Illinois at Urbana-Champaign (USA) . . . . . [8598-21]  
12:00 pm: **Transient Fourier holography with bacteriorhodopsin films for breast cancer diagnostics**, Gopal L. N. Rao, Univ. of Massachusetts Boston (USA) . . . . . [8598-26]

### POSTER SESSION AND COFFEE BREAK

Room: Hall A, BiOS Expo . . . . .Sun 3:00 pm to 4:00 pm

Attendees are invited to view the conference posters, which will be available on Saturday and Sunday. The poster session, with authors present, will be held from 3:00 to 4:00 PM on Sunday afternoon, in conjunction with the coffee break.

**POSTER AUTHORS:** Poster setup is scheduled from 10:00 to 11:30 AM on Saturday and Sunday in South Hall A. Please plan to stand with your poster during the poster session on Sunday from 3:00 to 4:00 PM. Posters may remain on the boards both Saturday and Sunday but must be removed following the Sunday afternoon poster session/coffee break. Posters left on the boards after this time will be discarded.

**Lensed fiber bundle probe for fluorescence imaging**, Joo Beom Eom, In Hee Shin, Jae Seok Park, Byeong Il Lee, Korea Photonics Technology Institute (Korea, Republic of) . . . . . [8598-22]

**A glucose fluorescent biosensor for glucose delay detection in interstitial fluid and blood**, Ting Shi, Dachao Li, Kexin Xu, Tianjin Univ. (China); Lou Lu, Univ. of California, Los Angeles (USA) . . . . . [8598-23]

**Surface-enhanced Raman scattering on diatom biosilica photonic crystals**, Fanghui Ren, Jeremy Campbell, Xiangyu Wang, Dihan Hasan, Gregory L. Rorrer, Alan X. Wang, Oregon State Univ. (USA) . . . . . [8598-24]

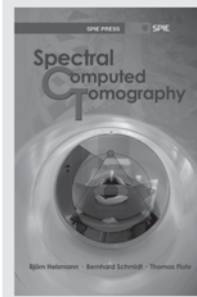
**pH induced switching in hydrogel coated fiber Bragg grating sensor**, B.N. Shivananju, Manish K. Priyadarshi, Gopalkrishna M. Hegde, D. Roy Mahapatra, Sundararajan Asokan, Indian Institute of Science (India) . . . . . [8598-25]

# BiOS

SPIE PRESS

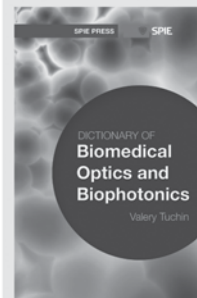
SPIE

## Visit the onsite Bookstore to browse these and other SPIE Press Books



### Spectral Computed Tomography

by Björn J. Heismann, Bernhard T. Schmidt, Thomas Flohr  
Vol. PM226



### Dictionary of Biomedical Optics and Biophotonics

by Valery Tuchin  
Vol. PM217

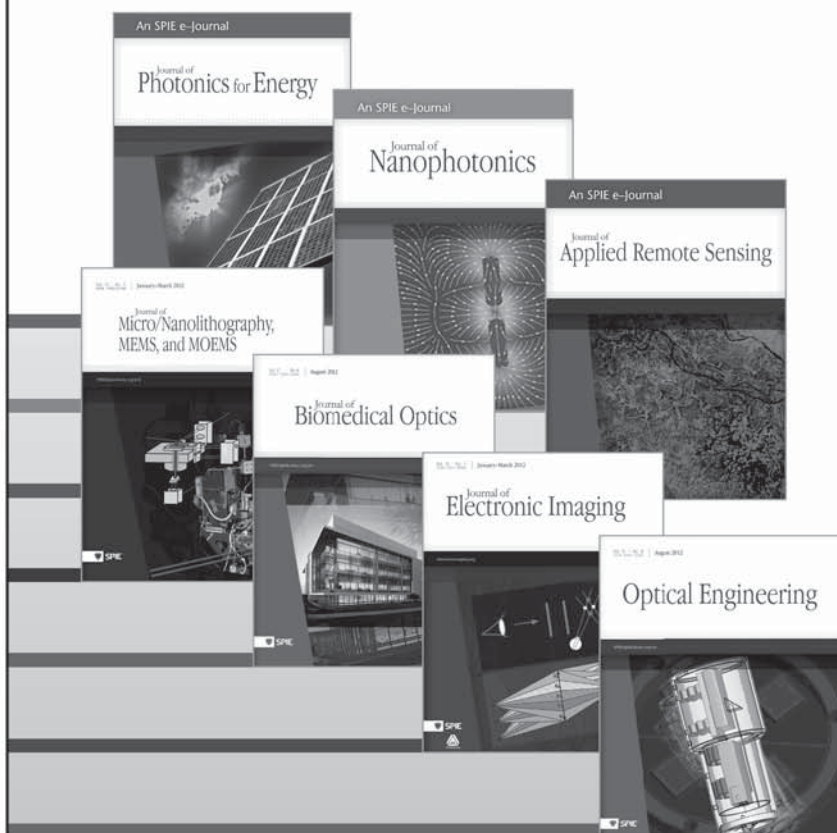
[www.spie.org/publications](http://www.spie.org/publications)

BiOS

# SPIE Journals



Led by distinguished editorial boards, SPIE Journals publish significant peer-reviewed articles reporting on cutting-edge applied research and emerging technologies in all fields of optics and photonics, from imaging, sensors, and biomedicine to nanotechnology, communications, and optoelectronics. Researchers and students need access to this knowledge about these key enabling technologies of the 21st century.



**Shared knowledge  
learning and innovation.**

**Optical Engineering**

**Ronald B. Driggers**, Editor-in-Chief

**Journal of  
Electronic Imaging**

**Gaurav Sharma**, Editor-in-Chief

**Journal of  
Biomedical Optics**

**Lihong V. Wang**, Editor-in-Chief

**Journal of  
Micro/Nanolithography,  
MEMS, and MOEMS**

**Chris Mack**, Editor-in-Chief

**Journal of  
Applied Remote Sensing**

**Wei Gao**, Editor-in-Chief

**Journal of  
Photonics for Energy**

**Zakya H. Kafafi**, Editor-in-Chief

**Journal of  
Nanophotonics**

**Akhlesh Lakhtakia**, Editor-in-Chief

**SPIE  
Digital  
Library**

[SPIDigitalLibrary.org](http://SPIDigitalLibrary.org)

All SPIE Journals are part of the SPIE Digital Library, the world's largest collection of optics and photonics research.

Join SPIE and get a subscription to one online journal with your membership, or request access from your librarian.

**[www.spie.org/journals](http://www.spie.org/journals)**

[journals@spie.org](mailto:journals@spie.org) | Tel: +1 360 676 3290 | Fax: +1 360 647 1445

**NEW** Pay voluntary publication charges and get the benefit of Gold Open Access for your paper!



[www.spie.org/JournalsOA](http://www.spie.org/JournalsOA)

# LASE

SPiE Photonics West

## Symposium Chairs



**Bo Gu**  
Bos Photonics (USA)



**Andreas Tünnermann,**  
Friedrich-Schiller-Univ. Jena (Germany)

## Symposium Co-Chairs



**Friedhelm Dorsch**  
TRUMPF Werkzeugmaschinen GmbH  
+ Co. KG (Germany)



**Alberto Piqué**  
U.S. Naval Research Lab. (USA)

## Laser Source Engineering

Program Chair: **Gregory J. Quarles**, B.E. Meyers & Co., Inc. (USA)

- 8599 **Solid State Lasers XXII: Technology and Devices**  
(W. Andrew Clarkson; Ramesh Shori) .....188
- 8600 **Laser Resonators, Microresonators, and Beam Control XV**  
(Alexis V. Kudryashov; Alan H. Paxton; Vladimir S. Ilchenko) ... 192
- 8601 **Fiber Lasers X: Technology, Systems, and Applications**  
(Sami T. Hendow) .....196
- 8602 **High-Power Lasers for Fusion Research II**  
(Abdul A. S. Awwal) .....202
- 8603 **High-Power Laser Materials Processing: Lasers, Beam  
Delivery, Diagnostics, and Applications II**  
(Friedhelm Dorsch) .....204

## Nonlinear Optics

- 8604 **Nonlinear Frequency Generation and Conversion: Materials,  
Devices, and Applications XII** (Konstantin L. Vodopyanov) ... 206
- 8622 **Organic Photonic Materials and Devices XV**  
(Christopher E. Tabor, Francois Kajzar, Toshikuni Kaino,  
Yasuhiro Koike) .....264
- 8623 **Ultrafast Phenomena and Nanophotonics XVII**  
(Markus Betz, Abdulhakem Y. Elezzabi, Jin-Joo Song,  
Kong-Thon Tsen) .....267

## Semiconductor Lasers and LEDs

Program Chair: **Klaus P. Streubel**, OSRAM AG (Germany)

- 8605 **High-Power Diode Laser Technology and Applications XI**  
(Mark S. Zediker) .....209
- 8606 **Vertical-External-Cavity Surface-Emitting Lasers  
(VECSELS) III** (Jennifer E. Hastie) .....211
- 8619 **Physics and Simulation of Optoelectronic Devices XXI**  
(Bernd Witzigmann; Marek Osinski; Fritz Henneberger;  
Yasuhiko Arakawa) .....252
- 8625 **Gallium Nitride Materials and Devices VIII** (Jen-Inn Chyi;  
Yasushi Nanishi; Hadis Morkoç) .....274
- 8639 **Vertical-Cavity Surface-Emitting Lasers XVII**  
(Kent D. Choquette, James K. Guenter) .....319
- 8640 **Novel In-Plane Semiconductor Lasers XII** (Alexey A. Belyanin,  
Peter M. Smowton) .....321
- 8641 **Light-Emitting Diodes: Materials, Devices, and  
Applications for Solid State Lighting XVII** (Conference) .....325

## Laser Micro-/Nanoengineering

Program Chairs: **Henry Helvajian**, The Aerospace Corp. (USA);  
**James S. Horwitz**, U.S. Dept. of Energy (USA)

- 8607 **Laser Applications in Microelectronic and Optoelectronic  
Manufacturing (LAMOM) XVIII** (Xianfan Xu; Guido Hennig;  
Yoshiki Nakata; Stephan W. Roth) .....213
- 8608 **Laser-based Micro- and Nanopackaging and Assembly VII**  
(Udo Klotzbach; Yongfeng Lu; Kunihiko Washio) .....217
- 8609 **Synthesis and Photonics of Nanoscale Materials X**  
(Jan J. Dubowski; David B. Geohegan; Frank Träger) .....219
- 8612 **Micromachining and Microfabrication Process  
Technology XVIII** (Mary Ann Maher; Paul J. Resnick) .....232
- 8613 **Advanced Fabrication Technologies for Micro/Nano  
Optics and Photonics VI** (Georg von Freymann;  
Winston V. Schoenfeld; Raymond C. Rumpf) .....234
- 8614 **Reliability, Packaging, Testing, and Characterization of  
MOEMS/MEMS and Nanodevices XII** (Rajeshuni Ramesham;  
Herbert R. Shea; Herbert R. Shea) .....237

## Laser Applications

- 8607 **Laser Applications in Microelectronic and Optoelectronic  
Manufacturing (LAMOM) XVIII** (Xianfan Xu; Guido Hennig;  
Yoshiki Nakata; Stephan W. Roth) .....213
- 8610 **Free-Space Laser Communication and Atmospheric  
Propagation XXV** (Hamid Hemmati; Don M. Boroson) .....221
- 8611 **Frontiers in Ultrafast Optics: Biomedical, Scientific, and  
Industrial Applications XIII** (Alexander Heisterkamp;  
Peter R. Herman; Michel Meunier; Stefan Nolte) .....223
- 8637 **Complex Light and Optical Forces VII** (Jesper Glückstad;  
David L. Andrews; Enrique J. Galvez) .....315
- 8638 **Laser Refrigeration of Solids VI** (Richard I. Epstein;  
Denis V. Seletskiy; Mansoor Sheik-Bahae) .....318



Download the  
SPiE Conference App





# LASE Daily Conference Schedule

Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
----------	--------	--------	---------	-----------	----------

## Laser Source Engineering

Program Chair: **Gregory J. Quarles**, B.E. Meyers & Co., Inc. (USA)

8599 **Solid State Lasers XXII: Technology and Devices**  
(Clarkson, Shori)

8602 **High-Power Lasers for Fusion Research II**  
(Awwal, Dunne, Li, Barty, Collier)

8600 **Laser Resonators, Microresonators, and Beam Control XV** (Kudryashov, Paxton, Ilchenko, Aschke, Washio)

8601 **Fiber Lasers X: Technology, Systems, and Applications**  
(Hendow, Ramachandran)

8603 **High-Power Laser Materials Processing: Lasers, Beam Delivery, Diagnostics, and Applications II** (Dorsch)

## Nonlinear Optics

8623 **Ultrafast Phenomena and Anophotonics XVII**  
(Betz, Elezzabi, Song, Tsen)

8622 **Organic Photonic Materials and Devices XV** (Tabor, Kajzar, Kaino, Koike)

8604 **Nonlinear Frequency Generation and Conversion: Materials, Devices, and Applications XII** (Vodopyanov, Kalisky)

## Semiconductor Lasers and LEDs

Program Chair: **Klaus P. Streubel**, OSRAM AG (Germany)

8605 **High-Power Diode Laser Technology and Applications XI**  
(Zediker)

8639 **Vertical-Cavity Surface-Emitting Lasers XVII** (Choquette, Guenter)

8606 **Vertical-External-Cavity Surface-Emitting Lasers (VECSELs) III** (Hastie)

8619 **Physics and Simulation of Optoelectronic Devices XXI**  
(Witzigmann, Osinski, Henneberger, Arakawa)

8625 **Gallium Nitride Materials and Devices VIII**  
(Chyi, Nanishi, Morkoç, Piprek, Yoon, Fujioka)

8640 **Novel In-Plane Semiconductor Lasers XII** (Belyanin, Smowton)

8641 **Light-Emitting Diodes: Materials, Devices, and Applications for Solid State Lighting XVII** (Streubel, Jeon, Tu, Strassburg)



### LASE Interactive Poster Session

Tuesday 5 February · 6:00 to 8:00 pm · Room 103

# LASE Daily Conference Schedule

LASE

Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
----------	--------	--------	---------	-----------	----------

## Laser Micro-/Nanoengineering

Program Chairs: **Henry Helvajian**, The Aerospace Corp. (USA) and **James S. Horwitz**, U.S. Dept. of Energy (USA)

8609 **Synthesis and Photonics of Nanoscale Materials X**  
(*Dubowski, Geohegan, Träger*)

8614 **Reliability, Packaging, Testing, and Characterization of MOEMS/MEMS and Nanodevices XII** (*Ramesham, Shea*)

8607 **Laser Applications in Microelectronic and Optoelectronic Manufacturing (LAMOM) XVIII** (*Xu, Hennig, Nakata, Roth*)

8613 **Advanced Fabrication Technologies for Micro/Nano Optics and Photonics VI** (*von Freymann, Schoenfeld, Rumpf*)

8612 **Micromachining and Microfabrication Process Technology XVIII** (*Maher, Resnick*)

8608 **Laser-based Micro- and Nanopackaging and Assembly VII**  
(*Klotzbach, Lu, Washio*)

## Laser Applications

8607 **Laser Applications in Microelectronic and Optoelectronic Manufacturing (LAMOM) XVIII** (*Xu, Hennig, Nakata, Roth*)

8610 **Free-Space Laser Communication and Atmospheric Propagation XXV** (*Hemmati, Boroson*)

8611 **Frontiers in Ultrafast Optics: Biomedical, Scientific, and Industrial Applications XIII** (*Heisterkamp, Herman, Meunier, Nolte*)

8637 **Complex Light and Optical Forces VII** (*Glückstad, Andrews, Galvez*)

8638 **Laser Refrigeration of Solids VI**  
(*Epstein, Seletskiy, Sheik-Bahae*)

### LASE Plenary Session

Room: 134 (Exhibit Level) . . . . . Wed. 10:20 am to 12:30 pm

10:20 am: **Welcome and Opening Remarks**

**Bo Gu**, Bos Photonics (USA); **Andreas Tünnermann**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) and Friedrich-Schiller-Univ. Jena (Germany)

10:25 am: **Announcement of the Best "Green" LASE Paper Award**

**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)

10:30 am: **Laser-based Particle Acceleration and the Path to TeV Physics and Compact X-ray and Gamma Ray Sources**  
(*Presentation Only*)

**Wim P. Leemans**, Lawrence Berkeley National Lab. (USA)

11:10 am: **Three-dimensional Metamaterials Made By Direct Laser Writing** (*Presentation Only*)

**Martin Wegener**, Karlsruher Institut für Technologie (Germany)

11:50 am: **Remote Laser Welding for Automotive Seat Production**  
(*Presentation Only*)

**Geert G. Verhaeghe**, Faurecia Autositze GmbH (Germany)

See p. 26 for details.

# Solid State Lasers XXII: Technology and Devices

Conference Chairs: **W. Andrew Clarkson**, Univ. of Southampton (United Kingdom); **Ramesh Shori**, Naval Air Warfare Ctr. Weapons Div. (USA)

Program Committee: **Patrick A. Berry**, Air Force Research Lab. (USA); **Marc Eichhorn**, Institut Franco-Allemand de Recherches de Saint-Louis (France); **Dennis G. Harris**, MIT Lincoln Lab. (USA); **Norman Hodgson**, Coherent, Inc. (USA); **Helena Jelínková**, Czech Technical Univ. in Prague (Czech Republic); **Christian Kränkel**, Univ. Hamburg (Germany); **Jacob I. Mackenzie**, Univ. of Southampton (United Kingdom); **Markus Pollnau**, Univ. Twente (Netherlands); **Narasimha S. Prasad**, NASA Langley Research Ctr. (USA); **Martin Richardson**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); **Akira Shirakawa**, The Univ. of Electro-Communications (Japan); **David H. Titterton**, Defence Science and Technology Lab. (United Kingdom)

## Sunday 3 February

### SESSION 1

Room: 132 (Exhibit Level) .....Sun 8:30 am to 9:50 am

#### Waveguide Lasers I

Session Chair: **Dennis G. Harris**, MIT Lincoln Lab. (USA)

8:30 am: **Fluoride waveguide lasers grown by liquid phase epitaxy** (*Invited Paper*), Patrice Camy, Florent Starecki, Western Boloños, Jean-Louis Doualan, Alain Braud, Richard Moncorgé, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche (France) ..... [8599-1]

8:55 am: **Highly efficient channel waveguide lasers at 1 µm and 2 µm in refractive-index-engineered potassium double tungstates**, Koop Van Dalfsen, Dimitri Geskus, Sonia M. García-Blanco, Markus Pollnau, Univ. Twente (Netherlands) ..... [8599-2]

9:10 am: **2-µm waveguide lasers in monoclinic double tungstates** (*Invited Paper*), Joan J. Carvajal Marti, Carla J. Berrospe, Xavier Mateos, Maria Cinta Pujol, Magdalena Aguilò Diaz, Francesc Diaz, Univ. Rovira i Virgili (Spain) ..... [8599-3]

9:35 am: **Low-threshold, mirrorless emission at 981 nm in an Yb,Gd,Lu:KYW inverted rib waveguide laser**, Amol Choudhary, Univ. of Southampton (United Kingdom); Western Boloños, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche (France); Pradeesh Kannan, Univ. of Southampton (United Kingdom); Joan J. Carvajal Marti, Magdalena Aguilò Diaz, Francesc Diaz, Univ. Rovira i Virgili (Spain); David P. Shepherd, Univ. of Southampton (United Kingdom) ..... [8599-4]

Coffee Break ..... Sun 9:50 am to 10:20 am

### SESSION 2

Room: 132 (Exhibit Level) .....Sun 10:20 am to 11:55 am

#### Waveguide Lasers II

Session Chair: **Dennis G. Harris**, MIT Lincoln Lab. (USA)

10:20 am: **Advances in visible and near-infrared fs-laser-written waveguide lasers** (*Invited Paper*), Sebastian Müller, Thomas Calmano, Fabian Reichert, Matthias Fechner, Günter Huber, Univ. Hamburg (Germany) ..... [8599-5]

10:45 am: **Versatile fs laser-written ZBLAN chip lasers** (*Invited Paper*), David G. Lancaster, The Univ. of Adelaide (Australia); Simon Gross, Alexander Fuerbach, Macquarie Univ. (Australia); Heike Ebendorff-Heidepriem, Tanya M. Monro, The Univ. of Adelaide (Australia); Michael J. Withford, Macquarie Univ. (Australia) ..... [8599-6]

11:10 am: **Er-doped planar waveguides for power amplifier applications**, J. I. Mackenzie, G. S. Murugan, Univ. of Southampton (United Kingdom); A. W. Yu, J. B. Abshire, NASA Goddard Space Flight Ctr. (USA) ..... [8599-7]

11:25 am: **Rare-earth-ion-doped ultra-narrow-linewidth lasers on a silicon chip and applications to intra-laser-cavity optical sensing**, Edward H. Bernhardt, René M. de Ridder, Kerstin Wörhoff, Markus Pollnau, Univ. Twente (Netherlands) ..... [8599-8]

11:40 am: **Single-crystalline rare-earth-doped In<sub>2</sub>O<sub>3</sub> waveguides epitaxially grown on Lu<sub>2</sub>O<sub>3</sub>**, Sebastian Heinrich, S. H. Wäselmann, Christian Kränkel, Günter Huber, Univ. Hamburg (Germany) ..... [8599-9]

Lunch Break ..... Sun 11:55 am to 1:15 pm

### SESSION 3

Room: 132 (Exhibit Level) .....Sun 1:15 pm to 3:00 pm

#### Eyesafe and Mid-IR Lasers I

Session Chair: **Patrick A. Berry**, Air Force Research Lab. (USA)

1:15 pm: **High-energy, kHz-rate, picosecond, 2-µm laser pump source for mid-IR nonlinear optical devices**, Alex Y. Dergachev, Q-Peak, Inc. (USA) ..... [8599-10]

1:30 pm: **A broadly tunable continuous-wave iron-doped zinc selenide laser**, Jonathan W. Evans, Patrick A. Berry, Kenneth L. Schepler, Air Force Research Lab. (USA) ..... [8599-11]

1:45 pm: **Gain-switched single-pass Cr:ZnSe amplifier**, Sean A. McDaniel, Univ. of Dayton (USA); Patrick A. Berry, Kenneth L. Schepler, Air Force Research Lab. (USA); Peter E. Powers, Univ. of Dayton (USA) ..... [8599-12]

2:00 pm: **Fe:ZnSe laser oscillation under cryogenic and room temperature**, Helena Jelínková, Czech Technical Univ. in Prague (Czech Republic); Maxim E. Doroshenko, A. M. Prokhorov General Physics Institute (Russian Federation); Michal Jelínek M.D., David Vyhřídál M.D., Jan Šulc, Michal Nemeč, Václav Kubeček, Czech Technical Univ. in Prague (Czech Republic); Yuri A. Zagoruiko, Nazar O. Kovalenko, Andriy S. Gerasimenko, Vyacheslav M. Puzikov, Vitaliy K. Komar, Institute for Single Crystals (Ukraine) ..... [8599-13]

2:15 pm: **Ho:YAG (2.09 µm) MOPA-system pumped by cw thulium fiber laser (1.9 µm) with >120-mJ pulse energy at 100-Hz repetition rate**, Karsten Schmidt, Christian Reiter, Heike Voss, Frank Massmann, Martin D. Ostermeyer, IBL Innovative Berlin Laser GmbH (Germany) ..... [8599-14]

2:30 pm: **Efficient Er:YAG lasers at 1645.55 nm, resonantly pumped with narrow bandwidth diode laser modules at 1532 nm, for methane detection**, Haro Fritsche, Oliver Lux, Technische Univ. Berlin (Germany); Bastian Kuschke, DirectPhotonics Industries GmbH (Germany); Casey Schütt, Technische Univ. Berlin (Germany); Stefan Heinemann, Wolfgang Gries, DirectPhotonics Industries GmbH (Germany); Hans Joachim Eichler, Technische Univ. Berlin (Germany) ..... [8599-15]

2:45 pm: **Simulations and experiments on resonantly pumped single-frequency Erbium lasers at 1.6 µm**, Ansgar Meissner, Jan Philipp Kucirek, Fraunhofer-Institut für Lasertechnik (Germany); SuHui Yang, Jing Li, Beijing Institute of Technology (China); Hans-Dieter Hoffmann, Fraunhofer-Institut für Lasertechnik (Germany) ..... [8599-16]

Coffee Break ..... Sun 3:00 pm to 3:30 pm

### SESSION 4

Room: 132 (Exhibit Level) .....Sun 3:30 pm to 4:15 pm

#### Eyesafe and Mid-IR Lasers II

Session Chair: **Patrick A. Berry**, Air Force Research Lab. (USA)

3:30 pm: **Coherent polarization locking of Q-switched Ho:YAG laser**, Chern Fei Chua, Li Hao Tan, Poh Boon Phua, Nanyang Technological Univ. (Singapore) ..... [8599-17]

3:45 pm: **Doped sesquioxide ceramic for eye-safe solid state laser materials**, Woohong Kim, Colin Baker, U.S. Naval Research Lab. (USA); Catalin Florea, Sotera Defense Solutions, Inc. (USA); Guillermo R. Villalobos, Brandon Shaw, Steven R. Bowman, Shawn P. O'Connor, U.S. Naval Research Lab. (USA); Bryan Sadowski, Sotera Defense Solutions, Inc. (USA); Michael Hunt, Univ. Research Foundation (USA); Ishwar Aggalwar, Sotera Defense Solutions, Inc. (USA); Jasbinder Sanghera, U.S. Naval Research Lab. (USA) ..... [8599-18]

4:00 pm: **Supercontinuum generation in mid-IR using chalcogenide and germanate nonlinear fibers**, Nikolai Tolstik, Norwegian Univ. of Science and Technology (Norway); Vladimir L. Kalashnikov, Evgeni Sorokin, Technische Univ. Wien (Austria); Dmitriy Klimentov, Vladislav Dvoryin, Irina T. Sorokina, Norwegian Univ. of Science and Technology (Norway) ..... [8599-20]

Session Break ..... 4:15 to 4:30 pm



**SESSION 5**

**Room: 132 (Exhibit Level) . . . . . Sun 4:30 pm to 5:45 pm**

**Airborne and Space Qualified Lasers**

Session Chair: **Narasimha S. Prasad**,  
NASA Langley Research Ctr. (USA)

- 4:30 pm: **Design of a rugged 308-nm tunable UV laser for airborne LIF measurements on top of a zeppelin**, Michael Strotkamp, Bernd Jungbluth, Alexander Munk, Fraunhofer-Institut für Lasertechnik (Germany) . . . . [8599-21]
- 4:45 pm: **Improved design of a pulsed UV laser source for application in space**, Christian Kolleck, Alexander Büettner, Mathias Ernst, Michael Hunnekuhl, Thomas Hüelsenbusch, Anas Moalem, Marc Priehs, Dietmar Kracht, Jörg Neumann, Laser Zentrum Hannover e.V. (Germany) . . . . . [8599-22]
- 5:00 pm: **Space-based multi-wavelength solid state lasers for NASA's ISS CATS application**, Ti Chuang, Patrick Burns, E. Brooke Walters, Ted Wysocki, Tim Deely, Andy Losse, Khoa Le, Bill Drumheller, Tom Schum, Mark Hart, Kent Puffenburger, Bill Ziegler, Floyd E. Hovis, Fibertek, Inc. (USA) . . . . . [8599-23]
- 5:15 pm: **Space qualified laser transmitter for NASA's ICESat-2 Mission**, Nicholas W. Sawruk, Slava Litvinovitch, Joel Edelman, Michael M. Albert, Ryan E. Edwards, Charles Culpepper, Joe Rudd, Elias Fakhoury, Floyd E. Hovis, Fibertek, Inc. (USA) . . . . . [8599-24]
- 5:30 pm: **A 16-beam non-scanning swath mapping laser altimeter instrument**, Anthony W. Yu, Michael A. Krainak, David J. Harding, James B. Abshire, NASA Goddard Space Flight Ctr. (USA) . . . . . [8599-25]

**Monday 4 February**

**SESSION 6**

**Room: 132 (Exhibit Level) . . . . . Mon 8:00 am to 10:00 am**

**Pulsed Lasers**

Session Chair: **Christian Kränkel**, Univ. Hamburg (Germany)

- 8:00 am: **A highly energetic, multiwavelength, diode-pumped nanosecond laser system with flexible pulse-shaping capability**, Andrey V. Okishev, Ildar A. Begishev, Robert Cuffney, Semyon Papernov, Jonathan D. Zuegel, Univ. of Rochester (USA) . . . . . [8599-26]
- 8:15 am: **Diode pumped high pulse energy and high repetition rate Q-switched Nd:YAG-lasers with excellent beam qualities with up to 400-mJ pulse energy**, Martin D. Ostermeyer, Artur Napiwotzki, Kirko Stimmer, Frank Massmann, IBL Innovative Berlin Laser GmbH (Germany) . . . . . [8599-27]
- 8:30 am: **Self-Q-switched Cr:LiCAF laser near 800 nm**, Ersen Beyatli, Alphan Sennaroglu, Koç Univ. (Turkey); Umit Demirbas, Uluslararası Antalya Univ. (Turkey) . . . . . [8599-28]
- 8:45 am: **Multi-output Q-switched solid-state laser using an intra-cavity MEMS micromirror array**, Ralf Bauer, Walter Lubeigt, Univ. of Strathclyde (United Kingdom); Caspar C. Clark, Euan J. McBrearty, Helia Photonics Ltd. (United Kingdom); Deepak G. Uttamchandani, Univ. of Strathclyde (United Kingdom) . . . . . [8599-29]
- 9:00 am: **Diode-pumped 300-mJ, 100-Hz, single-mode laser**, George J. Doster, Faming Xu, Northrop Grumman Cutting Edge Optronics (USA) . . . . . [8599-30]
- 9:15 am: **High peak power Yb,Er:glass lasers**, Scott J. Hamlin, MegaWatt Lasers, Inc. (USA) . . . . . [8599-31]
- 9:30 am: **DPSS amplifiers for high-energy, high-repetition-rate applications**, George J. Doster, Faming Xu, Ryan Feeler, Northrop Grumman Cutting Edge Optronics (USA) . . . . . [8599-32]
- 9:45 am: **Flash lamp failure modes and lifetime estimation techniques**, Ryand J. F. Tucker, Nicholas Cochran, Gregg L. Morelli, Honeywell Federal Manufacturing & Technologies, LLC (USA) . . . . . [8599-33]
- Coffee Break . . . . . Mon 10:00 am to 10:30 am

**SESSION 7**

**Room: 132 (Exhibit Level) . . . . . Mon 10:30 am to 11:45 am**

**Laser Materials and Characterization**

Session Chair: **Jacob I. Mackenzie**,  
Univ. of Southampton (United Kingdom)

- 10:30 am: **Simulation of solid-state lasers with composite and ceramic crystals**, Zhabiz Rahimi, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) and ASLD GmbH (Germany); Christoph Pflaum, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [8599-34]
- 10:45 am: **Thermo-optic quality assessment of doped optical-ceramics**, Christina C. C. Willis, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) . . . . . [8599-35]
- 11:00 am: **To be announced**, Saurabh Sharma, Naval Air Warfare Ctr. Aircraft Div. (USA) . . . . . [8599-36]
- 11:15 am: **Optical properties and oscillator strength calculations in Ytterbium-doped YAG**, Nicholas D. Haynes, Air Force Research Lab. (USA) and Univ. of Dayton (USA); David E. Zelmon, Air Force Research Lab. (USA) . . . . . [8599-37]
- 11:30 am: **Quasi-single-mode random lasing within a ZnO nanoparticle film**, Hideki Fujiwara, Ryo Niyuki, Hokkaido Univ. (Japan); Yoshie Ishikawa, Kagawa Univ. (Japan); Naoto Koshizaki, National Institute of Advanced Industrial Science and Technology (Japan); Takeshi Tsuji, Kyushu Univ. (Japan); Keiji Sasaki, Hokkaido Univ. (Japan) . . . . . [8599-38]
- Lunch Break . . . . . Mon 11:45 am to 1:15 pm

**SESSION 8**

**Room: 132 (Exhibit Level) . . . . . Mon 1:15 pm to 3:00 pm**

**Ultrafast Lasers**

Session Chair: **Martin Richardson**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA)

- 1:15 pm: **High energy ultrafast diode-pumped laser operating at 1053-nm based on Yb:CaF<sub>2</sub>**, Antoine Courjaud, Vincent Clet, Amplitude Systèmes (France); Patrice Camy, Jean-Louis Doualan, Richard Moncorge, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche (France); Eric P. Mottay, Amplitude Systèmes (France) . . . . . [8599-40]
- 1:30 pm: **Energy scaling of a multipass-cavity mode-locked femtosecond bulk laser with a carbon nanotube saturable absorber**, Isinsu Baylam, Koç Univ. (Turkey); Sarper Ozharar, Bahçesehir Univ. (Turkey); Hüseyin Cankaya, Koç Univ. (Turkey); Sun Y. Choi, Kihong Kim, Fabian Rotermund, Ajou Univ. (Korea, Republic of); Uwe Griebner, Valentin P. Petrov, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Alphan Sennaroglu, Koç Univ. (Turkey) . . . . . [8599-41]
- 1:45 pm: **200-W fs INNOSLAB amplifier with 100-µJ pulse energy for industrial applications**, Torsten G. Mans, Jan Dolkemeyer, Claus Schnitzler, AMPHOS GmbH (Germany); Clemens Höenninger, Eric P. Mottay, Amplitude Systèmes (France) . . . . . [8599-42]
- 2:00 pm: **1-Watt femtosecond mid-IR Cr:ZnS laser**, Evgeni Sorokin, Technische Univ. Wien (Austria); Nikolai Tolstik, Irina T. Sorokina, Norwegian Univ. of Science and Technology (Norway) . . . . . [8599-43]
- 2:15 pm: **900-fs pulses at 1040 nm from a passively Q-switched Nd:YVO<sub>4</sub> microchip laser system**, Reinhold Lehneis, Alexander Steinmetz, Jens Limpert, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8599-44]
- 2:30 pm: **High repetition rate titanium sapphire PetaWatt laser system**, Francois Lureau, Sébastien Laux, Olivier Casagrande, Christophe Radier, Olivier Chalus, Frederic Caradec, Christophe Derycke, Gilles Brousse, Paul Jougla, Christophe Simon-Boisson, Thales Optronique S.A.S. (France) . . . . . [8599-45]
- 2:45 pm: **Petawatt scale ultrashort laser system with diffraction-limited focus and transform-limited pulse duration**, Cheng Liu, Sudeep Banerjee, Jun Zhang, Shouyuan Chen, Kevin Brown, Jared B. Mills, Nathan Powers, Baozhen Zhao, Donald P. Umstadter, Univ. of Nebraska-Lincoln (USA) [8599-46]
- Coffee Break . . . . . Mon 3:00 pm to 3:30 pm

**LASE**

**SESSION 9**

**Room: 131 (Exhibit Level) . . . . . Mon 3:30 pm to 5:50 pm**

**NOTE ROOM CHANGE**

**Power Scaling Bulk SSL and Fiber Lasers**

Joint Session with Conferences 8599 and 8601

Session Chairs: **Eric C. Honea**, Lockheed Martin Aculight (USA);  
**W. Andrew Clarkson**, Univ. of Southampton (United Kingdom)

3:30 pm: **Advances in power scaling of fiber lasers** (*Invited Paper*), Valentin P. Gapontsev, IPG Photonics Corp. (USA) . . . . . [8601-13]

4:00 pm: **Cryogenic Yb-doped lasers for efficient nanosecond, picosecond, and femtosecond sources** (*Invited Paper*), Darren A. Rand, Daniel E. Miller, Tso Yee Fan, MIT Lincoln Lab. (USA) . . . . . [8599-47]

4:30 pm: **Mode instabilities: physical origin and mitigation strategies**, Cesar Jauregui-Misas, Hans-Jürgen Otto, Florian Jansen, Fabian Stutzki, Tino Eidam, Jens Limpert, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8601-105]

4:50 pm: **5-kW Yb:YAG thin disk laser with good beam quality**, Yuan Han Peng, Yu Xian Lim, James Cheng, Yunn Boon Tan, Wei-Pin E. Lau, Kin Seng Lai, DSO National Labs. (Singapore) . . . . . [8599-48]

5:10 pm: **Design evolution, long term performance and application tests of extra large mode area (XLMA) fiber lasers**, Andreas Langner, Mario Such, Gerhard Schötz, Heraeus Quarzglas GmbH & Co. KG (Germany); Florian Just, Martin Leich, Stephan Grimm, Matthias L. Jäger, Kay Schuster, Institut für Photonische Technologien e.V. (Germany); Hagen Zimer, Marcin Kozak, Björn Wedel, HIGHYAG Lasertechnologie GmbH (Germany); Charley Bachert, Georg Rehmann, Volker Krause, Laserline GmbH (Germany) . . . . . [8601-15]

5:30 pm: **100-W Tm:YLF INNOSLAB laser at 2 micron**, Ansgar Meissner, Fraunhofer-Institut für Lasertechnik (Germany); Jing Li, Suhui Yang, Beijing Institute of Technology (China); Marco Höfer, Hans-Dieter Hoffmann, Fraunhofer-Institut für Lasertechnik (Germany) . . . . . [8599-49]

**Tuesday 5 February**

**SESSION 10**

**Room: 132 (Exhibit Level) . . . . . Tue 8:00 am to 9:15 am**

**Novel Concepts**

Session Chair: **Helena Jelínková**,  
Czech Technical Univ. in Prague (Czech Republic)

8:00 am: **Wavelength dependence of the optical axis in double tungstate crystals**, Romain Cattoor, Institut Franco-Allemand de Recherches de Saint-Louis (France) and Univ. Bordeaux 1 (France); Inka B. Manek-Hönninger, Marc Tondusson, Univ. Bordeaux 1 (France); Todor Kirilov, Conerefringent optics SL (Spain); Daniel Rytz, FEE GmbH (Germany); Lionel S. Canioni, Univ. Bordeaux 1 (France); Marc Eichhorn, Institut Franco-Allemand de Recherches de Saint-Louis (France) . . . . . [8599-50]

8:15 am: **Single-frequency Nd:YAG laser with LG01 donut mode output**, Di Lin, Jae M. Daniel, W. Andrew Clarkson, Univ. of Southampton (United Kingdom) . . . . . [8599-51]

8:30 am: **Nd-doped PTR glass DBR laser**, Leonid B. Glebov, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Aleksandr Rysasnyanskiy, OptiGrate Corp. (USA); Nikolai Vorobiev, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Vadim Smirnov, OptiGrate Corp. (USA); Julien Lumeau, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Larissa Glebova, Oleksiy Mokhun, Christine P. Spiegelberg, OptiGrate Corp. (USA); Michael A. Krainak, NASA Goddard Space Flight Ctr. (USA) . . . . . [8599-52]

8:45 am: **Resonant optical devices for IR lasers**, Eric G. Johnson, Menelaos K. Poutous, Yuan Li, Indumathi Raghu Srimathi, Aaron J. Pung, Clemson Univ. (USA); Martin Richardson, Larry Shaw, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Ramesh Shori, Naval Air Warfare Ctr. Weapons Div. (USA); Robert Magnusson, The Univ. of Texas at Arlington (USA) . . . . . [8599-53]

9:00 am: **879-nm pump diode stack and single Nd:YAG rod design to achieve 20-W to 300-W adjustable laser output power at 532 nm and 38% optical to optical conversion efficiency**, Jason R. Xuan, Mike Scott, Xirong Yang, American Medical Systems (USA) . . . . . [8599-54]

**SESSION 11**

**Room: 132 (Exhibit Level) . . . . . Tue 9:15 am to 10:15 am**

**UV-VIS Lasers**

Session Chair: **Helena Jelínková**,  
Czech Technical Univ. in Prague (Czech Republic)

9:15 am: **High power high repetition rate VCSEL array side-pumped pulsed blue laser**, Robert Van Leeuwen, Pu Zhao, Tong Chen, Bing Xu, Laurence S. Watkins, Jean-Francois Seurin, Guoyang Xu, Alexander Miglo, Qing Wang, Chuni L. Ghosh, Princeton Optronics, Inc. (USA) . . . . . [8599-55]

9:30 am: **0.9-W compact UV pulsed lasers using high-power VCSEL array side-pumping**, Tong Chen, Bing Xu, Robert Van Leeuwen, Pu Zhao, Jean-Francois Seurin, Guoyang Xu, Alexander Miglo, Qing Wang, Chuni Ghosh, Princeton Optronics, Inc. (USA) . . . . . [8599-56]

9:45 am: **Laser and phosphor hybrid source for projection display**, Fei Hu, Yi Li, Apoptronics Corp. (China) . . . . . [8599-57]

10:00 am: **Wide temperature operation of a VCSEL pumped 355nm frequency tripled Nd:YAG laser**, Brian J. Cole, Christopher M. McIntosh, Alan D. Hays, Lew Goldberg, U.S. Army RDECOM CERDEC NVESD (USA) . . . . . [8599-58]

Coffee Break . . . . . Tue 10:15 am to 10:45 am

**SESSION 12**

**Room: 132 (Exhibit Level) . . . . . Tue 10:45 am to 12:00 pm**

**Disk Lasers**

Session Chair: **David H. Titterton**,  
Defence Science and Technology Lab. (United Kingdom)

10:45 am: **Cr:ZnSe thin disk cw lasers**, Günther Renz, Jochen Speiser, Adolf Giesen, Deutsches Zentrum für Luft- und Raumfahrt e.V. (Germany); Irina T. Sorokina, Norwegian Univ. of Science and Technology (Norway); Evgeni Sorokin, Technische Univ. Wien (Austria) . . . . . [8599-59]

11:00 am: **High-power Kerr-lens mode-locked Yb:YAG thin-disk oscillator in the negative and positive dispersion regimes**, Oleg Pronin, Max-Planck-Institut für Quantenoptik (Germany) and Ludwig-Maximilians-Univ. München (Germany); Jonathan Brons, Max-Planck-Institut für Quantenoptik (Germany); Fabian Lücking, Ludwig-Maximilians-Univ. München (Germany); Christian Grasse, Walter Schottky Institut (Germany); Vladimir Pervak, Ludwig-Maximilians-Univ. München (Germany); Gerhard Boehm, Markus C. Amann, Walter Schottky Institut (Germany); Alexander A. Apolonskiy, Ludwig-Maximilians-Univ. München (Germany); Vladimir L. Kalashnikov, Technische Univ. Wien (Austria); Ferenc Krausz, Max-Planck-Institut für Quantenoptik (Germany) and Ludwig-Maximilians-Univ. München (Germany) . . . . . [8599-60]

11:15 am: **Erbium-based edge-pumped disk laser**, John Vetrovec, Drew A. Copeland, Amardeep S. Litt, Aqwest, LLC (USA); Detao Du, General Atomics Aeronautical Systems, Inc. (USA) . . . . . [8599-61]

11:30 am: **Amplified spontaneous emission (ASE) models and approximations for thin-disk laser modeling**, Drew A. Copeland, General Atomics Aeronautical Systems, Inc. (USA) . . . . . [8599-62]

11:45 am: **Zero-phonon-line pumped 1 kHz Yb:YAG thin-disk regenerative amplifier**, Michal Chyla, Taisuke Miura, Martin Smrž, Patricie Severova, Ondrej Novak, Akira Endo, Tomas Mocek, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [8599-63]

**POSTERS-TUESDAY**

**Room: 103 (Exhibit Level) . . . . . Tue 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the LASE poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Spectroscopic characterization and upconversion processes in Er-doped Ytria ceramics**, EiEi Brown, Uwe H. Hömmerich, Hampton Univ. (USA); Althea G. Bluiett, Elizabeth City State Univ. (USA); Sudhir B. Trivedi, Brimrose Corp. of America (USA); Courtney Kucera, John Ballato, Clemson Univ. (USA) . . . . . [8599-39]

**Solid-state laser source of narrowband ultraviolet B light for skin disease care**, Aleksandr A. Tarasov, Hong Chu, Laseroptek (Korea, Republic of) . . . . . [8599-64]

**Power-scaling of Pr:YAlO<sub>3</sub> laser operating in CW regime at 747 nm and 720 nm wavelengths**, Martin Fibrich, Helena Jelinková, Czech Technical Univ. in Prague (Czech Republic) . . . . . [8599-65]

**A passively mode-locking Yb:YAG direct-bonding waveguide laser based on single-walled carbon nanotube saturable absorber**, Ke Liu, Mei Sang, Pan Zhu, Zhaoying Wang, Tianxin Yang, Tianjin Univ. (China) . . . . . [8599-66]

**Tunability of Yb:glass laser**, Jan Sulc, Ondrej Krivosudsky, Helena Jelinkova, Czech Technical Univ. in Prague (Czech Republic); Ryszard Stepien, Institute of Electronic Materials Technology (Poland) . . . . . [8599-67]

**Cavity length dependence of mode beating in passively Q-switched Nd-solid state lasers**, Nathan D. Zamoski, Space Dynamics Lab. (USA) and Sandia National Labs. (USA); Michael Wanke, David J. Bossert, Sandia National Labs. (USA) . . . . . [8599-68]

**High energy intracavity pumped eye-safe BaWO<sub>4</sub> Raman laser**, Ondrej Kitzler, Helena Jelinková, Jan Šulc, Michal Nemeč, Czech Technical Univ. in Prague (Czech Republic); Karel Nejezchleb, Vaclav Skoda, Crytur Ltd. (Czech Republic) . . . . . [8599-69]

**A low jitter single frequency Q-switched laser from solid state to optical fiber configuration**, Frank F. Wu, MetroLaser, Inc. (USA) . . . . . [8599-71]

**DPSS MOPA laser system generating 250 mJ with one nanosecond pulse**, Frank F. Wu, MetroLaser, Inc. (USA) . . . . . [8599-72]

**Observation of laser beam profile progression inside an extended laser cavity**, Frank F. Wu, MetroLaser, Inc. (USA) . . . . . [8599-73]

**Exploring optical properties of Nd-doped vanadates with intracavity self-mode locking**, Hsing-Chih Liang, Jung-Chen Tung, Chia-Han Tsou, Kuan-Wei Su, Yung-Fu Chen, National Chiao Tung Univ. (Taiwan) . . . . . [8599-74]

**Cr:ZnMgSe laser pumped by 1.7 μm Er:YLF radiation**, Maxim E. Doroshenko, A. M. Prokhorov General Physics Institute (Russian Federation); Helena Jelinková, Michal Nemeč, Jan Šulc, Michal Jelínek M.D., Czech Technical Univ. in Prague (Czech Republic); Vitaliy K. Komar, Andriy S. Gerasimenko, National Academy Sciences Ukraine (Ukraine); Vyacheslav M. Puzikov, Valerii V. Badikov, Kuban State Technological Univ. (Russian Federation) . . . . . [8599-75]

**Simulation of ultrashort laser pulse stretching and compression with chirped volume Bragg grating**, Xiao Yuan, Jiansheng Feng, Xiang Zhang, Kuaisheng Zou, Shang Wu, Soochow Univ. (China) . . . . . [8599-76]

**Characterization of polarizing splitter optics in extreme environments**, Ryand J. F. Tucker, Matthew Olson, Gregg L. Morelli, Honeywell Federal Manufacturing & Technologies, LLC (USA) . . . . . [8599-77]

**Optical extraction model including ASE loss for a CW quasi-three level thin disk laser**, Drew A. Copeland, General Atomics Aeronautical Systems, Inc. (USA) . . . . . [8599-78]

**High gain coherent image amplifier**, Anatoliy Khizhnyak, Vladimir B. Markov, Advanced Systems & Technologies, Inc. (USA); Douglas M. Craig, Air Force Research Lab. (USA); Shiang Liu, Advanced Systems & Technologies, Inc. (USA) . . . . . [8599-79]

**High energy diode-pumped 5th harmonic generation of Nd: YAG laser**, Xiaoyuan Peng, Enlight Technologies, Inc. (USA); Yang Yu, Chee Yuen Cheng, Yong Poo Chia, Saw Soon Yong, Ngee Ann Polytechnic (Singapore) . . . . . [8599-80]

**Experimental and simulation studies on a high-efficient, high-peak power diode pumped passive Q-switched and self Q-switched of Nd: YVO<sub>4</sub> laser at both 1064 nm using Cr: YAG and 532 nm using KTB Crystal, respectively**, Ashraf F. El-Sherif, Military Technical College (Egypt); Mahmoud M. Talaat, Military Technical Institute (Egypt) . . . . . [8599-81]

**Development of kW class Nd:YAG composite ceramic thin disc laser**, Koichi Iyama, Osaka Univ. (Japan) and ALPROT (Japan) and Hamamatsu Photonics K.K. (Japan); Ravi Bhushan, Osaka Univ. (Japan); Hiroyuki Furukawa, Osaka Univ. (Japan) and ALPROT (Japan); Koji Tsubakimoto, Hidetsugu Yoshida, Hisanori Fujita, Osaka Univ. (Japan); Masayuki Fujita, Osaka Univ. (Japan) and ALPROT (Japan); Noriaki Miyanaga, Osaka Univ. (Japan); Yoshinori Tamaoki, Yoshinori Kato, Toshiyuki Kawashima, Osaka Univ. (Japan) and Hamamatsu Photonics K.K. (Japan) . . . . . [8599-82]

# LASE

SPIE PRESS

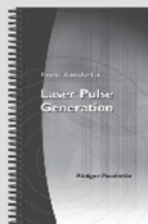


Visit the onsite Bookstore to browse these and other SPIE Press Books



## Field Guide to Lasers

by Rüdiger Paschotta  
Vol. FG12



## Field Guide to Laser Pulse Generation

by Rüdiger Paschotta  
Vol. FG14



## Laser Safety in the Lab

by Ken Barat  
Vol. PM212



## Field Guide to Adaptive Optics, Second Edition

by Robert K. Tyson, Benjamin W. Frazier  
Vol. FG24

[www.spie.org/publications](http://www.spie.org/publications)

LASE



# Laser Resonators, Microresonators, and Beam Control XV

*Conference Chairs:* **Alexis V. Kudryashov**, Moscow State Open Univ. (Russian Federation); **Alan H. Paxton**, Air Force Research Lab. (USA); **Vladimir S. Ilchenko**, OEwaves, Inc. (USA)

*Conference Co-Chairs:* **Lutz Aschke**, LIMO Lissotschenko Mikrooptik GmbH (Germany); **Kunihiko Washio**, Paradigm Laser Research Ltd. (Japan)

*Program Committee:* **Yanne K. Chembo**, FEMTO-ST (France); **Jean-Claude M. Diels**, The Univ. of New Mexico (USA); **Hans Joachim Eichler**, Laser- und Medizin-Technologie GmbH, Berlin (Germany); **Andrew Forbes**, CSIR National Laser Ctr. (South Africa); **Pierre Galarneau**, INO (Canada); **Thomas Graf**, Univ. Stuttgart (Germany); **Tobias J. Kippenberg**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **James R. Leger**, Univ. of Minnesota, Twin Cities (USA); **Andrey B. Matsko**, OEwaves, Inc. (USA); **Andrew W. Poon**, Hong Kong Univ. of Science and Technology (Hong Kong, China); **Michelle L. Povinelli**, The Univ. of Southern California (USA); **Michael J. Scaggis**, Neoteric Concepts, LLC (USA); **Lan Yang**, Washington Univ. in St. Louis (USA)

## Sunday 3 February

### SESSION 1

Room: 124 (Exhibit Level) . . . . . Sun 1:50 pm to 3:10 pm

#### CO<sub>2</sub> Lasers and their Beams

Session Chair: **Alan H. Paxton**, Air Force Research Lab. (USA)

1:50 pm: **Bistable behavior of a continuous optical discharge as a laser beam propagation effect** (*Invited Paper*), Mikhail Y. Yakimov, Vladimir A. Kuznetsov, Nikolai G. Solovoyov, Andrei N. Shemyakin, Vladimir P. Zimakov, A. Ishlinsky Institute for Problems in Mechanics (Russian Federation) . . . . . [8600-1]

2:20 pm: **Extremely high power CO<sub>2</sub> laser beam correction** (*Invited Paper*), Ann Lylova, Alexis V. Kudryashov, Alexander Alexandrov, Vadim Samarkin, Alexey Rukosuev, Moscow State Open Univ. (Russian Federation) . . . . . [8600-2]

2:50 pm: **Optimization of the intra-cavity optical flux in the unstable direction in RF excited annular CO<sub>2</sub> laser in terms of power stability**, Viktor Granson, Francisco J. Villarreal-Saucedo, Jochen Deile, Jesus F. Monjardin, Shadi S. Sumrain, TRUMPF Inc. (USA) . . . . . [8600-3]

Coffee Break . . . . . Sun 3:10 pm to 3:40 pm

### SESSION 2

Room: 124 (Exhibit Level) . . . . . Sun 3:40 pm to 5:10 pm

#### Beam Quality Measurements and Improvement

Session Chair: **Alexis V. Kudryashov**, Active Optics Night N Ltd. (Russian Federation)

3:40 pm: **Pulse compression and beam quality improvement of a single-frequency Nd:YAG MOPA system**, Oliver Lux, Hristomir Stankov, Haro Fritsche, Hans Joachim Eichler, Technische Univ. Berlin (Germany) . . . . . [8600-5]

4:00 pm: **Wavefront measurement and data analysis of XUV HHG beam**, Pavel Homer, Bedrich Rus, Jaroslav Nejdil, Jan Hrebicek, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [8600-6]

4:20 pm: **Interaction of UV and IR filaments** (*Invited Paper*), Ladan Arissian, Jean-Claude M. Diels, The Univ. of New Mexico (USA) . . . . . [8600-7]

4:50 pm: **Resonator interrogation using pulse interferometry**, Amir Rosenthal, Daniel Razansky, Vasilis Ntziachristos, Helmholtz Zentrum München GmbH (Germany) . . . . . [8600-8]

## Monday 4 February

### SESSION 3

Room: 124 (Exhibit Level) . . . . . Mon 8:25 am to 10:00 am

#### Microresonators in Frequency Combs

Session Chair: **Vladimir S. Ilchenko**, OEwaves, Inc. (USA)

8:25 am: **Terabit/s data transmission using frequency combs** (*Invited Paper*), Christian Koos, Jürg Leuthold, Wolfgang Freude, Karlsruher Institut für Technologie (Germany); Tobias J. Kippenberg, Ecole Polytechnique Fédérale de Lausanne (Switzerland) and Max-Planck-Institut für Quantenoptik (Germany); Joerg Pfeifle, Claudius Weimann, Karlsruher Institut für Technologie (Germany); Tobias Herr, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Klaus Hartinger, Ecole Polytechnique Fédérale de Lausanne (Switzerland) and Menlo Systems GmbH (Germany); Ronald Holzwarth, Max-Planck-Institut für Quantenoptik (Germany) and Menlo Systems GmbH (Germany); David Hillerkuss, Rene Schmogrow, Karlsruher Institut für Technologie (Germany) . . . . . [8600-9]

8:50 am: **Four-wave-mixing parametric oscillations in dispersion-tunable micro-bubble resonators**, Ming Li, Xiang Wu, Liying Liu, Lei Xu, Fudan Univ. (China) . . . . . [8600-10]

9:15 am: **Microcombs and SBS lasers using wedge resonators** (*Invited Paper*), Kerry J. Vahala, California Institute of Technology (USA) . . . . . [8600-11]

9:40 am: **On phase locking phenomena in Kerr combs**, Aurelien Coillet, Irina Balakireva, Remi Henriet, Laurent Larger, Yanne K. Chembo, FEMTO-ST (France) . . . . . [8600-12]

Coffee Break . . . . . Mon 10:00 am to 10:30 am

### SESSION 4

Room: 124 (Exhibit Level) . . . . . Mon 10:30 am to 12:05 pm

#### Microresonators in Lasers, RF Photonics, THz, and Mid-IR I

Session Chair: **Andrey B. Matsko**, OEwaves, Inc. (USA)

10:30 am: **Laser emission and thermal effects in Nd<sup>3+</sup> doped glass microspheres, observed, and studied without coupling devices**, Leopoldo L. Martin, Carla Perez Rodriguez, Univ. de La Laguna (Spain); Daniel Navarro-Urrios, Univ. de Barcelona (Spain); Inocencio J. Martin, Nestor E. Capuj, Univ. de La Laguna (Spain) . . . . . [8600-13]

10:50 am: **Low threshold ultraviolet lasers based on Ce:LiCaAlF<sub>6</sub> crystal resonator** (*Invited Paper*), Nan Yu, Thanh T. Le, Jet Propulsion Lab. (USA); Steven J. Schowalter, Wade Rellergert, Justin Jeet, Univ. of California, Los Angeles (USA); Guoping Lin, Jet Propulsion Lab. (USA); Eric Hudson, Univ. of California, Los Angeles (USA) . . . . . [8600-14]

11:15 am: **Mid-IR WGM lasers** (*Invited Paper*), Andrey M. Monakhov, Viktor V. Sherstnev, Elena Grebenshchikova, Ioffe Physico-Technical Institute (Russian Federation); Alexei N. Baranov, Univ. Montpellier 2 (France); Yury Yakovlev, Ioffe Physico-Technical Institute (Russian Federation) . . . . . [8600-15]

11:40 am: **High gain selective amplification in whispering gallery mode resonators: analysis by cavity ring down method** (*Invited Paper*), Patrice Féron, Ecole Nationale Supérieure des Sciences Appliquées et de Technologie (France) and Ecole Nationale Supérieure des Sciences Appliquées et de Technologie (France); Alphonse Rasoloniaina, Vincent Huet, Elodie Le Cren, Ecole Nationale Supérieure des Sciences Appliquées et de Technologie (France); Stéphane Trebaol, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Gualtiero Nunzi Conti, Istituto di Fisica Applicata Nello Carrara (Italy); Hélène Serier-Brault, Ctr. National de la Recherche Scientifique (France); Michel Mortier, Ecole Nationale Supérieure de Chimie de Paris (France); Yannick Dumeige, Ecole Nationale Supérieure des Sciences Appliquées et de Technologie (France) . . . . . [8600-16]  
Lunch Break . . . . . Mon 12:05 pm to 1:20 pm

**SESSION 5**

**Room: 124 (Exhibit Level) . . . . . Mon 1:20 pm to 3:00 pm**

**Microresonators in Lasers, RF Photonics, THz, and Mid-IR II**

Session Chair: **Jean-Claude M. Diels**, The Univ. of New Mexico (USA)

1:20 pm: **Laser beam engineering using plasmonics and deformed resonators** (*Invited Paper*), Federico Capasso, Harvard School of Engineering and Applied Sciences (USA) . . . . . [8600-17]

1:45 pm: **Narrow linewidth lasers, RF oscillators, and filters with WGM resonators** (*Invited Paper*), Vladimir S. Ilchenko, David J. Seidel, Andrey B. Matsko, Anatoliy A. Savchenkov, Elijah B. Dale, Wei Liang, Jerry L. Byrd, Lute Maleki, OEwaves, Inc. (USA) . . . . . [8600-18]

2:10 pm: **High-speed modulation of optical microcavities** (*Invited Paper*), Wesley D. Sacher, Univ. of Toronto (Canada); William M. J. Green, Solomon Assefa, Tymon Barwicz, Huapu Pan, IBM Thomas J. Watson Research Ctr. (USA); Steven M. Shank, IBM Corp. (USA); Yurii A. Vlasov, IBM Thomas J. Watson Research Ctr. (USA); Joyce Poon, Univ. of Toronto (Canada) . . [8600-19]

2:35 pm: **Chalcogenide glass mid-infrared integrated photonics** (*Invited Paper*), Juejun Hu, Yi Zou, Hongtao Lin, Lan Li, Okechukwu Ogbuu, Univ. of Delaware (USA); J. David Musgraves, Sylvain Danto, Kathleen Richardson, Clemson Univ. (USA) and CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) . . . . . [8600-20]

Coffee Break . . . . . Mon 3:00 pm to 3:30 pm

**SESSION 6**

**Room: 124 (Exhibit Level) . . . . . Mon 3:30 pm to 5:40 pm**

**Microresonators: Cavity QED, Optomechanics, and Frequency Conversion**

Session Chair: **Michael J. Scaggs**, Neoteric Concepts, LLC (USA)

3:30 pm: **Bose-Einstein condensation of photons in a microscopic optical resonator** (*Invited Paper*), Martin Weitz, Rheinische Friedrich-Wilhelms-Univ. Bonn (Germany) . . . . . [8600-21]

3:55 pm: **Bright squeezed light under conditions of second harmonic generation in a whispering-gallery mode resonator**, Matt T. Simons, Irina Novikova, The College of William & Mary (USA) . . . . . [8600-22]

4:15 pm: **Observation of spontaneous Brillouin cooling** (*Invited Paper*), Gaurav Bahl, Univ. of Illinois at Urbana-Champaign (USA); Matthew Tomes, Univ. of Michigan (USA) . . . . . [8600-23]

4:40 pm: **RF-Induced Change of Optical Refractive Index in Strontium Barium Niobate**, Andrey B. Matsko, Anatoliy A. Savchenkov, Vladimir S. Ilchenko, Iouri V. Solomatine, David J. Seidel, Lute Maleki, OEwaves, Inc. (USA) . . . . . [8600-51]

5:00 pm: **High Q BBO whispering gallery mode resonators**, Guoping Lin, Jet Propulsion Lab. (USA); Josef U. Fürst, Jet Propulsion Lab. (USA) and Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Dmitry V. Strekalov, Ivan S. Grudin, Nan Yu, Jet Propulsion Lab. (USA) . . . . . [8600-25]

5:20 pm: **Towards room temperature quantum optomechanics with whispering gallery mode resonators and nanostrings**, George Brawley, Robin M. Cole, James Bennett, The Univ. of Queensland (Australia); Silvan Schmid, Anja Boisen, Technical Univ. of Denmark (Denmark); Warwick Bowen, The Univ. of Queensland (Australia) . . . . . [8600-26]

**Tuesday 5 February**

**SESSION 7**

**Room: 124 (Exhibit Level) . . . . . Tue 8:50 am to 10:00 am**

**Laser Beam Polarization and Laser Resonators**

Session Chair: **Andrew Forbes**, CSIR National Laser Ctr. (South Africa)

8:50 am: **Compact laser beam analyzer with polarization independent optics and wide dynamic range of neutral density adjustment**, Michael J. Scaggs, Gilbert J. Haas, Haas Laser Technologies, Inc. (USA) . . . . . [8600-27]

9:10 am: **Recent advances in coupled laser cavity design** (*Invited Paper*), James R. Leger, Univ. of Minnesota, Twin Cities (USA) . . . . . [8600-30]

9:40 am: **Concept for coupling of a laser diode beam in a fiber with 40 micron diameter and numeric aperture 0.1**, Matthias Falk, Markus Lipp, Martin Forrer, FISBA OPTIK AG (Switzerland) . . . . . [8600-31]

Coffee Break . . . . . Tue 10:00 am to 10:30 am

**SESSION 8**

**Room: 124 (Exhibit Level) . . . . . Tue 10:30 am to 12:20 pm**

**Laser Beam Formation**

Session Chair: **James R. Leger**, Univ. of Minnesota (USA)

10:30 am: **Unraveling light with digital holograms** (*Invited Paper*), Andrew Forbes, CSIR National Laser Ctr. (South Africa) and Stellenbosch Univ. (South Africa) and Univ. of KwaZulu-Natal (South Africa) . . . . . [8600-32]

11:00 am: **Modeling of semiconductor saturable absorber mirrors using dynamic mode analysis**, Christoph Pflaum, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Zhabiz Rahimi, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) and ASLD GmbH (Germany) . . . . . [8600-33]

11:20 am: **Large deformable mirrors for beam control of high brightness lasers**, Nicolas A. Lefaudeux, Xavier Levecq, Guillaume Dovillaire, Imagine Optic SA (France); Lionnel Escolano, Sebastien Theis, ISP System (France) . . . . . [8600-34]

11:40 am: **Free space propagation without free space**, Christian Schulze, Daniel Flamm, Michael Duparré, Friedrich-Schiller-Univ. Jena (Germany); Andrew Forbes, Council for Scientific and Industrial Research (South Africa) . . . . . [8600-35]

12:00 pm: **Selective excitation of higher-order modes in diode-pumped solid-state laser resonators**, Andrew Forbes, CSIR National Laser Ctr. (South Africa) and Stellenbosch Univ. (South Africa) . . . . . [8600-36]

Lunch/Exhibition Break . . . . . Tue 12:20 pm to 1:30 pm

**SESSION 9**

**Room: 124 (Exhibit Level) . . . . . Tue 1:30 pm to 3:30 pm**

**Beam Shaping and Phase Distortion I**

Joint Session with Conferences 8600 and 8603

Session Chair: **Friedhelm Dorsch**, TRUMPF Werkzeugmaschinen GmbH + Co. KG (Germany)

1:30 pm: **Brilliant green laser lines for surface processing**, Mikhail M. Ivanenko, Wyacheslav Grimm, Lisa Kleinschmidt, Aliaksei Krasnaberski, Lutz Aschke, Vitalij N. Lissotschenko, LIMO Lissotschenko Mikrooptik GmbH (Germany) . . . . . [8600-37]

1:50 pm: **Active beam controlling of high power Q-switched Nd:YAG lasers for stable fiber coupling with small numerical aperture for material processing**, Mario Goehre, Clean-Lasersysteme GmbH (Germany); Christoph Becker, Betewis GmbH (Germany) . . . . . [8603-1]

2:10 pm: **Refractive beam shapers for material processing with high power single mode and multimode lasers**, Alexander V. Laskin, Vadim Laskin, AdIOptica Optical Systems GmbH (Germany) . . . . . [8600-38]

2:30 pm: **New monolithic Gauss-Tophat converter with integrated Fourier function and Gauss-Tophat beam splitter**, Aliaksei Krasnaberski, Lisa Kleinschmidt, Mikhail M. Ivanenko, LIMO Lissotschenko Mikrooptik GmbH (Germany) . . . . . [8600-39]

**LASE**

# Conference 8600 · Room: 124 (Exhibit Level)

2:50 pm: **Beam shaping for a high power laser diode bar with a wavelength of 940-980nm**, Hansruedi Moser, Dzelal Kura, Hans Forrer, Martin Forrer, FISBA OPTIK AG (Switzerland) ..... [8600-40]

3:10 pm: **In-situ optical phase distortion measurement of Yb:YAG thin disk in high average power regenerative amplifier**, Taisuke Miura, Michal Chyla, Martin Smrč, Patricie Severová, Ondrej Novák, Akira Endo, Tomáš Mocek, Institute of Physics of the ASCR, v.v.i. (Czech Republic) ..... [8603-2]

Coffee Break ..... Tue 3:30 pm to 4:00 pm

## SESSION 10

Room: 124 (Exhibit Level) ..... Tue 4:00 pm to 5:40 pm

### Beam Shaping and Phase Distortion II

Joint Session with Conferences 8600 and 8603

Session Chair: **Lutz Aschke**,  
LIMO Lissotschenko Mikrooptik GmbH (Germany)

4:00 pm: **Deterioration of beam quality factor of laser pulses due to angular dispersion of optical elements**, Sergiy Mokhov, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Vadim Smirnov, Eugeniu V. Rotari, OptiGrate Corp. (USA); Julien Lumeau, Boris Y. Zeldovich, Leonid B. Glebov, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) ..... [8603-3]

4:20 pm: **Recent results on bulk laser damage threshold of optical glasses**, Ralf Jedamzik, Frank Elsmann, SCHOTT AG (Germany) ..... [8603-4]

4:40 pm: **Limitations of optical antireflective coatings on fused silica optics in high-brightness 2D laser cutting heads**, Bjoern Wedel, Hagen Zimer, Roman Niedrig, HIGHYAG Lasertechnologie GmbH (Germany); Marcel Schulze, Bernhard Kley, Institut für Angewandte Physik (Germany) ..... [8603-5]

5:00 pm: **CVD diamond for high power laser applications**, Andrew M. Bennett, Element Six Ltd. (United Kingdom); Eugene V. Anokin, Element Six (USA); Jan Barten, Gert Pels, Element Six N.V. (Netherlands); John R. Brandon, Element Six Ltd. (United Kingdom) ..... [8603-6]

5:20 pm: **Analysis of temperature and thermal stress fields of K9 glass damaged by 1064nm nanosecond pulse laser**, Yunxiang Pan, Zhonghua Shen, Jian Lu, Xiao-Wu Ni, Nanjing Univ. of Science and Technology (China) ..... [8603-7]

## POSTERS-TUESDAY

Room: 103 (Exhibit Level) ..... Tue 6:00 pm to 8:00 pm

Conference attendees are invited to attend the LASE poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Compact ultra-broadband polarization generator/analyzer for supercontinuum light source**, Chun-Jen Weng, Instrument Technology Research Ctr. (Taiwan) and National Chiao Tung Univ. (Taiwan); Da-Ren Liu, Instrument Technology Research Ctr. (Taiwan); Ken-Yuh Hsu, Yung-Fu Chen, National Chiao Tung Univ. (Taiwan) ..... [8600-29]

**High pressure tuning of whispering gallery mode resonances on neodymium doped glass microspheres**, Carla Perez Rodriguez, Leopoldo L. Martin, Sergio Leon Luis, Inocencio J. Martin, Victor Lavin, Univ. de La Laguna (Spain); Daniel Navarro-Urrios, Univ. de Barcelona (Spain); Nestor E. Capuj, Univ. de La Laguna (Spain) ..... [8600-70]

**Nd:YAG laser with a two-pass unstable ring resonator**, Alan H. Paxton, Harold C. Miller, Air Force Research Lab. (USA) ..... [8600-71]

**Enhancing the radiation efficiency of dye doped microresonator using coupling effects with a suspended core microstructured optical fiber**, Alexandre Francois, Shahraam V. Afshar, Kristopher J. Rowland, Matthew Henderson, Tanya M. Monroe, The Univ. of Adelaide (Australia) ..... [8600-72]

**Temporal dynamics of Kerr frequency combs in WGM resonators**, Aurelien Collet, Irina Balakireva, Remi Henriet, Laurent Larger, Yanne K. Chembo, FEMTO-ST (France) ..... [8600-73]

**Microtaper fiber excitation effects in bottle microresonators**, Mohd Narizee Bin Mohd Nasir, Ming Ding, Senthil Murugan Ganapathy, Michalis N. Zervas, Univ. of Southampton (United Kingdom) ..... [8600-74]

**Experimental demonstration of continuous-wave index-antiguided slab waveguide lasers**, Adam S. Dittli, Hossein Alisafae, Tsing-Hua Her, Lee W. Casperson, Univ. of North Carolina at Charlotte (USA) ..... [8600-76]

**Two matrix algorithms of eignmodes of a Bessel-Gauss resonator**, Dongxiong Ling, Dongguan Univ. of Technology (China) ..... [8600-77]

**Spatially coherent top-hat beam output from a large mode area microstructured single-mode fiber**, Pierre Calvet, Commissariat à l'Énergie Atomique (France) and Univ. des Sciences et Technologies de Lille (France); Constance Valentin, Yves Quiquempois, Géraud Bouwmans, Quentin Coulombier, Laurent Bigot, Marc Douay, Arnaud Mussot, Univ. des Sciences et Technologies de Lille (France); Emmanuel Hugonnot, Commissariat à l'Énergie Atomique (France) ..... [8600-78]

**Process-optimized beam profiles for laser micromachining**, Christian Bischoff, Ulrich Raedel, TOPAG Lasertechnik GmbH (Germany) ..... [8600-79]

## Wednesday 6 February

### SESSION 11

Room: 124 (Exhibit Level) ..... Wed 8:00 am to 9:50 am

### Microresonators: Novel Topologies, Materials, and Applications I

Session Chair: **Yanne K. Chembo**, FEMTO-ST (France)

8:00 am: **Light scattering by microdisks and other planar dielectric structures**, David McCloskey, John F. Donegan, Trinity College Dublin (Ireland) ..... [8600-41]

8:20 am: **Coherent perfect absorption in linear and nonlinear optics (Invited Paper)**, Wenjie Wan, Yuanlin Zheng, Xianfeng Chen, Shanghai Jiao Tong Univ. (China) ..... [8600-42]

8:45 am: **Fabrication and modelling of truncated oblate and prolate microresonators (Invited Paper)**, Michalis N. Zervas, The Univ. of Southampton (United Kingdom) ..... [8600-43]

9:10 am: **Focused ion beam engineered disc resonators**, David C. Aveline, Jet Propulsion Lab. (USA); Lukas M. Baumgartel, Jet Propulsion Lab. (USA) and The Univ. of Southern California (USA); Byungmin Ahn, The Univ. of Southern California (USA); Nan Yu, Jet Propulsion Lab. (USA) ..... [8600-44]

9:30 am: **SNAP devices with ideal and lossy coupling to waveguides: theory vs. experiment**, Misha Sumetsky, OFS Labs. (USA) ..... [8600-45]

Coffee Break ..... Wed 9:50 am to 10:20 am

### LASE PLENARY SESSION

Room: 134 (Exhibit Level) ..... 10:20 am to 12:30 pm

10:20 am: **Welcome and Opening Remarks**  
**Bo Gu**, Bos Photonics (USA); **Andreas Tünnermann**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) and Friedrich-Schiller-Univ. Jena (Germany)

10:25 am: **Announcement of the Best "Green" LASE Paper Award**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)

10:30 am: **Laser-based Particle Acceleration and the Path to TeV Physics and Compact X-ray and Gamma Ray Sources (Presentation Only)**  
**Wim P. Leemans**, Lawrence Berkeley National Lab. (USA)

11:10 am: **Three-dimensional Metamaterials Made By Direct Laser Writing (Presentation Only)**  
**Martin Wegener**, Karlsruhe Institut für Technologie (Germany)

11:50 am: **Remote Laser Welding for Automotive Seat Production (Presentation Only)**  
**Geert G. Verhaeghe**, Faurecia Autositze GmbH (Germany)

See p. 26 for details.

Lunch/Exhibition Break ..... Wed 12:30 pm to 2:00 pm



**SESSION 12**

**Room: 124 (Exhibit Level) . . . . . Wed 2:00 pm to 3:15 pm**

**Microresonators: Novel Topologies, Materials, and Applications II**

Session Chair: **Michelle L. Povinelli**,  
The Univ. of Southern California (USA)

2:00 pm: **Complex polarization states of off-axis uniaxial whispering gallery mode resonators** (*Invited Paper*), Florian Sedlmeir, Josef U. Fürst, Dmitry V. Strekalov, Max Planck Institute for the Science of Light (Germany); Harald G. Schwefel, Gerd Leuchs, Max Planck Institute for the Science of Light (Germany) and Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany) . . . . . [8600-49]

2:25 pm: **Whispering gallery states of neutrons and anti-hydrogen atoms and their applications to fundamental and surface physics** (*Invited Paper*), Valery V. Nesvizhevsky, Institut Laue-Langevin (France) . . . . . [8600-24]

2:50 pm: **Nanowire architectures for next-generation solar cells and photonic devices** (*Invited Paper*), Thomas Kempa, Massachusetts Institute of Technology (USA); James F. Cahoon, The Univ. of North Carolina at Chapel Hill (USA); Sun-Kyung Kim, Robert Day, Harvard Univ. (USA); Hong-Gyu Park, Korea Univ. (Korea, Republic of); Charles M. Lieber, Harvard Univ. (USA) . . . . . [8600-50]

Coffee Break . . . . . Wed 3:15 pm to 3:40 pm

**SESSION 13**

**Room: 124 (Exhibit Level) . . . . . Wed 3:40 pm to 5:45 pm**

**Microresonators in Photonic Lightwave Circuits**

Session Chair: **Lan Yang**, Washington Univ. in St. Louis (USA)

3:40 pm: **On-chip ultrahigh-Q microcavities for highly unidirectional emission** (*Invited Paper*), Yun-Feng Xiao, Xue-Feng Jiang, Peking Univ. (China); Chang-Ling Zou, Univ. of Science and Technology of China (China); Lan Yang, Washington Univ. in St. Louis (USA); Qihuang Gong, Peking Univ. (China) . . . . . [8600-52]

4:05 pm: **Resonance-based CMOS-compatible reconfigurable nanophotonic structures in hybrid material platforms** (*Invited Paper*), Ali Adibi, Georgia Institute of Technology (USA) . . . . . [8600-53]

4:30 pm: **Silicon-based monolithically integrated whispering-gallery mode resonators** (*Invited Paper*), Mher Ghulinyan, Fondazione Bruno Kessler (Italy); Fernando Ramirez Manzano, Nikola Prtljaga, Univ. degli Studi di Trento (Italy); Georg Pucker, Fondazione Bruno Kessler (Italy); Lorenzo Pavesi, Univ. degli Studi di Trento (Italy) . . . . . [8600-54]

4:55 pm: **Metal-graphene-metal photodetectors** (*Invited Paper*), Thomas Mueller, Alexander Ulrich, Marco Furchi, Andreas Pospischil, Technische Univ. Wien (Austria) . . . . . [8600-55]

5:20 pm: **Far-field pattern simulation and measurement for unidirectional-emission circular microlasers** (*Invited Paper*), Yong-Zhen Huang, Xiao-Meng Lv, Qi-Feng Yao, Ling-Xiu Zou, Heng Long, Yue-De Yang, Jin-Long Xiao, Yun Du, Institute of Semiconductors (China) . . . . . [8600-56]

**Thursday 7 February**

**SESSION 14**

**Room: 124 (Exhibit Level) . . . . . Thu 8:15 am to 10:05 am**

**Microresonator Sensors I**

Session Chair: **Andrew W. Poon**,

Hong Kong Univ. of Science and Technology (Hong Kong, China)

8:15 am: **Impulse response of microresonators with a dual frequency comb probe**, Claudine N. Allen, Hugo Bergeron, Jean-Raphaël Carrier, Vincent Michaud-Belleau, Julien Roy, Simon Potvin, Maxime Charlebois, Jérôme E. Genest, Univ. Laval (Canada) . . . . . [8600-57]

8:35 am: **Ultra-compact and high-Q micro-ring resonators based on metal cladding polymer waveguides and their applications in high-frequency ultrasonic imaging**, Tao Ling, Sung-Liang Chen, Cheng Zhang, L. Jay Guo, Univ. of Michigan (USA) . . . . . [8600-58]

8:55 am: **Cavity enhanced Raman spectroscopy**, Perry S. Edwards, Corey Janisch, The Pennsylvania State Univ. (USA); Bo Peng, Washington Univ. at St. Louis (USA); Lan Yang, Washington Univ. in St. Louis (USA); Zhiwen Liu, The Pennsylvania State Univ. (USA) . . . . . [8600-59]

9:15 am: **Ultrahigh sensitive label-free coupled capillary optofluidic ring laser biosensors** (*Invited Paper*), Xiang Wu, Liqiang Ren, Ming Li, Liying Liu, Lei Xu, Fudan Univ. (China) . . . . . [8600-60]

9:40 am: **Hybrid organic/inorganic resonators for sensing and telecommunications applications** (*Invited Paper*), Andrea M. Armani, Nishita Deka, Audrey Harker, Ashley J. Maker, Simin Mehrabani Zeinabad, The Univ. of Southern California (USA) . . . . . [8600-61]

Coffee Break . . . . . Thu 10:05 am to 10:35 am

**SESSION 15**

**Room: 124 (Exhibit Level) . . . . . Thu 10:35 am to 12:20 pm**

**Microresonator Sensors II**

Session Chair: **Vladimir S. Ilchenko**, OEwaves, Inc. (USA)

10:35 am: **Whispering gallery mode microresonators: results on aptasensors and on a new sensing approach** (*Invited Paper*), Gualtiero Nunzi Conti, Francesco Baldini, Simone Berneschi, Daniele Farnesi, Ambra Giannetti, Silvia Soria, Cosimo Trono, Istituto di Fisica Applicata Nello Carrara (Italy); Lorenzo Lunelli, Laura Pasquardini, Cecilia Pederzoli, Fondazione Bruno Kessler (Italy) . . . . . [8600-62]

11:00 am: **Microcavity single virus detection and sizing with molecular sensitivity**, Venkata R. Dantham, Polytechnic Institute of New York Univ. (USA); Stephene Holler, Fordham Univ. (USA); Vasily Kolchenko, New York City College of Technology (USA); Zhenmao Wan, Hunter College (USA); Stephen Arnold, Polytechnic Institute of New York Univ. (USA) . . . . . [8600-63]

11:20 am: **Flow cytometer system for single-shot biosensing based on whispering gallery modes of fluorescent microspheres**, Reno Lessard, Olivier Rousseau-Cyr, Alex Paquet, Maxime Charlebois, Karel Boissinot, Maurice Boissinot, Michel G. Bergeron, Claudine N. Allen, Univ. Laval (Canada) . . . . . [8600-64]

11:40 am: **Beam-coupled micro-sphere optical resonator for high-resolution electric field detection**, Tindaro Ioppolo, Amir Ali, M. Volkan Otugen, Southern Methodist Univ. (USA) . . . . . [8600-65]

12:00 pm: **Optimization of resonator radial dimensions for quartz enhanced photoacoustic spectroscopy systems**, Samara L. Firebaugh, U.S. Naval Academy (USA); Eugene A. Terray, Woods Hole Oceanographic Institute (USA) . . . . . [8600-66]

Lunch/Exhibition Break . . . . . Thu 12:20 pm to 2:00 pm

**SESSION 16**

**Room: 124 (Exhibit Level) . . . . . Thu 2:00 pm to 3:10 pm**

**Microresonators: Cavity QED, Optomechanics, and Frequency Conversion II**

Session Chair: **Alan H. Paxton**, Air Force Research Lab. (USA)

2:00 pm: **Integrated force and displacement sensors using cavity optomechanics** (*Invited Paper*), Kartik Srinivasan, National Institute of Standards and Technology (USA); Houxun Miao, Yuxiang Liu, National Institute of Standards and Technology (USA) and Univ. of Maryland, College Park (USA); Vladimir A. Aksyuk, National Institute of Standards and Technology (USA) . . . . . [8600-67]

2:25 pm: **Photonic crystal split-beam nanocavities for torsional optomechanics**, Marcelo Wu, Univ. of Calgary (Canada); Aaron C. Hryciw, National Institute for Nanotechnology (Canada); Behzad Khanaliloo, Christopher J. Healey, Paul E. Barclay, Univ. of Calgary (Canada); John Davis, Mark R. Freeman, Univ. of Alberta (Canada) . . . . . [8600-68]

2:45 pm: **Cavity optomechanics on a microfluidic resonator** (*Invited Paper*), Tal Carmon, Univ. of Michigan (USA) . . . . . [8600-69]

**LASE**



# Fiber Lasers X: Technology, Systems, and Applications

Conference Chair: **Sami T. Hendow**, Consultant (USA)

Conference Co-Chair: **Siddharth Ramachandran**, Boston Univ. (USA)

Program Committee: **Paulo Almeida**, Fianium Ltd. (United Kingdom); **John Ballato**, Clemson Univ. (USA); **Jes Broeng**, NKT Photonics A/S (Denmark); **Adrian Carter**, Nufem (USA); **Jay W. Dawson**, Lawrence Livermore National Lab. (USA); **Fabio Di Teodoro**, The Aerospace Corp. (USA); **Mark Dubinskii**, U.S. Army Research Lab. (USA); **Almantas Galvanauskas**, Univ. of Michigan (USA); **Clifford Headley III**, OFS Labs. (USA); **Eric C. Honea**, Lockheed Martin Aculight (USA); **Florian Jansen**, Friedrich-Schiller-Univ. Jena (Germany); **Yoonchan Jeong**, Seoul National Univ. (Korea, Republic of); **John D. Minelly**, Coherent, Inc. (USA); **Peter F. Moulton**, Q-Peak, Inc. (USA); **Martin H. Muendel**, JDSU (USA); **Craig Robin**, Air Force Research Lab. (USA); **L. Brandon Shaw**, U.S. Naval Research Lab. (USA); **Daniel B. Soh**, Sandia National Labs., California (USA); **Sergei K. Turitsyn**, Aston Univ. (United Kingdom); **Ji Wang**, Corning Incorporated (USA); **Frank W. Wise**, Cornell Univ. (USA); **David E. Zelmon**, Air Force Research Lab. (USA); **Mikhail N. Zervas**, Univ. of Southampton (United Kingdom)

## Monday 4 February

### WELCOME AND INTRODUCTION

Room: 131 (Exhibit Level) ..... 8:10 am to 8:20 am

Session Chair: **Sami T. Hendow**, Consultant (USA)

### SESSION 1

Room: 131 (Exhibit Level) ..... Mon 8:20 am to 10:10 am

#### High Power I

Session Chair: **Mikhail N. Zervas**, SPI Lasers (United Kingdom)

8:20 am: **Progress on kW-class narrow linewidth fiber lasers and amplifiers (Invited Paper)**, Imtiaz Majid, Nufem (USA) ..... [8601-1]

8:50 am: **58 mJ burst containing ultra-short pulses with a homogenous energy level from an Yb-doped fiber amplifier**, Sven Breilkopf, Friedrich-Schiller-Univ. Jena (Germany); Arno Klenke, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz-Institut Jena (Germany); Thomas Gottschall, Hans-Jürgen Otto, Friedrich-Schiller-Univ. Jena (Germany); Jens Limpert, Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz-Institut Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) ..... [8601-2]

9:10 am: **Higher-order mode erbium-doped fiber amplifier with output reconversion to the fundamental mode**, Jeffrey W. Nicholson, John M. Fini, Anthony M. DeSantolo, Xiaoming Liu, Kenneth S. Feder, V. R. Supradeepa, Paul Westbrook, Eric M. Monberg, Frank V. DiMarcello, Clifford Headley III, David J. DiGiovanni, OFS Labs. (USA) ..... [8601-3]

9:30 am: **Mode-converters for rectangular-core fiber amplifiers to achieve diffraction-limited power scaling**, Arun K. Sridharan, Paul H. Pax, Derrek R. Drachenberg, John E. Heebner, Jay W. Dawson, Lawrence Livermore National Lab. (USA) ..... [8601-4]

9:50 am: **High efficiency cascaded Raman fiber laser with output power of 204 W at 1480 nm**, V. R. Supradeepa, Jeffrey W. Nicholson, Clifford Headley III, OFS Labs. (USA); Bera Palsdottir, Dan P. Jakobsen, OFS (Denmark) . . . [8601-5]

Coffee Break ..... Mon 10:10 am to 10:40 am

### SESSION 2

Room: 131 (Exhibit Level) ..... Mon 10:40 am to 12:00 pm

#### High Power II

Session Chair: **John D. Minelly**, Coherent, Inc. (USA)

10:40 am: **High order ribbon fiber modes, simulations, and experiments for high power amplifiers**, Derrek R. Drachenberg, Michael J. Messerly, Paul H. Pax, Arun K. Sridharan, John B. Tassano, Jay W. Dawson, Lawrence Livermore National Lab. (USA) ..... [8601-6]

11:00 am: **Mode instability thresholds of fiber amplifiers**, Arlee V. Smith, Jesse J. Smith, AS-Photonics, LLC (USA) ..... [8601-7]

11:20 am: **Analytical time-dependent theory of thermally-induced modal instabilities in high power fiber amplifiers**, I-Ning Hu, Almantas Galvanauskas, Univ. of Michigan (USA) ..... [8601-8]

11:40 am: **Mitigation of mode instabilities by dynamic excitation of fiber modes using an acousto-optic deflector**, Hans-Jürgen Otto, Cesar Jauregui-Misas, Fabian Stutzki, Florian Jansen, Friedrich-Schiller-Univ. Jena (Germany); Tino Eidam, Jens Limpert, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz-Institute Jena (Germany); Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz-Institute Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) ..... [8601-9]

Lunch Break ..... Mon 12:00 pm to 1:30 pm

### SESSION 3

Room: 131 (Exhibit Level) ..... Mon 1:30 pm to 3:00 pm

#### Fiber Laser Markets

Session Chair: **Siddharth Ramachandran**, The Boston Univ. Photonics Ctr. (USA)

1:30 pm: **Fiber laser market analysis (Invited Paper)**, Timothy P. V. Mammen, IPG Photonics Corp. (USA) ..... [8601-10]

2:00 pm: **Medical applications of optical coherence tomography using fiber-based laser sources (Invited Paper)**, Michalina Gora, Wellman Ctr. for Photomedicine (USA); Maciej Wojtkowski, Nicolaus Copernicus Univ. (Poland); Robert Huber, Ludwig-Maximilians-Univ. München (Germany); Brett E. Bouma, Wellman Ctr. for Photomedicine (USA) and Harvard-MIT (USA); Andrzej A. Kowalczyk, Nicolaus Copernicus Univ. (Poland); Guillermo J. Tearney M.D., Wellman Ctr. for Photomedicine (USA) and Massachusetts General Hospital (USA) ..... [8601-11]

2:30 pm: **Ultrafast laser technology, markets, and applications (Invited Paper)**, Eric P. Mottay, Amplitude Systèmes (France) ..... [8601-12]

Coffee Break ..... Mon 3:00 pm to 3:30 pm

**SESSION 4**

**Room: 131 (Exhibit Level) . . . . . Mon 3:30 pm to 5:50 pm**  
**Power Scaling Bulk SSL and Fiber Lasers**

Joint Session with Conferences 8599 and 8601

Session Chairs: **Eric C. Honea**, Lockheed Martin Aculight (USA);  
**W. Andrew Clarkon**, Univ. of Southampton (United Kingdom)

- 3:30 pm: **Advances in power scaling of fiber lasers** (*Invited Paper*),  
 Valentin P. Gapontsev, IPG Photonics Corp. (USA) . . . . . [8601-13]
- 4:00 pm: **Cryogenic Yb-doped lasers for efficient nanosecond, picosecond,  
 and femtosecond sources** (*Invited Paper*), Darren A. Rand, Daniel E. Miller, Tso  
 Yee Fan, MIT Lincoln Lab. (USA) . . . . . [8599-47]
- 4:30 pm: **Mode instabilities: physical origin and mitigation strategies**,  
 Cesar Jauregui-Misas, Hans-Jürgen Otto, Florian Jansen, Fabian Stutzki,  
 Tino Eidam, Jens Limpert, Friedrich-Schiller-Univ. Jena (Germany); Andreas  
 Tünnermann, Fraunhofer-Institut für Angewandte Optik und Feinmechanik  
 (Germany) . . . . . [8601-105]
- 4:50 pm: **5-kW Yb:YAG thin disk laser with good beam quality**, Yuan Han  
 Peng, Yu Xian Lim, James Cheng, Yunn Boon Tan, Wei-Pin E. Lau, Kin Seng  
 Lai, DSO National Labs. (Singapore) . . . . . [8599-48]
- 5:10 pm: **Design evolution, long term performance and application tests  
 of extra large mode area (XLMA) fiber lasers**, Andreas Langner, Mario Such,  
 Gerhard Schötz, Heraeus Quarzglas GmbH & Co. KG (Germany); Florian Just,  
 Martin Leich, Stephan Grimm, Matthias L. Jäger, Kay Schuster, Institut für  
 Photonische Technologien e.V. (Germany); Hagen Zimer, Marcin Kozak, Björn  
 Wedel, HIGHYAG Lasertechnologie GmbH (Germany); Charley Bachert, Georg  
 Rehmann, Volker Krause, Laserline GmbH (Germany) . . . . . [8601-15]
- 5:30 pm: **100-W Tm:YLF INNOSLAB laser at 2 micron**, Ansgar Meissner,  
 Fraunhofer-Institut für Lasertechnik (Germany); Jing Li, Suhui Yang, Beijing  
 Institute of Technology (China); Marco Höfer, Hans-Dieter Hoffmann,  
 Fraunhofer-Institut für Lasertechnik (Germany) . . . . . [8599-49]

**Tuesday 5 February**

**SESSION 5**

**Room: 131 (Exhibit Level) . . . . . Tue 8:10 am to 10:00 am**  
**Fiber Designs and Fabrication**

Session Chair: **Adrian Carter**, Nufern (USA)

- 8:10 am: **Bi-doped optical fibers: a new active medium for NIR lasers and  
 amplifiers** (*Invited Paper*), Evgeniy M. Dianov, A. M. Prokhorov General Physics  
 Institute (Russian Federation) . . . . . [8601-16]
- 8:40 am: **All-glass optical fibers derived from sapphire**, Peter D. Dragic,  
 Univ. of Illinois at Urbana-Champaign (USA); Thomas W. Hawkins, Paul Foy,  
 Stephanie Morris, Clemson Univ. Research Foundation (USA); John Ballato,  
 Advanced Materials Ctr. (USA) . . . . . [8601-17]
- 9:00 am: **Longitudinally-graded optical fibers**, John Ballato, Advanced  
 Materials Ctr. (USA); Alex Evert, Clemson Univ. Research Foundation (USA);  
 Thomas W. Hawkins, Clemson Univ. Research Foundation (USA); Peter D.  
 Dragic, Univ. of Illinois at Urbana-Champaign (USA); Paul Foy, Liang Dong,  
 Roger H. Stolen, Clemson Univ. Research Foundation (USA); Robert R. Rice,  
 Dreamcatchers Consulting (USA) . . . . . [8601-18]
- 9:20 am: **Cross-correlation imaging of single mode photonic crystal  
 rod fiber with distributed mode filtering**, Marko Laurila, Technical Univ.  
 of Denmark (Denmark); Roman Barankov, Boston Univ. (USA); Mette M.  
 Jørgensen, Sidsel R. Petersen, Technical Univ. of Denmark (Denmark); Thomas  
 T. Alkeskjold, Jes Broeng, NKT Photonics A/S (Denmark); Jesper Lægsgaard,  
 Technical Univ. of Denmark (Denmark); Siddharth Ramachandran, Boston Univ.  
 (USA) . . . . . [8601-19]
- 9:40 am: **Real-time mode analysis of fiber-to-fiber coupling processes  
 using the correlation filter method**, Daniel Flamm, Philipp Gelszinnis, Christian  
 Schulze, Friedrich-Schiller-Univ. Jena (Germany); Siegmund Schröter, Institut für  
 Photonische Technologien e.V. (Germany); Michael Duparré, Friedrich-Schiller-  
 Univ. Jena (Germany) . . . . . [8601-20]
- Coffee Break . . . . . Tue 10:00 am to 10:30 am

**SESSION 6**

**Room: 131 (Exhibit Level) . . . . . Tue 10:30 am to 11:50 am**  
**Fiber Characterization and Photodarkening**

Session Chairs: **John Ballato**, Clemson Univ. (USA);  
**E. J. Friebele**, U.S. Naval Research Lab. (USA)

- 10:30 am: **Nonlinear spatial mode imaging of hybrid photonic crystal  
 fibers**, Sidsel R. Petersen, Technical Univ. of Denmark (Denmark); Thomas  
 T. Alkeskjold, NKT Photonics A/S (Denmark); Marko Laurila, Technical Univ.  
 of Denmark (Denmark); Thomas V. Andersen, NKT Photonics A/S (Denmark);  
 Jesper Lægsgaard, Technical Univ. of Denmark (Denmark) . . . . . [8601-21]
- 10:50 am: **Electronically controllable mode selection in a multimode fiber  
 oscillator**, Jae M. O. Daniel, W. Andrew Clarkon, Univ. of Southampton (United  
 Kingdom) . . . . . [8601-22]
- 11:10 am: **Impact of Tm ions on the photodarkening process in Yb fibers**,  
 Sylvia Jetschke, Sonja Unger, Anka Schwuchow, Martin Leich, Matthias L.  
 Jäger, Johannes Kirchhof, Institut für Photonische Technologien e.V.  
 (Germany) . . . . . [8601-23]
- 11:30 am: **Strong excited state absorption (ESA) in Yb-doped fiber lasers:  
 the origin of photodarkening?**, Magnus Engholm, Sara Rydberg, Mid Sweden  
 Univ. (Sweden) . . . . . [8601-24]
- Lunch/Exhibition Break . . . . . Tue 11:50 am to 1:20 pm

**SESSION 7**

**Room: 131 (Exhibit Level) . . . . . Tue 1:20 pm to 3:10 pm**  
**Components**

Session Chair: **Paulo Almeida**, Fianium Ltd. (United Kingdom)

- 1:20 pm: **SESAM designs for ultrafast lasers** (*Invited Paper*), Clara J.  
 Saraceno, Cinia Schriber, Mario Mangold, Martin Hoffmann, Oliver H. Heckl,  
 Cyrill R. Baer, Matthias C. Golling, ETH Zurich (Switzerland); Thomas Südmeyer,  
 ETH Zurich (Switzerland) and Univ. of Neuchâtel (Switzerland); Ursula Keller,  
 ETH Zurich (Switzerland) . . . . . [8601-25]
- 1:50 pm: **All-fibre high power pump stripper manufactured by CO<sub>2</sub> laser  
 micro-structuring**, Mateusz Wyszomolek, Thomas Theeg, Hakan Sayinc,  
 Jörg Neumann, Dietmar Kracht, Laser Zentrum Hannover e.V. (Germany) and  
 Ctr. for Quantum Engineering and Space-Time Research (Germany) . . [8601-26]
- 2:10 pm: **Femtosecond pulse inscription of a selective mode filter in large  
 mode area fibers**, Ria G. Krämer, Christian Voigtländer, Friedrich-Schiller-Univ.  
 Jena (Germany); Erik Freier, Andreas Liem, Fraunhofer-Institut für Angewandte  
 Optik und Feinmechanik (Germany); Jens U. Thomas, Daniel Richter, Friedrich-  
 Schiller-Univ. Jena (Germany); Thomas Schreiber, Fraunhofer-Institut für  
 Angewandte Optik und Feinmechanik (Germany); Andreas Tünnermann,  
 Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) and  
 Friedrich-Schiller-Univ. Jena (Germany); Stefan Nolte, Friedrich-Schiller-  
 Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und  
 Feinmechanik (Germany) . . . . . [8601-27]
- 2:30 pm: **Fabrication of a high power Faraday isolator by direct bonding**,  
 Carolin Rothhardt, Miroslaw Rekas, Gerhard Kalkowski, Nicoletta Haarlammer,  
 Ramona Eberhardt, Andreas Tünnermann, Fraunhofer-Institut für Angewandte  
 Optik und Feinmechanik (Germany) . . . . . [8601-28]
- 2:50 pm: **Thermal-recovery of modal stability in rod fiber amplifiers**,  
 Mette M. Jørgensen, Marko Laurila, Technical Univ. of Denmark (Denmark);  
 Danny Noordeggraaf, Thomas T. Alkeskjold, NKT Photonics A/S (Denmark);  
 Jesper Lægsgaard, Technical Univ. of Denmark (Denmark) . . . . . [8601-29]
- Coffee Break . . . . . Tue 3:10 pm to 3:40 pm

**LASE**



**SESSION 8**

**Room: 131 (Exhibit Level) . . . . . Tue 3:40 pm to 5:20 pm**

**Narrow Line Sources and Fiber Nonlinearities**

Session Chair: **Craig Robin**, Air Force Research Lab. (USA)

- 3:40 pm: **300 W all-fiber counter-pumped single-frequency amplifier stage**, Thomas Theeg, Laser Zentrum Hannover e.V. (Germany); Hakan Sayinc, Jörg Neumann, Dietmar Kracht, Laser Zentrum Hannover e.V. (Germany) and Ctr. for Quantum Engineering and Space-Time Research (Germany) . . . . . [8601-30]
- 4:00 pm: **Stimulated Brillouin scattering suppression in optical fibers by hydrogen-loading technique**, Fanting Kong, Liang Dong, Clemson Univ. Research Foundation (USA) . . . . . [8601-31]
- 4:20 pm: **Coherent beam combining of sinusoidal phase modulated amplifiers at the kW level**, Angel Flores, Iyad Dajani, Chunte A. Lu, Craig Robin, Air Force Research Lab. (USA) . . . . . [8601-32]
- 4:40 pm: **Single-frequency, single-polarization holmium-doped ZBLAN fiber lasers**, Xiushan Zhu, NP Photonics, Inc. (USA) and College of Optical Sciences, The Univ. of Arizona (USA); Jie Zong, Andy Miller, Kort Wiersma, NP Photonics, Inc. (USA); Robert A. Norwood, College of Optical Sciences, The Univ. of Arizona (USA); Narasimha S. Prasad, NASA Langley Research Ctr. (USA); Arturo Chavez-Pirson, NP Photonics, Inc. (USA); Nasser N. Peyghambarian, College of Optical Sciences, The Univ. of Arizona (USA) . . . . . [8601-33]
- 5:00 pm: **Pseudo-random binary sequence phase modulation in high power Yb-doped fiber amplifiers**, Craig Robin, Iyad Dajani, Air Force Research Lab. (USA); Clint Zeringue, ZModDynamics LLC (USA); Angel Flores, Benjamin Pulford, Ann Lanari, Shadi A. Naderi, Air Force Research Lab. (USA) . . [8601-34]

**POSTERS-TUESDAY**

**Room: 103 (Exhibit Level) . . . . . Tue 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the LASE poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

- Thermally guiding high-power active fibers**, Florian Jansen, Fabian Stutzki, Hans-Jürgen Otto, Cesar Jauregui-Misas, Jens Limpert, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8601-14]
- Robust single-mode all solid photonic bandgap fibers with core diameter of 50 micron**, Liang Dong, Clemson Univ. Research Foundation (USA); Kunimasa Saitoh, Hokkaido Univ. (Japan); Fanting Kong, Thomas W. Hawkins, Devon McClane, Guancheng Gu, Clemson Univ. Research Foundation (USA) . . . . . [8601-64]
- Hyperspectral optical fiber refractive index measurement spanning 2.5 octaves**, Andrew D. Yablon, Jayesh Jasapara, Interfiber Analysis (USA) . . . . . [8601-65]
- Distinguishing dispersion from distributed scattering in S2 fiber mode analysis**, Jayesh Jasapara, Andrew D. Yablon, Interfiber Analysis (USA) . . . . . [8601-66]
- A high-peak power nanosecond all-fiber MOPA system at high-repetition rate**, Chun-Lin L. Chang, National Taiwan Univ. (Taiwan); Po-Yen Lai, National Central Univ. (Taiwan); Yen-Yin Li, National Taipei Univ. of Technology (Taiwan); Shih-Hung Chen, National Central Univ. (Taiwan); Sheng-Lung L. Huang, National Taiwan Univ. (Taiwan) and National Taiwan Univ. (Taiwan) . . . [8601-67]
- Gamma radiation induced darkening of ytterbium doped laser fiber: the role of AIOHC point defect**, Thierry Deschamps, Institut des Nanotechnologies de Lyon (France) and CEA (France); Nadege Ollier, CEA-IRAMIS (France); Herve Vezin, Univ. des Sciences et Technologies de Lille (France); Cedric Gonnet, Draka (France) . . . . . [8601-68]
- Effects of the gain property on the efficiency of the strongly pumped fiber laser**, Jianqiu Cao, Shaofeng Guo, Jinyong Leng, Xiaojun Xu, Jinbao Chen, National Univ. of Defense Technology (China) . . . . . [8601-69]
- Precisely tunable L-band multi-wavelength fiber laser**, Xuwei Qin, Zhaoying Wang, Cuiqin Gao, Dongfang Jia, Mei Sang, Tianxin Yang, Tianjin Univ. (China) . . . . . [8601-70]

- Fundamental mode evolution in long, large-core (<100-µm) adiabatic tapers**, Juho Kerttula, Valery Filippov, Tampere Univ. of Technology (Finland); Yuri Chamorovskii, Vasily Ustimchik, Institute of Radio Engineering and Electronics (Russian Federation); Oleg G. Okhotnikov, Tampere Univ. of Technology (Finland) . . . . . [8601-71]
- Multiple sensor interrogation system based on Fourier domain mode-locked wavelength swept laser**, Byeong Kwon Choi, Yong Seok Kwon, Ik Gon Park, Min Yong Jeon, Chungnam National Univ. (Korea, Republic of) . . [8601-72]
- Modal instability of rod fiber amplifiers: a semi-analytic approach**, Mette M. Jørgensen, Kristian R. Hansen, Marko Laurila, Technical Univ. of Denmark (Denmark); Thomas T. Alkeskjold, NKT Photonics A/S (Denmark); Jesper Lægsgaard, Technical Univ. of Denmark (Denmark) . . . . . [8601-73]
- Graphene thickness-dependent Er-doped Q-switched optical fiber laser**, Xiaolong Wang, Mei Sang, Pan Zhu, Ke Liu, Tianxin Yang, Tianjin Univ. (China) . . . . . [8601-74]
- System technology for laser-assisted milling with tool integrated optics**, Jan-Patrick Hermeni, Michael Emonts, Christian Brecher, Fraunhofer-Institut für Produktionstechnologie (Germany) . . . . . [8601-75]
- Yb-doped phosphate double-cladding optical fiber for high-power laser applications**, Emanuele Mura, Politecnico di Torino (Italy); Joris Lousteau, Politecnico di Torino (Italy) and Istituto Superiore Mario Boella (Italy); Nadia Giovanna Boetti, Gerardo C. Scarpignato, Davide Negro, Guido Perrone, Massimo Olivero, Politecnico di Torino (Italy); Silvio Abrate, Istituto Superiore Mario Boella (Italy); Daniel Milanese, Politecnico di Torino (Italy) . . . . . [8601-76]
- Wavelength-tunable optical fiber laser with suppression of multiple longitudinal modes by using a microfiber-based-ring cavity**, Sunduck Kim, Min-Seok Yoon, Young-Geun Han, Hanyang Univ. (Korea, Republic of) [8601-77]
- Experimental and theoretical study of Yb-doped gain-switched fiber laser**, Rok Petkovsek, Vid Agrež, Univ. of Ljubljana (Slovenia); Ferdinand Bammer, Technische Univ. Wien (Austria) . . . . . [8601-78]
- Heating power feedback control for CO<sub>2</sub> laser fusion splicers**, Wenxin Zheng, Hiroshi Sugawara, William R. Klimowych, AFL (USA) . . [8601-79]
- Investigation of temperature influence on output properties of high-power cladding-pumped Er,Yb co-doped fiber laser**, Wenting Chen, Jianjian Sha, Yong Wang, DeYuan Y. Shen, Fudan Univ. (China) . . . . . [8601-80]
- Mode coupling in large-diameter multi-mode silica optical fibers**, Changgeng Ye, Joona J. Koponen, Ville Aallos, Teemu Kokki, nLIGHT Corp., Lohja (Finland) . . . . . [8601-81]
- Tunable actively Q-switched fiber laser based on fiber Bragg grating**, Andres Gonzalez Garcia, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); Baldemar Ibarra Escamilla, Eugene A. Kuzin, Felipe Maya Ordoñez, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); Manuel Duran Sanchez, Univ. Tecnológica de Puebla (Mexico) . . . . . [8601-82]
- Tm<sup>3+</sup>/Sm<sup>3+</sup> co-doped Tellurite glass for amplification at 1.4 µm**, Luiz C. Barbosa, Marcos P. Belançon, Enver F. Chillcce, Univ. Estadual de Campinas (Brazil) . . . . . [8601-83]
- Strategy of efficient milli-joule output in single mode from a highly-controlled all-fiber MOPA system with 60 dB gain**, Chun-Lin L. Chang, National Taiwan Univ. (Taiwan); Po-Yen Lai, National Central Univ. (Taiwan); Yen-Yin Li, National Taiwan Univ. (Taiwan); Shih-Hung Chen, National Central Univ. (Taiwan); Sheng-Lung L. Huang, National Taiwan Univ. (Taiwan) and National Taiwan Univ. (Taiwan) . . . . . [8601-84]
- Spectroscopic investigation of the glass system TeO<sub>2</sub>-WO<sub>3</sub>-Na<sub>2</sub>O-Nb<sub>2</sub>O<sub>5</sub> for mid-infrared amplifiers**, Luiz C. Barbosa, Marcos P. Belançon, Enver F. Chillcce, Univ. Estadual de Campinas (Brazil) . . . . . [8601-85]
- Tunable dual-wavelength fiber laser within the gain curve of the erbium doped fiber**, Manuel Duran Sanchez, Univ. Tecnológica de Puebla (Mexico); Evgeny A. Kuzin, Baldemar Ibarra-Escamilla, Andres Gonzalez Garcia, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); Miguel V. Andrés, Jose L. Cruz Munoz, Univ. de València (Spain); Olivier J. Pottiez, Centro de Investigaciones en Óptica, A.C. (Mexico) . . . . . [8601-86]
- All-fiber highly-chirped dissipative soliton oscillator and its scaling**, Denis Kharenko, Institute of Automation and Electrometry (Russian Federation) and Novosibirsk State Univ. (Russian Federation); Evgeniy V. Podvilov, Institute of Automation and Electrometry (Russian Federation); Alexander A. Apolonskiy, Ludwig-Maximilians-Univ. München (Russian Federation) and Institute of Automation and Electrometry (Russian Federation); Sergey A. Babin, Institute of Automation and Electrometry (Russian Federation) and Novosibirsk State Univ. (Russian Federation) . . . . . [8601-87]

- Single-frequency ytterbium-doped phosphate fiber laser at 976 nm**, Xiushan Zhu, College of Optical Sciences, The Univ. of Arizona (USA) and NP Photonics, Inc. (USA); Wei Shi, Jie Zong, Dan T. Nguyen, NP Photonics, Inc. (USA); Robert A. Norwood, College of Optical Sciences, The Univ. of Arizona (USA); Arturo Chavez-Pirson, NP Photonics, Inc. (USA); Nasser N. Peyghambarian, College of Optical Sciences, The Univ. of Arizona (USA) . . . . . [8601-88]
- 1.3 micron flat-gain optical amplification with Bi doped silica fiber**, Soichi Kobayashi, Chitose Institute of Science and Technology (Japan) . . . . . [8601-90]
- Impact of P2 scribe geometry on monolithic series interconnected CIGS modules**, Mathew N. Rekow, EOLITE Systems (France); Dominik Bartle, Robert Bosch GmbH (Germany); Christian Sandfort, Bosch Solar CISTech GmbH (Germany); Andreas Letsch, Robert Bosch GmbH (Germany) . . [8601-91]
- Low noise and gain-ripple fiber Raman amplifiers pumped by single wavelength-swept Raman lasers with designed gain spectral profile**, Changren Qiu, Tianxin Yang, Dongfang Jia, Zhaoying Wang, Mei Sang, Chai Lu, Tianjin Univ. (China) . . . . . [8601-92]
- Picosecond supercontinuum laser with consistent emission parameters over variable repetition rates from 1 to 40 MHz**, Thomas Schönau, Torsten Siebert, Romano Haertel, Thomas Eckhardt, Dietmar Klemme, Kristian Lauritsen, Rainer Erdmann, PicoQuant GmbH (Germany) . . . . . [8601-93]
- High-power single-cavity and MOPA fiber lasers using large-mode-area multi-mode ring-doped fiber with large differential mode gain**, Masahiro Kashiwagi, Kentaro Ichii, Huy K. Nguyen, Shinichi Sakamoto, Tomoharu Kitabayashi, Ryo Sugimoto, Shoichiro Matsuo, Kensuke Shima, Munehisa Fujimaki, Kuniharu Himeno, Fujikura Ltd. (Japan) . . . . . [8601-94]
- Experimental study on ultra-long cavity passively mode-locked fiber laser based on semiconductor optical amplifier**, Tonghui Liu, Dongfang Jia, Zhongyuan Zhang, Jiong Chen, Jingwen Yang, Zhaoying Wang, Tianxin Yang, Tianjin Univ. (China) . . . . . [8601-95]
- Thermal effect-resilient design of large mode area double-cladding Yb-doped photonic crystal fibers**, Enrico Coscelli, Federica Poli, Univ. degli Studi di Parma (Italy); Mette M. Jørgensen, Technical Univ. of Denmark (Denmark); Thomas T. Alkeskjold, Lasse Leick, Jes Broeng, NKT Photonics A/S (Denmark); Michele Sozzi, Alessandro Candiani, Annamaria Cucinotta, Stefano Selleri, Univ. degli Studi di Parma (Italy) . . . . . [8601-96]
- Chirped pulse amplification in Tm doped fiber using a chirped Bragg grating**, Robert A. Sims, Pankaj Kadwani, Lawrence Shah, Martin C. Richardson, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) . . . . . [8601-97]
- Design and demonstration of tunable q-switched fiber laser**, Manas Srivastava, Deepa Venkitesh, Balaji Srinivasan, Indian Institute of Technology Madras (India) . . . . . [8601-98]
- Novel all-silica, large mode area fiber with microstructured cladding elements**, Sonali Dasgupta, John R. Hayes, David J. Richardson, Univ. of Southampton (United Kingdom) . . . . . [8601-99]
- Robust 1550-nm single-frequency all-fiber ns-pulsed fiber amplifier for wind-turbine predictive control by wind Lidar**, Oliver de Vries, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Christoph Bollig, Paul Gerke Hofmeister, Rainer Reuter, Carl von Ossietzky Univ. Oldenburg (Germany); Franz Beier, Thomas Schreiber, Ramona Eberhardt, Andreas Tünnermann, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8601-100]
- Pulsed Yb: fiber system capable of >250 kW peak power with tunable pulses in the 50 ps to 1.5 ns range**, Timothy S. McComb, Tyson L. Lowder, Joel Hutchinson, Matthieu J. Saracco, Adam S. Dittli, Jared Green, Matthew Randall, Geoff Fanning, Jake Bell, nLIGHT Corp. (USA) . . . . . [8601-101]
- A compact, >17W average power, high peak power (>100 kW), ns and sub-ns fiber laser system**, Matthieu J. Saracco, Joe Kollmann, David Logan, Scott W. Mettlen, Jared Green, Tyson L. Lowder, David R. Balsley, Timothy S. McComb, Gary Burkholder, Matthew Randall, Geoff Fanning, Jake Bell, nLIGHT Corp. (USA) . . . . . [8601-102]
- On the SBS threshold of optical pulse shapes compensated for gain saturation**, Louis Desbiens, Vincent Roy, Marc Deladurantaye, Yves Taillon, INO (Canada) . . . . . [8601-103]
- Polarization dependent nonlinear limitations in continuous-wave high power fiber amplifiers**, Nicoletta Haarlammer, Miroslava Rekas, Oliver de Vries, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Andrea Klöner, Friedrich-Schiller-Univ. Jena (Germany); Andreas Liem, Thomas Schreiber, Ramona Eberhardt, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Andreas Tünnermann, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) and Friedrich-Schiller-Univ. Jena (Germany) . . . . . [8601-104]
- Novel Y<sub>2</sub>O<sub>3</sub> codoped Yb-Tm-doped picosecond fiber laser**, Vladislav Dvoyrin, Dmitry Klimentov, Norwegian Univ. of Science and Technology (Norway); Arindam Halder, Mukul Chandra Paul, Minmay Pal, Shyamal K. Bhadra, Central Glass and Ceramic Research Institute (India); Alexander V. Kir'yanov, Centro de Investigaciones en Óptica, A.C. (Mexico); Irina T. Sorokina, Norwegian Univ. of Science and Technology (Norway) . . . . . [8601-106]
- CW lasing performance of thulium-doped rod type PCF**, Pankaj Kadwani, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Christian Gaida, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) and Friedrich-Schiller-Univ. Jena (Germany); Lasse Leick, Jes Broeng, NKT Photonics A/S (Denmark); Lawrence Shah, Martin C. Richardson, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) . . . . . [8601-107]
- Crystal fibers for high power lasers**, Woohong Kim, U.S. Naval Research Lab. (USA); Catalin Florea, Sotera Defense Solutions, Inc. (USA); Daniel J. Gibson, Brandon Shaw, Steve R. Bowman, Shyam S. Bayya, U.S. Naval Research Lab. (USA); Ishwal Aggalwar, Sotera Defense Solutions, Inc. (USA); Jasbinder S. Sanghera, U.S. Naval Research Lab. (USA) . . . . . [8601-108]
- FM pulse amplification via cascade scheme of length-inhomogeneous normal dispersion active fibers**, Christina V. Borisova, Igor O. Zolotovskiy, Dmitrii Korobko, Dmitrii I. Sementsov, Ulyanovsk State Univ. (Russian Federation); Alexey A. Sysoliatin, A. M. Prokhorov General Physics Institute (Russian Federation); Marina S. Yavtushenko, Ulyanovsk State Univ. (Russian Federation) . . . . . [8601-109]
- Multi-kW cw fiber oscillator pumped by wavelength stabilized fiber coupled diode lasers**, Frank Becker, Benjamin Neumann, Lutz Winkelmann, Steffen Belke, Stefan Ruppik, Ulrich Heftner, ROFIN-SINAR Laser GmbH (Germany); Bernd Köhler, Paul Wolf, Jens Biesenbach, DILAS Diodenlaser GmbH (Germany) . . . . . [8601-110]
- Compact mid-IR source based on a DFB diode, fiber amplifier, and PPLN**, Igor V. Melnikov, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) . . . . . [8601-111]
- Pulsed thulium-doped fiber laser at 1.94 μm based on a seed diode**, Massimo Olivero, Enkeleada Balliu, Andrea Braglia, Alessio Califano, Guido Perrone, Politecnico di Torino (Italy) . . . . . [8601-112]
- 25 ps tunable MOPA at C+L band**, Youngjae Kim, Bryan Burgoyne, Alain Villeneuve Jr., Genia Photonics Inc. (Canada) . . . . . [8601-113]
- Passively stabilized Brillouin fiber lasers with doubly-resonant cavities**, Vasily Spirin, Ctr. de Investigación Científica y de Educación Superior de Ensenada (Mexico) and Univ. de Mons (Belgium); Cesar A. López-Mercado, Ctr. de Investigación Científica y de Educación Superior de Ensenada (Mexico); Patrice Mégret, Univ. de Mons (Belgium); Andrei A. Fotiadi, Univ. de Mons (Belgium) and Ioffe Physico-Technical Institute (Russian Federation) and Ulyanovsk State Univ. (Russian Federation) . . . . . [8601-114]
- Indirect evaluation of active fiber parameters for high-power laser design**, Guido Perrone, Andrea Braglia, Alessio Califano, Massimo Olivero, Alberto Vallan, Politecnico di Torino (Italy) . . . . . [8601-115]
- Synchronized ps fiber lasers with pulse durations (25, 50, 100-2000ps) and repetition rates (100kHz-150MHz) continuously tunable over three orders of magnitude**, Alexandre Dupuis, Bryan Burgoyne, Guido Pena, Andre Archambault, Dominic Lemieux, Vasile Solomonian, Maxime Duong, Alain Villeneuve Jr., Genia Photonics Inc. (Canada) . . . . . [8601-116]
- 100 micro-J ultrafast thulium-doped fiber laser**, Peng Wan, Lih-Mei Yang, Jian Liu, PolarOnyx, Inc. (USA) . . . . . [8601-117]
- High-efficiency (6+1)x1 combiner for high power fiber lasers and amplifiers**, Victor I. Kopp, Jongchul Park, Mitchell S. Wlodawski, Jonathan Singer, Dan Neugroschl, Chiral Photonics, Inc. (USA) . . . . . [8601-118]
- Widely tunable fiber ring laser based on two cascaded long period fiber gratings with a core-mode blocker**, Hanzheng Wang, Jie Huang, Xinwei Lan, Lei Yuan, Zhang Gao, Hai Xiao, Missouri Univ. of Science and Technology (USA) . . . . . [8601-119]
- Radio frequency interrogation of a passively mode-locked fiber ring laser for sensing application**, Jie Huang, Xinwei Lan, Hanzheng Wang, Lei Yuan, Zhan Gao, Hai Xiao, Missouri Univ. of Science and Technology (USA) [8601-120]

**Photobleaching investigation of photo darkened fiber using 633 nm irradiation: evidence of color center time evolution**, Stefano Taccheo, Hrvoje Gebavi, Swansea Univ. (United Kingdom); Denis Tregoat, Achille Monteville, Plate-forme d'Étude et de Recherche sur les Fibres Optiques Spéciales (France); Benoit Cadier, Thierry Robin, iFiber SAS (France) . . . . . [8601-121]

**Forced air cooling effect on beam quality in volume Bragg gratings for spectral beam combination**, Brian Anderson, Sergiy Kaim, George B. Venus, Julien Lumeau, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Vadim Smirnov, OptiGrate Corp. (USA); Boris Y. Zeldovich, Leonid B. Glebov, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) . . . . . [8601-122]

**Analysis of fiber laser beam combining using multiplexed volume Bragg gratings in resonator configurations**, Erik J. Bochove, Chunte A. Lu, William P. Roach, Air Force Research Lab. (USA); Apurva Jain, Daniel Ott, George B. Venus, Leonid B. Glebov, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) . . . . . [8601-123]

**Detailed numerical study of modal instabilities suppression in high power fiber amplifiers**, Shadi A. Naderi, Iyad Dajani, Timothy J. Madden, Air Force Research Lab. (USA); Benjamin G. Ward, U.S. Air Force Academy (USA); Craig Robin, Jacob Grosek, Air Force Research Lab. (USA) . . . . . [8601-125]

## Wednesday 6 February

### SESSION 9

**Room: 131 (Exhibit Level) . . . . . Wed 8:00 am to 9:50 am**

#### Visible and UV Sources

Session Chair: **Fabio Di Teodoro**, The Aerospace Corp. (USA)

8:00 am: **Broadband and gap-free tunable femtosecond resonant dispersive wave generations in PCF** (*Invited Paper*), Jiahui Peng, National Research Council Canada (Canada); Feng Zhu, Aleksander K. Wojcik, Texas A&M Univ. (USA); Fetah Benabid, Univ. of Bath (United Kingdom); Alexei Sokolov, Texas A&M Univ. (USA) . . . . . [8601-35]

8:30 am: **Pulsed blue laser source based on frequency quadrupling of a Tm fiber laser**, Eric C. Honea, Matthias P. Savage-Leuchs, Tolga Yilmaz, Roy D. Mead, Mark S. Bowers, Lockheed Martin Aculight (USA) . . . . . [8601-36]

8:50 am: **Single frequency, ultra-low noise, CW, 4W 488nm fiber laser**, Romain Dubrasquet, Johan Bouillet, Simon Lugan, Gil Mery, Nicholas Traynor, Azur Light Systems (France); Eric Cormier, Univ. Bordeaux 1 (France) . [8601-37]

9:10 am: **High power industrial picosecond laser from IR to UV**, Julien Saby, Damien Sangla, Simonette Pierrot, Pierre Deslandes, François Salin, EOLITE Systems (France) . . . . . [8601-38]

9:30 am: **45W second-harmonic and 24.5W third-harmonic generation from a fiber-amplified passively Q-switched microchip laser**, Alexander Steinmetz, Reinhold Lehneis, Jens Limpert, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8601-39]

Coffee Break . . . . . Wed 9:50 am to 10:20 am

### LASE PLENARY SESSION

**Room: 134 (Exhibit Level) . . . . . 10:20 am to 12:30 pm**

10:20 am: **Welcome and Opening Remarks**  
**Bo Gu**, Bos Photonics (USA); **Andreas Tünnermann**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) and Friedrich-Schiller-Univ. Jena (Germany)

10:25 am: **Announcement of the Best "Green" LASE Paper Award**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)

10:30 am: **Laser-based Particle Acceleration and the Path to TeV Physics and Compact X-ray and Gamma Ray Sources** (*Presentation Only*)  
**Wim P. Leemans**, Lawrence Berkeley National Lab. (USA)

11:10 am: **Three-dimensional Metamaterials Made By Direct Laser Writing** (*Presentation Only*)  
**Martin Wegener**, Karlsruhe Institut für Technologie (Germany)

11:50 am: **Remote Laser Welding for Automotive Seat Production** (*Presentation Only*)  
**Geert G. Verhaeghe**, Faurecia Autositze GmbH (Germany)

See p. 26 for details.

Lunch/Exhibition Break . . . . . Wed 12:30 pm to 2:00 pm

### SESSION 10

**Room: 131 (Exhibit Level) . . . . . Wed 2:00 pm to 3:10 pm**

#### Beam Combining I

Session Chair: **Peter F. Moulton**, Q-Peak, Inc. (USA)

2:00 pm: **A perspective on beam combining as a path to high power fiber laser systems** (*Invited Paper*), J. Thomas Schriempf, Naval Sea Systems Command (USA) . . . . . [8601-40]

2:30 pm: **Experimental demonstration of coherent beam combining with an array of 21 adaptive fiber collimators**, Thomas Weyrauch, Micah D. Gatz, Univ. of Dayton (USA); Mikhail A. Vorontsov, Univ. of Dayton (USA) and Optonicus (USA); Gary W. Carhart, U.S. Army Research Lab. (USA); Andrew C. Deck, Andrey P. Rostov, Optonicus (USA) . . . . . [8601-41]

2:50 pm: **4-channel coherently combined femtosecond fiber CPA system**, Arno Klenke, Sven Breitkopf, Thomas Gottschall, Tino Eidam, Jens Limpert, Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany) . . . . . [8601-42]

Coffee Break . . . . . Wed 3:10 pm to 3:40 pm

### SESSION 11

**Room: 131 (Exhibit Level) . . . . . Wed 3:40 pm to 5:00 pm**

#### Beam Combining II

Session Chair: **David E. Zelmon**, Air Force Research Lab. (USA)

3:40 pm: **Passive coherent beam combining of temporally cascaded pulses**, Marco Kienel, Arno Klenke, Jens Limpert, Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany) . . . . . [8601-43]

4:00 pm: **Passive coherent beam combination of two nanosecond fiber amplifiers by using an all-optical feedback loop**, Houkang Liu, Jun Zhou, Bing He, Qihong Lou, Shanghai Institute of Optics and Fine Mechanics (China) . . . . . [8601-44]

4:20 pm: **Active coherent superposition of five fiber amplifiers at 670W using multiplexed volume Bragg grating**, Chunte A. Lu, Angel Flores, Erik J. Bochove, William P. Roach, Air Force Research Lab. (USA); Vadim Smirnov, OptiGrate Corp. (USA); Leonid B. Glebov, OptiGrate Corp. (USA) and OptiGrate Corp. (USA) . . . . . [8601-45]

4:40 pm: **Scalable passive coherent beam combining of fiber lasers using multiplexed volume Bragg gratings**, Apurva Jain, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Chunte A. Lu, Air Force Research Lab. (USA); George B. Venus, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Vadim Smirnov, OptiGrate Corp. (USA); Erik J. Bochove, Air Force Research Lab. (USA); Leonid B. Glebov, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) . . . . . [8601-46]



**Thursday 7 February**

**SESSION 12**

**Room: 131 (Exhibit Level) . . . . . Thu 8:00 am to 9:50 am**

**Mode Locked and Ultrafast Fiber Sources**

Session Chair: **Frank W. Wise**, Cornell Univ. (USA)

8:00 am: **Fiber optical parametric chirped pulse amplification** (*Invited Paper*), Arnaud Mussot, Alexandre Kudlinski, Univ. des Sciences et Technologies de Lille (France); Damien Bigourd, Imperial College London (United Kingdom); Emmanuel Hugonnot, Patrick Beauderaugeres, Commissariat à l'Énergie Atomique (France) . . . . . [8601-47]

8:30 am: **High average power fiber laser system for attosecond science**, Jan Rothhardt, Steffen Hädrich, Helmholtz Institute Jena (Germany) and Friedrich-Schiller-Univ. Jena (Germany); Stefan Demmler, Manuel Krebs, Friedrich-Schiller-Univ. Jena (Germany); Jens Limpert, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz-Institut Jena (Germany); Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz-Institut Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8601-48]

8:50 am: **Passive spatio-temporal coherent combining of stretcher-free femtosecond fiber systems**, Louis Daniault, Marc Hanna, Lab. Charles Fabry (France); Dimitris N. Papadopoulos, Lab. Charles Fabry (France) and Ecole Polytechnique (France); Yoann Zaouter, Eric P. Mottay, Amplitude Systèmes (France); Frédéric Druon, Patrick Georges, Lab. Charles Fabry (France) [8601-49]

9:10 am: **23 fs pulses at 250 W of average power from a FCPA with solid core nonlinear compression**, Christoph Jocher, Friedrich-Schiller-Univ. Jena (Germany); Tino Eidam, Steffen Hädrich, Jens Limpert, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz-Institute Jena (Germany); Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz-Institute Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8601-50]

9:30 am: **Picosecond passively mode-locked mid-infrared fiber laser**, Chen Wei, The Univ. of Arizona (USA) and Nankai Univ. (China); Xiushan Zhu, Robert A. Norwood, Nasser N. Peyghambarian, College of Optical Sciences, The Univ. of Arizona (USA) . . . . . [8601-51]

Coffee Break . . . . . Thu 9:50 am to 10:20 am

**SESSION 13**

**Room: 131 (Exhibit Level) . . . . . Thu 10:20 am to 12:10 pm**

**Mid-IR Sources and Frequency Conversion**

Session Chair: **Daniel B. Soh**, Sandia National Labs., California (USA)

10:20 am: **Mid-infrared fiber lasers** (*Invited Paper*), Real Vallee, Martin Bernier, Nicolas Caron, Dominic Faucher, Vincent Fortin, Univ. Laval (Canada) . [8601-52]

10:50 am: **High energy parametric amplification at 1 μm with record large mode area optical fibers**, Paul E. Steinvurzel, Boston Univ. (USA); Lars S. Rishøj, Boston Univ. (USA) and Technical Univ. of Denmark (Denmark); Yuhao Chen, Lu Yan, Jeffrey D. Demas, Michael D. W. Grogan, Boston Univ. (USA); Tal Ellenbogen, Kenneth B. Crozier, Harvard Univ. (USA); Karsten Rottwitz, Technical Univ. of Denmark (Denmark); Siddharth Ramachandran, Boston Univ. (USA) . . . . . [8601-53]

11:10 am: **A combined Yb-Raman fiber amplifier for generating narrow linewidth, high-power pulses in the 1100-1200 nm wavelength range and efficient nonlinear conversion into yellow**, Eitan E. Rowen, Guy Vashdi, Jacob Lasri, Eran Inbar, V-Gen Ltd. (Israel) . . . . . [8601-54]

11:30 am: **Dynamics of ultra-long Brillouin fiber laser**, Andrei A. Fotiadi, Univ. de Mons (Belgium) and Ioffe Physico-Technical Institute (Russian Federation) and Ulyanovsk State Univ. (Russian Federation); Ivan Lobach, Institute of Automation and Electrometry (Russian Federation); Patrice Mégret, Univ. de Mons (Belgium) . . . . . [8601-55]

11:50 am: **Effective index numerical modelling of microstructured chalcogenide-glass fiber for frequency conversion to the mid-infrared band**, Pierre Bourdon, Anne Durécu, Claire Alhenc-Gelas, Laura Di Bianca, Guillaume Canat, ONERA (France); Frédéric Druon, Lab. Charles Fabry (France) . . . . . [8601-56]

Lunch/Exhibition Break . . . . . Thu 12:10 pm to 1:40 pm

**SESSION 14**

**Room: 131 (Exhibit Level) . . . . . Thu 1:40 pm to 3:10 pm**

**Pulsed Fiber Laser Sources**

Session Chair: **Sami T. Hendow**, Consultant (USA)

1:40 pm: **3C Yb-doped fiber based high energy and power pulsed fiber lasers** (*Invited Paper*), Thomas S. Sosnowski, Andrey Kuznetsov, Robert Maynard, Arbor Photonics, Inc. (USA); Xiuquan Ma, Cheng Zhu, I-Ning Hu, Almantas Galvanauskas, Univ. of Michigan (USA); Joona J. Koponen, Dahv A. V. Kliner, Timothy S. McComb, nLIGHT Corp. (USA) . . . . . [8601-57]

2:10 pm: **A high-energy cladding-pumped nanosecond Q-switched fiber laser using a fiber saturable absorber**, Sean W. Moore, Daniel B. Soh, Scott E. Bisson, Brian D. Patterson, Sandia National Labs., California (USA) . [8601-58]

2:30 pm: **High power amplification of a tailored-pulse fiber laser**, Julien Saby, Damien Sangla, François Salin, EOLITE Systems (France) . . . . [8601-59]

2:50 pm: **Study of destructive random backscattering pulses showing Brillouin signature in MOPA fiber laser systems**, Miguel Melo, Multiwave Photonics (Portugal) and Univ. do Porto (Portugal); Martin O. Berendt, João M. Sousa, Multiwave Photonics (Portugal) . . . . . [8601-60]

Coffee Break . . . . . Thu 3:10 pm to 3:40 pm

**SESSION 15**

**Room: 131 (Exhibit Level) . . . . . Thu 3:40 pm to 4:50 pm**

**Applications**

Session Chair: **Clifford Headley III**, OFS Labs. (USA)

3:40 pm: **Applications of fiber lasers for remote sensing of atmospheric greenhouse gases** (*Invited Paper*), Jeremy T. Dobler, Michael I. Braun, ITT Exelis Inc. (USA); James A. Nagel, College of Optical Sciences, The Univ. of Arizona (USA) and TIPD, LLC (USA); Valery L. Temyanko, TIPD, LLC (USA); T. Scott Zaccheo, Atmospheric and Environmental Research, Inc. (USA); Edward V. Browell, Fenton W. Harrison, NASA Langley Research Ctr. (USA); Susan A. Kooi, Science Systems and Applications, Inc. (USA) . . . . . [8601-61]

4:10 pm: **Fiber laser based high-spectral resolution lidar for earth science measurements**, Youming Chen, Fibertek, Inc. (USA); Timothy A. Berkoff, Univ. of Maryland, Baltimore County (USA); Frank Kimpel, Mark E. Storm, Shantanu Gupta, Fibertek, Inc. (USA) . . . . . [8601-62]

4:30 pm: **Multi-wavelength S-band Tm:ZBLAN fiber lasers**, Blaise Frison, Abdul R. Sarmani, Lawrence R. Chen, McGill Univ. (Canada); Xijia J. Gu, Ryerson Univ. (Canada); Mohammed Saad, IRphotonics Inc. (Canada) [8601-63]

**Best Student Oral Presentation Awards and Concluding**

**Room: 131 (Exhibit Level) . . . . . 4:50 pm to 5:10 pm**

Conference Chair: **Sami T. Hendow**, Consultant (USA)

Throughout the conference, qualifying student oral presentations will be evaluated by a conference steering committee, led by the 2012 winner, Florian Jansen. Student presentations will be judged based on scientific merit, impact, and clarity of the presentation (not the manuscript). While the award is not judged by the manuscript, a manuscript must be submitted.

To be eligible for consideration, a student must be listed as an author on an accepted paper, must have conducted the majority of the work being presented, and must make the oral presentation.

The winner of the Best Student Oral Presentation Award will be announced during the Student Award Ceremony on Thursday afternoon.

Award Sponsors: **NKT-Photonics**  
**Fianium**  
**PolarOnyx**

**LASE**



# High-Power Lasers for Fusion Research II

Conference Chair: **Abdul A. S. Awwal**, Lawrence Livermore National Lab. (USA)

Conference Co-Chairs: **Mike Dunne**, Lawrence Livermore National Lab. (USA); **Ruxin Li**, Shanghai Institute of Optics and Fine Mechanics (China); **Christopher P. J. Barty**, Lawrence Livermore National Lab. (USA); **John L. Collier**, Rutherford Appleton Lab. (United Kingdom)

Program Committee: **Ghaleb M. Abdulla**, Lawrence Livermore National Lab. (USA); **Andy J. Bayramian**, Lawrence Livermore National Lab. (USA); **Scott C. Burkhart**, Lawrence Livermore National Lab. (USA); **Genevieve M. Chabassier**, Commissariat à l'Énergie Atomique (France); **Jean-Christophe F. Chanteloup**, Lab. pour l'Utilisation des Lasers Intenses, Ecole Polytechnique (France); **Jean-Michel G. Di Nicola**, Lawrence Livermore National Lab. (USA); **Timothy Frazier**, Lawrence Livermore National Lab. (USA); **John E. Heebner**, Lawrence Livermore National Lab. (USA); **Laurent Hilsz**, Commissariat à l'Énergie Atomique (France); **Brian E. Kruschwitz**, Univ. of Rochester (USA); **Larry Lagin**, Lawrence Livermore National Lab. (USA); **Richard R. Leach Jr.**, Lawrence Livermore National Lab. (USA); **Zunqi Lin**, Shanghai Institute of Optics and Fine Mechanics (China); **Brian J. MacGowan**, Lawrence Livermore National Lab. (USA); **Christopher D. Marshall**, Lawrence Livermore National Lab. (USA); **Kinioki Mima**, Osaka Univ. (Japan); **Noriaki Miyanaga**, Hamamatsu Photonics K.K. (Japan); **Mark A. Newton**, Lawrence Livermore National Lab. (USA); **Takayoshi Norimatsu**, Osaka Univ. (Japan); **John M. Soures**, Univ. of Rochester (USA); **Tayyab I. Suratwala**, Lawrence Livermore National Lab. (USA); **Kazuo A. Tanaka**, Osaka Univ. (Japan); **Changhe Zhou**, Shanghai Institute of Optics and Fine Mechanics (China)

## Thursday 7 February

### SESSION 1

Room: 234 (Mezzanine) .....Thu 9:00 am to 10:20 am

#### Future Laser System I

Session Chair: **David N. Winter**, AWE plc (United Kingdom)

9:00 am: **Design of a laser based fusion power plant** (*Invited Paper*), Mike Dunne, Lawrence Livermore National Lab. (USA) ..... [8602-1]

9:30 am: **The National Ignition Facility: beam area increase upgrade** (*Invited Paper*), Scott C. Burkhart, Abdul A. S. Awwal, Michael R. Borden, Tracy S. Budge, John A. Campbell, Mark A. Henesian, Kenneth S. Jancaitis, Donald R. Jedlovec, Richard R. Leach Jr., Roger R. Lowe-Webb, Brian J. MacGowan, Steven M. Pratch, Jesse C. Palma, Joseph T. Salmon, David A. Smauley, Larry K. Smith, Stanley C. Sommer, Paul J. Wegner, Karl Wilhelmson, Monika C. Witte, Jen N. Wong, Sham N. Dixit, Lawrence Livermore National Lab. (USA) ..... [8602-2]

10:00 am: **Scaling-up energy: future large scale solutions made of today's micro optics**, Manuel Bracker, Thomas Mitra, Oliver Homburg, LIMO Lissotschenko Mikroskopik GmbH (Germany) ..... [8602-3]

Coffee Break ..... Thu 10:20 am to 10:50 am

### SESSION 2

Room: 234 (Mezzanine) .....Thu 10:50 am to 12:20 pm

#### Future Laser System II

Session Chair: **Jacques Luce**, Commissariat à l'Énergie Atomique (France)

10:50 am: **Opacity of germanium and silicon in ICF plasmas** (*Invited Paper*), Djamel Benredjem, Univ. Paris-Sud 11 (France) ..... [8602-4]

11:20 am: **Hybrid filtering for high power laser with the combination of Bragg grating and traditional spatial filter**, Xiao Yuan, Xiang Zhang, Kuaisheng Zou, Jiansheng Feng, Soochow Univ. (China) ..... [8602-5]

11:40 am: **Orion facility status update**, David N. Winter, Thomas H. Bett, Nicholas Cann, Colin N. Danson, Stuart J. Duffield, Stephen P. Elsmere, David A. Egan, Mark Girling, Ewan J. Harvey, David I. Hillier, Nick W. Hopps, Dianne Hussey, Micheal J. Norman, Stefan Parker, Paul A. Treadwell, AWE plc (United Kingdom) ..... [8602-6]

12:00 pm: **HiLASE cryogenically-cooled diode-pumped laser prototype for inertial fusion energy**, Antonio Lucianetti, Institute of Physics of the ASCR, v.v.i. (Czech Republic) ..... [8602-7]

Lunch/Exhibition Break ..... Thu 12:20 pm to 1:50 pm

### SESSION 3

Room: 234 (Mezzanine) .....Thu 1:50 pm to 3:10 pm

#### Optical Systems

Session Chair: **Scott C. Burkhart**, Lawrence Livermore National Lab. (USA)

1:50 pm: **Experimental measurement of frequency transfer function due to smoothing by spectral dispersion**, Jacques Luce, Denis Penninckx, Commissariat à l'Énergie Atomique (France) ..... [8602-8]

2:10 pm: **Image processing and control of a programmable spatial light modulator for spatial beam shaping**, Abdul A. S. Awwal, Charles D. Orth, Eddy M. Tse, JoAnn T. Matone, Carla P. Hardy, Mitanu Paul, Gordon K. Brunton, Jean-Michel G. Di Nicola, John E. Heebner, Lawrence Livermore National Lab. (USA) ..... [8602-9]

2:30 pm: **Radiative power losses in inertial fusion plasmas: detailed and statistical calculations**, Guillaume Mondet, Univ. Paris-Sud 11 (France) ..... [8602-10]

2:50 pm: **Multi-objective optimization for the National Ignition Facility's Gamma Reaction History diagnostic**, George R. Labaria, Lawrence Livermore National Lab. (USA) and Univ. of California, Berkeley (USA); Judith A. Liebman, Daniel B. Sayre, Lawrence Livermore National Lab. (USA); Hans W. Herrmann, Los Alamos National Lab. (USA); Essex J. Bond, Jennifer A. Church, Lawrence Livermore National Lab. (USA) ..... [8602-11]

Coffee Break ..... Thu 3:10 pm to 3:40 pm

### SESSION 4

Room: 234 (Mezzanine) .....Thu 3:40 pm to 5:40 pm

#### Performance Modelling

Session Chair: **Brian E. Kruschwitz**, Univ. of Rochester (USA)

3:40 pm: **Simulations of the propagation of multiple-FM smoothing by spectral dispersion on OMEGA EP**, John H. Kelly, Alexander Shvydky, John A. Marozas, Mark J. Guardalben, Brian E. Kruschwitz, Leon J. Waxer, Christophe Dorrer, Elizabeth Hill, Andrey V. Okishev, Univ. of Rochester (USA); Jean-Michel G. Di Nicola, Lawrence Livermore National Lab. (USA) ..... [8602-12]

4:00 pm: **Commissioning of a multiple-FM smoothing by spectral dispersion demonstration system on OMEGA EP**, Brian E. Kruschwitz, John H. Kelly, Christophe Dorrer, Andrey V. Okishev, Leon J. Waxer, Gregory Balonek, Ildar A. Begishev, Wade Bittle, Albert Consentino, Robert H. Cuffney, Elizabeth Hill, John A. Marozas, Matthew Moore, Richard G. Roides, Jonathan D. Zuegel, Univ. of Rochester (USA) ..... [8602-13]

4:20 pm: **Deployment of a spatial light modulator-based beam-shaping system on the OMEGA EP laser**, Matthew Barczys, Seung-Whan Bahk, Michael Spilatro, Diana Coppenbarger, Elizabeth Hill, Thomas Hinterman, Richard W. Kidder, Jason C. Puth, Todd C. Touris, Jonathan D. Zuegel, Univ. of Rochester (USA) ..... [8602-14]

4:40 pm: **Update of laser mégajoule large optics wavefront performance requirements**, Stéphane Mainguy, Jean-Philippe Airiau, Thierry Bart, Vincent Beau, Edouard Bordenave, Stéphane Bouillet, Christian Chappuis, Sandrine Chico, Philippe Cormont, Nathalie Ferriou-Daurios, Jérôme Daurios D.D.S., Vincent Denis, Laure Eupherte, Nathalie Ferriou-Daurios, Servane Fontaine, Gaël Gaborit, Claire Grosset-Grange, Eric Journot, Laurent Lamaignère, Thomas Lanternier, Eric A. G. Lavastre, Christophe Leymarié, Louis-André Lompré, Mélanie Mangeant, Jérôme Néauport, Etienne Perrot-Minnot, Gérard Razé, Stéphane Reyné, Claude Rouyer, Jean-Michel Sajer, Stéphane E. Seznec, Daniel Taroux, Sébastien Vermersch, Commissariat à l'Énergie Atomique (France) . . . . . [8602-15]

5:00 pm: **Image processing methods for characterizing cryogenic target quality during ice layer formation at the National Ignition Facility (NIF)**, Richard R. Leach Jr., Randy S. Roberts, Tayyab I. Suratwala, Rebecca Dylla-Spears, Evan Mapoles, Bernie Koziowski, Laura Mascio-Kegelmeyer, Lawrence Livermore National Lab. (USA) . . . . . [8602-16]

5:20 pm: **Efficient pumping of inertial fusion energy lasers**, Christian Wessling, INGENERIC GmbH (Germany); Saamyabrata Banerjee, Klaus Ertel, Rutherford Appleton Lab. (United Kingdom); Stefan Hambücker, INGENERIC GmbH (Germany); Paul D. Mason, Rutherford Appleton Lab. (United Kingdom); Olaf Rübenach, Volker R. Sinhoff, INGENERIC GmbH (Germany) . . . . . [8602-17]



## Don't miss the Exhibition

See new products, top companies, potential collaborators, and the best suppliers face-to-face

**5–7 February 2013**  
**South Hall ABC and North Hall D**  
Tuesday · 10:00 am to 5:00 pm  
Wednesday · 10:00 am to 5:00 pm  
Thursday · 10:00 am to 4:00 pm



# High-Power Laser Materials Processing: Lasers, Beam Delivery, Diagnostics, and Applications II

Conference Chair: **Friedhelm Dorsch**, TRUMPF Werkzeugmaschinen GmbH + Co. KG (Germany)

Program Committee: **Edward Chlebus**, Wroclaw Univ. of Technology (Poland); **Ingomar Kelbassa**, RWTH Aachen (Germany); **Wolfgang Knapp**, Cooperation Laser Franco-Allemande (France); **Isamu Miyamoto**, Osaka Univ. (Japan); **Carlos Lee**, European Photonics Industry Consortium (France); **Silke Pflueger**, ULO Optics Inc. (USA); **Michael H. Schmidt**, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); **Anja Techel**, Fraunhofer IWS Dresden (Germany); **Luigi Tricarico**, Politecnico di Bari (Italy); **Kunihiko Washio**, Paradigm Laser Research Ltd. (Japan)

## Tuesday 5 February

### SESSION 1

Room: 124 (Exhibit Level) . . . . . Tue 1:30 pm to 3:30 pm

#### NOTE ROOM CHANGE

#### Beam Shaping and Phase Distortion I

Joint Session with Conferences 8600 and 8603

Session Chairs: **Friedhelm Dorsch**, TRUMPF Werkzeugmaschinen GmbH + Co. KG (Germany); **Friedhelm Dorsch**, TRUMPF Werkzeugmaschinen GmbH + Co. KG (Germany)

- 1:30 pm: **Brilliant green laser lines for surface processing**, Mikhail M. Ivanenko, Wyacheslav Grimm, Lisa Kleinschmidt, Aliaksei Krasnaberski, Lutz Aschke, Vitalij N. Lissotschenko, LIMO Lissotschenko Mikrooptik GmbH (Germany) . . . . . [8600-37]
- 1:50 pm: **Active beam controlling of high power Q-switched Nd:YAG lasers for stable fiber coupling with small numerical aperture for material processing**, Mario Goehre, Clean-Lasersysteme GmbH (Germany); Christoph Becker, Betewis GmbH (Germany) . . . . . [8603-1]
- 2:10 pm: **Refractive beam shapers for material processing with high power single mode and multimode lasers**, Alexander V. Laskin, Vadim Laskin, AdlOptica Optical Systems GmbH (Germany) . . . . . [8600-38]
- 2:30 pm: **New monolithic Gauss-Tophat converter with integrated Fourier function and Gauss-Tophat beam splitter**, Aliaksei Krasnaberski, Lisa Kleinschmidt, Mikhail M. Ivanenko, LIMO Lissotschenko Mikrooptik GmbH (Germany) . . . . . [8600-39]
- 2:50 pm: **Beam shaping for a high power laser diode bar with a wavelength of 940-980nm**, Hansruedi Moser, Dzelal Kura, Hans Forrer, Martin Forrer, FISBA OPTIK AG (Switzerland) . . . . . [8600-40]
- 3:10 pm: **In-situ optical phase distortion measurement of Yb:YAG thin disk in high average power regenerative amplifier**, Taisuke Miura, Michal Chyla, Martin Smrř, Patricie Severová, Ondrej Novák, Akira Endo, Tomáš Mocek, Institute of Physics of the ASCR, v.v.i. (Czech Republic) . . . . . [8603-2]
- Coffee Break . . . . . Tue 3:30 pm to 4:00 pm

### SESSION 2

Room: 124 (Exhibit Level) . . . . . Tue 4:00 pm to 5:40 pm

#### NOTE ROOM CHANGE

#### Beam Shaping and Phase Distortion II

Joint Session with Conferences 8600 and 8603

Session Chair: **Lutz Aschke**, LIMO Lissotschenko Mikrooptik GmbH (Germany)

- 4:00 pm: **Deterioration of beam quality factor of laser pulses due to angular dispersion of optical elements**, Sergiy Mokhov, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Vadim Smirnov, Eugeniu V. Rotari, OptiGrate Corp. (USA); Julien Lumeau, Boris Y. Zeldovich, Leonid B. Glebov, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) . . . . . [8603-3]
- 4:20 pm: **Recent results on bulk laser damage threshold of optical glasses**, Ralf Jedamzik, Frank Elsmann, SCHOTT AG (Germany) . . . . . [8603-4]

- 4:40 pm: **Limitations of optical antireflective coatings on fused silica optics in high-brightness 2D laser cutting heads**, Bjoern Wedel, Hagen Zimer, Roman Niedrig, HIGHYAG Lasertechnologie GmbH (Germany); Marcel Schulze, Bernhard Kley, Institut für Angewandte Physik (Germany) . . . . . [8603-5]
- 5:00 pm: **CVD diamond for high power laser applications**, Andrew M. Bennett, Element Six Ltd. (United Kingdom); Eugene V. Anoinin, Element Six (USA); Jan Barten, Gert Pels, Element Six N.V. (Netherlands); John R. Brandon, Element Six Ltd. (United Kingdom) . . . . . [8603-6]
- 5:20 pm: **Analysis of temperature and thermal stress fields of K9 glass damaged by 1064nm nanosecond pulse laser**, Yunxiang Pan, Zhonghua Shen, Jian Lu, Xiao-Wu Ni, Nanjing Univ. of Science and Technology (China) . . . . . [8603-7]

### POSTERS-TUESDAY

Room: 103 (Exhibit Level) . . . . . Tue 6:00 pm to 8:00 pm

Conference attendees are invited to attend the LASE poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

- Propulsion of targets with different confinement geometries in water by Nd:YAG laser at 1064nm**, Jun Chen, Bei-Bei Li, Hong-Chao Zhang, Bing Han, Zhong-Hua Shen, Xiao-Wu Ni, Nanjing Univ. of Science and Technology (China) . . . . . [8603-31]
- Laser processing technologies in limited tubular space by a composite-type optical fiber system**, Takaya Terada, Fuyumi Ito, Akihiko Nishimura, Japan Atomic Energy Agency (Japan) . . . . . [8603-32]
- Research of pulse CO<sub>2</sub> laser produced tin plasma**, Xingbing Wang, Duluo Zuo, Peixiang Lu, Huazhong Univ. of Science and Technology (China); Tao Wu, Wuhan Institute of Technology (China) . . . . . [8603-33]
- Fiber profilometer for measurement of hard-to-access areas**, Zhuang Liu, Nanyang Technological Univ. (Singapore); Xia Yu, A\*STAR Singapore Institute of Manufacturing Technology (Singapore); Qijie Wang, Nanyang Technological Univ. (Singapore); Shawwei Kok, Ying Zhang, A\*STAR Singapore Institute of Manufacturing Technology (Singapore) . . . . . [8603-34]
- Effect of laser welding parameters on impact and tensile strength for dissimilar metals joint**, Dhia A. Azawi, Dublin City Univ. (Ireland) . . . . [8603-35]
- High-speed laser ablation cutting of metals**, Frank Ullmann, Lars Hartwig, Hochschule Mittweida (Germany); Daniel Szczepanski, Otto-von-Guericke-Univ. Magdeburg (Germany); Joerg Schille, Stefan Gronau, Tommy Knebel, Jan Drechsel, Udo Loeschner, Robby Ebert, Horst Exner, Hochschule Mittweida (Germany) . . . . . [8603-36]
- Energy characteristics of cutting of thick steel sheets by a CO<sub>2</sub> and fiber laser**, Anatoly M. Orishich, Alexander G. Malikov, Victor B. Shulyatyev, Aleksandr Golishev, Khristianovich Institute of Theoretical and Applied Mechanics (Russian Federation) . . . . . [8603-37]
- The effect of hardening on ablation rate in aluminum alloys (zeolites) and crater profile development analogized with meteorite craters**, Osama M. Khalil, NILES (Egypt) . . . . . [8603-38]

**Wednesday 6 February**

**LASE PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . . 10:20 am to 12:30 pm**

- 10:20 am: **Welcome and Opening Remarks**  
**Bo Gu**, Bos Photonics (USA); **Andreas Tünnermann**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) and Friedrich-Schiller-Univ. Jena (Germany)
  - 10:25 am: **Announcement of the Best “Green” LASE Paper Award**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
  - 10:30 am: **Laser-based Particle Acceleration and the Path to TeV Physics and Compact X-ray and Gamma Ray Sources** (*Presentation Only*)  
**Wim P. Leemans**, Lawrence Berkeley National Lab. (USA)
  - 11:10 am: **Three-dimensional Metamaterials Made By Direct Laser Writing** (*Presentation Only*)  
**Martin Wegener**, Karlsruher Institut für Technologie (Germany)
  - 11:50 am: **Remote Laser Welding for Automotive Seat Production** (*Presentation Only*)  
**Geert G. Verhaeghe**, Faurecia Autositze GmbH (Germany)
- See p. 26 for details.*

Lunch/Exhibition Break . . . . . Wed 12:30 pm to 2:00 pm

**SESSION 3**

**Room: 113 (Exhibit Level) . . . . . Wed 2:00 pm to 3:30 pm**

**Beam Sources**

Session Chair: **Carlos Lee**, EPIC (France)

- 2:00 pm: **Essential building blocks for a flexible approach to laser source design** (*Invited Paper*), Jochen Deile, TRUMPF Inc. (USA); Jochen Doberitzsch, TRUMPF Laser- und Systemtechnik GmbH (Germany) . . . . . [8603-8]
  - 2:30 pm: **Fiber lasers based on beam quality converters for diode lasers**, Charley Bachert, Georg Rehmann, Axel Luft, Merlin Gerber, Anne Krause, Jihui Song, Volker Krause, Laserline GmbH (Germany) . . . . . [8603-9]
  - 2:50 pm: **Disk technology enables next generation micromachining laser sources**, Oliver H. Heckl, Severin Luzius, TRUMPF Laser- und Systemtechnik GmbH (Germany); Dirk H. Sutter, TRUMPF Laser GmbH & Co. KG (Germany); Sascha Weiler, TRUMPF Inc. (USA) . . . . . [8603-10]
  - 3:10 pm: **Fiber laser performance in industrial applications**, Stuart McCulloch, Andrew Hassey, Paul Harrison, SPI Lasers (United Kingdom) . . . . . [8603-11]
- Coffee Break . . . . . Wed 3:30 pm to 4:00 pm

**SESSION 4**

**Room: 113 (Exhibit Level) . . . . . Wed 4:00 pm to 5:50 pm**

**Special Laser Processes**

Session Chair: **Wolfgang Knapp**, Cooperation Laser Franco-Allemande (France)

- 4:00 pm: **Induction of engineered residual stresses fields and enhancement of fatigue life of high reliability metallic components by laser shock processing** (*Invited Paper*), José Luis Ocaña, Juan Antonio Porro, Marcos Díaz, Leonardo Ruiz de Lara, Carlos Correa, Andrea Gil-Santos, Univ. Politécnica de Madrid (Spain) . . . . . [8603-12]
- 4:30 pm: **Lasers and applications in parts cleaning and surface pretreatment**, Till Schneider, TRUMPF Laser- und Systemtechnik GmbH (Germany); Thomas Burdel, Sascha Weiler, TRUMPF Inc. (USA); Birgit Faisst, Oliver H. Heckl, TRUMPF Laser- und Systemtechnik GmbH (Germany); Jörn Birkel, TRUMPF Maschinen Grüşch AG (Switzerland); Severin Luzius, TRUMPF Laser- und Systemtechnik GmbH (Germany) . . . . . [8603-13]
- 4:50 pm: **An exhaustive model for the laser hardening of hypo eutectoid steel**, Alessandro Fortunato, Univ. degli Studi di Bologna (Italy); Leonardo Orazi, Gabriele Cuccolini, Univ. degli Studi di Modena e Reggio Emilia (Italy); Alessandro Ascari, Univ. degli Studi di Bologna (Italy) . . . . . [8603-14]
- 5:10 pm: **Laser shock peening and warm laser shock peening: process modeling and pulse shape influence**, Alessandro Fortunato, Univ. degli Studi di Bologna (Italy); Leonardo Orazi, Gabriele Cuccolini, Univ. degli Studi di Modena e Reggio Emilia (Italy); Alessandro Ascari, Univ. degli Studi di Bologna (Italy) . . . . . [8603-15]

- 5:30 pm: **CO<sub>2</sub>-laser-assisted processing of glass fiber-reinforced thermoplastic composites**, Joffrey Stimpfl, Fraunhofer-Institut für Produktionstechnologie (Germany); Christian Brecher, Michael Emonts, Fraunhofer-Institut für Produktionstechnologie (Germany); Richard Ludwig Schares, Fraunhofer Institute for Production Technology IPT (Germany) . . . . . [8603-16]

**Thursday 7 February**

**SESSION 5**

**Room: 113 (Exhibit Level) . . . . . Thu 8:00 am to 11:20 am**

**Laser Beam Welding**

Session Chair: **Silke Pflueger**, ULO Optics, Inc. (USA)

- 8:00 am: **Characterization of disk-laser dissimilar welding of titanium alloy Ti-6Al-4V to aluminum alloy 2024** (*Invited Paper*), Vincenzo Sergi, Fabrizio Caiazza, Vittorio Alfieri, Univ. degli studi di Salerno (Italy) . . . . . [8603-17]
  - 8:30 am: **Laser welding of dissimilar materials for lightweight construction and special applications**, Stefan Kaerle, Mitja Schimek, André Springer, Ronny Pfeifer, Volker Wesling, Laser Zentrum Hannover e.V. (Germany) . . . . . [8603-18]
  - 8:50 am: **Challenges and solution for copper welding with laser**, Uwe Kriegshaeuser, TRUMPF Laser- und Systemtechnik GmbH (Germany). [8603-19]
  - 9:10 am: **High speed laser welding of steel using a high power single mode continuous wave fiber laser**, Udo Loeschner, Jan Drechsel, Sascha Schwind, Lars Hartwig, Joerg Schille, Horst Exner, Peter Hübner, Andreas Eysert, Hochschule Mittweida (Germany) . . . . . [8603-20]
  - 9:30 am: **Process characteristics of laser beam welding at reduced ambient pressure**, Christian Boerner, Klaus Dilger, Technische Univ. Braunschweig (Germany) . . . . . [8603-21]
  - 9:50 am: **Advanced welding techniques with optimized accessories for high brightness 1 µm lasers**, David L. Havrilla, TRUMPF Inc. (USA); Volker Rominger, Thomas Harrer, Andrey Andreev, Marco Holzer, TRUMPF Laser- und Systemtechnik GmbH (Germany) . . . . . [8603-22]
- Coffee Break . . . . . Thu 10:10 am to 10:40 am
- 10:40 am: **Numerical and experimental evaluation of Nd:YAG laser welding efficiency in AZ31 magnesium alloy butt joints**, Leonardo Daniele Scintilla, Luigi Tricarico, Politecnico di Bari (Italy) . . . . . [8603-23]
  - 11:00 am: **Corrosion performance of laser-welded austenitic-ferritic connections**, Markus Weigl, Michael H. Schmidt, BLZ Bayerisches Laserzentrum GmbH (Germany) . . . . . [8603-24]

**SESSION 6**

**Room: 113 (Exhibit Level) . . . . . Thu 11:20 am to 12:20 pm**

**Process Diagnostics**

Session Chair: **Dagmar Schaefer**, RWTH Aachen (Germany)

- 11:20 am: **Hyperspectral and gated ICCD imagery for laser irradiated carbon materials**, Glen P. Perram, Charles D. Roberts, Michael A. Marciniak, Air Force Institute of Technology (USA) . . . . . [8603-25]
  - 11:40 am: **Online characterization of laser beam welds by NIR-camera observation**, Friedhelm Dorsch, Holger Braun, Steffen Kessler, Dieter Pfitzner, TRUMPF Werkzeugmaschinen GmbH + Co. KG (Germany); Volker Rominger, TRUMPF Laser- und Systemtechnik GmbH (Germany) . . . . . [8603-26]
  - 12:00 pm: **Inline coherent imaging applied to high power laser processing**, Paul J. Webster, Queen’s Univ. (Canada) and Laser Depth Dynamics, Inc. (Canada); Alison W. Kinross, Cole P. Van Vlack, Logan G. Wright, Christopher M. Galbraith, Yang Ji, James M. Fraser, Queen’s Univ. (Canada) . . . . . [8603-27]
- Lunch/Exhibition Break . . . . . Thu 12:20 pm to 1:20 pm

**SESSION 7**

**Room: 113 (Exhibit Level) . . . . . Thu 1:20 pm to 2:30 pm**

**Laser Beam Drilling and Cutting**

Session Chair: **Friedhelm Dorsch**, TRUMPF Werkzeugmaschinen GmbH + Co. KG (Germany)

- 1:20 pm: **Advancement of diode lasers and their applications** (*Invited Paper*), Stefan W. Heinemann, Torsten Schmidt, DirectPhotonics Industries GmbH (Germany); Silke Pflueger, DirectPhotonics Industries GmbH (USA) . . . . . [8603-28]
- 1:50 pm: **Laser cutting of lightweight alloys sheets with 1-µm laser wavelength**, Leonardo Daniele Scintilla, Luigi Tricarico, Politecnico di Bari (Italy) . . . . . [8603-29]
- 2:10 pm: **On the Laser Beam Cutting of Metallic Hollow Sphere Structures**, Harald Riegel, Markus Merkel, Joerg Fruhstuck, Rolf Winkler, Hochschule Aalen (Germany); Andreas Oechsner, Univ. Teknologi Malaysia (Malaysia) . . . . . [8603-30]

**LASE**

# Nonlinear Frequency Generation and Conversion: Materials, Devices, and Applications XII

Conference Chair: **Konstantin L. Vodopyanov**, Stanford Univ. (USA)

Conference Co-Chair: **Yehoshua Y. Kalisky**, Nuclear Research Ctr. Negev (Israel)

Program Committee: **Darrell J. Armstrong**, Sandia National Labs. (USA); **Pinhas Blau**, Soreq Nuclear Research Ctr. (Israel); **Majid Ebrahim-Zadeh**, ICFO - Institut de Ciències Fotòniques (Spain); **Peter Günter**, ETH Zurich (Switzerland); **Baldemar Ibarra-Escamilla**, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); **Yun-Shik Lee**, Oregon State Univ. (USA); **Rita D. Peterson**, Air Force Research Lab. (USA); **Peter Powers**, Univ. of Dayton (USA); **Peter G. Schunemann**, BAE Systems (USA); **Kenneth L. Schepler**, Air Force Research Lab. (USA); **Andrei V. Shchegrov**, KLA-Tencor Corp. (USA); **Wei Shi**, Tianjin Univ. (China)

## Tuesday 5 February

### SESSION 1

Room: 133 (Exhibit Level) ..... Tue 8:30 am to 10:00 am

#### Visible and UV Lasers I

Session Chairs: **Andrei V. Shchegrov**, KLA-Tencor Corp. (USA);  
**Yehoshua Y. Kalisky**, Nuclear Research Ctr. Negev (Israel)

8:30 am: **A narrow-band continuous-wave laser source at 191 nm** (*Invited Paper*), Matthias Scholz, Dmitrijs Opalevs, Patrick Leisching, Wilhelm G. Kaenders, TOPTICA Photonics AG (Germany); Guiling Wang, Xiaoyang Wang, Rukang Li, Chuangtian Chen, Beijing Ctr. for Crystal Research and Development (China) ..... [8604-1]

9:00 am: **Two photon absorption and stimulated Raman scattering in alkali vapor lasers**, Glen P. Perram, Jeffrey E. Gallagher, Air Force Institute of Technology (USA) ..... [8604-2]

9:20 am: **Efficient concept generating 3.9 W of diffraction-limited green light with spectrally combined tapered diode lasers**, André Müller, Ole B. Jensen, Technical Univ. of Denmark (Denmark); Karl-Heinz Hasler, Bernd Sumpf, Götz Erbert, Ferdinand-Braun-Institut (Germany); Peter E. Andersen, Paul M. Petersen, Technical Univ. of Denmark (Denmark) ..... [8604-3]

9:40 am: **Megawatt peak power UV microlaser**, Rakesh Bhandari, Takunori Taira, Institute for Molecular Science (Japan) ..... [8604-4]

Coffee Break ..... Tue 10:00 am to 10:30 am

### SESSION 2

Room: 133 (Exhibit Level) ..... Tue 10:30 am to 12:10 pm

#### Visible and UV Lasers II

Session Chairs: **Andrei V. Shchegrov**, KLA-Tencor Corp. (USA);  
**Yehoshua Y. Kalisky**, Nuclear Research Ctr. Negev (Israel)

10:30 am: **Generation of tunable visible picosecond pulses by frequency-doubling of a quantum-dot laser in a PPKTP waveguide**, Ksenia A. Fedorova, Univ. of Dundee (United Kingdom); Grigori S. Sokolovskii, Univ. of Dundee (United Kingdom) and Ioffe Physico-Technical Institute (Russian Federation); Daniil I. Nikitichev, Univ. of Dundee (United Kingdom); Philip R. Battle, AdvR, Inc. (USA); Daniil A. Livshits, Innolume GmbH (Germany); Edik U. Rafailov, Univ. of Dundee (United Kingdom) ..... [8604-5]

10:50 am: **17 ps, 765 and 792.5 nm, MOPA using second-harmonic frequency conversion in a fiber-coupled PPLN bulk mixer**, Youngjae Kim, Bryan Burgoyne, Alain Villeneuve Jr., Genia Photonics Inc. (Canada); Karin Wu, Jason Lin, Ryan Lai, HC Photonics Corp. (Taiwan) ..... [8604-6]

11:10 am: **Several watts compact CW green laser head without cooling by using PPMgSLT**, Yasuhiro Tomihari, Satoshi Makio, Masayuki Hoshi, Masami Hatori, Junji Hirohashi, Koichi Imai, Hiroshi Motegi, Yasunori Furukawa, Oxide Corp. (Japan) ..... [8604-7]

11:30 am: **Pulsed picosecond 766 nm laser source operating between 1-80 MHz with automatic pump power management**, Thomas Schönau, Torsten Siebert, Romano Haertel, Thomas Eckhardt, Dietmar Klemme, Kristian Lauritsen, Rainer Erdmann, PicoQuant GmbH (Germany) ..... [8604-8]

11:50 am: **Ultra-violet generation by third-harmonic conversion in conventional solid-core fibers**, Yuichi Takushima, Yosuke Orii, Asa Higashitani, Takeshi Manabe, Spectronix Corp. (Japan) ..... [8604-9]

Lunch/Exhibition Break ..... Tue 12:10 pm to 1:40 pm

### SESSION 3

Room: 133 (Exhibit Level) ..... Tue 1:40 pm to 3:20 pm

#### Terahertz Generation

Session Chairs: **Peter Günter**, ETH Zurich (Switzerland);  
**Wei Shi**, Tianjin Univ. (China)

1:40 pm: **High-power THz pulse generation and nonlinear THz spectroscopy** (*Invited Paper*), Hideki Hirori, Koichiro Tanaka, Kyoto Univ. (Japan) ..... [8604-10]

2:10 pm: **High-field THz pulses by efficient optical rectification in organic crystals** (*Invited Paper*), Carlo Vicario, Clemens Ruchert, Christoph P. Hauri, Paul Scherrer Institut (Switzerland) ..... [8604-11]

2:40 pm: **Comparative study on THz time-domain spectroscopy using 780-nm 1.3-ps laser pulses with different detections of LT-GaAs photoconductive antenna and ZnTe electro-optic sampling**, Yuzuru Tadokoro, Osaka City Univ. (Japan); Yuma Takida, Osaka City Univ. (Japan) and Japan Society for the Promotion of Science (Japan); Hiroshi Kumagai, Osaka City Univ. (Japan) and Kitasato Univ. (Japan); Shigeki Nashima, Ataru Kobayashi, Osaka City Univ. (Japan) ..... [8604-12]

3:00 pm: **The widely tunable THz generation in QPM-GaAs crystal pumped by a near-degenerate dual-wavelength KTP OPO at around 2.127 μm**, Deggang Xu, Wei Shi, Kai Zhong, YuYe Wang, Pengxiang Liu, Jianquan Yao, Tianjin Univ. (China) ..... [8604-13]

Coffe Break ..... Tue 3:20 pm to 3:50 pm

### SESSION 4

Room: 133 (Exhibit Level) ..... Tue 3:50 pm to 5:30 pm

#### Optical Parametric and Ultrafast Nonlinear Devices

Session Chairs: **Darrell J. Armstrong**, Sandia National Labs. (USA);  
**Peter E. Powers**, Univ. of Dayton (USA)

3:50 pm: **CW mid-IR OPO based on OP-GaAs** (*Invited Paper*), Peter G. Schunemann, Leonard A. Pomeranz, Scott D. Setzler, Casey W. Jones, Peter A. Budni, BAE Systems (USA) ..... [8604-14]

4:20 pm: **Intracavity phase interferometry and its application to magnetometry** (*Invited Paper*), Jean-Claude M. Diels, Ladan Arissian, Koji Masuda, The Univ. of New Mexico (USA) ..... [8604-16]

4:50 pm: **Narrow bandwidth tunable optical parametric generator**, Brian D. Dolasinski, Univ. of Dayton (USA); Peter E. Powers, Univ. of Dayton (USA) and Univ. of Dayton (USA) ..... [8604-17]

5:10 pm: **Ho<sup>3+</sup>:LLF MOPA pumped RISTRA ZGP OPO at 3-5 μm**, Georg Stöppler, Martin Schellhorn, Marc Eichhorn, Institut Franco-Allemand de Recherches de Saint-Louis (France) ..... [8604-18]



**POSTERS-TUESDAY**

**Room: 103 (Exhibit Level) . . . . . Tue 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the LASE poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**An efficient WDM-OTDM converter for spectrum interrogation based on nonlinear effects in electro-absorption modulator**, Cuiqin Gao, Zhaoying Wang, Xuwei Qin, Tianhe Wang, Chunfeng Ge, Tianxin Yang, Tianjin Univ. (China) . . . . . [8604-41]

**Terahertz generation in quasi-phase-matched GaAs wafers by pulse CO<sub>2</sub> laser**, Xingbing Wang, Duluo Zuo, Huazhong Univ. of Science and Technology (China); Zhiming Rao, Jiangxi Univ. of Traditional Chinese Medicine (China) . . . . . [8604-42]

**Fourth-harmonic generation of the CO<sub>2</sub> laser wavelength at 10.5910 μm in BaGa<sub>4</sub>S<sub>7</sub>**, Kiyoshi Kato, Chitose Institute of Science and Technology (Japan); Takayuki Okamoto, Takuya Mikami, Okamoto Optics Works (Japan); Valentin P. Petrov, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Valeriy V. Badikov, Dmitrii V. Badikov, Kuban State Technological Univ. (Russian Federation); Vladimir L. Panyutin, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany) . . . . . [8604-43]

**Frequency-doubled supercontinuum for scanning white-light interferometry**, Piotr Ryzkowski, Goëry Genty, Tampere Univ. of Technology (Finland); Anton Nolvi, Ivan Kassamakov, Edward Hægström, Univ. of Helsinki (Finland) . . . . . [8604-44]

**Parametric gain analysis in tellurite/phospho-tellurite hybrid microstructured optical fibers with an engineered chromatic dispersion**, Edmund P. Samuel, Tong Hoang Tuan, Meisong Liao, Zhongchao Duan, Takenobu Suzuki, Yasutake Ohishi, Toyota Technological Institute (Japan) . . . . . [8604-45]

**New acentric materials composed of 4-nitrophenol and pyridine derivatives for NLO and THz applications**, Tatiana V. Timofeeva, Marina S. Fonari, Mikhail Y. Antipin, New Mexico Highlands Univ. (USA); Artem Masunov, Univ. of Central Florida (USA); Joel Zazueta, New Mexico Highlands Univ. (USA); Shannon Sullivan, Univ. of Central Florida (USA); Sergiu I. Draguta, New Mexico Highlands Univ. (USA) . . . . . [8604-46]

**Generation of broadband infrared radiation in step index chalcogenide fiber**, Satya P. Singh, Shailendra K. Varshney, Prasanta K. Datta, Indian Institute of Technology Kharagpur (India) . . . . . [8604-47]

**Ultraviolet coherent light source by sum frequency generation with doubly-resonant external cavity**, Norihiro Inoue, Hitachi Zosen Corp. (Japan); Kenta Mukoyama, Kazuhiro Tokuyama, Osaka City Univ. (Japan); Hiroshi Kumagai, Kitasato Univ. (Japan); Naoki Fukuda, Kyoto Univ. (Japan); Toshio Takiya, Hitachi Zosen Corp. (Japan) . . . . . [8604-49]

**Linear and nonlinear refractive indices contributions on third-harmonic generation at materials interfaces using femtosecond pulses**, Lino Misoguti, Emerson C. Barbano, Cleber R. Mendonca, Sergio C. Zilio, Univ. de São Paulo (Brazil) . . . . . [8604-50]

**High-speed polygon-scanner-based frequency-swept optical beat source for continuous wave terahertz generation**, Yong Seok Kwon, Myoung Ock Ko, Mi Sun Jung, Ik Gon Park, Chungnam National Univ. (Korea, Republic of); Namje Kim, Sang-Pil Han, Han-Cheol Ryu, Electronics and Telecommunications Research Institute (Korea, Republic of); Dae-Su Yee, Korea Research Institute of Standards and Science (Korea, Republic of); Kyung Hyun Park, Electronics and Telecommunications Research Institute (Korea, Republic of); Min Yong Jeon, Chungnam National Univ. (Korea, Republic of) . . . . . [8604-51]

**Nonlinear optical properties of tungsten lead-pyrophosphate glass containing copper nanoparticles**, Juliana Mara P. Almeida, Univ. de São Paulo (Brazil); Danilo Manzani, Univ. Estadual Paulista (Brazil); Leonardo De Boni, Univ. de São Paulo (Brazil); Marcelo Nalin, Univ. Federal de São Carlos (Brazil); Sidney J. Ribeiro, Univ. Estadual Paulista (Brazil); Cleber R. Mendonca, Univ. de São Paulo (Brazil) . . . . . [8604-52]

**Tunable picosecond THz-wave generation based on trapezoidal MgO:LiNbO<sub>3</sub> crystal in novel pentagram-shaped pump-enhancement cavity**, Yuma Takida, Osaka City Univ. (Japan) and Japan Society for the Promotion of Science (Japan); Yuzuru Tadokoro, Osaka City Univ. (Japan); Hiroshi Kumagai, Osaka City Univ. (Japan) and Kitasato Univ. (Japan); Shigeki Nashima, Ataru Kobayashi, Osaka City Univ. (Japan) . . . . . [8604-53]

**Collinear THz parametric oscillator using QPM-GaAs structures pumped by 2.06 μm pulsed fiber laser**, Wei Shi, Tianjin Univ. (China); Qiang Fang, HFB Photonics (China); Degang Xu, Jianquan Yao, Tianjin Univ. (China); Nasser N. Peyghambarian, College of Optical Sciences, The Univ. of Arizona (USA) . . . . . [8604-54]

**Theoretical simulation on optical parametric oscillator based on LiInS<sub>2</sub> crystals**, Chao Ma, Sasa Zhang, Yang Liu, Shandong Univ. (China) . . . . . [8604-55]

**Second-harmonic generation in Hg<sub>0.35</sub>Cd<sub>0.65</sub>Ga<sub>2</sub>S<sub>4</sub> and Hg<sub>0.52</sub>Cd<sub>0.48</sub>Ga<sub>2</sub>S<sub>4</sub>**, Kiyoshi Kato, Chitose Institute of Science and Technology (Japan); Takuya Mikami, Okamoto Optics Works (Japan); Valentin P. Petrov, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany) . . . . . [8604-56]

**Effects of nonlinear phase modulation on quantum frequency conversion using four-wave mixing Bragg scattering**, Lasse Mejling, Technical Univ. of Denmark (Denmark); Colin J. McKinstrie, Alcatel-Lucent Bell Labs. (USA); Karsten Rottwitz, Technical Univ. of Denmark (Denmark) . . . . . [8604-57]

**Nd:YAG laser-pumped HgGa<sub>2</sub>S<sub>4</sub> OPO**, Fumihito Tanno, Panasonic Industrial Devices Nitto Co., Ltd. (Japan); Kiyoshi Kato, Chitose Institute of Science and Technology (Japan) . . . . . [8604-58]

**Modeling ultra-broadband terahertz waveguide emitters through difference frequency generation using coupled mode theory**, Felipe A. Vallejo, L. Michael Hayden, Univ. of Maryland, Baltimore County (USA) . . . . . [8604-59]

**Wednesday 6 February**

**SESSION 5**

**Room: 133 (Exhibit Level) . . . . . Wed 8:00 am to 9:50 am**

**Nonlinear Fiber Devices and Applications**

Session Chairs: **Wei Shi**, Tianjin Univ. (China); **Darrell J. Armstrong**, Sandia National Labs. (USA)

**8:00 am: Cascaded generation of octave-spanning 2-5 μm frequency combs via subharmonic-supercontinuum process (Invited Paper)**, Alireza Marandi, Charles W. Rudy, Konstantin L. Vodopyanov, Robert L. Byer, Stanford Univ. (USA) . . . . . [8604-19]

**8:30 am: Widely tunable parametric generation of picosecond visible and mid-infrared radiation in optical fibers**, Achut Giree, Cesar Jauregui-Misas, Friedrich-Schiller-Univ. Jena (Germany); Jens Limpert, Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany) and Helmholtz-Institute Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8604-20]

**8:50 am: Polarization stabilization of vector solitons in circularly birefringent fibers induced by Raman effect**, Evgeny A. Kuzin, Nikolay A. Korneev, Balder-Arturo Villagomez-Bernabe, Baldemar Ibarra-Escamilla, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); Olivier J. Pottiez, Centro de Investigaciones en Óptica, A.C. (Mexico); Andres González-García, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); Manuel Durán-Sánchez, Univ. Tecnológica de Puebla (Mexico) . . . . . [8604-21]

**9:10 am: Design of microstructured optical fibers for supercontinuum generation**, Silvia Rodrigues, Margarida Facão, Sofia C. Latas, Mário F. Ferreira, Univ. de Aveiro (Portugal) . . . . . [8604-22]

**9:30 am: Experimental and theoretical investigations of single-frequency Raman fiber amplifiers operating at 1178 nm**, Iyad Dajani, Christopher L. Vergien, Craig Robin, Air Force Research Lab. (USA); Benjamin G. Ward, Shadi A. Naderi, U.S. Air Force Academy (USA) . . . . . [8604-23]

Coffee Break . . . . . Wed 9:50 am to 10:20 am

**LASE**

**LASE PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . . 10:20 am to 12:30 pm**

- 10:20 am: **Welcome and Opening Remarks**  
Bo Gu, Bos Photonics (USA); Andreas Tünnermann, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) and Friedrich-Schiller-Univ. Jena (Germany)
  - 10:25 am: **Announcement of the Best “Green” LASE Paper Award**  
Stephen J. Eglash, Precourt Institute for Energy, Stanford Univ. (USA)
  - 10:30 am: **Laser-based Particle Acceleration and the Path to TeV Physics and Compact X-ray and Gamma Ray Sources (Presentation Only)**  
Wim P. Leemans, Lawrence Berkeley National Lab. (USA)
  - 11:10 am: **Three-dimensional Metamaterials Made By Direct Laser Writing (Presentation Only)**  
Martin Wegener, Karlsruher Institut für Technologie (Germany)
  - 11:50 am: **Remote Laser Welding for Automotive Seat Production (Presentation Only)**  
Geert G. Verhaeghe, Faurecia Autositze GmbH (Germany)
- See p. 26 for details.

Lunch/Exhibition Break . . . . . Wed 12:30 pm to 2:00 pm

**SESSION 6**

**Room: 133 (Exhibit Level) . . . . . Wed 2:00 pm to 4:50 pm**

**Mid-IR Frequency Comb and Supercontinuum Generation**

Session Chairs: **Konstantin L. Vodopyanov**, Stanford Univ. (USA);  
**Kenneth L. Schepler**, Air Force Research Lab. (USA)

- 2:00 pm: **Precision mid-infrared frequency combs and spectroscopic applications (Invited Paper)**, Marco Marangoni, Politecnico di Milano (Italy) . . . . . [8604-24]
- 2:30 pm: **Ultrafast Tm fiber lasers: frequency combs and applications to nonlinear optics (Invited Paper)**, Ingmar Hartl, IMRA America, Inc. (USA) . . . . . [8604-25]
- Coffee Break . . . . . Wed 3:00 pm to 3:30 pm
- 3:30 pm: **Broad-band cascaded four-wave mixing frequency comb centered around 1 μm**, Mateusz Wyszynski, Hakan Sayinc, Laser Zentrum Hannover e.V. (Germany) and Ctr. for Quantum Engineering and Space-Time Research (Germany); Jose Manuel Chavez Boggio, Roger Haynes, Martin M. Roth, Leibniz-Institut für Astrophysik Potsdam (Germany); Uwe Morgner, Laser Zentrum Hannover e.V. (Germany) and Ctr. for Quantum Engineering and Space-Time Research (Germany) and Leibniz Univ. Hannover (Germany); Jörg Neumann, Dietmar Kracht, Laser Zentrum Hannover e.V. (Germany) and Ctr. for Quantum Engineering and Space-Time Research (Germany) . . . . . [8604-26]
- 3:50 pm: **Multispectral mid-infrared imaging using frequency up-conversion**, Nicolai Sanders, Jeppe S. Dam, Ole B. Jensen, Christian Pedersen, Peter Tidemand-Lichtenberg, DTU Fotonik (Denmark) . . . . . [8604-27]
- 4:10 pm: **High resolution mid-infrared spectroscopy based on frequency up-conversion**, Jeppe S. Dam, Qi Hu, Peter Tidemand-Lichtenberg, Christian Pedersen, DTU Fotonik (Denmark) . . . . . [8604-28]
- 4:30 pm: **Intracavity molecular spectroscopy in the mid-IR using ultra-broadband optical parametric oscillator**, Magnus W. Haakstad, Norwegian Defence Research Establishment (Norway) and Stanford Univ. (USA); Nicholas C. Leindecker, Alireza Marandi, Konstantin L. Vodopyanov, Tobias P. Lammour, Stanford Univ. (USA) . . . . . [8604-29]

**Thursday 7 February**

**SESSION 7**

**Room: 133 (Exhibit Level) . . . . . Thu 8:00 am to 10:20 am**

**Nonlinear Materials and Characterization I**

Session Chairs: **Peter G. Schunemann**, BAE Systems (USA);  
**Baldemar Ibarra-Escamilla**, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico)

- 8:00 am: **Periodically oriented GaN for nonlinear frequency conversion (Invited Paper)**, Jennifer K. Hite, Mark E. Twigg, Jaime A. Freitas Jr., Michael A. Mastro, Igor Vergaftman, Jerry R. Meyer, Shawn P. O'Connor, Nicholas J. Condon, Francis J. Kub, Steven R. Bowman, Charles R. Eddy Jr., U.S. Naval Research Lab. (USA) . . . . . [8604-30]
- 8:30 am: **Progress in orientation-patterned GaP for next-generation nonlinear optical devices (Invited Paper)**, Vladimír Tassev, Michael Snure, Rita D. Peterson, Robert G. Bedford, Air Force Research Lab. (USA); William D. Goodhue, Univ. of Massachusetts Lowell (USA); Shivashankar R. Vangala, Solid State Scientific Corp. (USA); Angie Lin, James S. Harris Jr., Martin M. Fejer, Stanford Univ. (USA); Peter G. Schunemann, BAE Systems (USA) . . . . . [8604-31]
- 9:00 am: **Surface plasmon enhanced second harmonic generation in periodically poled whispering gallery resonator**, Ardhendu Saha, Nabamita Goswami, Priyanka Dey, National Institute of Technology Agartala (India) . . . . . [8604-32]
- 9:20 am: **Study and design of fractal two dimensional second-order nonlinear photonic crystals**, Mohamed Lazoul, Univ. Paris 13 (France) . . . . . [8604-33]
- 9:40 am: **Difference frequency generation in strained silicon waveguides**, Federica Bianco, Massimo Cazzanelli, Univ. degli Studi di Trento (Italy); Mher Ghulinyan, Georg Pucker, Fondazione Bruno Kessler (Italy); Lorenzo Pavesi, Univ. degli Studi di Trento (Italy) . . . . . [8604-34]
- 10:00 am: **Tapered nanowire waveguide layout for rapid optical loss measurement by cut-back technique**, M. Firdaus A. Muttalib, Univ. of Southampton (United Kingdom); Ruiqi Y. Chen, Stuart J. Pearce, Martin D. B. Charlton, Univ. of Southampton (United Kingdom) . . . . . [8604-35]
- Coffee Break . . . . . Thu 10:20 am to 10:50 am

**SESSION 8**

**Room: 133 (Exhibit Level) . . . . . Thu 10:50 am to 12:20 pm**

**Nonlinear Materials and Characterization II**

Session Chairs: **Peter G. Schunemann**, BAE Systems (USA);  
**Baldemar Ibarra-Escamilla**, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico)

- 10:50 am: **Tailorable stimulated Brillouin scattering in silicon nanophotonics (Invited Paper)**, Peter T. Rakich, Sandia National Labs. (USA) and Yale Univ. (USA); Heedeuk Shin, Sandia National Labs. (USA); Wenjun Qiu, Massachusetts Institute of Technology (USA); Robert L. Jarecki, Jonathan A. Cox, Roy H. Olsson III, Andrew Starbuck, Sandia National Labs. (USA); Zheng Wang, The Univ. of Texas at Austin (USA) . . . . . [8604-36]
- 11:20 am: **Large second-harmonic generation in silicon nitride films and silicon nitride resonant waveguide gratings**, Tingyin Ning, Henna Pietarinen, Outi Hyvärinen, Janne Simonen, Martti Kauranen, Goëry Genty, Tampere Univ. of Technology (Finland) . . . . . [8604-37]
- 11:40 am: **Giant optical nonlinearity of graphene in a magnetic field**, Xianghan Yao, Alexey A. Belyanin, Texas A&M Univ. (USA) . . . . . [8604-38]
- 12:00 pm: **Low loss OPGaAs waveguides for quasi-phaseshifted infrared devices**, Izaak V. Kemp, Air Force Research Lab. (USA); Dan Botez, Univ. of Wisconsin-Madison (USA); Rita D. Peterson, Kenneth L. Schepler, Air Force Research Lab. (USA) . . . . . [8604-40]

# High-Power Diode Laser Technology and Applications XI

Conference Chair: **Mark S. Zediker**, Foro Energy, Inc. (USA)

Program Committee: **Friedrich G. Bachmann**, LUMERA LASER GmbH (Germany); **Stefan W. Heinemann**, Fraunhofer USA, Inc. (USA); **Volker Krause**, Laserline Inc. (USA); **Robert J. Martinsen**, nLIGHT Corp. (USA); **Kurt J. Linden**, Spire Corp. (USA); **Erik P. Zucker**, JDSU (USA)

## Sunday 3 February

### SESSION 1

Room: 133 (Exhibit Level) . . . . .Sun 8:30 am to 10:10 am

#### High-Power Fiber Coupled Sources I

Session Chair: **Volker Krause**, Laserline GmbH (Germany)

8:30 am: **Advances in power-delivery and loss-handling capabilities of small connectors for fiber-optic launching of high-power diode lasers**, Stuart Campbell, Magnus Pålsson, Optoskand AB (Sweden) . . . . . [8605-1]

8:50 am: **Characterization of laser diodes under short-pulsed conditions with high pulse energies**, Tobias Koenning, Evan Hale, Kim Alegria, Steve Patterson, DILAS Diode Laser, Inc. (USA) . . . . . [8605-2]

9:10 am: **Micro-optics and beam shaping the inconspicuous key elements for highly efficient and brilliant high power diode laser systems**, Thomas Mitra, Udo Fornahl, Jana Fründt, Oliver Homburg, Waleri Imgrunt, Manfred Jarczynski, Jens Meinschien, Michael Voss, LIMO Lissotschenko Mikrooptik GmbH (Germany) . . . . . [8605-3]

9:30 am: **High-brightness 15-W/60%-efficient single emitters for fiber laser pumping**, Dan A. Yanson, Moshe Levy, Ido Amrani, Moshe Shamay, Noam Rappaport, Yaroslav Don, Ophir Peleg, Shalom Cohen, Yuri Berk, Genadi Klumel, Renana Tessler, Yoram Karni, SCD Semiconductor Devices (Israel) . . . . . [8605-4]

9:50 am: **High brightness fiber coupled pump modules optimized for optical efficiency and power**, Kirk Price, Marty Hemenway, Ling Bao, John G. Bai, Kylan Hoener, Kevin Shea, David Dawson, Manoj Kanskar, nLIGHT Corp. (USA) . . . . . [8605-5]

Coffee Break . . . . . Sun 10:10 am to 10:40 am

### SESSION 2

Room: 133 (Exhibit Level) . . . . .Sun 10:40 am to 12:20 pm

#### High-Power Fiber Coupled Sources II

Session Chair: **Erik P. Zucker**, JDSU (USA)

10:40 am: **Monolithic fast-axis collimation of diode laser stacks**, Roy McBride, Natalia Trela, Matthew O. Currie, Jozef J. Wendland, PowerPhotonic, Ltd. (United Kingdom) . . . . . [8605-6]

11:00 am: **Optimization of fiber coupling in ultra-high power pump modules at  $\lambda = 980$  nm**, Boris N. Sverdlov, Hans-Ulrich Pfeiffer, Evgeny Zibik, Stefan Mohrdiek, Michele Agresti, Norbert Lichtenstein, Oclaro, Inc. (Switzerland) . . . . . [8605-7]

11:20 am: **Micro-lens arrays for laser beam homogenization**, Volker R. Sinhoff, Stefan Hambuecker, Olaf Ruebenach, Christian Wessling, Klaus Kleine, INGENERIC GmbH (Germany) . . . . . [8605-8]

11:40 am: **Power scaling to high-brightness kW systems using semiconductor bars in water-cooled stacks**, David A. Schleunig, Keith Guinn, Serguei Kim, Krishna Kuchibhotla, Calvin Luong, Yu Zhang, Bruno Acklin, Coherent, Inc. (USA) . . . . . [8605-9]

12:00 pm: **Multi-kW high-brightness fiber coupled diode laser**, Bernd Köhler, Armin Segref, Paul Wolf, Andreas Unger, Heiko Kissel, Jens Biesenbach, DILAS Diodenlaser GmbH (Germany) . . . . . [8605-10]

Lunch Break . . . . . Sun 12:20 pm to 1:50 pm

### SESSION 3

Room: 133 (Exhibit Level) . . . . .Sun 1:50 pm to 3:10 pm

#### High-Power Laser Diode Sources I

Session Chair: **Stefan W. Heinemann**, Fraunhofer USA, Inc. (USA)

1:50 pm: **Laser bars and single emitters in the 9xx emission range optimized for high output powers at reduced far field angles**, Martin Zorn, Ralf Huelsewede, Agnieszka Pietrzak, Olaf Hirsekorn, Haike Schulze, Juergen Sebastian, JENOPTIK Diode Lab GmbH (Germany); Petra Hennig, JENOPTIK Laser GmbH (Germany) . . . . . [8605-11]

2:10 pm: **Higher brightness laser diodes with smaller slow axis divergence**, Wenyang Sun, Science Research Lab., Inc. (USA); Rajiv Pathak, Coherent, Inc. (USA); Mehmet Dogan, Geoff Campbell, Henry Eppich, Jonah H. Jacob, Science Research Lab., Inc. (USA); Aland K. Chin, Somerville Laser Technology, LLC (USA); Jack Fryer, Micro Cooling Concepts, Inc. (USA) . . . . . [8605-12]

2:30 pm: **Liquid metal heat sink for high-power laser diodes**, John Vetrovec, Drew A. Copeland, Amardeep S. Litt, Aqwest, LLC (USA); Jeremy Junghans, Roger Durkee, Northrop Grumman Cutting Edge Optonics (USA) . . . . . [8605-13]

2:50 pm: **Optimizing performance of 808 nm diode laser bars for efficient high-temperature operation**, John G. Bai, Ling Bao, Zhigang Chen, Weimin Dong, Xingguo Guan, Shiguo Zhang, Jason Patternson, Mike Grimshaw, Mark DeVito, Manoj Kanskar, Rob Martinsen, Jim Haden, nLIGHT Corp. (USA) . . . . . [8605-14]

Coffee Break . . . . . Sun 3:10 pm to 3:40 pm

### SESSION 4

Room: 133 (Exhibit Level) . . . . .Sun 3:40 pm to 5:20 pm

#### High-Power Laser Diode Sources II

Session Chair: **Friedrich G. Bachmann**

3:40 pm: **High-power high-beam-quality laser source with narrow stable spectra based on truncated-tapered semiconductor amplifier**, Xiaozhuo Wang, Götz Erbert, Hans Wenzel, Paul Crump, Bernd Eppich, Steffen Knigge, Peter Ressel, Arnim Ginolas, Andre Maassdorf, Guenther Tränkle, Ferdinand-Braun-Institut (Germany) . . . . . [8605-15]

4:00 pm: **Novel opto-mechanical platform for line generators of high-power diode lasers**, Jens Meinschien, Melanie Brodner, Udo Fornahl, Dirk Hauschild, Ulrich Jentsch, Thomas Mitra, Stephan Schneider, Detlef Stöhr, LIMO Lissotschenko Mikrooptik GmbH (Germany) . . . . . [8605-16]

4:20 pm: **High-power and high-efficiency distributed feedback (DFB) lasers operating in the 1.4-1.6 mm range for eye-safe applications**, Toby J. Garrod, Christian Galstad, Michael Klaus, Don Olson, Yan Xiao, Francois Brunet, Alfaight, Inc. (USA) . . . . . [8605-17]

4:40 pm: **High-brightness laser systems incorporating advanced laser bars**, Stephan G. Strohmaier, Thilo Vethake, Mark Gottdiener, Jens Wunderlin, Viorel Negoita, Yufeng Li, Tobias Barnowski, Tim Gong, Haiyan An, Georg Treusch, TRUMPF Photonics (USA) . . . . . [8605-18]

5:00 pm: **High-power fiber-coupled 100 W visible spectrum diode lasers for display applications**, Andreas Unger, Bernd Köhler, Matthias Küster, Jens Biesenbach, DILAS Diodenlaser GmbH (Germany) . . . . . [8605-19]

LASE



**Monday 4 February**

**SESSION 5**

**Room: 133 (Exhibit Level) . . . . . Mon 8:20 am to 10:00 am**

**Laser Diode Reliability I**

Session Chair: **Kurt J. Linden**, Spire Corp. (USA)

8:20 am: **The impact of external optical feedback to the degradation behavior of high-power diode lasers**, Martin Hempel, Forschungsverbund Berlin e.V. (Germany); Mingjun Chi, Paul M. Petersen, Technical Univ. of Denmark (Denmark); Ute Zeimer, Ferdinand-Braun-Institut (Germany); Jens W. Tomm, Forschungsverbund Berlin e.V. (Germany) . . . . . [8605-20]

8:40 am: **Catastrophic optical bulk damage (COBD) processes in aged and proton-irradiated high power InGaAs-AlGaAs strained quantum well lasers**, Yongkun Sin, Stephen LaLumondiere, Brendan Foran, Nathan Presser, William Lotshaw, Steven C. Moss, The Aerospace Corp. (USA) . . . . . [8605-22]

9:00 am: **Reliability of high power/brightness diode lasers emitting from 790 to 980 nm**, Ling Bao, John G. Bai, Kirk Price, Kevin Bruce, Mark Devito, Mike Grimshaw, Weimin Dong, Xingguo Guan, Shiguo Zhang, Hailong Zhou, David Dawson, Manoj Kanskar, Rob Martinsen, Jim Haden, nLIGHT Corp. (USA) . . . . . [8605-23]

9:20 am: **High power 405 nm diode laser fiber-coupled single-mode system with high long-term stability**, Cornell P. Gonschior, Karl-Friedrich Klein, Technische Hochschule Mittelhessen (Germany); Tong Sun, Ken T. V. Grattan, The City Univ. (United Kingdom) . . . . . [8605-24]

9:40 am: **Laser-bar stack using ELF heat-sinks mounted kinematically for double-sided cooling**, Aland K. Chin, Somerville Laser Technology, LLC (USA); Jeff G. Manni, JGM Associates, Inc. (USA); Richard H. Chin, Science Research Lab., Inc. (USA); Joe Levy, Northrop Grumman Cutting Edge Optronics (USA); Mehmet Dogan, Jonah H. Jacob, Science Research Lab., Inc. (USA); Rajiv Pathak, Coherent, Inc. (USA); Christian Wessling, INGENERIC GmbH (Germany); Keith D. Lang, Henry Eppich, Science Research Lab., Inc. (USA); Jay Fryer, Micro Cooling Concepts, Inc. (USA); Tobias Haverkamp, INGENERIC GmbH (Germany) . . . . . [8605-25]

Coffee Break . . . . . Mon 10:00 am to 10:30 am

**SESSION 6**

**Room: 133 (Exhibit Level) . . . . . Mon 10:30 am to 11:50 am**

**Spectral Beam Combined Sources**

Session Chair: **Erik P. Zucker**, JDSU (USA)

10:30 am: **Compact high brightness diode laser emitting 400W from a 0.1mm fiber**, Stefan W. Heinemann, Benjamin Lewis, Torsten Schmidt, Fraunhofer USA, Inc. (USA); Ulrich Pahl, Wolfgang Gries, DirectPhotonics Industries GmbH (Germany) . . . . . [8605-26]

10:50 am: **Suppression of mode switching noise in wavelength stabilized laser diodes by external Bragg gratings**, Karl Häusler, Ralf Staske, Goetz Erbert, Ferdinand-Braun-Institut (Germany) . . . . . [8605-27]

11:10 am: **Multi-wavelength operation of an unstructured broad area diode laser using spectral beam combining**, Christof Zink, Antonio Saghati, Ronny Schmidt, Danilo Skoczowsky, Axel Heuer, Ralf Menzel, Univ. Potsdam (Germany) . . . . . [8605-28]

11:30 pm: **Low-loss smile-insensitive external frequency-stabilization of high power diode lasers enabled by vertical designs with extremely low divergence angle and high efficiency**, Paul Crump, Steffen Knigge, Andre Maassdorf, Frank Bugge, Ferdinand-Braun-Institut (Germany); Stefan Hengesbach, Ulrich Witte, Hans-Dieter Hoffmann, Fraunhofer-Institut für Lasertechnik (Germany); Bernd Köhler, Ralf Hubrich, Heiko Kissel, Jens Biesenbach, DILAS Diodenlaser GmbH (Germany); Götz Erbert, Guenther Traenkle, Ferdinand-Braun-Institut (Germany) . . . . . [8605-29]

Lunch Break . . . . . Mon 11:50 am to 1:20 pm

**SESSION 7**

**Room: 133 (Exhibit Level) . . . . . Mon 1:20 pm to 3:00 pm**

**High-Power Laser Diode Reliability II**

Session Chair: **Robert J. Martinsen**, nLIGHT Corp. (USA)

1:20 pm: **Advances in high power and high brightness laser bars with enhanced reliability**, Haiyan An, John Jiang, Yihan Xiong, Aloysius Inyang, Qiang Zhang, Alexander Lewin, Stephan G. Strohmaier, Georg Treusch, TRUMPF Photonics (USA) . . . . . [8605-30]

1:40 pm: **Reliable QCW diode laser arrays for operation with high duty cycles**, Heiko Kissel, Wilhelm Fassbender, Jens Lotz, DILAS Diodenlaser GmbH (Germany); Steve Patterson, DILAS Diode Laser, Inc. (USA); Jens Biesenbach, DILAS Diodenlaser GmbH (Germany) . . . . . [8605-31]

2:00 pm: **Increased power density QCW arrays**, Jeremy Junghans, Joseph Levy, Ryan Feeler, Northrop Grumman Cutting Edge Optronics (USA) . [8605-32]

2:20 pm: **14xx nm and 15xx nm laser diodes with 50% power-conversion-efficiency**, Manoj Kanskar, Ling Bao, Zhigang Chen, Mark DeVito, Weimin Dong, Sandrio Elim, Mike Grimshaw, Xingguo Guan, Shiguo Zhang, nLIGHT Corp. (USA) . . . . . [8605-33]

2:40 pm: **Next generation 9xx/10xx nm high power laser diode bars for multi-kilowatt industrial applications**, J. Paul Commin, René Todt, Martin Krejci, Rainer Bätting, Reinhard Brunner, Norbert Lichtenstein, Oclaro, Inc. (Switzerland) . . . . . [8605-34]

**Tuesday 5 February**

**POSTERS-TUESDAY**

**Room: 103 (Exhibit Level) . . . . . Tue 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the LASE poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Laser assisted sheet metal working in series production**, Markus Eckert, Michael Emonts, Christian Brecher, Fraunhofer-Institut für Produktionstechnologie . . . . . [8605-35]

**20.8W TM polarized GaAsP laser diodes of 808nm wavelength**, Peixu Li, Shandong Huaguang Optoelectronics Co., Ltd. (China); Kai Jiang, Xin Zhang, Qingmin Tang, Wei Xia, Shuqiang Li, Zhongxiang Ren, Shandong Huaguang Optoelectronics Co., Ltd. (China); Xiangang Xu, Shandong Univ. (China) . . . . . [8605-36]

**Latest developments in high brightness diode lasers and their applications**, Waldemar Sokolowski, TRUMPF Laser- und Systemtechnik GmbH (Germany); Alexander Hangst, Matthias Buehler, Alexander Killi, TRUMPF Laser GmbH & Co. KG (Germany); Tracey Ryba, TRUMPF Inc. (USA) . . . . . [8605-37]

**Speckle characteristics of laser diodes for SWIR and NIR active imaging**, Lew Goldberg, U.S. Army RDECOM CERDEC NVESD (USA); Stephen R. Chinn, U.S. Army Night Vision & Electronic Sensors Directorate (USA); Jeffrey H. Leach, U.S. Army RDECOM CERDEC NVESD (USA) . . . . . [8605-38]

**High power 840nm AlGaAs-InGaAsP GRIN-DBSCH laser diodes with extremely small vertical divergence beam**, Chih Tsang Hung, Tien-Chang Lu, National Chiao Tung Univ. (Taiwan) . . . . . [8605-39]



# Vertical-External-Cavity Surface-Emitting Lasers (VECSELS) III

Conference Chair: **Jennifer E. Hastie**, Univ. of Strathclyde (United Kingdom)

Program Committee: **Sophie Bouchoule**, CNRS Lab. de Photonique et de Nanostructures (France); **Juan L. Chilla**, Coherent, Inc. (USA); **Arnaud Garnache**, Univ. Montpellier 2 (France); **Mircea Guina**, Tampere Univ. of Technology (Finland); **Elyahou Kapon**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Ursula Keller**, ETH Zurich (Switzerland); **Jerome V. Moloney**, The Univ. of Arizona (USA); **Anne C. Tropper**, Univ. of Southampton (United Kingdom)

## Sunday 3 February

### OPENING REMARKS

Room: 123 (Exhibit Level) . . . . . 8:30 am to 8:40 am

Jennifer E. Hastie, Univ. of Strathclyde (United Kingdom)

### SESSION 1

Room: 123 (Exhibit Level) . . . . . Sun 8:40 am to 10:20 am

#### Power Scaling I

Session Chair: **Jerome V. Moloney**, The Univ. of Arizona (USA)

8:40 am: **Design of high-efficiency semiconductor disk lasers (Tutorial)** (*Invited Paper*), Peter Unger, Univ. Ulm (Germany) . . . . . [8606-1]

9:30 am: **Development of next generation OPS laser products** (*Invited Paper*), Juan L. Chilla, Coherent, Inc. (USA) . . . . . [8606-2]

10:00 am: **High power (23 W) vertical external cavity surface emitting laser emitting at 1180 nm**, Tomi Leinonen, Sanna Ranta, Miki Tavast, Tampere Univ. of Technology (Finland); Ryan J. Epstein, Gregory J. Fetzer, Arete Associates (USA); Sandalphon, Cinnabar Optics LLC (USA); Neil R. Van Lieu, Arete Associates (USA); Mircea Guina, Tampere Univ. of Technology (Finland) [8606-3]

Coffee Break . . . . . Sun 10:20 am to 10:50 am

### SESSION 2

Room: 123 (Exhibit Level) . . . . . Sun 10:50 am to 12:40 pm

#### Ultrafast VECSELS I: High Average Power

Session Chair: **Ursula Keller**, ETH Zurich (Switzerland)

10:50 am: **Passively mode-locked femtosecond VECSELS with high average output power** (*Invited Paper*), Maik Scheller, College of Optical Sciences, The Univ. of Arizona (USA); Stephan W. Koch, Philipps-Univ. Marburg (Germany); Jerome V. Moloney, The Univ. of Arizona (USA) . . . . . [8606-4]

11:20 am: **Characterization of nonlinear gain parameters in VECSELS to optimize femtosecond high average power operation** (*Invited Paper*), Mario Mangold, Valentin J. Wittwer, Oliver D. Sieber, Martin Hoffmann, Matthias Golling, Thomas Südmeyer, Ursula Keller, ETH Zurich (Switzerland) . . . . . [8606-5]

11:50 am: **Towards VECSEL frequency combs** (*Invited Paper*), Keith G. Wilcox, Univ. of Southampton (United Kingdom) . . . . . [8606-6]

12:20 pm: **Supercontinuum generation with femtosecond pulse fiber amplified VECSELS**, Christopher R. Head, Ho-Yin Chan, James S. Feehan, David P. Shepherd, Shaif-ul Alam, Anne C. Tropper, Jonathan H. Price, Keith G. Wilcox, Univ. of Southampton (United Kingdom) . . . . . [8606-7]

Lunch Break . . . . . Sun 12:40 pm to 2:10 pm

### SESSION 3

Room: 123 (Exhibit Level) . . . . . Sun 2:10 pm to 3:30 pm

#### Intracavity Techniques

Session Chair: **Jennifer E. Hastie**, Univ. of Strathclyde (United Kingdom)

2:10 pm: **Semiconductor disk lasers: a flexible intracavity power platform** (*Invited Paper*), John-Mark Hopkins, Univ. of Strathclyde (United Kingdom); David J. M. Stothard, Malcolm H. Dunn, Univ. of St. Andrews (United Kingdom); David Burns, Univ. of Strathclyde (United Kingdom) . . . . . [8606-8]

2:40 pm: **Intracavity-enhanced solid-state laser cooling using high power VECSELS at 1020 nm** (*Invited Paper*), Mansoor Sheik-Bahae, Mohammad Ghasemkhani, Alexander R. Albrecht, The Univ. of New Mexico (USA); Denis V. Seletskiy, Univ. Konstanz (Germany); Jeffrey G. Cederberg, Sandia National Labs. (USA); Seth D. Melgaard, The Univ. of New Mexico (USA) . . . . . [8606-9]

3:10 pm: **30 W peak-power 3 ns pulse-width operation of a 2 μm electro-optically cavity-dumped VECSEL**, Sebastian Kaspar, Marcel Rattunde, Tino Töpfer, Christian Manz, Klaus Köhler, Joachim Wagner, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany) . . . . . [8606-10]

Coffee Break . . . . . Sun 3:30 pm to 4:00 pm

### SESSION 4

Room: 123 (Exhibit Level) . . . . . Sun 4:00 pm to 5:10 pm

#### Spectral Coverage

Session Chair: **Mircea Guina**, Tampere Univ. of Technology (Finland)

4:00 pm: **VECSEL-pumped infrared and visible Raman lasers** (*Invited Paper*), Daniele C. Parrotta, Peter J. Schlosser, Alan J. Kemp, Martin D. Dawson, Jennifer E. Hastie, Univ. of Strathclyde (United Kingdom) . . . . . [8606-11]

4:30 pm: **Investigation of InAs quantum dashes for 1.45-2.1 μm vertical external cavity surface emitting laser active regions**, Thomas J. Rotter, Pankaj Ahirwar, Darryl M. Shima, Christopher P. Hains, L. Ralph Dawson, Ganesh Balakrishnan, Ctr. for High Technology Materials (USA); Saima Husaini, Robert G. Bedford, Air Force Research Lab. (USA) . . . . . [8606-12]

4:50 pm: **TEM based analysis of III-Sb VECSELS on GaAs substrates for improved laser performance**, Pankaj Ahirwar, Darryl M. Shima, Thomas J. Rotter, Stephen P. R. Clark, Christopher P. Hains, L. Ralph Dawson, Ganesh Balakrishnan, Ctr. for High Technology Materials (USA); Robert G. Bedford, Air Force Research Lab. (USA); Yi-Ying Lai, Alexandre Laurain, Jörg Hader, College of Optical Sciences, The Univ. of Arizona (USA); Jerome V. Moloney, The Univ. of Arizona (USA) . . . . . [8606-13]

LASE

## Monday 4 February

### SESSION 5

Room: 123 (Exhibit Level) . . . . . Mon 9:00 am to 10:30 am

#### Electrical Pumping and Device Packaging

Session Chair: **Arnaud Garnache**, Univ. Montpellier 2 (France)

9:00 am: **Recent progress in wafer-fused VECSELS emitting in the 1310 nm and 1550 nm bands** (*Invited Paper*), Alexei Sirbu, Alexandru Mereuta, Andrei Caliman, Vladimir Iakovlev, Nicolas Volet, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Jari Lyytikäinen, Jussi Rautiainen, Oleg G. Okhotnikov, Tampere Univ. of Technology (Finland); Kamil Pierscinski, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Antti Rantamäki, Tampere University of Technology (Finland); Elyahou Kapon, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8606-14]

9:30 am: **Passively mode-locked electrically pumped VECSELS**, Christian A. Zaugg, Wolfgang P. Pallmann, Mario Mangold, Valentin J. Wittwer, ETH Zurich (Switzerland); Holger Moench, Stephan Gronenborn, Philips Technologie GmbH (Germany); Michael Miller, Philips Technologie GmbH U-L-M Photonics (Germany); Bauke W. Tilma, Thomas Südmeyer, Ursula Keller, ETH Zurich (Switzerland) . . . . . [8606-15]

9:50 am: **Analysis of single-mode efficiency of electrically-pumped VECSELS**, Thomas Schwarz, Michael Berens, RWTH Aachen (Germany); Stephan Gronenborn, Johanna Kolb, Philips Technologie GmbH (Germany); Peter Loosen, RWTH Aachen (Germany); Michael Miller, Philips Technologie GmbH U-L-M Photonics (Germany); Holger Moench, Philips Technologie GmbH (Germany); Rolf Wester, Fraunhofer-Institut für Lasertechnik (Germany) [8606-16]

10:10 am: **Automated assembly of VECSEL components**, Christian Brecher, Nicolas Pyschny, Sebastian Haag, Fraunhofer-Institut für Produktionstechnologie (Germany) . . . . . [8606-17]

Coffee Break . . . . . Mon 10:30 am to 11:00 am

### SESSION 6

Room: 123 (Exhibit Level) . . . . . Mon 11:00 am to 12:10 pm

#### Power Scaling II: Thermal Management

Session Chair: **Juan L. Chilla**, Coherent, Inc. (USA)

11:00 am: **Characteristics of thermal resistance in (Gain)As-based near-infrared VECSEL** (*Invited Paper*), Wolfgang Stolz, Bernd Heinen, Philipps-Univ. Marburg (Germany); Tsuei-Lian Wang, College of Optical Sciences, The Univ. of Arizona (USA); Bernardette Kunert, Philipps-Univ. Marburg (Germany); Jörg Hader, College of Optical Sciences, The Univ. of Arizona (USA); Martin Koch, Stephan W. Koch, Philipps-Univ. Marburg (Germany); Jerome V. Moloney, The Univ. of Arizona (USA) . . . . . [8606-18]

11:30 am: **2- $\mu$ m single-chip VECSEL overcoming the 10-W benchmark by means of 1.5- $\mu$ m barrier pumping**, Marcel Rattunde, Sebastian Kaspar, Tino Töpfer, Andreas Bächle, Rolf Aidam, Joachim Wagner, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany) . . . . . [8606-19]

11:50 am: **Effects of cryogenic temperatures on the performance of CW and mode-locked VECSELS**, Oliver J. Morris, Keith G. Wilcox, Christopher R. Head, Andrew P. Turnbull, Univ. of Southampton (United Kingdom); Ian Farrer, Harvey E. Beere, David A. Ritchie, Univ. of Cambridge (United Kingdom); Anne C. Tropper, Univ. of Southampton (United Kingdom) . . . . . [8606-20]

Lunch Break . . . . . Mon 12:10 pm to 1:40 pm

### SESSION 7

Room: 123 (Exhibit Level) . . . . . Mon 1:40 pm to 3:20 pm

#### Ultrafast VECSELS II

Session Chair: **Anne C. Tropper**, Univ. of Southampton (United Kingdom)

1:40 pm: **Self mode locked OPSSL** (*Invited Paper*), Hsing-Chih Liang, Yi-Chun Lee, Jung-Chen Tung, Kuan-Wei Su, Yung-Fu Chen, Kai-Feng Huang, National Chiao Tung Univ. (Taiwan) . . . . . [8606-21]

2:10 pm: **Advances in mode-locked semiconductor disk lasers** (*Invited Paper*), Lukasz W. Kornaszewski, Nils Hempler, Craig Hamilton, Gareth T. Maker, Graeme P. A. Malcolm, M Squared Lasers Ltd. (United Kingdom) . . . . . [8606-22]

2:40 pm: **Generation of 200 fs pulses with a short micro-cavity VECSEL**, Andrew P. Turnbull, Keith G. Wilcox, Christopher R. Head, Oliver J. Morris, Univ. of Southampton (United Kingdom); Ian Farrer, David A. Ritchie, Univ. of Cambridge (United Kingdom); Anne C. Tropper, Univ. of Southampton (United Kingdom) . . . . . [8606-23]

3:00 pm: **Exploring spatio-temporal dynamics of an optically pumped semiconductor laser with intracavity second harmonic generation**, Yi-Chun Lee, Hsing-Chih Liang, Jung-Chen Tung, Kuan-Wei Su, Yung-Fu Chen, Kai-Feng Huang, National Chiao Tung Univ. (Taiwan) . . . . . [8606-24]

Coffee Break . . . . . Mon 3:20 pm to 3:50 pm

### SESSION 8

Room: 123 (Exhibit Level) . . . . . Mon 3:50 pm to 5:10 pm

#### Single Frequency

Session Chair: **Elyahou Kapon**, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

3:50 pm: **Noise properties of NIR and MIR VECSELS** (*Invited Paper*), Mikhaël Myara, Univ. Montpellier 2 (France) . . . . . [8606-25]

4:20 pm: **Optically-pumped external-cavity semiconductor lasers for precision spectroscopy and laser cooling of atomic Hg** (*Invited Paper*), R. Jason Jones, Justin R. Paul, Yushi Kaneda, Tsuei-Lian Wang, Christian R. Lytle, College of Optical Sciences, The Univ. of Arizona (USA); Jerome V. Moloney, The Univ. of Arizona (USA) . . . . . [8606-26]

4:50 pm: **Tunable high-purity microwave signal generation from a dual-frequency VECSEL at 852 nm**, F. A. Camargo, Lab. Charles Fabry (France); N. Girard, Thales Research and Technology (France); J.-M. Danet, LNE-SYRTE, Systèmes de Référence Temps-Espace, Observatoire de Paris, CNRS (France); G. Bailli, L. Morvan, D. Dolfi, Thales Research & Technology (France); David Holleville, LNE-SYRTE, Systèmes de Référence Temps-Espace, Observatoire de Paris, CNRS (France); S. Guérandel, Observatoire de Paris (France); I. Sagnes, Lab. de Photonique et de Nanostructures (France); Patrick Georges, Lab. Charles Fabry (France); G. Lucas-Leclin, Lab. Charles Fabry, Institut d'Optique, CNRS (France) . . . . . [8606-28]

#### Closing Remarks and Announcement of Student Prize

Room: 123 (Exhibit Level) . . . . . 5:10 pm to 5:20 pm

**Jennifer E. Hastie**, Univ. of Strathclyde (United Kingdom)

Throughout the conference, qualifying student oral presentations will be evaluated. Student presentations will be judged based on scientific merit, impact, and clarity of the presentation (not the manuscript). While the award is not judged by the manuscript, a manuscript must be submitted.

Award Sponsor: **Coherent**

## Tuesday 5 February

### POSTERS-TUESDAY

Room: 103 (Exhibit Level) . . . . . Tue 6:00 pm to 8:00 pm

Conference attendees are invited to attend the LASE poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

**Efficient thermoelectric cooling of concentrated heat loads**, Jeff Hershberger, Robert Smythe, Xiaoyi Gu, Richard Hill, Laird Technologies (USA) . . . . . [8606-27]



# Laser Applications in Microelectronic and Optoelectronic Manufacturing (LAMOM) XVIII

**Conference Chairs:** **Xianfan Xu**, Purdue Univ. (USA); **Guido Hennig**, Daetwyler Graphics AG (Switzerland); **Yoshiki Nakata**, Osaka Univ. (Japan); **Stephan W. Roth**, BLZ Bayerisches Laserzentrum GmbH (Germany)

**Program Committee:** **Craig B. Arnold**, Princeton Univ. (USA); **J. Thomas Dickinson**, Washington State Univ. (USA); **Jan J. Dubowski**, Univ. de Sherbrooke (Canada); **Bo Gu**, Bos Photonics (USA); **Henry Helvajian**, The Aerospace Corp. (USA); **Ralf Knappe**, LUMERA LASER GmbH (Germany); **Yongfeng Lu**, Univ. of Nebraska-Lincoln (USA); **Michel Meunier**, Ecole Polytechnique de Montréal (Canada); **Beat Neuenschwander**, Bern Univ. of Applied Science (Switzerland); **Hiroyuki Niino**, National Institute of Advanced Industrial Science and Technology (Japan); **Alberto Piqué**, U.S. Naval Research Lab. (USA); **Gediminas Raciukaitis**, Ctr. for Physical Sciences and Technology (Lithuania); **Andrei V. Rode**, The Australian National Univ. (Australia); **Klaus Sokolowski-Tinten**, Univ. Duisburg-Essen (Germany); **Razvan Stoian**, Lab. Hubert Curien (France); **Koji Sugioka**, RIKEN (Japan)

LASE

## Monday 4 February

### SESSION 1

Room: 120 (Exhibit Level) . . . . . Mon 8:10 am to 10:00 am

#### NOTE ROOM CHANGE

#### Nanoscale Materials Synthesis and Processing

Joint Session with Conferences 8607 and 8609

Session Chair: **Guido Hennig**, Daetwyler Graphics AG (Switzerland)

8:10 am: **10-year perspective on laser generation of sub-100 nm structures** (*Invited Paper*), Andreas Ostendorf, Ruhr-Univ. Bochum (Germany) . . . [8609-18]

8:40 am: **Formation of quantum dots from precursors in polymeric films by ps-laser**, Gediminas Raciukaitis, Institute of Physics (Lithuania) and Ctr. for Physical Sciences and Technology (Lithuania); Paulius Gecys, Institute of Physics (Lithuania); Francesco Antolini, Lenuta Stroea, ENEA (Italy); Ashu K. Bansal, Ifor D. W. Samuel, Univ. of St. Andrews (United Kingdom); Sybille Allard, Ulrich Scherf, Bergische Univ. Wuppertal (Germany); Luca Ortolani, Istituto per la Microelettronica e Microsistemi (Italy) . . . . . [8607-1]

9:00 am: **Growth of periodic ZnO nano-crystals on buffer layer patterned by interference laser irradiation**, Daisuke Nakamura, Tetsuya Shimogaki, Kota Okazaki, Mitsuhiro Higashihata, Kyushu Univ. (Japan); Yoshiki Nakata, Osaka Univ. (Japan); Tatsuo Okada, Kyushu Univ. (Japan) . . . . . [8607-2]

9:20 am: **Sintering of solution-based aluminum nano-particles by laser ignition**, Jie Zhang, Panasonic Boston Lab. (USA) . . . . . [8607-3]

9:40 am: **F2 laser induced surface and interface modifications of aluminum thin films for selective metallization**, Masayuki Okoshi, Kazufumi Iwai, National Defense Academy (Japan); Hidetoshi Nojiri, Renias Co., Ltd. (Japan); Narumi Inoue, National Defense Academy (Japan) . . . . . [8607-4]

Coffee Break . . . . . Mon 10:00 am to 10:30 am

### SESSION 2

Room: 120 (Exhibit Level) . . . . . Mon 10:30 am to 12:00 pm

#### NOTE ROOM CHANGE

#### Nanoscale Patterning

Joint Session with Conferences 8607 and 8609

Session Chair: **Xianfan Xu**, Purdue Univ. (USA)

10:30 am: **Nanopatterning beyond the far-field diffraction limit** (*Invited Paper*), Rajesh Menon, The Univ. of Utah (USA) . . . . . [8607-5]

11:00 am: **Periodic surface structures generated by cross-polarized double femtosecond laser pulse irradiation sequences**, Arkadi Rosenfeld, Sandra Höhm, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Jörn Bonse, Jörg Krüger, Bundesanstalt für Materialforschung und-prüfung (Germany) . . . . . [8607-6]

11:20 am: **Periodic surface nanopatterning controlled with preformed scattering structures excited by femtosecond laser irradiation**, Go Obara, Naoki Maeda, Hisashi Shimizu, Mitsuhiro Terakawa, Keio Univ. (Japan); Eric Mazur, Harvard Univ. (USA); Minoru Obara, Keio Univ. (Japan) . . . . . [8607-7]

11:40 am: **Far-field laser direct synthesis of 60 nm silicon nanowires for chemical sensing**, James I. Mitchell, Woongsik Nam, Xianfan Xu, Purdue Univ. (USA) . . . . . [8607-8]

## Tuesday 5 February

### SESSION 3

Room: 130 (Exhibit Level) . . . . . Tue 8:00 am to 10:10 am

#### Ultrafast Laser Micromachining I: Fundamentals

Joint Session with Conferences 8607 and 8611

Session Chair: **Stefan Nolte**, Friedrich-Schiller-Univ. Jena (Germany)

8:00 am: **Modelling electron excitation and relaxation in solids under ultrafast laser irradiation** (*Invited Paper*), Bärbel Rethfeld, Technische Univ. Kaiserslautern (Germany) . . . . . [8607-9]

8:30 am: **Time-resolved X-ray scattering studies of ultrafast phase transitions in laser-excited materials**, Klaus Sokolowski-Tinten, Univ. Duisburg-Essen (Germany) . . . . . [8607-10]

8:50 am: **Time-resolved spectroscopy characterization of femtosecond fiber laser induced plasma**, Huan Huang, Lih-Mei Yang, Jian Liu, PolarOnyx, Inc. (USA) . . . . . [8611-42]

9:10 am: **Time and space resolved fs-laser ablation of transparent tantalum pentoxide thin films**, Stephan Rapp, Janosch Rosenberger, Matthias Domke, Gerhard Heise, Heinz P. Huber, Hochschule München für Angewandte Wissenschaften (Germany) . . . . . [8607-11]

9:30 am: **Factors controlling the incubation in the application of ps laser pulses on copper and iron surfaces**, Beat Neuenschwander, Beat Jaeggi, Marc C. Schmid, Berner Fachhochschule Technik und Informatik (Switzerland); Alex Dommann, Antonia Neels, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Guido Hennig, Daetwyler Graphics AG (Switzerland) . [8607-12]

9:50 am: **Study on the influence of repetition rate and pulse duration on ablation efficiency using a new generation of high power Ytterbium doped fiber ultrafast laser**, John Lopez, Univ. Bordeaux 1 (France); Rémi Torres, ALPhANOV (France); Yoann Zaouter, Clemens Hoenninger, Amplitude Systèmes (France); Patrick Georges, Marc Hanna, Institut d'Optique Graduate School (France); Eric P. Mottay, Amplitude Systèmes (France); Rainer Kling, ALPhANOV (France) . . . . . [8611-43]

Coffee Break . . . . . Tue 10:10 am to 10:40 am

### SESSION 4

Room: 130 (Exhibit Level) . . . . . Tue 10:40 am to 12:30 pm

#### Ultrafast Laser Micromachining II

Fundamentals: Joint Session with Conferences 8607 and 8611

Session Chair: **Yong Feng Lu**, Univ. of Nebraska-Lincoln (USA)

10:40 am: **Ultrafast lasers for materials processing in consumer electronics** (*Invited Paper*), Haibin Zhang, Electro Scientific Industries, Inc. (USA) . [8611-44]

11:10 am: **Micro-structuring of thin titanium films with ultra-short laser pulses**, Regina Moser, Tobias Gschwilm, Adrian Zacherle, Gerhard Heise, Heinz P. Huber, Hochschule München für Angewandte Wissenschaften (Germany) . . . . . [8611-45]

11:30 am: **High throughput laser micro machining on a rotating cylinder with ultra short pulses at highest precision**, Beat Neuenschwander, Beat Jaeggi, Markus Zimmermann, Thomas Meier, Berner Fachhochschule Technik und Informatik (Switzerland); Guido Hennig, Daetwyler Graphics AG (Switzerland) . . . . . [8607-13]

11:50 am: **Formation of mixed metal oxides by femtosecond laser irradiation for solar harvesting**, Kasey C. Phillips, Jin Suntivich, Harvard Univ. (USA); Tian Ming, Shao-Horn Yang, Massachusetts Institute of Technology (USA); Eric Mazur, Harvard Univ. (USA) . . . . . [8607-14]

12:10 pm: **Transient investigations of the laser lift-off process of thin molybdenum films**, Matthias Domke, Stephan Rapp, Jürgen Sotrop, Hochschule München für Angewandte Wissenschaften (Germany); Heinz P. Huber, Hochschule München für Angewandte Wissenschaften (Germany) . . . . . [8611-46]

Lunch/Exhibition Break . . . . . Tue 12:30 pm to 2:00 pm

**SESSION 5**

**Room: 130 (Exhibit Level) . . . . . Tue 2:00 pm to 3:30 pm**

**Ultrafast Laser Micromachining III**

Joint Session with Conferences 8607 and 8611

Session Chair: **Haibin Zhang**, Electro Scientific Industries, Inc. (USA)

2:00 pm: **Double-pulse irradiation of ultrafast laser for high-efficiency glass microwelding** (*Invited Paper*), Koji Sugioka, Sizhu Wu, Katsumi Midorikawa, RIKEN (Japan) . . . . . [8607-15]

2:30 pm: **Ultrastable bonding of glass with femtosecond laser bursts**, Sören Richter, Felix Zimmermann, Sven Döring, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Stefan Nolte, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8611-47]

2:50 pm: **Selective localised modification of silicon crystal by ultrafast laser induced micro-explosion**, Ludovic Rapp, Bianca Haberl, Jodie Bradby, Eugene G. Gamaly, The Australian National Univ. (Australia); Saulius Juodkazis, Swinburne Univ. of Technology (Australia); Andrei V. Rode, The Australian National Univ. (Australia) . . . . . [8607-16]

3:10 pm: **Contrast of femtosecond near infrared and nanosecond deep ultraviolet laser interaction with fused silica glass**, Jianzhao Li, Samira Karimelahi, Peter R. Herman, Univ. of Toronto (Canada) . . . . . [8607-17]

Coffee Break . . . . . Tue 3:30 pm to 4:00 pm

**SESSION 6**

**Room: 130 (Exhibit Level) . . . . . Tue 4:00 pm to 5:40 pm**

**Ultrafast Laser Micromachining IV**

Joint Session with Conferences 8607 and 8611

Session Chair: **Klaus Sokolowski-Tinten**, Univ. Duisburg-Essen (Germany)

4:00 pm: **Influence of ambient pressure on the hole formation process in ultrashort pulse laser deep drilling**, Sven Döring, Sören Richter, Tobias Ullsperger, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Stefan Nolte, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8611-48]

4:20 pm: **Laser through hole formation for microelectronic substrate vertical interconnection**, Chong Zhang, Nikhil Sharma, Amanda E. Schuckman, Islam A. Salama, Tao Wu, Sheng Li, Intel Corp. (USA) . . . [8607-18]

4:40 pm: **Micro-hole drilling with femtosecond fiber laser**, Huan Huang, Lih-Mei Yang, Jian Liu, PolarOnyx, Inc. (USA) . . . . . [8607-19]

5:00 pm: **Spatio-temporal dynamics of femtosecond Bessel beams for high-aspect ratio nanochannel drilling in dielectrics**, Jinggui Zhang, Univ. de Franche-Comté (France); Francois Courvoisier, Institut Femto ST (France); Arnaud Couairon, Ecole Polytechnique (France); John M. Dudley, Univ. de Franche-Comté (France) . . . . . [8611-49]

5:20 pm: **Understanding femtosecond laser hyperdoping mechanism via pump-probe methods**, Yu-Ting Lin, Harvard Univ. (USA); Guoliang Deng, Sichuan Univ. (China); Weilu Shen, Rensselaer Polytechnic Institute (USA); Meng-Ju Sher, Eric Mazur, Harvard Univ. (USA) . . . . . [8607-20]

**POSTERS-TUESDAY**

**Room: 103 (Exhibit Level) . . . . . Tue 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the LASE poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Reducing damage in femtosecond laser processed silicon for photovoltaics**, Benjamin Franta, Harvard Univ. (USA); Clarissa Klein, Menlo School (USA); Eric Mazur, Harvard Univ. (USA) . . . . . [8607-44]

**Research on period microstructure induced by femtosecond laser in transparent dielectric**, Shuwei Fan, Yan Zhang, Xi'an Jiaotong Univ. (China) . . . . . [8607-49]

**Fresnel attenuator of laser radiation power**, Jan A. Owsik, Military Univ. of Technology (Poland); Yuri Avdeev, A. N. Severtsov Institute of Ecology and Evolution (Russian Federation); Anatoly A. Liberman, Alexander A. Kovalev, Alexey S. Mikryukov, Sergey A. Moskalyuk, All-Russian Research Institute for Optical and Physical Measurement (Russian Federation); Janusz Noga, Military Univ. of Technology (Poland); Anna Z. Rembielirska, LOT Polish Airlines (Poland); Joanna Walczuk, Agency for Restructuring and Modernisation of Agriculture (Poland) . . . . . [8607-50]

**Development of hybrid ArF laser system for lithography**, Takashi Onose, Shinji Ito, Kouji Kakizaki, Takashi Matsunaga, Hakaru Mizoguchi, Gigaphoton Inc. (Japan); Shuntaro Watanabe, Chun Zhou, Tokyo Univ. of Science (Japan); C. T. Chen, X. T. Wang, Chinese Academy of Sciences (China); Teruto Kanai, Yohei Kobayashi, The Univ. of Tokyo (Japan) . . . . . [8607-51]

**Laser-induced front side etching using self-regenerating adsorbing layer (SAL-LIFE) of commercial glasses**, Pierre Lorenz, Martin Ehrhardt, Klaus-Peter Zimmer, Leibniz-Institut für Oberflächenmodifizierung e.V. (Germany) . [8607-52]

**Measuring the complex refractive index of metals in the solid and liquid state and its influence on the laser machining**, Marc C. Schmid, Sarah Zehnder, Patrick Schwaller, Beat Neuenschwander, Joseph Zürcher, Urs W. Hunziker, Bern Univ. of Applied Science (Switzerland) . . . . . [8607-53]

**Laser processing system development of large area and high precision**, Hyeonchan Park, Kwanghyun Ryu, Tae-sang Hwang, ASTJETEC Co., Ltd. (Korea, Republic of) . . . . . [8607-54]

**Sub-ns and ps laser performance and results**, Joyce P. Kilmer, Matthew Terraciano, Yusong Yin, Photonics Industries International, Inc. (USA) . [8607-55]

**Femtosecond laser based in-fiber grating fabrication techniques for improved solution sensing**, Farid Ahmed, Univ. of Victoria (Canada); Md. Shamim Ahsan, Man Seop Lee, KAIST (Korea, Republic of); Martin B. G. Jun, Univ. of Victoria (Canada) . . . . . [8607-57]

**Low cost of ownership solid state laser delivering 120 W at 355 nm for material processing applications**, Aleksej M. Rodin, Nick Hay, Young Kwon, Yili Guo, Powerlase Photonics Ltd. (United Kingdom) . . . . . [8607-58]

**Micromachining of Ti-3Al-2.5V tubes by nanosecond Nd:YAG laser**, Yaomin Lin, Alfred E. Mann Foundation for Scientific Research (USA); Mool C. Gupta, Univ. of Virginia (USA) . . . . . [8607-59]

**Mechanism of micromachining of semiconductor silicon by nano short pulses of multi wavelength laser**, Shiva P. Gadag, Southern Methodist Univ. (USA) . . . . . [8607-60]

**Wednesday 6 February**

**SESSION 7**

**Room: 130 (Exhibit Level) . . . . . Wed 8:00 am to 9:50 am**

**Diagnostics in Laser Processing**

Session Chair: **David Jae-Seok Hwang**, Stony Brook Univ. (USA)

8:00 am: **Laser-based spectroscopy and spectrometry** (*Invited Paper*), Yong Feng Lu, Xiang Nan He, Xi Huang, Lian Bo Guo, Univ. of Nebraska-Lincoln (USA) . . . . . [8607-21]

8:30 am: **Raman and fluorescence microscopy in polarized light to probe local femtosecond laser-induced partial amorphization of the monoclinic doped crystal LYB:Eu<sup>3+</sup>**, Nicolas Marquestaut, Univ. Bordeaux 1 (France); Marc Dussauze, Yannick G. Petit, Institut de Chimie de la Matière Condensée de Bordeaux (France); Arnaud Royon, Gautier Papon, Univ. Bordeaux 1 (France); Véronique Jubera, Institut de Chimie de la Matière Condensée de Bordeaux (France); Michel Couzi, Vincent Rodriguez, Univ. Bordeaux 1 (France); Thierry Cardinal, Institut de Chimie de la Matière Condensée de Bordeaux (France); Lionel S. Canioni, Univ. Bordeaux 1 (France) . . . . . [8607-22]

8:50 am: **Quantum cascade laser-based sensing to investigate fast laser ablation process**, Francesco P. Mezzapesa, Vincenzo Spagnolo, Antonio Ancona, Gaetano Scamarcio, CNR-IFN UOS Bari (Italy) . . . . . [8607-23]

9:10 am: **High resolution laser direct imaging technology for package substrate high density routing application**, Sheng Li, Islam A. Salama, Danny R. Singh, Chong Zhang, Intel Corp. (USA) . . . . . [8607-24]

9:30 am: **Femtosecond single-beam dual-voxel local probing of two-photon excited fluorescence in the Eu<sup>3+</sup>-doped monoclinic Li<sub>6</sub>Y(BO<sub>3</sub>)<sub>3</sub> crystal**, Yannick G. Petit, Institut de Chimie de la Matière Condensée de Bordeaux (France); Arnaud Royon, Nicolas Marquestaut, Univ. Bordeaux 1 (France); Marc Dussauze, Philippe Veber, Véronique Jubera, Thierry Cardinal, Institut de Chimie de la Matière Condensée de Bordeaux (France); Lionel S. Canioni, Univ. Bordeaux 1 (France) . . . . . [8607-25]

Coffee Break . . . . . Wed 9:50 am to 10:20 am

**LASE PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . . 10:20 am to 12:30 pm**

10:20 am: **Welcome and Opening Remarks**  
**Bo Gu**, Bos Photonics (USA); **Andreas Tünnermann**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) and Friedrich-Schiller-Univ. Jena (Germany)

10:25 am: **Announcement of the Best “Green” LASE Paper Award**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)

10:30 am: **Laser-based Particle Acceleration and the Path to TeV Physics and Compact X-ray and Gamma Ray Sources** (*Presentation Only*)  
**Wim P. Leemans**, Lawrence Berkeley National Lab. (USA)

11:10 am: **Three-dimensional Metamaterials Made By Direct Laser Writing** (*Presentation Only*)  
**Martin Wegener**, Karlsruher Institut für Technologie (Germany)

11:50 am: **Remote Laser Welding for Automotive Seat Production** (*Presentation Only*)  
**Geert G. Verhaeghe**, Faurecia Autositze GmbH (Germany)  
*See p. 26 for details.*

Lunch/Exhibition Break . . . . . Wed 12:30 pm to 2:00 pm

**SESSION 8**

**Room: 130 (Exhibit Level) . . . . . Wed 2:00 pm to 3:00 pm**

**3D Manufacturing I**

Session Chair: **Henry Helvajian**, The Aerospace Corp. (USA)

2:00 pm: **3D printing, additive manufacturing, and solid freeform fabrication: a new direction in manufacturing** (*Invited Paper*), Joseph J. Beaman, The Univ. of Texas at Austin (USA) . . . . . [8607-26]

2:30 pm: **Laser additive manufacturing in China** (*Invited Paper*), Henry Peng, Rui Guo, Yanmin Li, Zoe Wu, GE China Technology Ctr. (China) . . . . . [8607-27]

Coffee Break . . . . . Wed 3:00 pm to 3:30 pm

**SESSION 9**

**Room: 130 (Exhibit Level) . . . . . Wed 3:30 pm to 5:20 pm**

**3D Manufacturing II**

Session Chair: **Gediminas Raciukaitis**, Institute of Physics (Lithuania)

3:30 pm: **Laser processing of 2D and 3D metamaterial structures** (*Invited Paper*), Nicholas A. Charipar, Kristin M. Metkus, Heungsoo Kim, Matthew A. Kirleis, Raymond C. Y. Auyeung, Andrew T. Smith, Scott A. Mathews, Alberto Piqué, U.S. Naval Research Lab. (USA) . . . . . [8607-29]

4:00 pm: **Optical tweezers in microassembly**, Andreas Ostendorf, Reza Ghadiri, Sarah I. Ksouri, Ruhr-Univ. Bochum (Germany) . . . . . [8607-30]

4:20 pm: **Hologram design for holographic laser machining inside transparent materials**, Masaaki Sakakura, Naoaki Fukuda, Yasuhiko Shimotsuma, Kazuyuki Hirao, Kiyotaka Miura, Kyoto Univ. (Japan) . . . . . [8607-31]

4:40 pm: **LIFT printing of conductive materials for passive microelectronic components**, Julie Ailuno, Ludovic Rapp, Anne Patricia B. Alloncle, Philippe Delaporte, Lasers, Plasmas et Procédés Photoniques (France) . . . . . [8607-32]

5:00 pm: **Investigation of cw and ultrashort pulse laser irradiation of powder surfaces: a comparative study**, Robby Ebert, Frank Ullmann, Joerg Schille, Udo Loeschner, Jan Drechsel, Horst Exner, Hochschule Mittweida (Germany) . . . . . [8607-61]

**Thursday 7 February**

**SESSION 10**

**Room: 130 (Exhibit Level) . . . . . Thu 8:30 am to 10:10 am**

**Laser Direct Write**

Session Chair: **Hiroyuki Niino**, National Institute of Advanced Industrial Science and Technology (Japan)

8:30 am: **Film-free laser microprinting of transparent solutions** (*Invited Paper*), Pere Serra, Adrian Patrascioiu, Juan Marcos Fernández-Pradas, José Luis Morenza, Univ. de Barcelona (Spain) . . . . . [8607-33]

9:00 am: **Applications of laser printing for organic electronics** (*Invited Paper*), Philippe Delaporte, Centre National de la Recherche Scientifique (France) . . . . . [8607-34]

9:30 am: **Chemical and Z-scan analysis on the direct laser writing of 3D nanofabrication of metal structures**, SeungYeon Kang, Kevin Vora, Christopher C. Evans, Kelly Miller, Eric Mazur, Harvard Univ. (USA) . . . . . [8607-35]

9:50 am: **Maskless selective laser patterning of PEDOT:PSS on barrier/foil for organic electronics applications**, Dimitris Karnakis, Tim Stephens, Oxford Lasers Ltd. (United Kingdom); Greg Chabrol, ECAM Strasbourg-Europe (France) . . . . . [8607-36]

Coffee Break . . . . . Thu 10:10 am to 10:40 am

**LASE**



**SESSION 11**

**Room: 130 (Exhibit Level) . . . . . Thu 10:40 am to 12:20 pm**

**Laser Patterning and Drilling**

Session Chair: **Stephan W. Roth,**

BLZ Bayerisches Laserzentrum GmbH (Germany)

10:40 am: **Laser patterning of thin indium tin oxide film on a plastics substrate for high-resolution touch applications,** Tao Zhang, Di Liu, Hee K. Park, Stony Brook Univ. (USA); Dong X. Yu, YUCO Optics Corp. (USA); David J. Hwang, Stony Brook Univ. (USA) . . . . . [8607-37]

11:00 am: **Laser processing of GaN-based light-emitting diodes: the suitable laser source,** Rüdiger Moser, Michael Kunzer, Christian Gößler, Klaus Köhler, Wilfried Pletschen, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany); Ulrich T. Schwarz, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany) and Albert-Ludwigs-Univ. Freiburg (Germany); Joachim Wagner, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany) . . . . . [8607-38]

11:20 am: **Laser cutting of carbon fiber reinforced plastics (CFRP),** Hiroyuki Niino, Yoshizo Kawaguchi, Tadadata Sato, Aiko Narazaki, Ryoza Kurosaki, Yoshihisa Harada, National Institute of Advanced Industrial Science and Technology (Japan) and ALPROT (Japan); Takahiro Nagashima, Zyunpei Kase, Miyachi Corp. (Japan) and ALPROT (Japan); Masafumi Matsushita, Koichi Furukawa, Shin Nippon Koki Co. Ltd. (Japan) and ALPROT (Japan); Michiteru Nishino, Mitsubishi Chemical Corp. (Japan) and ALPROT (Japan) . . . . [8607-39]

11:40 am: **Contrasting methods for high speed picosecond laser drilling of high aspect ratio holes in glass,** Samira Karimelahi, Ladan E. Abolghasemi, Peter R. Herman, Univ. of Toronto (Canada) . . . . . [8607-40]

12:00 pm: **Novel micro-dots design to resolve hotspot appeared on ultra-slim LED backlight,** Wei Ping Chan, Modie Tsai, Yu Ren Chiou, Chih Sheng Jao, Forhouse Corp. (Taiwan) . . . . . [8607-41]

Lunch/Exhibition Break . . . . . Thu 12:20 pm to 1:50 pm

**SESSION 12**

**Room: 130 (Exhibit Level) . . . . . Thu 1:50 pm to 3:10 pm**

**Photovoltaics**

Session Chair: **Yoshiki Nakata,** Osaka Univ. (Japan)

1:50 pm: **Laser-assisted doping process for selective emitter formation in solar cells via combined pulsed and continuous wave laser illuminations,** Di Liu, Hee K. Park, Stony Brook Univ. (USA); Dong X. Yu, YUCO Optics Corp. (USA); David J. Hwang, Stony Brook Univ. (USA) . . . . . [8607-42]

2:10 pm: **Fabrication of polymer-nanocomposite anti-reflective coatings by RIR-MAPLE,** Richard F. Haglund Jr., Vanderbilt Univ. (USA) and Vanderbilt Univ. (USA); Daniel C. Mayo, Vanderbilt Univ. (USA); Senthilraja Singaravelu, Hee K. Park, Kenneth E. Schriver, AppliFlex LLC. (USA) . . . . . [8607-43]

2:30 pm: **Scribing of thin film solar cells by high repetition rate picosecond and nanosecond pulsed lasers and in-situ scribing thickness monitoring,** David J. Hwang, Di Liu, Hee K. Park, Stony Brook Univ. (USA); Dong X. Yu, YUCO Optics Corp. (USA) . . . . . [8607-45]

2:50 pm: **Luminescence down shifter effect in hydrogenated amorphous silicon modified by femtosecond laser radiation,** Andrey Emelyanov, Andrey G. Kazanskii, Mark Khenkin, Pavel Forsh, Pavel Kashkarov, Lomonosov Moscow State Univ. (Russian Federation); Mindaugas Gecevicius, Martynas Beresna, Peter G. Kazansky, Univ. of Southampton (United Kingdom) . [8607-46]

Coffee Break . . . . . Thu 3:10 pm to 4:00 pm

**SESSION 13**

**Room: 130 (Exhibit Level) . . . . . Thu 4:00 pm to 5:50 pm**

**Photovoltaics, Alternative Energy Sources and Advanced Energy Storage Systems**

Joint Session with Conferences 8607 and 8608

Session Chairs: **David Jae-Seok Hwang,** Stony Brook Univ. (USA); **Udo Klotzbach,** Fraunhofer IWS Dresden (Germany)

4:00 pm: **Diode laser processed crystalline silicon thin-film solar cells (Invited Paper),** Sergey Varlamov, The Univ. of New South Wales (Australia); Bonne Eggleston, Jonathan Dore, The Univ. of New South Wales (Australia) and Suntech Power Holdings Co., Ltd. (Australia); Rhett Evans, Daniel Ong, Oliver Kunz, Suntech R&D Australia Pty Ltd. (Australia); Jialiang Huang, The Univ. of New South Wales (Australia); Ute Schubert, Suntech R&D Australia Pty Ltd. (Australia); Kyung Hun Kim, The Univ. of New South Wales (Australia) and Suntech Power Holdings Co., Ltd. (Australia); Renate Egan, Suntech R&D Australia Pty Ltd. (Australia); Martin A. Green, The Univ. of New South Wales (Australia) . . . . . [8608-27]

4:30 pm: **The photovoltaic potential of femtosecond laser textured amorphous silicon,** Meng-Ju Sher, Benjamin Franta, Kenneth Hammond, Lysander Christakis, Eric Mazur, Harvard Univ. (USA) . . . . . [8608-28]

4:50 pm: **Investigation of a reliable all laser scribing process in thin film Cu(In,Ga)(S,Se)<sub>2</sub> manufacturing,** Reiner M. Witte, Bruno Frei, Stefan Schneeberger, Solneva SA (Switzerland); Andreas Burn, Valerio Romano, Martin Mural, Bern Univ. of Applied Science (Switzerland); Stephan Buecheler, Shiro Nishiwaki, EMPA (Switzerland) . . . . . [8607-47]

5:10 pm: **Laser scribing integration of polycrystalline thin film solar cells,** Michele Sozzi, Filomena Manilia, Roberto Antezza, Cristina Catellani, Alessandro Candiani, Enrico Coscelli, Annamaria Cucinotta, Stefano Selleri, Daniele Menossi, Alessio Bosio, Univ. degli Studi di Parma (Italy) . . . . . [8608-29]

5:30 pm: **Scribing of CIGS thin films for solar module fabrication by external integrated interconnection,** Pierre Lorenz, Martin Ehrhardt, Anja Wehrmann, Leibniz-Institut für Oberflächenmodifizierung e.V. (Germany); Christian Scheit, Steffen Ragnow, Alexander Braun, Solarion AG (Germany); Klaus-Peter Zimmer, Leibniz-Institut für Oberflächenmodifizierung e.V. (Germany) . . . . . [8607-48]

# Laser-based Micro- and Nanopackaging and Assembly VII

Conference Chairs: **Udo Klotzbach**, Fraunhofer IWS Dresden (Germany); **Yongfeng Lu**, Univ. of Nebraska-Lincoln (USA); **Kunihiko Washio**, Paradigm Laser Research Ltd. (Japan)

Program Committee: **Craig B. Arnold**, Princeton Univ. (USA); **Jose Alfredo Alvarez-Chavez**, Ctr. de Investigación e Innovación Tecnológica (Mexico); **Friedrich G. Bachmann**, LUMERA LASER GmbH (Germany); **Francois Courvoisier**, Univ. de Franche-Comté (France); **Ramona Eberhardt**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); **Bo Gu**, Bos Photonics (USA); **Duncan P. Hand**, Heriot-Watt Univ. (United Kingdom); **Miguel Holgado Bolaños**, Univ. Politécnica de Madrid (Spain); **Minghui Hong**, National Univ. of Singapore (Singapore); **Nam Seong Kim**, EO Technics Co., Ltd. (Korea, Republic of); **Sonja M. Kittel**, Robert Bosch GmbH (Germany); **Rainer Kling**, ALPHANOV (France); **Thomas Klotzbücher**, Institut für Mikrotechnik Mainz GmbH (Germany); **Carlos Lee**, EPIC (France); **Xinbing Liu**, Panasonic Boston Lab. (USA); **Yasu Osako**, Electro Scientific Industries, Inc. (USA); **Roberto Osellame**, Istituto di Fotonica e Nanotecnologie, CNR, Politecnico di Milano (Italy); **Andreas Ostendorf**, Ruhr-Univ. Bochum (Germany); **Alberto Piqué**, U.S. Naval Research Lab. (USA); **Wilhelm Pflöging**, Karlsruher Institut für Technologie (Germany); **Mariusz Przybylski**, ATL Lasertechnik GmbH (Germany); **Razvan Stoian**, Lab. Hubert Curien, CNRS, Univ. Jean Monnet Saint-Etienne (France); **Koji Sugioka**, RIKEN (Japan); **Akira Watanabe**, Tohoku Univ. (Japan); **Xianfan Xu**, Purdue Univ. (USA); **Haiyan Zhao**, Tsinghua Univ. (China)

LASE

## Wednesday 6 February

### LASE PLENARY SESSION

Room: 134 (Exhibit Level) ..... 10:20 am to 12:30 pm

- 10:20 am: **Welcome and Opening Remarks**  
**Bo Gu**, Bos Photonics (USA); **Andreas Tünnermann**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) and Friedrich-Schiller-Univ. Jena (Germany)
- 10:25 am: **Announcement of the Best “Green” LASE Paper Award**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
- 10:30 am: **Laser-based Particle Acceleration and the Path to TeV Physics and Compact X-ray and Gamma Ray Sources (Presentation Only)**  
**Wim P. Leemans**, Lawrence Berkeley National Lab. (USA)
- 11:10 am: **Three-dimensional Metamaterials Made By Direct Laser Writing (Presentation Only)**  
**Martin Wegener**, Karlsruher Institut für Technologie (Germany)
- 11:50 am: **Remote Laser Welding for Automotive Seat Production (Presentation Only)**  
**Geert G. Verhaeghe**, Faurecia Autositze GmbH (Germany)
- See p. 26 for details.

Lunch/Exhibition Break ..... Wed 12:30 pm to 2:00 pm

### SESSION 1

Room: 132 (Exhibit Level) ..... Wed 2:00 pm to 4:10 pm

#### Laser Micro- and Nanostructuring I

Session Chair: **Udo Klotzbach**, Fraunhofer IWS Dresden (Germany)

- 2:00 pm: **Enhanced light extraction from microstructured organic light-emitting devices (Invited Paper)**, Hong-Bo Sun, Jing Feng, Jilin Univ. (China) ..... [8608-1]
- 2:30 pm: **Periodically structured optical materials by microsphere-assisted laser interactions**, Deepak L. N. Kallepalli Lakshmi Narayana, David Grojo, L. Charmasson, Philippe Delaporte, Olivier P. Utéza, Lasers, Plasmas et Procédés Photoniques (France); Marc Dussauze, Institut des Sciences Moléculaires (France); Evelyne Fargin, Thierry Cardinal, Institut de Chimie de la Matière Condensée de Bordeaux (France); Yannick G. Petit, Lionel S. Canioni, Univ. Bordeaux 1 (France) ..... [8608-2]
- 2:50 pm: **Picosecond and nanosecond pulsed laser ablation of aluminium, polypropylene, polyethylene, and their thin film combinations**, Adrian H. Lutey, Univ. degli Studi di Bologna (Italy); Michele Sozzi, Stefano Selleri, Univ. degli Studi di Parma (Italy); Pier Gabriele Molari, Univ. degli Studi di Bologna (Italy); Annamaria Cucinotta, Univ. degli Studi di Parma (Italy) ..... [8608-3]

3:10 pm: **Improvement of laser dicing system performance I: high speed and high quality processing of thick silicon wafer utilizing spatial light modulator**, Naoya Matsumoto, Yu Takiguchi, Haruyasu Itoh, Masaharu Hoshikawa, Hiroyuki Iwaki, Tsukasa Hasegawa, Makoto Nakano, Masaki Oyaizu, Takeshi Sakamoto, Takafumi Ogiwara, Takashi Inoue, Hamamatsu Photonics K.K. (Japan) ..... [8608-4]

3:30 pm: **Laser-induced self-organizing surface structures on cathode materials for lithium-ion batteries**, Robert Kohler, Johannes Pröll, Michael Bruns, Torsten Scherer, Hans Jürgen Seifert, Wilhelm Pflöging, Karlsruher Institut für Technologie (Germany) ..... [8608-5]

3:50 pm: **Thin film passivation of laser generated 3D micro patterns in lithium manganese oxide cathodes**, Johannes Pröll, Robert Kohler, Michael Bruns, Vanessa Hermann, Peter G. Weidler, Stefan Heissler, Torsten Scherer, Hans Jürgen Seifert, Wilhelm Pflöging, Karlsruher Institut für Technologie (Germany) ..... [8608-6]

Coffee Break ..... Wed 4:10 pm to 4:40 pm

### SESSION 2

Room: 132 (Exhibit Level) ..... Wed 4:40 pm to 6:10 pm

#### Laser Micro- and Nanostructuring II

Session Chair: **Kunihiko Washio**, Paradigm Laser Research Ltd. (Japan)

- 4:40 pm: **High speed micro scanner for 3D in-volume laser micro processing (Invited Paper)**, Dagmar Schaefer, Jens Gottmann, Martin Hermans, Ingomar Kelbassa, RWTH Aachen (Germany) ..... [8608-7]
- 5:10 pm: **Improvement of laser dicing performance II: dicing rate enhancement by multi beams and simultaneous aberration correction with phase-only spatial light modulator**, Yu Takiguchi, Naoya Matsumoto, Masaki Oyaizu, Jyunji Okuma, Makoto Nakano, Takeshi Sakamoto, Haruyasu Ito, Takashi Inoue, Hamamatsu Photonics K.K. (Japan) ..... [8608-8]
- 5:30 pm: **High speed micromachining with high power UV lasers**, Rajesh S. Patel, James M. Bovatsek, Ashwini Tamhankar, Spectra-Physics®, a Newport Corp. Brand (USA) ..... [8608-9]
- 5:50 pm: **UV laser writing system based on polar scanning strategy to produce subwavelength metal gratings for surface plasmon resonance**, Jun Amako, Toyo Univ. (Japan); Eiichi Fujii, Seiko Epson Corp. (Japan) [8608-10]

**Thursday 7 February**

**SESSION 3**

**Room: 132 (Exhibit Level) . . . . . Thu 8:20 am to 10:10 am**

**Ultrashort Pulsed Laser Processing**

Session Chair: **Alberto Piqué**, U.S. Naval Research Lab. (USA)

8:20 am: **Ultrafast laser processing of thin and strengthened display glasses** (*Invited Paper*), Dirk Mueller, Andreas Blumenrath, Bernhard H. Klimt, LUMERA LASER GmbH (Germany); Abbas Hosseini, FiLaser Inc. (Canada) . . . . . [8608-12]

8:50 am: **Ultrafast laser trimming for reduced device leakage in high performance OTFT semiconductors for flexible displays**, Dimitris Karnakis, Oxford Lasers Ltd. (United Kingdom); Michael D. Cooke, Y. F. Chan, Simon Ogier, PETEC (United Kingdom) . . . . . [8608-16]

9:10 am: **Pico second laser ablation of transparent materials**, Simone Russ, TRUMPF Laser GmbH & Co. KG (Germany); Christof Siebert, Birgit Faisst, TRUMPF Laser- und Systemtechnik GmbH (Germany); Wolfgang Schulz, Urs Eppelt, Claudia Hartmann, Fraunhofer-Institut für Lasertechnik (Germany) . . . . . [8608-13]

9:30 am: **Metal microdrilling combining high power femtosecond laser and trepanning head**, Rainer Kling, Mathieu Dijoux, ALPhANOV (France); Luca Romoli, Univ. di Pisa (Italy); Jorge Sanabria, Amplitude Systèmes (France) . . . . . [8608-14]

9:50 am: **Direct curved micromachining with femtosecond accelerating beams**, Amaury Mathis, Francois Courvoisier, Luc Froehly, Luca Furfaro, Maxime Jacquot, Pierre-Ambroise Lacourt, John M. Dudley, FEMTO-ST (France) . . . . . [8608-15]

Coffee Break . . . . . Thu 10:10 am to 10:40 am

**SESSION 4**

**Room: 132 (Exhibit Level) . . . . . Thu 10:40 am to 12:10 pm**

**Direct-write Processing and Surface Modification**

Session Chair: **Wilhelm Pfleging**,  
Karlsruher Institut für Technologie (Germany)

10:40 am: **Laser sintering and crystallization for high performance electronics** (*Invited Paper*), Costas P. Grigoropoulos, Daeho Lee, Jungbin In, Hyck-Jun Kwon, Univ. of California, Berkeley (USA); Seung Hwan Ko, KAIST (Korea, Republic of) . . . . . [8608-18]

11:10 am: **Three-dimensional finite element modelling of conductive silver ink tracks thermally cured on flexible substrates by repeating irradiations of Nd:YAG laser at the wavelength of 532 nm**, Liwei Fu, Shuo Shang, Eamonn Fearon, Stuart Edwardson, Geoff Dearden, Kenneth G. Watkins, Univ. of Liverpool (United Kingdom) . . . . . [8608-19]

11:30 am: **Laser direct writing of graphene patterns on insulator substrates** (*Invited Paper*), L. S. Fan, Wei Xiong, J. B. Park, Yunshen Zhou, Yong Feng Lu, Univ. of Nebraska-Lincoln (USA) . . . . . [8608-20]

11:50 am: **Laser transfer of reconfigurable patterns with a spatial light modulator**, Alberto Piqué, Raymond C. Y. Auyeung, Andrew T. Smith, Heungsoo Kim, Nicholas A. Charipar, Scott A. Mathews, U.S. Naval Research Lab. (USA) . . . . . [8608-25]

Lunch/Exhibition Break . . . . . Thu 12:10 pm to 1:40 pm

**SESSION 5**

**Room: 132 (Exhibit Level) . . . . . Thu 1:40 pm to 3:30 pm**

**Packaging and Additive Manufacturing**

Session Chair: **Friedrich G. Bachmann**,  
LUMERA LASER GmbH (Germany)

1:40 pm: **Laser-assisted ultrathin bare die packaging: a route to a new class of microelectronic devices** (*Invited Paper*), Val R. Marinov, Orven F. Swenson, Yuriy Atanasov, Nathan Schneck, North Dakota State Univ. (USA) . . . . . [8608-22]

2:10 pm: **Cellular scanning strategy for selective laser melting: evolution of optimal grid-based scanning path & parametric approach to thermal homogeneity**, Sankhya Mohanty D.D.S., Cem C. Tutum, Jesper H. Hattel, Technical Univ. of Denmark (Denmark) . . . . . [8608-23]

2:30 pm: **Embedding of ZnO nanoparticles in hybrid microgels by laser ablation in aqueous monomer solution**, Nina Million, Univ. Duisburg-Essen (Germany); Philipp Nachev, Andrij Pich, RWTH Aachen (Germany); Stephan Barcikowski, Univ. Duisburg-Essen (Germany) . . . . . [8608-24]

2:50 pm: **Laser sintering of gold nanoparticles on a copper substrate toward an alternative to gold plating**, Akira Watanabe, Tohoku Univ. (Japan) . . . . . [8608-21]

3:10 pm: **Pulsed Nd:YAG laser fine spot welding for attachment of refractory mini-pins**, Yaomin Lin, Guangqiang Jiang, Alfred E. Mann Foundation for Scientific Research (USA) . . . . . [8608-26]

Coffee Break . . . . . Thu 3:30 pm to 4:00 pm

**SESSION 6**

**Room: 130 (Exhibit Level) . . . . . Thu 4:00 pm to 5:50 pm**

**NOTE ROOM CHANGE**

**Photovoltaics, Alternative Energy Sources and Advanced Energy Storage Systems**

Joint Session with Conferences 8607 and 8608

Session Chairs: **David Jae-Seok Hwang**, Stony Brook Univ. (USA);  
**Udo Klotzbach**, Fraunhofer IWS Dresden (Germany)

4:00 pm: **Diode laser processed crystalline silicon thin-film solar cells** (*Invited Paper*), Sergey Varlamov, The Univ. of New South Wales (Australia); Bonne Eggleston, Jonathan Dore, The Univ. of New South Wales (Australia) and Suntech Power Holdings Co., Ltd. (Australia); Rhett Evans, Daniel Ong, Oliver Kunz, Suntech R&D Australia Pty Ltd. (Australia); Jialiang Huang, The Univ. of New South Wales (Australia); Ute Schubert, Suntech R&D Australia Pty Ltd. (Australia); Kyung Hun Kim, The Univ. of New South Wales (Australia) and Suntech Power Holdings Co., Ltd. (Australia); Renate Egan, Suntech R&D Australia Pty Ltd. (Australia); Martin A. Green, The Univ. of New South Wales (Australia) . . . . . [8608-27]

4:30 pm: **The photovoltaic potential of femtosecond laser textured amorphous silicon**, Meng-Ju Sher, Benjamin Franta, Kenneth Hammond, Lysander Christakis, Eric Mazur, Harvard Univ. (USA) . . . . . [8608-28]

4:50 pm: **Investigation of a reliable all laser scribing process in thin film Cu(In,Ga)(S,Se)<sub>2</sub> manufacturing**, Reiner M. Witte, Bruno Frei, Stefan Schneeberger, Solneva SA (Switzerland); Andreas Burn, Valerio Romano, Martin Muralt, Bern Univ. of Applied Science (Switzerland); Stephan Buecheler, Shiro Nishiwaki, EMPA (Switzerland) . . . . . [8607-47]

5:10 pm: **Laser scribing integration of polycrystalline thin film solar cells**, Michele Sozzi, Filomena Manilia, Roberto Antezza, Cristina Catellani, Alessandro Candiani, Enrico Coscelli, Annamaria Cucinotta, Stefano Selleri, Daniele Menossi, Alessio Bosio, Univ. degli Studi di Parma (Italy) . . . . . [8608-29]

5:30 pm: **Scribing of CIGS thin films for solar module fabrication by external integrated interconnection**, Pierre Lorenz, Martin Ehrhardt, Anja Wehrmann, Leibniz-Institut für Oberflächenmodifizierung e.V. (Germany); Christian Scheit, Steffen Ragnow, Alexander Braun, Solarion AG (Germany); Klaus-Peter Zimmer, Leibniz-Institut für Oberflächenmodifizierung e.V. (Germany) . . . . . [8607-48]



# Synthesis and Photonics of Nanoscale Materials X

Conference Chairs: **Jan J. Dubowski**, Univ. de Sherbrooke (Canada); **David B. Geohegan**, Oak Ridge National Lab. (USA); **Frank Träger**, Univ. Kassel (Germany)

Program Committee: **Paolo Biagioni**, Politecnico di Milano (Italy); **J. Thomas Dickinson**, Washington State Univ. (USA); **Costas P. Grigoropoulos**, Univ. of California, Berkeley (USA); **Richard F. Haglund Jr.**, Vanderbilt Univ. (USA); **Hiroshi Kumagai**, Osaka City Univ. (Japan); **Thomas K. Lippert**, Paul Scherrer Institut (Switzerland); **Yong Feng Lu**, Univ. of Nebraska-Lincoln (USA); **Jim Schuck**, The Molecular Foundry (USA); **Xianfan Xu**, Purdue Univ. (USA); **Yaqiong Xu**, Vanderbilt Univ. (USA)

## Sunday 3 February

### SESSION 1

Room: 120 (Exhibit Level) . . . . . Sun 8:30 am to 10:20 am

#### Self-organized and Laser-induced Nanostructure

Session Chair: **Jan J. Dubowski**, Univ. de Sherbrooke (Canada)

8:30 am: **Methods and materials for bio-nanophotonics: 10 years perspective** (*Invited Paper*), Andrei V. Kabashin, Institut de Neurosciences Cognitives de la Méditerranée (France). . . . . [8609-1]

9:00 am: **SHG studies of self-assembled monolayers of phthalocyanines on gold**, Nadezda Lilicenko, Ulrich Glebe, Ulrich Siemeling, Frank Hubenthal, Frank Träger, Univ. Kassel (Germany). . . . . [8609-2]

9:20 am: **Direct observation of early stages of surface ripples formation on LiNbO<sub>3</sub> substrate**, Hisashi Shimizu, Go Obara, Mitsuhiro Terakawa, Keio Univ. (Japan); Eric Mazur, Harvard Univ. (USA); Minoru Obara, Keio Univ. (Japan). . . . . [8609-3]

9:40 am: **Permanent dichroic coloring of surfaces by laser-induced formation of chain-like self-organized silver nanoparticles within crystalline titania films**, Nathalie N. Destouches, Nicolas N. Crespo-Monteiro, Thierry Epicier, Yaya Lefkir, Francis Vocanson, Stéphanie Reynaud, Univ. Claude Bernard Lyon 1 (France). . . . . [8609-4]

10:00 am: **Combinatorial synthesis using pulsed laser deposition on patterned substrate**, Rudresh Ghosh, Yukihiko Hara, Rene Lopez, The Univ. of North Carolina at Chapel Hill (USA). . . . . [8609-5]

Coffee break . . . . . Sun 10:20 am to 10:50 am

### SESSION 2

Room: 120 (Exhibit Level) . . . . . Sun 10:50 am to 12:10 pm

#### Nano-scale Laser-Matter Interaction

Session Chair: **Frank Träger**, Univ. Kassel (Germany)

10:50 am: **Plasmonic-enhanced light-matter interactions** (*Invited Paper*), Steve Blair, The Univ. of Utah (USA). . . . . [8609-6]

11:20 am: **Probing strong correlations in vanadium dioxide with plasmonic nano antennae**, Davon W. Ferrara, Joyeeta Nag, Evan R. MacQuarrie, Richard F. Haglund Jr., Vanderbilt Univ. (USA). . . . . [8609-7]

11:40 am: **Light at the nanometer scale** (*Invited Paper*), Reuven Gordon, Univ. of Victoria (Canada). . . . . [8609-8]

Lunch Break . . . . . Sun 12:10 pm to 1:40 pm

### SESSION 3

Room: 120 (Exhibit Level) . . . . . Sun 1:40 pm to 3:20 pm

#### Nano-particles and Applications

Session Chair: **Andrei V. Kabashin**, Institut de Neurosciences Cognitives de la Méditerranée (France)

1:40 pm: **Efficient nanoparticle production using wire ablation**, René Streubel, Univ. Duisburg-Essen (Germany); Gabriele Messina, Univ. degli Studi di Catania (Italy); Philipp Wagener, Univ. Duisburg-Essen (Germany); Giuseppe Compagnini, Univ. degli Studi di Catania (Italy); Stephan Barcikowski, Univ. Duisburg-Essen (Germany). . . . . [8609-9]

2:00 pm: **Synthesis of ultrasmall TiO<sub>2</sub> nanoparticles by pulsed laser vaporization**, David B. Geohegan, Murari Regmi, Christopher M. Rouleau, David L. Swanson, Joshua W. Halstead, Mina Yoon, Alex A. Puzetky, Gyula Eres, Oak Ridge National Lab. (USA); Mengkun Tian, Gerd Duscher, The Univ. of Tennessee (USA); Karren L. More, Oak Ridge National Lab. (USA) . . . . [8609-10]

2:20 pm: **In situ sensor for trace analysis of pollutant chemicals in water based on a SERS/SERDS set-up and supported optimized noble metal nanoparticles**, Robert Ossig, Univ. Kassel (Germany); Yong-Hyok Kwon, Technische Univ. Berlin (Germany); Frank Hubenthal, Univ. Kassel (Germany); Heinz-Detlef Kronfeldt, Technische Univ. Berlin (Germany) . . . . . [8609-11]

2:40 pm: **Development of visible-light activated titanium dioxide films with femtosecond laser**, Naoto Horiguchi, Masahiro Tsukamoto, Osaka Univ. (Japan); Minoru Yoshida, Kinki Univ. (Japan); Togo Shinonaga, Osaka Univ. (Japan); Masanari Takahashi, Osaka Municipal Technical Research Institute (Japan); Masayuki Fujita, Nobuyuki Abe, Osaka Univ. (Japan) . . . . . [8609-12]

3:00 pm: **Optical amplification at 1.06 μm from laser ablated neodymium nanoparticles embedded in a polymer host**, Gabriel Pelegrina-Bonilla, Andreas Schwenke, Laser Zentrum Hannover e.V. (Germany); Hakan Sayinc, Laser Zentrum Hannover e.V. (Germany) and Ctr. for Quantum Engineering and Space-Time Research (Germany); Uwe Morgner, Laser Zentrum Hannover e.V. (Germany) and Ctr. for Quantum Engineering and Space-Time Research (Germany) and Leibniz Univ. Hannover (Germany); Jörg Neumann, Laser Zentrum Hannover e.V. (Germany) and Ctr. for Quantum Engineering and Space-Time Research (Germany); Boris N. Chichkov, Laser Zentrum Hannover e.V. (Germany) and Leibniz Univ. Hannover (Germany); Laszlo C. Sajtí, Laser Zentrum Hannover e.V. (Germany); Dietmar Kracht, Laser Zentrum Hannover e.V. (Germany) and Ctr. for Quantum Engineering and Space-Time Research (Germany) . . . . . [8609-13]

Coffee Break . . . . . Sun 3:20 pm to 3:50 pm

### SESSION 4

Room: 120 (Exhibit Level) . . . . . Sun 3:50 pm to 5:30 pm

#### Nanofilms and Nano-interfaces

Session Chair: **David B. Geohegan**, Oak Ridge National Lab. (USA)

3:50 pm: **Integration of graphene with fiber optics and integrated optical devices for ultrafast photonic applications** (*Invited Paper*), Kevin P. Chen, Mingshan Li, Qing Wang, Univ. of Pittsburgh (USA); Yong Feng Lu, Univ. of Nebraska-Lincoln (USA) . . . . . [8609-14]

4:20 pm: **Real-time optical diagnostics of isothermal graphene growth induced by chemical vapor and pulsed laser deposition**, Alex A. Puzetky, David B. Geohegan, Sreekanth Pannala, Christopher M. Rouleau, Gyula Eres, Murari Regmi, Oak Ridge National Lab. (USA); Gerd Duscher, The Univ. of Tennessee (USA) . . . . . [8609-15]

4:40 pm: **Transport dynamics resulting from through thin film femtosecond laser ablation**, Christopher M. Rouleau, Alex A. Puzetky, David B. Geohegan, Mina Yoon, Karren L. More, Linda Zhang, Kevin Chen, Oak Ridge National Lab. (USA); Gerd Duscher, The Univ. of Tennessee (USA); Cheng-Yu Shih, Chengping Wu, Leonid V. Zhigilei, Univ. of Virginia (USA) . . . . . [8609-16]

5:00 pm: **Low-power plasmonic switching of an insulator-to-metal transition in vanadium dioxide** (*Invited Paper*), Richard F. Haglund Jr., Davon W. Ferrara, Victor Diez-Blanco, Vanderbilt Univ. (USA); Carl Merrigan, William Jewell College (USA); Joyeeta Nag, Evan R. MacQuarrie, Vanderbilt Univ. (USA); Anthony Kaye, ITT Advanced Engineering & Sciences (USA) . . . . . [8609-17]

LASE

**Monday 4 February**

**SESSION 5**

**Room: 120 (Exhibit Level) . . . . . Mon 8:10 am to 10:00 am**

**Nanoscale Materials Synthesis and Processing**

Joint Session with Conferences 8607 and 8609

Session Chair: **Guido Hennig**, Daetwyler Graphics AG (Switzerland)

8:10 am: **10-year perspective on laser generation of sub-100 nm structures** (*Invited Paper*), Andreas Ostendorf, Ruhr-Univ. Bochum (Germany) . . . [8609-18]

8:40 am: **Formation of quantum dots from precursors in polymeric films by ps-laser**, Gediminas Raciukaitis, Institute of Physics (Lithuania) and Ctr. for Physical Sciences and Technology (Lithuania); Paulius Gečys, Institute of Physics (Lithuania); Francesco Antolini, Lenuta Stroea, ENEA (Italy); Ashu K. Bansal, Ifor D. W. Samuel, Univ. of St. Andrews (United Kingdom); Sybille Allard, Ulrich Scherf, Bergische Univ. Wuppertal (Germany); Luca Ortolani, Istituto per la Microelettronica e Microsistemi (Italy) . . . . . [8607-1]

9:00 am: **Growth of periodic ZnO nano-crystals on buffer layer patterned by interference laser irradiation**, Daisuke Nakamura, Tetsuya Shimogaki, Kota Okazaki, Mitsuhiro Higashihata, Kyushu Univ. (Japan); Yoshiki Nakata, Osaka Univ. (Japan); Tatsuo Okada, Kyushu Univ. (Japan) . . . . . [8607-2]

9:20 am: **Sintering of solution-based aluminum nano-particles by laser ignition**, Jie Zhang, Panasonic Boston Lab. (USA) . . . . . [8607-3]

9:40 am: **F2 laser induced surface and interface modifications of aluminum thin films for selective metallization**, Masayuki Okoshi, Kazufumi Iwai, National Defense Academy (Japan); Hidetoshi Nojiri, Renias Co., Ltd. (Japan); Narumi Inoue, National Defense Academy (Japan) . . . . . [8607-4]

Coffee Break . . . . . Mon 10:00 am to 10:30 am

**SESSION 6**

**Room: 120 (Exhibit Level) . . . . . Mon 10:30 am to 12:00 pm**

**Nanoscale Patterning**

Joint Session with Conferences 8607 and 8609

Session Chair: **Xianfan Xu**, Purdue Univ. (USA)

10:30 am: **Nanopatterning beyond the far-field diffraction limit** (*Invited Paper*), Rajesh Menon, The Univ. of Utah (USA) . . . . . [8607-5]

11:00 am: **Periodic surface structures generated by cross-polarized double femtosecond laser pulse irradiation sequences**, Arkadi Rosenfeld, Sandra Höhm, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Jörn Bonse, Jörg Krüger, Bundesanstalt für Materialforschung und-prüfung (Germany) . . . . . [8607-6]

11:20 am: **Periodic surface nanopatterning controlled with preformed scattering structures excited by femtosecond laser irradiation**, Go Obara, Naoki Maeda, Hisashi Shimizu, Mitsuhiro Terakawa, Keio Univ. (Japan); Eric Mazur, Harvard Univ. (USA); Minoru Obara, Keio Univ. (Japan) . . . . . [8607-7]

11:40 am: **Far-field laser direct synthesis of 60 nm silicon nanowires for chemical sensing**, James I. Mitchell, Woongsik Nam, Xianfan Xu, Purdue Univ. (USA) . . . . . [8607-8]

**Tuesday 5 February**

**POSTERS-TUESDAY**

**Room: 103 (Exhibit Level) . . . . . Tue 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the LASE poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

**Hydrogenated amorphous silicon laser micromachining for photonic devices**, Michael G. Moebius, Eric Mazur, Harvard Univ. (USA) . . . . . [8609-19]

**Wettability control of silicon surface by excimer laser irradiation in various aqueous environments**, Neng Liu, Jan J. Dubowski, Univ. de Sherbrooke (Canada) . . . . . [8609-20]

**On the role of laser heating and adatom diffusion in femtosecond laser induced tungsten nanograting**, Tsinghua Her, Mark E. Green, The Univ. of North Carolina at Charlotte (USA) . . . . . [8609-21]

**Femtosecond laser induced periodic nanostructures on titanium dioxide film for improving biocompatibility**, Togo Shinonaga, Masahiro Tsukamoto, Naoto Horiguchi, Osaka Univ. (Japan); Akiko Nagai, Kimihiro Yamashita, Takao Hanawa, Tokyo Medical and Dental Univ. (Japan) and Institute of Biomaterials and Bioengineering (Japan); Nobuhiro Matsushita, Tokyo Institute of Technology (Japan); Guoqiang Xie, Tohoku Univ. (Japan); Nobuyuki Abe, Osaka Univ. (Japan) . . . . . [8609-22]

**A study simulation on transmission characteristics of focused laser inside KDP crystal**, Leimin Deng, Jun Duan, Xiaoyan Zeng, Shan Huang, Wuhan National Lab. for Optoelectronics (China) . . . . . [8609-23]

**Laser patterning of graphene using pulsed UV laser irradiation**, Takeshi Sasaki, National Institute of Advanced Industrial Science and Technology (Japan) . . . . . [8609-25]

**Photoconductivity of metal nanoparticle ensembles supported by localized surface plasmon polariton resonances**, Elena Vashchenko, Tigran A. Vartanyan, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation); Frank Träger, Frank Hubenthal, Univ. Kassel (Germany) . . . . . [8609-26]

# Free-Space Laser Communication and Atmospheric Propagation XXV

Conference Chairs: **Hamid Hemmati**, Jet Propulsion Lab. (USA); **Don M. Boroson**, MIT Lincoln Lab. (USA)

Program Committee: **Vincent W. S. Chan**, Massachusetts Institute of Technology (USA); **Renny A. Fields**, The Aerospace Corp. (USA); **G. Charmaine Gilbreath**, U.S. Naval Research Lab. (USA); **Olga Korotkova**, Univ. of Miami (USA); **Michael A. Krainak**, NASA Goddard Space Flight Ctr. (USA); **Robert Lange**, Tesat-Spacecom GmbH & Co. KG (Germany); **Ronald L. Phillips**, Florida Space Institute (USA); **Zoran Sodnik**, European Space Research and Technology Ctr. (Netherlands); **Morio Toyoshima**, National Institute of Information and Communications Technology (Japan); **Alan Eli Willner**, The Univ. of Southern California (USA); **Shiro Yamakawa**, Japan Aerospace Exploration Agency (Japan)

## Tuesday 5 February

### SESSION 1

Room: 120 (Exhibit Level) . . . . . Tue 2:00 pm to 3:00 pm

#### Demonstrations from Air and Space

Session Chair: **Don M. Boroson**, MIT Lincoln Lab. (USA)

2:00 pm: **LLCD overview talk** (*Invited Paper*), Bryan S. Robinson, Don M. Boroson, MIT Lincoln Lab. (USA) . . . . . [8610-2]

2:30 pm: **Simultaneous laser ranging and communication from an Earth-based satellite laser ranging station to the Lunar Reconnaissance Orbiter in lunar orbit** (*Invited Paper*), Xiaoli Sun, David R. Skillman, NASA Goddard Space Flight Ctr. (USA); Evan D. Hoffman, Honeywell Technology Solutions, Inc. (USA); Dandan Mao, Sigma Space Corp. (USA); Jan F. McGarry, NASA Goddard Space Flight Ctr. (USA); Leva E. McIntire, The Catholic Univ. of America (USA); Ronald S. Zellar, NASA Goddard Space Flight Ctr. (USA); Frederic M. Davidson, Johns Hopkins Univ. (USA); Wai H. Fong, Michael A. Krainak, NASA Goddard Space Flight Ctr. (USA); Maria T. Zuber, Massachusetts Institute of Technology (USA); David E. Smith, NASA Goddard Space Flight Ctr. (USA). . . . . [8610-3]

Coffee Break . . . . . Tue 3:00 pm to 3:30 pm

### SESSION 2

Room: 120 (Exhibit Level) . . . . . Tue 3:30 pm to 5:10 pm

#### Laboratory and Planned Demonstrations

Session Chair: **Hamid Hemmati**, Jet Propulsion Lab. (USA)

3:30 pm: **Multiplexing vortex beams for Tbit/s free-space optical communications** (*Invited Paper*), Alan E. Willner, The Univ. of Southern California (USA) . . . . . [8610-4]

4:00 pm: **13 bits per incident photon optical communications demonstration** (*Invited Paper*), William H. Farr, Jet Propulsion Lab. (USA); John M. Choi, California Institute of Technology (USA); Bruce Moision, Jet Propulsion Lab. (USA) . . . . . [8610-5]

4:30 pm: **Mountain-top-to-valley optical link demonstration as part of a miniature terminal development**, Thomas Dreischer, Martin Mosberger, Michael Bacher, Björn Thieme, Klaus Buchheim, RUAG Space AG (Switzerland) . . . . . [8610-6]

4:50 pm: **Wide field-of-view single-mode-fiber coupled laser communication terminal**, Yoshinori Arimoto, National Institute of Information and Communications Technology (Japan); Hiroyuki Yoshida, Katsuto Kisara, Japan Aerospace Exploration Agency (Japan) . . . . . [8610-7]

## Wednesday 6 February

### LASE PLENARY SESSION

Room: 134 (Exhibit Level) . . . . . 10:20 am to 12:30 pm

10:20 am: **Welcome and Opening Remarks**  
**Bo Gu**, Bos Photonics (USA); **Andreas Tünnermann**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) and Friedrich-Schiller-Univ. Jena (Germany)

10:25 am: **Announcement of the Best "Green" LASE Paper Award**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)

10:30 am: **Laser-based Particle Acceleration and the Path to TeV Physics and Compact X-ray and Gamma Ray Sources** (*Presentation Only*)  
**Wim P. Leemans**, Lawrence Berkeley National Lab. (USA)

11:10 am: **Three-dimensional Metamaterials Made By Direct Laser Writing** (*Presentation Only*)  
**Martin Wegener**, Karlsruher Institut für Technologie (Germany)

11:50 am: **Remote Laser Welding for Automotive Seat Production** (*Presentation Only*)  
**Geert G. Verhaeghe**, Faurecia Autositze GmbH (Germany)

See p. 26 for details.

Lunch/Exhibition Break . . . . . Wed 12:30 pm to 2:20 pm

### SESSION 3

Room: 120 (Exhibit Level) . . . . . Wed 2:20 pm to 4:50 pm

#### Pointing, Acquisition and Tracking

Session Chair: **Bryan S. Robinson**, MIT Lincoln Lab. (USA)

2:20 pm: **RIN-suppressed ultra-low noise interferometric fiber optic gyroscopes (IFOGs) for improving inertial stabilization of space telescopes**, Farhad Hakimi, John D. Moores, MIT Lincoln Lab. (USA) . . . . . [8610-10]

2:40 pm: **Using a low-noise interferometric fiberoptic gyro in a pointing, acquisition, and tracking system**, John E. Kaufmann, MIT Lincoln Lab. (USA) . . . . . [8610-11]

3:00 pm: **Centroiding performance of photon-counting array for optical communications**, John M. Choi, California Institute of Technology (USA) and Jet Propulsion Lab. (USA); Kevin M. Birnbaum, William H. Farr, Jet Propulsion Lab. (USA) and California Institute of Technology (USA) . . . . . [8610-12]

Coffee Break . . . . . Wed 3:20 pm to 3:50 pm

3:50 pm: **Modeling and pointing performance of a CCD based deep space optical transceiver**, Joel F. Shields, Meera Srinivasan, Martin W. Regehr, Abhijit Biswas, Jet Propulsion Lab. (USA) . . . . . [8610-13]

4:10 pm: **Determination of the direction of arrival of a light beam using an angle-diversity array of photodiodes**, Anjan K. Ghosh, Dhirubhai Ambani Institute of Information and Communication Technology (India); Adeola Fasiku, Pramode K. Verma, The Univ. of Oklahoma - Tulsa (USA) . . . . . [8610-14]

4:30 pm: **Base motion rejection performance of the low frequency vibration isolation system for interplanetary optical communications**, Gerardo G. Ortiz, Didier Keymeulen, Santos F. Fregoso, Jet Propulsion Lab. (USA); Virginio Sannibale, California Institute of Technology (USA) . . . . . [8610-15]

LASE



**Thursday 7 February**

**SESSION 4**

**Room: 120 (Exhibit Level) . . . . .Thu 8:10 am to 10:10 am**

**Laser Transmitter/Modulation**

Session Chair: **Zoran Sodnik**, European Space Research and Technology Ctr. (Netherlands)

8:10 am: **Nonlinearity mitigation of a 40 watt 1.55 micron uplink transmitter for Lunar laser communications**, Robert T. Schuelein, MIT Lincoln Lab. (USA); Robert E. Lafon, NASA Goddard Space Flight Ctr. (USA); Michael B. Taylor, John J. Carney, MIT Lincoln Lab. (USA); David W. Peckham, OFS Fitel LLC (USA); Benyuan Zhu, OFS Labs. (USA); John M. Fini, OFS Labs. (USA); David O. Caplan, MIT Lincoln Lab. (USA) . . . . . [8610-16]

8:30 am: **Highly efficient and athermal 1550um-fiber-MOPA based, high power down link laser transmitter for deep space communication**, Doruk Engin, Frank Kimpel, John Burton, He Cao, Bruce McIntosh, Mark E. Storm, Shantanu Gupta, Fibertek, Inc. (USA) . . . . . [8610-17]

8:50 am: **Generation of exotic laser beams with fiber-array systems for active imaging and wavefront sensing applications**, Svetlana L. Lachinova, Optonicus (USA); Mikhail A. Vorontsov, Optonicus (USA) and Univ. of Dayton (USA) . . . . . [8610-18]

9:10 am: **Orthogonal on-off keying (O3K) for free space laser communication**, Saleh Faruque, Shams Faruque, The Univ. of North Dakota (USA); Tasbirun Nahian Upal, Univ. of North Dakota (USA); William H. Semke, The Univ. of North Dakota (USA) . . . . . [8610-19]

9:30 am: **The measurement and generation of orbital angular momentum using an optical geometric transformation**, Martin P. J. Lavery, Univ. of Glasgow (United Kingdom); Andrew Fraine, Boston Univ. (USA); David J. Roberston, Durham Univ. (United Kingdom); Alexander V. Sergienko, Boston Univ. (USA); Johannes Courtial, Univ. of Glasgow (United Kingdom); Alan Wilner, The Univ. of Southern California (USA); Miles J. Padgett, Univ. of Glasgow (United Kingdom) . . . . . [8610-20]

9:50 am: **A dual format communication modem development for the Laser Communications Relay Demonstration (LCRD) Program**, Michael A. Krainak, Edward Y. Luzhansky, Steven X. Li, Scott A. Merritt, Anthony W. Yu, R. Butler, J. Badgley, L. Thomas, H. Stello, Y. Chen, Q. Nguyen, S. MacPherson, Pete Sparacino, P. Brown, C. Goodloe, W. Kem, W. Allison, NASA Goddard Space Flight Ctr. (USA) . . . . . [8610-21]

Coffee Break . . . . . Thu 10:10 am to 10:40 am

**SESSION 5**

**Room: 120 (Exhibit Level) . . . . .Thu 10:40 am to 12:00 pm**

**Ground Receiver and Transmitter I**

Session Chair: **Keith E. Wilson**, Jet Propulsion Lab. (USA)

10:40 am: **The architecture of the laser communications relay demonstration ground stations: an overview**, Keith E. Wilson, Jet Propulsion Lab. (USA); John D. Moores, MIT Lincoln Lab. (USA) . . . . . [8610-22]

11:00 am: **Comparing adaptive optics approaches for NASA LCRD Ground Station #2**, Jason B. Stewart, Daniel V. Murphy, John D. Moores, Andrew Fletcher, Keith Bonneau, MIT Lincoln Lab. (USA) . . . . . [8610-23]

11:20 am: **Conceptual design of the adaptive optics system for the laser communication relay demonstration ground station at Table Mountain**, Lewis C. Roberts Jr., Norman A. Page, Rick Burruss, Tuan N. Truong, Mitchell Troy, Jet Propulsion Lab. (USA) . . . . . [8610-24]

11:40 am: **The Lunar Lasercom OCTL Terminal (LLOT)**, Abhijit Biswas, Kevin M. Birnbaum, Joseph M. Kovalik, Martin W. Regehr, W. Thomas Roberts, Jet Propulsion Lab. (USA) and California Institute of Technology (USA); Malcolm W. Wright, Jet Propulsion Lab. (USA) . . . . . [8610-25]

Lunch/Exhibition Break . . . . . Thu 12:00 pm to 1:50 pm

**SESSION 6**

**Room: 120 (Exhibit Level) . . . . .Thu 1:50 pm to 2:50 pm**

**Ground Receiver and Transmitter II**

1:50 pm: **Lunar laser OCTL terminal (LLOT) optical systems**, W. Thomas Roberts, Malcolm W. Wright, Jet Propulsion Lab. (USA) . . . . . [8610-26]

2:10 pm: **A post-processing receiver for the Lunar Laser Communications Demonstration project**, Meera Srinivasan, Kevin M. Birnbaum, Abhijit Biswas, Michael K. Cheng, Kevin J. Quirk, Jet Propulsion Lab. (USA) . . . . . [8610-27]

2:30 pm: **Optical filter assembly for interplanetary optical communications**, Yijiang Chen, Hamid Hemmati, Jet Propulsion Lab. (USA) . . . . . [8610-28]

Coffee Break . . . . . Thu 2:50 pm to 3:20 pm

**SESSION 7**

**Room: 120 (Exhibit Level) . . . . .Thu 3:20 pm to 6:00 pm**

**Atmospheric Characterization & Analysis**

Session Chair: **Olga Korotkova**, Univ. of Miami (USA)

3:20 pm: **Effects of atmospheric transmission of high power diode pumped alkali lasers**, Glen P. Perram, Christopher Rice, Air Force Institute of Technology (USA) . . . . . [8610-30]

3:40 pm: **Measurements of partially coherent laser beam intensity fluctuations propagating through a hot-air turbulence emulator and comparison with the maritime environment**, Charles Nelson, Svetlana Avramov-Zamurovic, U.S. Naval Academy (USA); Olga Korotkova, Univ. of Miami (USA); Reza Malek-Madani, U.S. Naval Academy (USA); Raymond Sova, Johns Hopkins Univ. Applied Physics Lab. (USA); Frederic M. Davidson, Johns Hopkins Univ. (USA) . . . . . [8610-31]

4:00 pm: **Lidar sensing of the turbulence based on the backscattering enhancement effect**, Victor A. Kulikov, Alexander S. Gurvich, A.M. Obukhov Institute of Atmospheric Physics (Russian Federation) . . . . . [8610-32]

4:20 pm: **Beaconless characterization of turbulent atmosphere**, Anatoliy Khizhnyak, Vladimir B. Markov, Advanced Systems & Technologies, Inc. (USA); Joseph R. Chavez, Air Force Research Lab. (USA); Shiang Liu, Advanced Systems & Technologies, Inc. (USA) . . . . . [8610-33]

4:40 pm: **Determining seeing conditions of a horizontal turbulent optical path with video image analysis**, Christopher C. Wilcox, Sergio R. Restaino, K. Peter Judd, Ty Martinez, Jonathan R. Andrews, U.S. Naval Research Lab. (USA) . . . . . [8610-34]

5:00 pm: **Efficiency comparison of spatial and spectral diversity techniques for fading mitigation in free-space optical communications over tactical-range distances**, Jean Minet, Univ. of Dayton (USA) and Thales Research & Technology (France); Mikhail A. Vorontsov, Univ. of Dayton (USA) and Optonicus (USA); Daniel Dolfi, Thales Research & Technology (France) . . . . . [8610-35]

5:20 pm: **Digital adaptive optics and imaging through deep turbulence**, Mathieu Aubailly, Univ. of Maryland, College Park (USA); Mikhail A. Vorontsov, Univ. of Dayton (USA) and Univ. of Maryland, College Park (USA) and Optonicus (USA); Jony Jiang Liu, U.S. Army Research Lab. (USA) . . . . . [8610-36]

5:40 pm: **Losses on a free-space optical link due to a channel turbulence**, Bruce Moision, Sabino Piazzolla, Jon Hamkins, Jet Propulsion Lab. (USA) . . . . . [8610-37]



# Frontiers in Ultrafast Optics: Biomedical, Scientific, and Industrial Applications XIII

*Conference Chairs:* **Alexander Heisterkamp**, Friedrich-Schiller-Univ. Jena (Germany); **Peter R. Herman**, Univ. of Toronto (Canada); **Michel Meunier**, Ecole Polytechnique de Montréal (Canada); **Stefan Nolte**, Friedrich-Schiller-Univ. Jena (Germany)

*Program Committee:* **Craig B. Arnold**, Princeton Univ. (USA); **James E. Carey III**, SiOnyx Inc. (USA); **Xun Gu**, Max-Planck-Institut für Quantenoptik (Germany); **Denise M. Krol**, Univ. of California, Davis (USA); **Eric Mazur**, Harvard Univ. (USA); **Michael M. Mielke**, Raydiance, Inc. (USA); **Eric P. Mottay**, Amplitude Systemes (France); **Christopher B. Schaffer**, Cornell Univ. (USA); **Alexander Szameit**, Friedrich-Schiller-Univ. Jena (Germany); **Alfred Vogel**, Univ. zu Lübeck (Germany); **Wataru Watanabe**, National Institute of Advanced Industrial Science and Technology (Japan)

LASE

## Sunday 3 February

### WELCOME AND OPENING REMARKS

Room: 130 (Exhibit Level) ..... 8:00 am to 8:05 am

Session Chairs: **Michel Meunier**, Ecole Polytechnique de Montréal (Canada); **Alexander Heisterkamp**, Friedrich-Schiller-Univ. Jena (Germany)

### SESSION 1

Room: 130 (Exhibit Level) .....Sun 8:05 am to 9:55 am

#### Micro and Nano Manipulation of Cells, Optical Transfection

Session Chair: **Alexander Heisterkamp**, Friedrich-Schiller-Univ. Jena (Germany)

8:05 am: **Biodegradable microsphere mediated perforation of cells using femtosecond laser for theranostics** (*Invited Paper*), Mitsuhiro Terakawa, Keio Univ. (Japan) ..... [8611-1]

8:35 am: **High-throughput optical injection of mammalian cells using a Bessel light beam**, Helen A. Rendall, Robert F. Marchington, Bavishna B. Praveen, Univ. of St. Andrews (United Kingdom); Gerald Bergmann, Friedrich-Schiller-Univ. Jena (Germany); Yoshihiko Arita, Univ. of St. Andrews (United Kingdom); Alexander Heisterkamp, Friedrich-Schiller-Univ. Jena (Germany); Frank J. Gunn-Moore, Kishan Dholakia, Univ. of St. Andrews (United Kingdom) ..... [8611-2]

8:55 am: **Femtosecond optical transfection as a tool for genetic manipulation of human embryonic stem cells**, Maria Leilani Y. Torres-Mapa, Univ. of St. Andrews (United Kingdom); John Gardner, Helen Bradburn, Jason King, Roslin Cellab (United Kingdom); Kishan Dholakia, Frank J. Gunn-Moore, Univ. of St. Andrews (United Kingdom) ..... [8611-3]

9:15 am: **Off-resonance plasmonic enhanced ultrafast laser induced nanocavitation and transfection of cancer cells: effect of pulse duration**, Michel Meunier, Rémi Lachaine, Hichem Guerboukha, Étienne Boulais, Ecole Polytechnique de Montréal (Canada) ..... [8611-4]

9:35 am: **Material multiphoton nanoprocessing with a 12 fs NIR laser scanning microscope**, Karsten König, Univ. des Saarlandes (Germany) and JenLab GmbH (Germany); Aisada Uchugonova, Hans G. Breunig, Martin H. Straub, Helmut Seidel, Maziar Afshar, Univ. des Saarlandes (Germany) ..... [8611-5]

Coffee Break ..... Sun 9:55 am to 10:20 am

### SESSION 2

Room: 130 (Exhibit Level) .....Sun 10:20 am to 12:30 pm

#### Tissue and Surgical Applications of Ultrashort Pulse Lasers

Session Chair: **Michel Meunier**, Ecole Polytechnique de Montréal (Canada)

10:20 am: **Two-photon guided surgery using fs lasers in vivo (embryonic hearts)** (*Invited Paper*), Jonathan Butcher, Cornell Univ. (USA) ..... [8611-6]

10:50 am: **Temporal focusing for photodynamic therapy**, Christopher J. Rowlands, Sebastien G. M. Uzel, Massachusetts Institute of Technology (USA); Oliver J. Klein, Conor L. Evans, Wellman Ctr. for Photomedicine (USA); Peter T. C. So, Massachusetts Institute of Technology (USA) ..... [8611-7]

11:10 am: **Simultaneous spatio-temporal focusing of femtosecond pulses: a new paradigm for material processing and tissue ablation**, Erica K. Block, Michael Greco, Charles G. Durfee III, Jeff A. Squier, Colorado School of Mines (USA); Omid Masihzadeh, David A. Ammar, Malik Y. Kahook M.D., Naresh Mandava, Univ. of Colorado Denver School of Medicine (USA) ..... [8611-8]

11:30 am: **Pump-probe investigation of fs-LIOB in water by simultaneous spatial and temporal focusing**, Robert Kammel, Roland Ackermann, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) and Friedrich-Schiller-Univ. Jena (Germany); Stefan Nolte, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) ..... [8611-9]

11:50 am: **Femtosecond laser two-photon polymerization fabrication of three-dimensional microcaffolds functionalized for stem cell culture**, Renato Bertozzi, Istituto di Fotonica e Nanotecnologie (Italy); Michele M. Nava, Politecnico di Milano (Italy); Mara Galli, Shane M. Eaton, Giulio Cerullo, Istituto di Fotonica e Nanotecnologie (Italy); Manuela T. Raimondi, Politecnico di Milano (Italy); Roberto Osellame, Istituto di Fotonica e Nanotecnologie (Italy) ..... [8611-10]

12:10 pm: **Functional scaffolds for bone tissue engineering fabricated by direct fs laser writing technique**, Paulius Danilevicius, Foundation for Research and Technology-Hellas (Greece); Frederik Claeysens, The Univ. of Sheffield (United Kingdom); Mohamed Oubaha, Dublin City Univ. (Ireland); Leoni Georgiadi, Foundation for Research and Technology-Hellas (Greece); Maria Vamvakaki, Foundation for Research and Technology-Hellas (Greece) and Univ. of Crete (Greece); Maria Chatzinikolaïdou, Univ. of Crete (Greece); Maria Farsari, Costas Fotakis, Foundation for Research and Technology-Hellas (Greece) ..... [8611-11]

Lunch Break ..... Sun 12:30 pm to 2:00 pm

**SESSION 3**

**Room: 130 (Exhibit Level) . . . . .Sun 2:00 pm to 3:30 pm**

**Novel Medical Applications of Ultrafast Lasers**

Session Chair: **Alexander Heisterkamp**,  
Friedrich-Schiller-Univ. Jena (Germany)

2:00 pm: **Harmonic nanoparticles for nonlinear bio-imaging and detection** (*Invited Paper*), Luigi Bonacina, Univ. of Geneva (Switzerland) . . . . . [8611-12]

2:30 pm: **Conjugated gold nanoparticles as selective imaging tools in cell biology**, Stephan Barcikowski, Christoph Rehbock, Lisa Gamrad, Univ. Duisburg-Essen (Germany); Ulrike Taylor, Friedrich-Loeffler-Institut (Germany); Daniel Werner, Univ. Duisburg-Essen (Germany); Wilfried Kues, Detlef Rath, Friedrich-Loeffler-Institut (Germany) . . . . . [8611-13]

2:50 pm: **Label free optimal dynamic discrimination of biological macromolecules**, Svetlana Afonina, Denis Kiselev, Jérôme Extermann, Luigi Bonacina, Jean-Pierre Wolf, Univ. of Geneva (Switzerland) . . . . . [8611-14]

3:10 pm: **Femtosecond pumped lasing from the fluorescent protein DsRed in a one dimensional random cavity**, Thomas M. Drane, Valery Milner, The Univ. of British Columbia (Canada) . . . . . [8611-15]

Coffee Break . . . . . Sun 3:30 pm to 4:00 pm

**SESSION 4**

**Room: 130 (Exhibit Level) . . . . .Sun 4:00 pm to 5:40 pm**

**Ultrafast Laser Sources for Biomedical Use**

Session Chair: **Eric P. Mottay**, Amplitude Systèmes (France)

4:00 pm: **Single-beam fiber laser sources for CARS microscopy**, Martin Baumgartl, Thomas Gottschall, Mario Chemnitz, Friedrich-Schiller-Univ. Jena (Germany); Tobias Meyer, Friedrich-Schiller-Univ. Jena (Germany) and Institut für Photonische Technologien e.V. (Germany); Javier Abreu-Afonso, Univ. de València (Spain); Cesar Jauregui-Misas, Friedrich-Schiller-Univ. Jena (Germany); Benjamin Dietzek, Friedrich-Schiller-Univ. Jena (Germany) and Institut für Photonische Technologien e.V. (Germany); Manfred Rothhardt, Institut für Photonische Technologien e.V. (Germany); Jürgen Popp, Friedrich-Schiller-Univ. Jena (Germany) and Institut für Photonische Technologien e.V. (Germany); Antonio Díez, Univ. de València (Spain); Jens Limpert, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8611-16]

4:20 pm: **Tunable picosecond Tm fiber laser centered at 2 μm**, Youngjae Kim, Bryan Burgoyne, Alain Villeneuve Jr., Guido Pena, Genia Photonics Inc. (Canada) . . . . . [8611-17]

4:40 pm: **100-fs-level diode-pumped Yb-doped laser amplifiers**, Clemens Hoenninger, Martin Delaigue, Sandrine Ricaud, Eric P. Mottay, Amplitude Systèmes (France) . . . . . [8611-18]

5:00 pm: **A new small-package super continuum light source for optical coherence tomography**, Sven Meissner, Peter Cimalla, Universitätsklinikum Carl Gustav Carus Dresden (Germany); Björn Fischer, Fraunhofer-Institut für Zerstörungsfreie Prüfverfahren (Germany); Christopher Taudt, Tobias Baselt, Peter Hartmann, Westsächsische Hochschule Zwickau (Germany); Edmund Koch, Universitätsklinikum Carl Gustav Carus Dresden (Germany) . . . . [8611-19]

5:20 pm: **Defense of fake fingerprint attacks using a swept source laser optical coherence tomography setup**, Sven Meissner, Technische Univ. Dresden (Germany); Ralph Breithaupt, Bundesamt für Sicherheit in der Informationstechnik (Germany); Edmund Koch, Technische Univ. Dresden (Germany) . . . . . [8611-20]

**Monday 4 February**

**SESSION 5**

**Room: 130 (Exhibit Level) . . . . . Mon 8:00 am to 10:20 am**

**Ultrafast Laser Sources and Instrumentation**

Session Chair: **Michael M. Mielke**, Raydiance, Inc. (USA)

8:00 am: **Fiber amplifier with <300-fs pulses, 55 W average power, and >50 μJ pulse energy**, Clemens Hoenninger, Franck Morin, Yoann Zaouter, Eric P. Mottay, Amplitude Systèmes (France) . . . . . [8611-21]

8:20 am: **3D ultrafast laser scanner**, Ata Mahjoubfar, Univ. of California, Los Angeles (USA) and California NanoSystems Institute (USA); Keisuke Goda, Univ. of California, Los Angeles (USA) and California NanoSystems Institute (USA) and Univ. of California, Los Angeles (USA); Chao Wang, Univ. of California, Los Angeles (USA); Ali M. Fard, Univ. of California, Los Angeles (USA) and California NanoSystems Institute (USA); Jost Adam, Univ. of California, Los Angeles (USA); Daniel R. Gossett, Univ. of California, Los Angeles (USA) and California NanoSystems Institute (USA); Ali Ayazi, Elodie Sollier, Omer Malik, Evan Chen, Yaqiao Liu, Rebecca Brown, Niusha Sarkhosh, Univ. of California, Los Angeles (USA); Dino Di Carlo, Univ. of California, Los Angeles (USA) and California NanoSystems Institute (USA); Bahram Jalali, Univ. of California, Los Angeles (USA) and California NanoSystems Institute (USA) and Univ. of California, Los Angeles (USA) . . . . . [8611-22]

8:40 am: **10GW diode-pumped femtosecond laser based on Yb:CaF<sub>2</sub>**, Antoine Courjaud, Vincent Clet, Amplitude Systèmes (France); Patrice Camy, Jean-Louis Doualan, Richard Moncorgé, Ecole Nationale Supérieure d'Ingenieurs de Caen et Ctr. de Recherche (France); Eric P. Mottay, Amplitude Systèmes (France) . . . . . [8611-23]

9:00 am: **Simultaneous measurement of two ultrashort pulses at different wavelengths using double blind polarization-gate frequency-resolved optical gating**, Tsz Chun Wong, Rick Trebino, Georgia Institute of Technology (USA) . . . . . [8611-24]

9:20 am: **New, simplified algorithm for cross-correlation frequency resolved optical gating**, Daniel J. Kane, Mesa Photonics, LLC (USA) . . . . . [8611-25]

9:40 am: **The coherent artifact in modern pulse measurement**, Justin Ratner, Georgia Institute of Technology (USA); Günter Steinmeyer, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Michelle Rhodes, Rick Trebino, Georgia Institute of Technology (USA) . . . . . [8611-26]

10:00 am: **Temporal self-reconstruction of few-cycle nondiffracting wavepackets**, Stefan Koenig, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Martin Bock, Susanta K. Das, Alexander Treffer, Ruediger Grunwald, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany) . . . . . [8611-27]

Coffee Break . . . . . Mon 10:20 am to 10:50 am

**SESSION 6**

**Room: 130 (Exhibit Level) . . . . . Mon 10:50 am to 12:10 pm**

**Ultrafast Laser Volume Structuring I**

Session Chair: **Craig B. Arnold**, Princeton Univ. (USA)

10:50 am: **Femtosecond laser writing of lab-on-a-fiber: integrating interferometers and microfluidics**, Moez Haque, Kenneth Lee, Univ. of Toronto (Canada); Luís Andre N. A. Fernandes, Univ. of Toronto (Canada) and Univ. do Porto (Portugal); Jason R. Grenier, Kyle Cheng, Peter R. Herman, Univ. of Toronto (Canada) . . . . . [8611-28]

11:10 am: **High aspect ratio nanofiber formation due to sub-surface, high repetition rate, ultrashort laser irradiation of transparent dielectrics**, Mark Ramme, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Arnaud Royon, Thierry Cardinal, Univ. Bordeaux 1 (France); Martin Richardson, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Lionel S. Canioni, Univ. Bordeaux 1 (France) . . . . . [8611-29]

11:30 am: **Femtosecond laser fabrication of optical sensing circuits in the coreless optical fibers**, Jason R. Grenier, Moez Haque, Univ. of Toronto (Canada); Luís Andre N. A. Fernandes, Univ. of Toronto (Canada) and Univ. do Porto (Portugal); Kyle Cheng, James S. Aitchison, Univ. of Toronto (Canada); Paulo V. S. Marques, Univ. do Porto (Portugal); Peter R. Herman, Univ. of Toronto (Canada) . . . . . [8611-30]

11:50 am: **The influence of distributed rare earth dopant on the performance of waveguide lasers fabricated by the femtosecond laser direct-write technique**, Yuwen Duan, Aaron M. McKay, Peter Dekker, Michael Steel, Michael J. Withford, Macquarie Univ. (Australia) . . . . . [8611-31]

Lunch Break . . . . . Mon 12:10 pm to 1:40 pm



**SESSION 7**

**Room: 130 (Exhibit Level) . . . . . Mon 1:40 pm to 3:10 pm**

**Ultrafast Laser Volume Structuring II**

Session Chair: **Peter R. Herman**, Univ. of Toronto (Canada)

1:40 pm: **Volume scattering optics fabrication by ultrashort pulse lasers** (*Invited Paper*), Rafael Piestun, Univ. of Colorado at Boulder (USA). . . [8611-32]

2:10 pm: **The underlying structure of ultrashort pulse laser-induced nanogratings**, Felix Zimmermann, Friedrich-Schiller-Univ. Jena (Germany); Anton Plech, Karlsruher Institut für Technologie (Germany); Sören Richter, Sven Döring, Matthias Heinrich, Michael Steinert, Friedrich-Schiller-Univ. Jena (Germany); Ulf Peschel, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Ernst-Bernhard Kley, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Stefan Nolte, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8611-33]

2:30 pm: **Dense arrays of microscopic optical vortex generators from femtosecond direct laser writing of radial birefringence in glass**, Arnaud Royon, Lionel S. Canioni, Etienne Brasselet, Univ. Bordeaux 1 (France) [8611-34]

2:50 pm: **Birefringence tuning in fused silica waveguides by femtosecond laser-induced stress**, Luis Andre N. A. Fernandes, Univ. of Toronto (Canada) and Univ. do Porto (Portugal); Jason R. Grenier, Peter R. Herman, James S. Aitchison, Univ. of Toronto (Canada); Paulo V. S. Marques, Univ. do Porto (Portugal) . . . . . [8611-35]

Coffee Break . . . . . Mon 3:10 pm to 3:40 pm

**SESSION 8**

**Room: 130 (Exhibit Level) . . . . . Mon 3:40 pm to 5:40 pm**

**Ultrafast Laser Volume Structuring III**

Session Chair: **Wataru Watanabe**, National Institute of Advanced Industrial Science and Technology (Japan)

3:40 pm: **Adaptive control of pulse front tilt, the quill effect, and directional ultrafast laser writing**, Patrick Salter, Richard D. Simmonds, Martin Booth, Univ. of Oxford (United Kingdom) . . . . . [8611-36]

4:00 pm: **Femtosecond laser ablation properties of transparent materials**, Victor V. Matyilitsky, Juerg Aus-der-Au, High Q Laser, a Newport Corp. Brand (Austria) . . . . . [8611-37]

4:20 pm: **Wavelength dependence of femtosecond laser interactions confined inside bandgap solids**, Stephanie Leyder, David Grojo, Philippe Delaporte, Maxime Lebugle, Lasers, Plasmas et Procédés Photoniques (France); Wladimir I. Marine, CiNAM - Ctr. Interdisciplinaire de Nanoscience de Marseille (France); Nicolas Sanner, Marc L. Sentis, Olivier P. Utéza, Lasers, Plasmas et Procédés Photoniques (France) . . . . . [8611-38]

4:40 pm: **Laser erasing of ultrafast laser written optical waveguides in fused silica glass**, Satoru Takahashi, Univ. of Toronto (Canada) and The Univ. of Tokyo (Japan); Jianzhao Li, Peter R. Herman, Univ. of Toronto (Canada) . . . . . [8611-39]

5:00 pm: **Direct laser writing of three-dimensional silver nanostructures and applications**, Kevin Vora, SeungYeon Kang, Michael G. Moebius, Eric Mazur, Harvard Univ. (USA) . . . . . [8611-40]

5:20 pm: **Dynamic band collapse in photonic graphene**, Giacomo Corrielli, Andrea Crespi, Giuseppe Della Valle, Stefano Longhi, Politecnico di Milano (Italy); Roberto Osellame, Istituto di Fotonica e Nanotecnologie (Italy) . [8611-41]

**Tuesday 5 February**

**SESSION 9**

**Room: 130 (Exhibit Level) . . . . . Tue 8:00 am to 10:10 am**

**Ultrafast Laser Micromachining I: Fundamentals**

Joint Session with Conferences 8607 and 8611

Session Chair: **Stefan Nolte**, Friedrich-Schiller-Univ. Jena (Germany)

8:00 am: **Modelling electron excitation and relaxation in solids under ultrafast laser irradiation** (*Invited Paper*), Bärbel Rethfeld, Technische Univ. Kaiserslautern (Germany) . . . . . [8607-9]

8:30 am: **Time-resolved X-ray scattering studies of ultrafast phase transitions in laser-excited materials**, Klaus Sokolowski-Tinten, Univ. Duisburg-Essen (Germany) . . . . . [8607-10]

8:50 am: **Time-resolved spectroscopy characterization of femtosecond fiber laser induced plasma**, Huan Huang, Lih-Mei Yang, Jian Liu, PolarOnyx, Inc. (USA). . . . . [8611-42]

9:10 am: **Time and space resolved fs-laser ablation of transparent tantalum pentoxide thin films**, Stephan Rapp, Janosch Rosenberger, Matthias Domke, Gerhard Heise, Heinz P. Huber, Hochschule München für Angewandte Wissenschaften (Germany) . . . . . [8607-11]

9:30 am: **Factors controlling the incubation in the application of ps laser pulses on copper and iron surfaces**, Beat Neuenschwander, Beat Jaeggi, Marc C. Schmid, Berner Fachhochschule Technik und Informatik (Switzerland); Alex Dommann, Antonia Neels, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Guido Hennig, Daetwyler Graphics AG (Switzerland) . [8607-12]

9:50 am: **Study on the influence of repetition rate and pulse duration on ablation efficiency using a new generation of high power Ytterbium doped fiber ultrafast laser**, John Lopez, Univ. Bordeaux 1 (France); Rémi Torres, ALPhANOV (France); Yoann Zaouter, Clemens Hoenninger, Amplitude Systèmes (France); Patrick Georges, Marc Hanna, Institut d'Optique Graduate School (France); Eric P. Mottay, Amplitude Systèmes (France); Rainer Kling, ALPhANOV (France) . . . . . [8611-43]

Coffee Break . . . . . Tue 10:10 am to 10:40 am

**SESSION 10**

**Room: 130 (Exhibit Level) . . . . . Tue 10:40 am to 12:30 pm**

**Ultrafast Laser Micromachining II: Fundamentals**

Joint Session with Conferences 8607 and 8611

Session Chair **Yong Feng Lu**, Univ. of Nebraska-Lincoln (USA)

10:40 am: **Ultrafast lasers for materials processing in consumer electronics** (*Invited Paper*), Haibin Zhang, Electro Scientific Industries, Inc. (USA) . [8611-44]

11:10 am: **Micro-structuring of thin titanium films with ultra-short laser pulses**, Regina Moser, Tobias Gschwilm, Adrian Zacherle, Gerhard Heise, Heinz P. Huber, Hochschule München für Angewandte Wissenschaften (Germany) . . . . . [8611-45]

11:30 am: **High throughput laser micro machining on a rotating cylinder with ultra short pulses at highest precision**, Beat Neuenschwander, Beat Jaeggi, Markus Zimmermann, Thomas Meier, Berner Fachhochschule Technik und Informatik (Switzerland); Guido Hennig, Daetwyler Graphics AG (Switzerland) . . . . . [8607-13]

11:50 am: **Formation of mixed metal oxides by femtosecond laser irradiation for solar harvesting**, Kasey C. Phillips, Jin Suntivich, Harvard Univ. (USA); Tian Ming, Shao-Horn Yang, Massachusetts Institute of Technology (USA); Eric Mazur, Harvard Univ. (USA) . . . . . [8607-14]

12:10 pm: **Transient investigations of the laser lift-off process of thin molybdenum films**, Matthias Domke, Stephan Rapp, Jürgen Sotrop, Hochschule München für Angewandte Wissenschaften (Germany); Heinz P. Huber, Hochschule München für Angewandte Wissenschaften (Germany) . . . . . [8611-46]

Lunch/Exhibition Break . . . . . Tue 12:30 pm to 2:00 pm

**LASE**

**SESSION 11**

**Room: 130 (Exhibit Level) . . . . . Tue 2:00 pm to 3:30 pm**

**Ultrafast Laser Micromachining III**

Joint Session with Conferences 8607 and 8611

Session Chair: **Haibin Zhang**, Electro Scientific Industries, Inc. (USA)

2:00 pm: **Double-pulse irradiation of ultrafast laser for high-efficiency glass microwelding** (*Invited Paper*), Koji Sugioka, Sizhu Wu, Katsumi Midorikawa, RIKEN (Japan) . . . . . [8607-15]

2:30 pm: **Ultrastable bonding of glass with femtosecond laser bursts**, Sören Richter, Felix Zimmermann, Sven Döring, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Stefan Nolte, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8611-47]

2:50 pm: **Selective localised modification of silicon crystal by ultrafast laser induced micro-explosion**, Ludovic Rapp, Bianca Haberl, Jodie Bradby, Eugene G. Gamaly, The Australian National Univ. (Australia); Saulius Juodkazis, Swinburne Univ. of Technology (Australia); Andrei V. Rode, The Australian National Univ. (Australia) . . . . . [8607-16]

3:10 pm: **Contrast of femtosecond near infrared and nanosecond deep ultraviolet laser interaction with fused silica glass**, Jianzhao Li, Samira Karimelahi, Peter R. Herman, Univ. of Toronto (Canada) . . . . . [8607-17]

Coffee Break . . . . . Tue 3:30 pm to 4:00 pm

**SESSION 12**

**Room: 130 (Exhibit Level) . . . . . Tue 4:00 pm to 5:40 pm**

**Ultrafast Laser Micromachining IV**

Joint Session with Conferences 8607 and 8611

Session Chair: **Klaus Sokolowski-Tinten**, Univ. Duisburg-Essen (Germany)

4:00 pm: **Influence of ambient pressure on the hole formation process in ultrashort pulse laser deep drilling**, Sven Döring, Sören Richter, Tobias Ullsperger, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Stefan Nolte, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8611-48]

4:20 pm: **Laser through hole formation for microelectronic substrate vertical interconnection**, Chong Zhang, Nikhil Sharma, Amanda E. Schuckman, Islam A. Salama, Tao Wu, Sheng Li, Intel Corp. (USA) . . . . . [8607-18]

4:40 pm: **Micro-hole drilling with femtosecond fiber laser**, Huan Huang, Lih-Mei Yang, Jian Liu, PolarOnyx, Inc. (USA) . . . . . [8607-19]

5:00 pm: **Spatio-temporal dynamics of femtosecond Bessel beams for high-aspect ratio nanochannel drilling in dielectrics**, Jinggui Zhang, Univ. de Franche-Comté (France); Francois Courvoisier, Institut Femto ST (France); Arnaud Couairon, Ecole Polytechnique (France); John M. Dudley, Univ. de Franche-Comté (France) . . . . . [8611-49]

5:20 pm: **Understanding femtosecond laser hyperdoping mechanism via pump-probe methods**, Yu-Ting Lin, Harvard Univ. (USA); Guoliang Deng, Sichuan Univ. (China); Weilu Shen, Rensselaer Polytechnic Institute (USA); Meng-Ju Sher, Eric Mazur, Harvard Univ. (USA) . . . . . [8607-20]

**POSTERS-TUESDAY**

**Room: 103 (Exhibit Level) . . . . . Tue 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the LASE poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Protein profile studies of tissue homogenate in diagnosis of cervical cancers using HPLC-LIF: a preliminary report**, Maheedhar Kodali, Vidyasagar M.S., Vadhira B. M. M.D., Donald J. Fernandes M.D., Manipal Univ. (India) . . . . . [8611-50]

**Calculation of mode-locked CO laser with 5.3 μm**, Igor Ya. Baranov, Andrey V. Koptev, Baltic State Technical Univ. (Russian Federation) . . . . . [8611-51]

**Laser time-of-flight measurement based on multi-channel time delay estimation**, Chao Li, Qian Chen, Guohua Guand, Tian Man, Nanjing Univ. of Science and Technology (China) . . . . . [8611-52]

**Characterization of femtosecond laser filament-fringes in titanium**, Md. Shamim Ahsan, KAIST (Korea, Republic of) and Khulna Univ. (Bangladesh); Fadia Dewanda, KAIST (Korea, Republic of); Farid Ahmed, Martin B. G. Jun, Univ. of Victoria (Canada); Man Seop Lee, KAIST (Korea, Republic of) . [8611-54]

**Liquid jet generated by thermocavitation bubbles within a droplet**, Juan Pablo Padilla-Martinez, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); Darren Banks, University of California in Riverside (USA); Julio-Cesar Ramirez-San-Juan, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); Guillermo Aguilar, University of California in Riverside (USA); Ruben Ramos-García, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico) . . . . . [8611-55]

**A multi-GPU implementation of nonlinear schrödinger equation for the propagation of USPL and its interaction with matters**, Mohammad R. Zunoubi, State Univ. of New York at New Paltz (USA); William P. Roach, Air Force Research Lab. (USA) . . . . . [8611-56]

**Direct laser writing of 3D silver gratings and devices in a polymer matrix**, Michael G. Moebius, Kevin Vora, SeungYeon Kang, Harvard Univ. (USA) . . . . . [8611-57]

**Laser-induced structural modifications in glass using a femtosecond laser and a CO<sub>2</sub> laser**, Takayuki Tamaki, Keigo Nakamura, Shunsuke Ono, Nara National College of Technology (Japan) . . . . . [8611-58]

**Defect detection in laser powder deposition components by laser thermography and laser ultrasonic inspections**, S. P. Santospirito, Kingston Computer Consultancy Ltd. (United Kingdom); Rafal Lopatka, Polkom Badania (Poland); Kamil Slyk, Bin Luo, Kingston Computer Consultancy Ltd. (United Kingdom) . . . . . [8611-59]

**Substrate optimization of a nanostructured plasmonic transfection device**, Sebastien D. Courvoisier, Harvard School of Engineering and Applied Sciences (USA) and Univ. of Geneva (Switzerland); Jun Chen, Harvard School of Engineering and Applied Sciences (USA) and Nanjing Univ. of Science and Technology (China); Lucy Chen, Harvard School of Engineering and Applied Sciences (USA); Luigi Bonacina, Jean-Pierre Wolf, Univ. of Geneva (Switzerland); Eric Mazur, Harvard School of Engineering and Applied Sciences (USA) . . . . . [8611-60]

**Wednesday 6 February**

**STUDENT COMPETITION**

**Room: 132 (Exhibit Level) . . . . . 8:00 am to 9:00 am**

*Session Chairs* : **Stefan Nolte**, Friedrich-Schiller-Univ. Jena (Germany);  
**Alexander Heisterkamp**, Friedrich-Schiller-Univ. Jena (Germany);  
**Michel Meunier**, Ecole Polytechnique de Montréal (Canada)

Papers submitted to this conference by **graduate and undergraduate students** are eligible (both poster and oral papers considered). In order to ensure a fair evaluation, the conference chairs and the program committee will judge the students during this special student competition session. Here students will present a brief **5-minute summary** of their original talk or poster presented at the conference.

Following the student competition, the judges will meet and decide on the winner. The winner and runner-up will be announced at 9:40 am and awarded a cash prize.

**AWARD CEREMONY . . . . . 9:40 am to 10:00 am**

Award Sponsors: **Amplitude Systemes**

**APE**

Coffee Break . . . . . Wed 10:00 am to 10:20 am

**LASE PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . . 10:20 am to 12:30 pm**

- 10:20 am: **Welcome and Opening Remarks**  
**Bo Gu**, Bos Photonics (USA); **Andreas Tünnermann**,  
 Fraunhofer-Institut für Angewandte Optik und Feinmechanik  
 (Germany) and Friedrich-Schiller-Univ. Jena (Germany)
  - 10:25 am: **Announcement of the Best “Green”**  
**LASE Paper Award**  
**Stephen J. Eglash**, Precourt Institute for Energy,  
 Stanford Univ. (USA)
  - 10:30 am: **Laser-based Particle Acceleration and the Path to**  
**TeV Physics and Compact X-ray and Gamma Ray**  
**Sources** (*Presentation Only*)  
**Wim P. Leemans**, Lawrence Berkeley National Lab. (USA)
  - 11:10 am: **Three-dimensional Metamaterials Made By Direct**  
**Laser Writing** (*Presentation Only*)  
**Martin Wegener**, Karlsruher Institut für Technologie (Germany)
  - 11:50 am: **Remote Laser Welding for Automotive Seat**  
**Production** (*Presentation Only*)  
**Geert G. Verhaeghe**, Faurecia Autositze GmbH (Germany)
- See p. 26 for details.*



**Don't miss the Exhibition**

See new products, top companies, potential collaborators, and the best suppliers face-to-face

**5–7 February 2013**  
**South Hall ABC and North Hall D**  
 Tuesday · 10:00 am to 5:00 pm  
 Wednesday · 10:00 am to 5:00 pm  
 Thursday · 10:00 am to 4:00 pm



# SPIE Newsroom

Stay informed with up-to-date information

[www.spie.org/Newsroom](http://www.spie.org/Newsroom)

- Videos

- Technical articles

- News

- Interviews

- Conference coverage

- Product updates

[www.spie.org/Newsroom](http://www.spie.org/Newsroom)

**SPIE**

Connecting minds. Advancing light  
SPIE is the international society for optics and photonics

**SPIE**

Q  SEARCH

HOME CONFERENCES + EXHIBITIONS PUBLICATIONS EDUCATION MEMBERSHIP INDUSTRY RESOURCES CAREER CENTER NEWS + VIDEOS

### Newsroom Home

- Astronomy
- Biomedical Optics & Medical Imaging
- Defense & Security
- Electronic Imaging & Signal Processing
- Illumination & Displays
- Lasers & Sources
- Micro/Nano Lithography
- Nanotechnology
- Optical Design & Engineering
- Optoelectronics & Communications
- Remote Sensing
- Sensing & Measurement
- Solar & Alternative Energy
- Sign up for Newsroom E-Alerts

Information for:  
Advertisers  
ISSN 1818-2259

## SPIE Newsroom

We thank the many sources who have contributed to our award-winning content. [Send us your ideas](#). Also, here's [how to cite Newsroom articles](#).



SPIE.TV ▶ 00:00 / 06:20 | SHARE

**Featured Video:**  
▶ [Michael Eismann: Hyperspectral remote sensing](#)  
[Frank Koppens: Manipulating light with graphene](#)  
[Alison Flatau: Nature inspires improved sensor and actuator designs](#)  
[More Videos...](#)

#### TECHNICAL ARTICLES

 [Watching while listening to the interaction of photons with bio-tissues](#)  
Using a single light source to carry out optical coherence tomography and photoacoustic microscopy simultaneously enables novel studies of optical scattering and absorption in biological tissues.  
3 January 2013

 [Practical laser sources will unlock important applications in the mid-IR](#)  
Optically pumped semiconductor disk lasers at 1 and

#### NEWS HEADLINES

[Tingye Li, laser pioneer and optical fibers expert, dies at 81](#)  
SPIE Newsroom  
28 December 2012

[Tax Deal Leaves U.S. Science Agencies and Institutions in Funding Limbo](#)

[Concentrated Solar Power: Next-Generation Technologies Poised to Ramp up Utility-Scale Production](#)

[California rules phased in for lower-watt bulbs](#)

# MOEMS- MEMS

SPIE Photonics West

Symposium Chair



**Harald Schenk**  
Fraunhofer Institute for Photonic  
Microsystems (Germany)

Symposium Co-Chair



**David L. Dickensheets**  
Montana State Univ. (USA)

Steering Committee Chair



**Rajeshuni Ramesham**  
Jet Propulsion Lab. (USA)

Founding Chair



**M. Edward Motamedi**  
Revoltech Microsystems (USA)

## Micro/Nanofabrication

- 8607 **Laser Applications in Microelectronic and Optoelectronic Manufacturing (LAMOM) XVIII** (Xianfan Xu; Guido Hennig; Yoshiaki Nakata; Stephan W. Roth) . . . . .213
- 8608 **Laser-based Micro- and Nanopackaging and Assembly VII** (Udo Klotzbach; Yongfeng Lu; Kunihiko Washio) . . . . .217
- 8612 **Micromachining and Microfabrication Process Technology XVIII** (Mary Ann Maher; Paul J. Resnick) . . . . .232
- 8613 **Advanced Fabrication Technologies for Micro/Nano Optics and Photonics VI** (Georg von Freymann; Winston V. Schoenfeld; Raymond C. Rumpf) . . . . .234

## Devices/Applications/Reliability

- 8614 **Reliability, Packaging, Testing, and Characterization of MOEMS/MEMS and Nanodevices XII** (Rajeshuni Ramesham; Herbert R. Shea; Herbert R. Shea) . .237
- 8615 **Microfluidics, BioMEMS, and Medical Microsystems XI** (Holger Becker) . . . . .239
- 8616 **MOEMS and Miniaturized Systems XII** (Wibool Piyawattanametha; Yong-Hwa Park) . . . . .242
- 8617 **MEMS Adaptive Optics VII** (Scot S. Olivier; Thomas G. Bifano; Joel Kubby) . . . . .245
- 8618 **Emerging Digital Micromirror Device Based Systems and Applications V** (Michael R. Douglass; Patrick I. Oden) .246

MOEMS-MEMS



Download the  
SPIE Conference App



# MOEMS-MEMS Daily Conference Schedule

Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
<b>Micro/Nanofabrication</b>					
			<p><b>8613 Advanced Fabrication Technologies for Micro/Nano Optics and Photonics VI</b> (von Freymann, Schoenfeld, Rumpf)</p> <p>SESSION 1. <b>Plasmonic Structures I</b> (von Freymann)</p> <p>SESSION 2. <b>Novel Approaches to Direct Laser Writing</b> (Mizeikis)</p> <p>SESSION 3. <b>Precise Material Deposition</b> (von Freymann)</p> <p>SESSION 4. <b>3D Structures</b> (Thiel)</p>	<p>SESSION 5. <b>Plasmonic Structures II</b> (Schoenfeld)</p> <p>SESSION 6. <b>Large Area Structuring</b> (von Freymann)</p> <p>SESSION 7. <b>Novel Applications and Materials for DLW</b> (Srinivasan)</p> <p>SESSION 8. <b>Nano- and Micro-optic Applications</b> (Kemme)</p>	<p><b>8612 Micromachining and Micro-fabrication Process Technology XVIII</b> (Maher, Resnick)</p> <p>SESSION 1. <b>Direct Laser Processing</b> (Maher)</p> <p>SESSION 2. <b>Laser-assisted Processing</b> (Resnick)</p> <p>SESSION 3. <b>Microfabrication Technology</b> (Lishan)</p> <p>SESSION 4. <b>Device and Fabrication Simulation</b> (Maher)</p>
			<p><b>8607 Laser Applications in Micro-electronic and Optoelectronic Manufacturing (LAMOM) XVIII</b> (Xu, Hennig, Nakata, Roth)</p>		
		<p>SESSION 1. <b>Nanoscale Materials Synthesis and Processing Direct Writing</b> (Joint Session with Conf. 8607 and 8609) (Hennig)</p> <p>SESSION 2. <b>Nanoscale Patterning</b> (Joint Session with Conf. 8607 and 8609) (Xu)</p>	<p>SESSION 3. <b>Ultrafast Laser Micromachining I: Fundamentals</b> (Joint Session with Conf. 8607 and 8611) (Nolte)</p> <p>SESSION 4. <b>Ultrafast Laser Micromachining II: Fundamentals</b> (Joint Session with Conf. 8607 and 8611) (Lu)</p> <p>SESSION 5. <b>Ultrafast Laser Micromachining III: Fundamentals</b> (Joint Session with Conf. 8607 and 8611) (Zhang)</p> <p>SESSION 6. <b>Ultrafast Laser Micromachining IV: Fundamentals</b> (Joint Session with Conf. 8607 and 8611) (Sokolowski-Tinten)</p>	<p>SESSION 7. <b>Diagnostics in Laser Processing</b> (Hwang)</p> <p>SESSION 8. <b>3D Manufacturing I</b> (Helvajian)</p> <p>SESSION 9. <b>3D Manufacturing II</b> (Raciukaitis)</p>	<p>SESSION 10. <b>Laser Direct Write</b> (Niino)</p> <p>SESSION 11. <b>Laser Patterning and Drilling</b> (Roth)</p> <p>SESSION 12. <b>Photovoltaics</b> (Nakata)</p> <p>SESSION 13. <b>Photovoltaics, Alternative Energy Sources and Advanced Energy Storage Systems</b> (Joint Session with Conf. 8607 and 8608) (Hwang, Klotzbach)</p>
				<p><b>8608 Laser-based Micro- and Nanopackaging and Assembly VII</b> (Klotzbach, Lu, Washio)</p>	
				<p>SESSION 1. <b>Laser Micro- and Nanostructuring I</b> (Klotzbach)</p> <p>SESSION 2. <b>Laser Micro- and Nanostructuring II</b> (Washio)</p> <p>SESSION 3. <b>Ultrashort Pulsed Laser Processing</b> (Piqué)</p>	<p>SESSION 4. <b>Direct-write Processing and Surface Modification</b> (Pflieger)</p> <p>SESSION 5. <b>Packaging and Additive Manufacturing</b> (Bachmann)</p> <p>SESSION 6. <b>Photovoltaics, Alternative Energy Sources, and Advanced Energy Storage Systems</b> (Joint Session with Conf. 8607 and 8608) (Hwang, Klotzbach)</p>



## MOEMS-MEMS Interactive Poster Session

Tuesday 5 February · 6:00 to 8:00 pm · Room: 103



# MOEMS-MEMS Daily Conference Schedule

Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
----------	--------	--------	---------	-----------	----------

## Devices/Applications/Reliability

		<b>8614 Reliability, Packaging, Testing, and Characterization of MEMS/MOEMS and Nanodevices XII</b> <i>(Ramesham, Shea)</i>			
		SESSION 1. <b>MOEMS-MEMS Reliability I</b> <i>(Ramesham)</i>	SESSION 3. <b>MOEMS/MEMS Packaging</b> <i>(Ramesham)</i>		
		SESSION 2. <b>MOEMS-MEMS Reliability II</b> <i>(Shea)</i>	SESSION 4. <b>MOEMS/MEMS for Space Applications</b> <i>(Shea)</i>		
		<b>8615 Microfluidics, BioMEMS, and Medical Microsystems XI</b> <i>(Becker)</i>			
SESSION 1. <b>Optical Methods in Microfluidics</b> <i>(Becker)</i>		SESSION 5. <b>Novel Methods and Instruments</b> <i>(Weigl)</i>	SESSION 7. <b>Applications III: Surfaces, Cells, and Particles</b> <i>(Weigl)</i>		
SESSION 2. <b>Medical Microsystems</b> <i>(Gray)</i>		SESSION 6. <b>Applications II: Diagnostics</b> <i>(Hagmeyer)</i>	SESSION 8. <b>Applications IV: New Approaches</b> <i>(Rapp)</i>		
SESSION 3. <b>Applications I: Complex Biological Systems and Assays</b> <i>(O'Sullivan)</i>				SESSION 9. <b>Devices and Applications I</b> <i>(Gray)</i>	
SESSION 4. <b>Manufacturing Technologies</b> <i>(Anthony)</i>				SESSION 10. <b>Devices and Applications I</b> <i>(Becker)</i>	
		<b>8616 MOEMS and Miniaturized Systems XII</b> <i>(Piyawattanametha, Park)</i>			
		SESSION 1. <b>Microscopy</b> <i>(Joint Session with Conf. 8616 and 8575) (Dickensheets)</i>	SESSION 2. <b>Microscanner I</b> <i>(Piyawattanametha)</i>	SESSION 6. <b>MOEMS Components and Systems I</b> <i>(Stewart)</i>	
				SESSION 7. <b>MOEMS Components and Systems II</b> <i>(Jung)</i>	
				SESSION 8. <b>Microlenses and Microlens Arrays</b> <i>(Milanovic)</i>	
				SESSION 9. <b>Imaging</b> <i>(Davis)</i>	
				SESSION 10. <b>Spatial Light Modulator</b> <i>(Joint Session with Conf. 8616 and 8618) (Schenk)</i>	
				SESSION 11. <b>Microspectrometer and Optical Filters</b> <i>(Zhou)</i>	
		<b>8618 Emerging Digital Micromirror Device Based Systems and Applications V</b> <i>(Douglass, Oden)</i>		<b>8617 MEMS Adaptive Optics VII</b> <i>(Olivier, Bifano, Kubby)</i>	
		SESSION 1. <b>Biomedical Imaging and Cell Manipulation using a DMD I</b> <i>(Joint Session with Conf. 8587 and 8618) (Best)</i>	SESSION 4. <b>Spectroscopy and Hyperspectral Imaging</b> <i>(Becker)</i>	SESSION 1. <b>Deformable Mirrors</b> <i>(Bifano)</i>	
		SESSION 2. <b>Biomedical Imaging and Cell Manipulation using a DMD II</b> <i>(Joint Session with Conf. 8587 and 8618) (Zuzak)</i>	SESSION 5. <b>3D Measurement Systems Using Structured Light</b> <i>(Becker, Bellis)</i>	SESSION 2. <b>Astronomy</b> <i>(Bifano)</i>	
		SESSION 3. <b>Spatial Light Modulator</b> <i>(Joint Session with Conf. 616 and 8618) (Schenk)</i>	SESSION 6. <b>Beam Shaping and Special Image Encoding</b> <i>(Rabinovitz, Lee)</i>	SESSION 3. <b>Biological Imaging</b> <i>(Kubby)</i>	
				SESSION 7. <b>Advanced and Immersive Displays</b> <i>(Yang, Geng)</i>	

**MOEMS-MEMS Plenary Session**  
 Room: 307 (Esplanade) . . . . . 9:00 am to 12:00 pm  
**Welcome and Announcement of MOEMS-MEMS Best Paper Award and Best Student Paper Award**  
**Harald Schenk**, Fraunhofer Institute for Photonic Microsystems (Germany);  
**David L. Dickensheets**, Montana State Univ. (USA)  
 9:15 am: **Towards Future Systems with Nano-optics Contributions**  
**Bozena Kaminska**, Simon Fraser Univ. (Canada)  
 Coffee Break . . . . . Mon 10:00 am to 10:30 am  
 10:30 am: **MOEMS Pressure Sensors for Geothermal Well Monitoring**  
**Aaron J. Knobloch**, GE Global Research (USA)  
 11:15 am: **Superaligned Carbon Nanotubes: A Road Toward Real Applications**  
**Kaili Jiang**, Tsinghua Univ. (China)  
 See page 24 for details.

# Micromachining and Microfabrication Process Technology XVIII

Conference Chairs: **Mary Ann Maher**, SoftMEMS (USA); **Paul J. Resnick**, Sandia National Labs. (USA)

Program Committee: **Mu Chiao**, The Univ. of British Columbia (Canada); **David G. Lishan**, Plasma-Therm LLC (USA); **Sanjay Krishna**, Ctr. for High Technology Materials (USA); **Tamal Mukherjee**, Carnegie Mellon Univ. (USA); **Metin Ozen**, Ozen Engineering, Inc. (USA); **Yu-Chuan Su**, National Tsing Hua Univ. (Taiwan); **T. C. Yih**, California State Univ., Long Beach (USA)

## Tuesday 5 February

### POSTERS-TUESDAY

Room: 103 (Exhibit Level) .....Tue 6:00 pm to 8:00 pm

Conference attendees are invited to attend the MOEMS-MEMS poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Method of creating microscale rapid prototypes using SLM based holographic lithography**, Joseph L. Lawson, Nathan J. Jenness, Scott M. Wilson, Robert L. Clark, Univ. of Rochester (USA) ..... [8612-21]

**Super-hydrophobicity of PMMA surface by laser fabrication and thin film coating**, Hong-Myeong Jeong, Woon-Young Lee, Jin-Ho Lee, Deok-Cho Yang, Ki-Soo Lim, Chungbuk National Univ. (Korea, Republic of) ..... [8612-22]

**Fabrication of polymeric microstructures with Au nanoparticles**, Cleber R. Mendonca, Vinicius Tribuzi, Daniel Correa, Univ. de São Paulo (Brazil). [8612-23]

**Optimizing mechanical performance of comb drive actuators at low driving voltage**, Nasim Tarameshloo, National Univ. of Malaysia (Malaysia); Ali Babaei, The Univ. of Guilan (Iran, Islamic Republic of) ..... [8612-24]

## Thursday 7 February

### SESSION 1

Room: 274 (Mezzanine) .....Thu 8:40 am to 10:00 am

#### Direct Laser Processing

Session Chair: **Mary Ann Maher**, SoftMEMS (USA)

8:40 am: **Design of microcantilever sensors using SLM based holographic lithography**, Joseph L. Lawson, Robert L. Clark, Univ. of Rochester (USA) ..... [8612-1]

9:00 am: **Graphene-based inkjet printing of flexible bioelectronic circuits and sensors**, Dogan Sinar, George K. Knopf, The Univ. of Western Ontario (Canada); Suwas Nikumb, National Research Council Canada (Canada) [8612-2]

9:20 am: **Laser direct write system for fabricating seamless roll-to-roll lithography tools**, Joseph E. Petzelka, David E. Hardt, Massachusetts Institute of Technology (USA) ..... [8612-4]

9:40 am: **Plateau-Rayleigh instability triggered transformation in thin chromium film on glass substrate under nanosecond laser irradiation**, Mindaugas Gedvilas, Karolis Ratautas, Bogdan Voisiat, Kestutis Regelskis, Gediminas Raciukaitis, Institute of Physics (Lithuania) ..... [8612-5]

Coffee Break ..... Thu 10:00 am to 10:30 am

### SESSION 2

Room: 274 (Mezzanine) .....Thu 10:30 am to 11:30 am

#### Laser-Assisted Processing

Session Chair: **Paul J. Resnick**, Sandia National Labs. (USA)

10:30 am: **Silicon backside machining using a nanosecond 2- $\mu$ m Tm:fiber laser**, Thomas Ferhat, Martin Richardson, Lawrence Shah, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA). ..... [8612-6]

10:50 am: **Use of laser transfer processing for producing Al-Bi doped silicon electronic devices**, Pablo M. Romero, Nerea Otero, Asociación de Investigación Metalúrgica del Noroeste (Spain) ..... [8612-7]

11:10 am: **Doping method to glass material using a CO<sub>2</sub> laser**, Keigo Nakamura, Takayuki Tamaki, Nara National College of Technology (Japan). ..... [8612-8]

Lunch/Exhibition Break ..... Thu 11:30 am to 1:20 pm

### SESSION 3

Room: 274 (Mezzanine) .....Thu 1:20 pm to 3:20 pm

#### Microfabrication Technology

Session Chair: **David G. Lishan**, Plasma-Therm LLC (USA)

1:20 pm: **Deep silicon etch for biology MEMS fabrication: review of process parameters influence versus chip design**, Thomas Magis, CEA-LETI (France) ..... [8612-10]

1:40 pm: **Eliminating stiction in NEMS and MEMS release: parameters optimization for an HF vapor process operating at room temperature and ambient pressure**, Olivier Pollet, Roselyne Segaud, Carine Marcoux, Francois de Crecy, CEA-LETI-Minatec (France) ..... [8612-11]

2:00 pm: **Interferometrically defined 3D pyrolyzed-carbon**, D. Bruce Burckel, Sandia National Labs. (USA). ..... [8612-12]

2:20 pm: **Fabrication of thin vertical mirrors through plasma etch and KOH:IPA polishing for integration into MEMS electrostatic actuators**, Quamrul Huda, Fahim Amin, Univ. of Alberta (Canada); Yuebin Ning, Graham McKinnon, Norcada Inc. (Canada); John Tulip, Boreal Laser Inc. (Canada); Wolfgang Jäger, Univ. of Alberta (Canada). ..... [8612-13]

2:40 pm: **High-quality surface micromachining of LiNbO<sub>3</sub> by ion implantation-assisted etching**, S. Sugliani, P. De Nicola, G. B. Montanari, A. Nubile, A. Menin, Lab. for Micro and Submicro enabling Technologies of Emilia-Romagna Region (Italy); F. Mancarella, Istituto per la Microelettronica e Microsistemi (Italy); P. Vergani, A. Meroni, M. Astolfi, M. Borsetto, G. Consonni, R. Longone, Oclaro, Inc. (Italy); M. Chiarini, Lab. of Micro and Submicro Enabling Technologies of Emilia-Romagna Region (Italy) and CGS S.p.A. (Italy); M. Bianconi, Lab. of Micro and Submicro Enabling Technologies of Emilia-Romagna Region (Italy) and Istituto per la Microelettronica e Microsistemi (Italy); G. G. Bentini, Lab. of Micro and Submicro Enabling Technologies o (Italy) and Istituto per la Microelettronica e Microsistemi (Italy). ..... [8612-14]

3:00 pm: **Characteristics of a tapered hollow micro-tube emitting a Bessel light beam**, Ming-Han Chung, Chun-Yen Chen, National Taiwan Univ. (Taiwan); Chih-Kung Lee, Institute for Information Industry (Taiwan) and National Taiwan Univ. (Taiwan) ..... [8612-15]

Coffee Break ..... Thu 3:20 pm to 3:50 pm

SESSION 4

Room: 274 (Mezzanine) . . . . . Thu 3:50 pm to 5:30 pm

Device and Fabrication Simulation

Session Chair: **Mary Ann Maher**, SoftMEMS (USA)

3:50 pm: **Practical implementation of broadband diffractive optical elements**, Junoh Choi, Anthony Tanbakuchi, Alvaro A. Cruz-Cabrera, Sandia National Labs. (USA) . . . . . [8612-16]

4:10 pm: **Simulation of thick film photoresist processes**, Stewart A. Robertson, KLA-Tencor Texas (USA); Andy Miller, Patrick Jaenen, IMEC (Belgium) . . . . . [8612-17]

4:30 pm: **Piezoelectric resonant micromirror with high frequency and large deflection applying mechanical leverage amplification**, Shanshan Gu-Stoppel, Hans-Joachim Quenzer, Ulrich Hofmann, Fraunhofer-Institut für Siliziumtechnologie (Germany); Hans J Quenzer, Ulrich Hofmann, Fraunhofer Institute for Silicon Technology ISIT (Germany); Wolfgang Benecke, Fraunhofer-Institut für Siliziumtechnologie (Germany). . . . . [8612-18]

4:50 pm: **Effect of nonlinearity degree on pull in voltage**, M. Amin Changizi, Davut E. Sahin, Ion Stiharu, Concordia Univ. (Canada) . . . . . [8612-19]

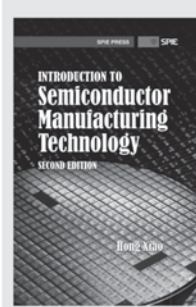
5:10 pm: **ThermoEMF of phases and states of Si under high pressure**, Vsevolod Shchennikov Jr., Institute of Engineering Science (Russian Federation); Igor V. Korobeynikov, Institute of Metal Physics (Russian Federation); Natalia V. Morozova, Institute for Metal Physics (Russian Federation); Vladimir Shchennikov, Sergey Streltsov, Institute of Metal Physics (Russian Federation); Sergey Ovsyannikov, Univ. Bayreuth (Germany). . . . . [8612-20]

# MOEMS-MEMS

SPIE PRESS



Visit the onsite Bookstore to browse this and other SPIE Press Books



**Introduction to Semiconductor Manufacturing Technology, Second Edition**

by Hong Xiao  
Vol. PM220



Download the SPIE Conference App



[www.spie.org/publications](http://www.spie.org/publications)

MOEMS-MEMS



# Advanced Fabrication Technologies for Micro/Nano Optics and Photonics VI

**Conference Chairs:** **Georg von Freymann**, Technische Univ. Kaiserslautern (Germany); **Winston Vaughan Schoenfeld**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); **Raymond C. Rumpf**, The Univ. of Texas at El Paso (USA)

**Program Committee:** **Stefano Cabrini**, Lawrence Berkeley National Lab. (USA); **Aaron R. Hawkins**, Brigham Young Univ. (USA); **Babak Heidari**, OBUDCAT AB (Sweden); **Saulius Juodkazis**, Swinburne Univ. of Technology (Australia); **Shanalyn A. Kemme**, Sandia National Labs. (USA); **Ernst-Bernhard Kley**, Friedrich-Schiller-Univ. Jena (Germany); **Dwayne L. LaBrake**, Molecular Imprints, Inc. (USA); **Akhlesh Lakhtakia**, The Pennsylvania State Univ. (USA); **Uriel Levy**, The Hebrew Univ. of Jerusalem (Israel); **Wen Liu**, Accelink Technologies Co., Ltd. (China); **Marko Loncar**, Harvard Univ. (USA); **Robert R. McLeod**, Univ. of Colorado at Boulder (USA); **Yosuke Mizuyama**, Panasonic Boston Lab. (USA); **Patrick P. Naulleau**, Lawrence Berkeley National Lab. (USA); **Mahesh Pitchumani**, Ostendo Technologies, Inc. (USA); **Menelaos K. Poutous**, The Univ. of North Carolina at Charlotte (USA); **Dennis W. Prather**, Univ. of Delaware (USA); **John A. Rogers**, Univ. of Illinois at Urbana-Champaign (USA); **Pradeep Srinivasan**, Intel Corp. (USA); **Thomas J. Suleski**, The Univ. of North Carolina at Charlotte (USA); **Michael Thiel**, Nanoscribe GmbH (Germany); **Jian Jim Wang**, OmniPV Inc. (USA); **Mike P. C. Watts**, Impattern Solutions (USA)

## Tuesday 5 February

### SESSION 1

Room: 274 (Mezzanine) ..... Tue 8:00 am to 10:00 am

#### Plasmonic Structures I

Session Chair: **Georg von Freymann**,  
Technische Univ. Kaiserslautern (Germany)

8:00 am: **Precisely controlled plasmonic nanostructures and its application to nanolithography** (*Invited Paper*), Kosei Ueno, Hokkaido Univ. (Japan) ..... [8613-1]

8:30 am: **3D chiral and nonreciprocal plasmonics** (*Invited Paper*), Harald W. Giessen, Univ. Stuttgart (Germany) ..... [8613-2]

9:00 am: **Fabrication of chiral plasmonic nanostructures and patterns for optomechanical applications**, Gediminas Gervinskas, Lorenzo Rosa, Swinburne Univ. of Technology (Australia); Etienne Brasselet, Univ. Bordeaux 1 (France) and CNRS Lab. Onde et Matière d'Aquitaine (France); Saulius Juodkazis, Swinburne Univ. of Technology (Australia) and Melbourne Ctr. for Nanofabrication (Australia) ..... [8613-3]

9:20 am: **Nanoscale patterning of colloidal quantum dots for surface plasmon generation**, Yeonsang Park, Young-Geun Roh, Un Jeong Kim, Jin-Eun Kim, Sangmo Cheon, Hwansoo Suh, Jaesoong Lee, Dae-Young Chung, Tae-Ho Kim, Kyung-Sang Cho, Chang-Won Lee, Samsung Advanced Institute of Technology (Korea, Republic of) ..... [8613-4]

9:40 am: **Focused electron-beam induced deposition of plasmonic nanostructures from aqueous solutions**, J. Todd Hastings, Neha Nehru, Matthew D. Bresin, Univ. of Kentucky (USA) ..... [8613-5]

Coffee Break ..... Tue 10:00 am to 10:30 am

### SESSION 2

Room: 274 (Mezzanine) ..... Tue 10:30 am to 12:00 pm

#### Novel Approaches to Direct Laser Writing

Session Chair: **Vygantas Mizeikis**, Shizuoka Univ. (Japan)

10:30 am: **Additive and subtractive three-dimensional nanofabrication using two-photon polymerization and multi-photon ablation** (*Invited Paper*), Yong Feng Lu, Wei Xiong, Yunshen Zhou, Xiang Nan He, Yang Gao, Masoud Mahjour-Samani, Univ. of Nebraska-Lincoln (USA); Lan Jiang, Beijing Institute of Technology (China); Tommaso Baldacchini, Newport Corp. (USA) ... [8613-6]

11:00 am: **Large-area high-speed 3D laser lithography with high-NA objectives**, André Radke, Philipp Simon, Holger Fischer, Christoph Linden, Georg von Freymann, Nanoscribe GmbH (Germany); Michael Thiel, Nanoscribe GmbH (Germany) and Karlsruher Institut für Technologie (Germany) ... [8613-7]

11:20 am: **Recent progress in SLM based 3D direct laser writing**, Erik H. Waller, Georg von Freymann, Technische Univ. Kaiserslautern (Germany) ..... [8613-8]

11:40 am: **Dynamic optical methods for direct laser written waveguides**, Patrick Salter, Martin Booth, Univ. of Oxford (United Kingdom) ..... [8613-9]

Lunch/Exhibition Break ..... Tue 12:00 pm to 1:30 pm

### SESSION 3

Room: 274 (Mezzanine) ..... Tue 1:30 pm to 3:00 pm

#### Precise Material Deposition

Session Chair: **Georg von Freymann**,  
Technische Univ. Kaiserslautern (Germany)

1:30 pm: **Tuning of optical properties by atomic layer deposition** (*Invited Paper*), Mato Knez, CIC nanoGUNE Consolider (Spain); Adriana V. Szeghalmi, Friedrich-Schiller-Univ. Jena (Germany) ..... [8613-10]

2:00 pm: **Nonpolarizing singlelayer inorganic and double layer organic-inorganic one-dimensional guided mode resonance filters**, Muhammad Rizwan Saleem, Univ. of Eastern Finland (Finland) and National Univ. of Sciences and Technology (Pakistan); Benfeng Bai, Tsinghua Univ. (China); Seppo K. Honkanen, Jari Turunen, Univ. of Eastern Finland (Finland) .. [8613-11]

2:20 pm: **III-V access waveguides using atomic layer deposition**, Khaled Mnymneh, Univ. of Michigan (USA); Dan Dalacu, Simon Frederick, Jean Lapointe, Philip J. Poole, Robin L. Williams, National Research Council Canada (Canada) ..... [8613-12]

2:40 pm: **Wire grid polarizers fabricated by low angle deposition**, Mike P. Watts, Impattern Solutions (USA); Michael J. Little, Steve Stephansen, Agoura Technology (USA) ..... [8613-13]

Coffee Break ..... Tue 3:00 pm to 3:30 pm

### SESSION 4

Room: 274 (Mezzanine) ..... Tue 3:30 pm to 6:00 pm

#### 3D Structures

Session Chair: **Michael Thiel**, Nanoscribe GmbH (Germany)

3:30 pm: **Three-dimensional mechanical metamaterials made by dip-in direct laser writing** (*Invited Paper*), Tiemo K. Bückmann, Robert Schittny, Andreas M. Frölich, Michael Thiel, Aude Martin, Muamer Kadic, Martin Wegener, Karlsruher Institut für Technologie (Germany) ..... [8613-14]

4:00 pm: **Mechanical properties of crosslinked poly(methyl methacrylate) polymer nano coil springs fabricated by two-photon lithography**, Satoru Shoji, Shota Ushiba, Kyoko Masui, Satoshi Kawata, Osaka Univ. (Japan) ..... [8613-15]

4:20 pm: **Talbot optimization of phase mask gratings**, Mi-Li Ng, Univ. of Toronto (Canada); Debashis Chanda, Univ. of Central Florida (USA); Peter R. Herman, Univ. of Toronto (Canada) ..... [8613-16]

4:40 pm: **Reversible microstructuring of lithium niobate by direct laser write technique**, Vygantas Mizeikis, Shizuoka Univ. (Japan); Domas Paipulas, Vytautas Purlys, Vilnius Univ. (Lithuania); Ricardas Buividas, Saulius Juodkazis, Swinburne Univ. of Technology (Australia) ..... [8613-17]

5:00 pm: **Freeform mirror fabrication and metrology using a high performance test CGH and advanced alignment features**, Sebastian Scheiding, Stefan Risse, Uwe Detlef Zeitner, Andreas Gebhardt, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) ..... [8613-18]



5:20 pm: **Flexible micro-optics fabrication by direct laser writing toward CMOS compatible 3D optical circuit**, Chris Summitt, Sunclin Wang, Lee Johnson, The Univ. of Arizona (USA); Melissa A. Zaverton, Yuzuru Takashima, Thomas D. Milster, College of Optical Sciences, The Univ. of Arizona (USA) ..... [8613-19]

5:40 pm: **Enhanced performance of organic solar cells by using three-dimensional nanohelix-array electrodes**, Hyunah Kwon, Seung Jae Oh, Juyoung Ham, Gwan Ho Jung, Jong-Lam Lee, Jong Kyu Kim, Pohang Univ. of Science and Technology (Korea, Republic of) ..... [8613-20]

**POSTERS-TUESDAY**

**Room: 103 (Exhibit Level) ..... Tue 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the MOEMS-MEMS poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Inkjet printed microlens array on patterned substrate**, Pauliina Vilmi, Risto Myllylä, Tapio Fabritius, Univ. of Oulu (Finland) ..... [8613-42]

**Fabrication, replication, and characterization of microlenses for optofluidic applications**, Mangirdas Malinauskas, Albertas Zukauskas, Linas Jonusauskas, Vilnius Univ. (Lithuania); Zigmantas Balevicius, Institute of Physics (Lithuania) ..... [8613-43]

**New fabrication method of glass packages with inclined optical windows for micro mirrors on wafer level**, Vanessa Stenclhy, Ulrich Hofmann, Hans-Joachim Quenzer, Wolfgang Benecke, Fraunhofer-Institut für Siliziumtechnologie (Germany) ..... [8613-44]

**Low-NA focused vortex beam lithography for below 100-nm feature size at 405 nm illumination**, Myun-Sik Kim, Ecole Polytechnique Fédérale de Lausanne (Switzerland) and SUSS MicroOptics SA (Switzerland); Toralf Scharf, Hans Peter Herzig, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Reinhard Voelkel, SUSS MicroOptics SA (Switzerland) ..... [8613-45]

**Light confinement effect of non-spherical nanoscale solid immersion lenses**, Myun-Sik Kim, Ecole Polytechnique Fédérale de Lausanne (Switzerland) and SUSS MicroOptics SA (Switzerland); Toralf Scharf, David Nguyen, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Ethan Keeler, Rydberg Rydberg, Wataru Nakagawa, Montana State Univ. (USA); Gaël Osowecki, Hans Peter Herzig, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Reinhard Voelkel, SUSS MicroOptics SA (Switzerland) ..... [8613-46]

**Holographic fabrication of woodpile-type photonic crystal templates using silicon based single reflective optical element**, Jeffrey R. Lutkenhaus, David George, Kris Ohlinger, Hualiang Zhang, Univ. of North Texas (USA); Zsolt Poole, Kevin P. Chen, Univ. of Pittsburgh (USA); Yuankun Lin, Univ. of North Texas (USA) ..... [8613-47]

**Advanced mask aligner lithography (AMALITH)**, L. Andrea Dunbar, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Uwe Vogler, Reinhard Voelkel, Dominik Peterer, Raoul Kirner, SUSS MicroOptics SA (Switzerland); Silvia Angeloni, Giovanni Bergonzi, Branislav Timotijevic, Ross P. Stanley, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland) ..... [8613-48]

**Single phase mask laser scanning holography for flexibly integrating uniform 3D periodic nanostructures with microfluidics**, Liang Yuan, Peter R. Herman, Univ. of Toronto (Canada) ..... [8613-49]

**Precisely shift interference pattern by phase control method based on spatial light modulator**, Jie Ma, Yongchun Zhong, Zhe Chen, Jianhui Yu, Jinan Univ. (China) ..... [8613-50]

**Silver nanocrystal growth through femtosecond laser direct writing**, Kevin Vora, SeungYeon Kang, Michael G. Moebius, Eric Mazur, Harvard Univ. (USA) ..... [8613-52]

**Towards high-rate fabrication of photonic devices utilizing a combination of roll-to-roll compatible imprint lithography and ink jet printing methods**, Xiaohui Lin, The Univ. of Texas at Austin (USA); Tao Ling, Univ. of Michigan (USA); Harish Subbaraman, Omega Optics, Inc. (USA); L. Jay Guo, Univ. of Michigan (USA); Ray T. Chen, The Univ. of Texas at Austin (USA) ..... [8613-53]

**An improved wire grid polarizer for thermal infrared applications**, Matthew C. George, Jonathan Bergquist, Hua Li, Bin Wang, Eric W. Gardner, MOXTEK, Inc. (USA) ..... [8613-54]

**Asymmetric suspended photonic crystal slab membranes for sensitivity enhancement in optofluidic sensing applications**, Ryan Schilling, Costa Nicholaou, Ofer Levi, Univ. of Toronto (Canada) ..... [8613-55]

**Cascaded fiber-optic intrinsic Fabry-Perot interferometers fabricated by femtosecond laser irradiation**, Lei Yuan, Beijing Institute of Technology (China) and Missouri Univ. of Science and Technology (USA); Jie Huang, Hanzheng Wang, Xinwei Lan, Lei Hua, Missouri Univ. of Science and Technology (USA); Hai Xiao, Missouri Univ. of Science and Technology (USA); Lan Jiang, Beijing Institute of Technology (China) ..... [8613-56]

**Nanoplasmonic tip array for large area nanolithography**, Youngseop Lee, Jae-Jun Kim, Sang-Gil Park, Min-Hee Kang, Jae-Beom Kim, Ki-Hun Jeong, KAIST (Korea, Republic of) ..... [8613-57]

**NIR-photopolymers for self-guiding photopolymerization**, Olivier Soppera, Univ. de Haute Alsace (France) and CNRS IS2M (France) and CNRS-LRC (France) ..... [8613-58]

**Fabrication of subwavelength holes using nanoimprint lithography**, Alexander Weiss, Jan Besser, Mario Baum, Thomas Otto, Thomas Gessner, Fraunhofer-Institut für Elektronische Nanosysteme (Germany) ..... [8613-59]

**Wednesday 6 February**

**SESSION 5**

**Room: 274 (Mezzanine) ..... Wed 8:10 am to 10:00 am**

**Plasmonic Structures II**

Session Chair: **Winston Vaughan Schoenfeld**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA)

8:10 am: **Nanofabrication of surface-enhanced Raman scattering substrates for optical fiber sensors** (*Invited Paper*), Paul R. Stoddart, Swinburne Univ. of Technology (Australia) ..... [8613-21]

8:40 am: **Femtosecond direct laser writing of fluorescence in silver containing glass**, Gautier Papon, Arnaud Royon, Nicolas Marquestaut, Marc Dussaze, Univ. Bordeaux 1 (France); Yannick G. Petit, Institut de Chimie de la Matière Condensée de Bordeaux, Univ. de Bordeaux (France) and LOMA, Univ. de Bordeaux (France); Thierry Cardinal, Institut de Chimie de la Matière Condensée de Bordeaux (France); Lionel S. Canioni, Univ. Bordeaux 1 (France) ..... [8613-22]

9:00 am: **Holographic fabrication of nano-optical devices using single reflective optical element**, David George, Jeffrey R. Lutkenhaus, Hualiang Zhang, Yuankun Lin, Univ. of North Texas (USA) ..... [8613-23]

9:20 am: **Electrical resistivity of transparent metal nanomesh electrodes**, Tsutomu Nakanishi, Akira Fujimoto, Ryota Kitagawa, Kumi Masunaga, Kenji Nakamura, Eishi Tsutsumi, Koji Asakawa, Toshiba Corp. (Japan) ..... [8613-24]

9:40 am: **Femtosecond laser fabrication of gold nanorods aggregate microstructures based on local surface plasmon induced two-photon polymerization**, Kyoko Masui, Satoru Shoji, Shota Ushiba, Osaka Univ. (Japan); Xuan-Ming Duan, Technical Institute of Physics and Chemistry (China); Satoshi Kawata, Osaka Univ. (Japan) ..... [8613-25]

Coffee Break ..... Wed 10:00 am to 10:30 am

**SESSION 6**

**Room: 274 (Mezzanine) ..... Wed 10:30 am to 12:00 pm**

**Large Area Structuring**

Session Chair: **Georg von Freymann**, Technische Univ. Kaiserslautern (Germany)

10:30 am: **Opalux's P-Ink technology: low-power flexible color-tunable surfaces** (*Invited Paper*), Andre C. Arsenault, Hai Wang, Fergal Kerins, Ulrich Kamp, Eric Henderson, Opalux, Inc. (Canada) ..... [8613-26]

11:00 am: **Wafer-level electro-optical waveguides with isotropic liquid crystals blends on silicon backplane**, Florenta A. Costache, Martin Blasl, Haldor Hartwig, Kirstin Bornhorst, Harald Schenk, Fraunhofer-Institut für Photonische Mikrosysteme (Germany) ..... [8613-27]

11:20 am: **Nanostructured antireflective coatings by high throughput optical lithography**, Boris Kobrin, Joseph B. Geddes III, Mukti Aryal, Ian McMackin, Rolith, Inc. (USA) ..... [8613-28]

11:40 am: **Microstructured optics for high performance optical systems**, Alexandre Gatto, Carl Zeiss Jena GmbH (Germany) ..... [8613-29]

Lunch/Exhibition Break ..... Wed 12:00 pm to 1:30 pm

**SESSION 7**

**Room: 274 (Mezzanine) . . . . . Wed 1:30 pm to 3:30 pm**

**Novel Applications and Materials for DLW**

Session Chair: **Pradeep Srinivasan**, Intel Corp. (USA)

1:30 pm: **High-resolution 3D nanofabrication for advanced plasmonic applications** (*Invited Paper*), Isabelle Staude, Manuel Decker, The Australian National Univ. (Australia); Michael J. Ventura, Swinburne Univ. of Technology (Australia); Chennupati Jagadish, Dragomir N. Neshev, The Australian National Univ. (Australia); Min Gu, Swinburne Univ. of Technology (Australia); Yuri S. Kivshar, The Australian National Univ. (Australia) . . . . . [8613-30]

2:00 pm: **Photonic wire bonding: connecting nanophotonic circuits across chip boundaries** (*Invited Paper*), Christian Koos, Juerg Leuthold, Wolfgang Freude, Nicole Lindenmann, Sebastian Koeber, Gerhard Balthasar, Joerg Hoffmann, Tobias Hoese, Philipp Huebner, David Hillerkuss, Rene Schmogrow, Karlsruhe Institut für Technologie (Germany) . . . . . [8613-31]

2:30 pm: **Fundamental processes of refractive index modifications during femtosecond laser waveguide writing**, Dagmar Schaefer, Ingomar Kelbassa, RWTH Aachen (Germany) . . . . . [8613-32]

2:50 pm: **Two photon polymerization lithography for 3D micro fabrication of single wall carbon nanotube/polymer composites**, Shota Ushiba, Satoru Shoji, Osaka Univ. (Japan); Preeya Kuray, Department of Materials Science and Engineering, Rutgers, The State University of New Jersey (USA); Kyoko Masui, Osaka Univ. (Japan); Junichiro Kono, Rice Univ. (USA); Satoshi Kawata, Osaka Univ. (Japan) . . . . . [8613-33]

3:10 pm: **Nonlinear absorption measurements of commercial and custom made two-photon initiators for direct laser writing application**, Paulius Danilevicius, David Gray, Foundation for Research and Technology-Hellas (Greece); Muhammad Rashid Nazir, Daniel T. Gryko, Polish Academy of Sciences (Poland); Maria Farsari, Foundation for Research and Technology-Hellas (Greece) . . . . . [8613-34]

Coffee Break . . . . .Wed 3:30 pm to 4:00 pm

**SESSION 8**

**Room: 274 (Mezzanine) . . . . . Wed 4:00 pm to 6:20 pm**

**Nano- and Micro-optic Applications**

Session Chair: **Shanalyn A. Kemme**, Sandia National Labs. (USA)

4:00 pm: **Light sensitive holographic waveguides fabricated by vacuum assisted microfluidics**, Sarfaraz Baig, Guomin Jiang, Michael R. Wang, Univ. of Miami (USA) . . . . . [8613-35]

4:20 pm: **Optimization of deposition conditions for silica/polystyrene microlens and nanolens arrays for light extraction enhancement in GaN light-emitting diodes**, Peifen Zhu, Peter O. Weigel, Guangyu Liu, Jing Zhang, Alex L. Weldon, Tanyakorn Muangnaphor, James F. Gilchrist, Nelson Tansu, Lehigh Univ. (USA) . . . . . [8613-36]

4:40 pm: **Flexible conductive polymer polarizer designed for a chemical tag**, Cody M. Washburn, Julia M. Craven-Jones, Steve R. Vigil, Patrick S. Finnegan, Robert R. Boye, Jeffery D. Hunker, David A. Scrymgeour, Shawn M. Dirk, Bradley G. Hance, Sandia National Labs. (USA) . . . . . [8613-37]

5:00 pm: **Micro-optical grayscale collection lenses for atom and ion trapping**, David A. Scrymgeour, Shanalyn A. Kemme, Robert R. Boye, A. Robert Ellis, Tony R. Carter, Jeffery D. Hunker, Sandia National Labs. (USA) . . [8613-38]

5:20 pm: **A snapshot multispectral imager with integrated, tiled filters, and optical duplication**, Bert Geelen, Klaas Tack, Andy Lambrechts, IMEC (Belgium) . . . . . [8613-39]

5:40 pm: **Micro-optical system as integration platform for III-N nanowire based opto-chemical detectors**, Roman M. Kleindienst, Technische Univ. Ilmenau (Germany); Volker Cimalla, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany); Martin H. Eickhoff, Justus-Liebig-Univ. Giessen (Germany); Adrian Grewe, Technische Univ. Ilmenau (Germany); Katarzyna A. Holc, Jérôme Schätzle, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany); Ulrich T. Schwarz, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany) and Freiburg Univ. (Germany); Jörg Teubert, Justus-Liebig-Univ. Giessen (Germany); Stefan Sinzinger, Technische Univ. Ilmenau (Germany) . . . . . [8613-40]

6:00 pm: **Hyperspectral Fabry-Pérot filters for HgCdTe infrared detectors**, Yong Chang, Christoph H. Grein, Sivananthan Labs., Inc. (USA); Silviu Velicu, EPIR Technologies, Inc. (USA); Neelam Gupta, U.S. Army Research Lab. (USA) . . . . . [8613-41]

**Best Paper Award and Best Student Paper Award**

Advanced Fabrication Technologies for Micro/Nano Optics and Photonics (Conf. 8613)

We are pleased to announce that a cash prize will be awarded to the best paper and best student paper in this conference.

Qualifying papers will be evaluated by the awards committee. The winner will be announced during the session in which their paper will be presented, and they will also be awarded a cash prize.

Award Sponsor: **Nanoscribe**

# Reliability, Packaging, Testing, and Characterization of MOEMS/MEMS and Nanodevices XII

Conference Chairs: **Rajeshuni Ramesham**, Jet Propulsion Lab. (USA); **Herbert R. Shea**, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

Program Committee: **Paul A. Bierden**, Boston Micromachines Corp. (USA); **Christopher K. Harrison**, Schlumberger-Doll Research Ctr. (USA); **Allyson Hartzell**, Qualcomm Inc. (USA), Pixtronix, Inc. (United States); **Albert K. Henning**, NanoInk, Inc. (USA); **Maurice S. Karpman**, Draper Lab. (USA); **Kee-Keun Lee**, Ajou Univ. (Korea, Republic of); **Richard C. Kullberg**, Vacuum Energy, Inc. (USA); **Tolga Tekin**, Technische Univ. Berlin (Germany); **Yanzhu Zhao**, Medtronic, Inc. (USA); **Jose M. Pozo**, TNO (Netherlands); **Sonia M. Garcia-Blanco**, Univ. Twente (Netherlands)

## Monday 4 February

**MOEMS-MEMS PLENARY SESSION**

**Room: 307 (Esplanade) . . . . . 9:00 am to 12:00 pm**

**Welcome and Announcement of MOEMS-MEMS Best Paper Award and Best Student Paper Award**  
**Harald Schenk**, Fraunhofer Institute for Photonic Microsystems (Germany);  
**David L. Dickensheets**, Montana State Univ. (USA)

9:15 am: **Towards Future Systems with Nano-optics Contributions**  
**Bozena Kaminska**, Simon Fraser Univ. (Canada)

Coffee Break . . . . . Mon 10:00 am to 10:30 am

10:30 am: **MOEMS Pressure Sensors for Geothermal Well Monitoring**  
**Aaron J. Knobloch**, GE Global Research (USA)

11:15 am: **Superaligned Carbon Nanotubes: A Road Toward Real Applications**  
**Kaili Jiang**, Tsinghua Univ. (China)

See page 24 for details.

Lunch Break . . . . . Mon 12:00 pm to 1:20 pm

### SESSION 1

**Room: 120 (Exhibit Level) . . . . . Mon 1:20 pm to 3:30 pm**

#### MOEMS-MEMS Reliability I

Session Chair: **Rajeshuni Ramesham**, Jet Propulsion Lab. (USA)

1:20 pm: **Probing interfacial contact via MEMS-based microinstrumentation** (*Invited Paper*), Roya Maboudian, Univ. of California, Berkeley (USA) . . . [8614-1]

1:50 pm: **Analysis of metal-metal contacts in RF MEMS switches**, Steffen Kurth, Fraunhofer-Institut für Elektronische Nanosysteme (Germany); Sven Voigt, Sven Haas, Andreas Bertz, Christian Kaufmann, Technische Univ. Chemnitz (Germany); Thomas Gessner, Fraunhofer-Institut für Elektronische Nanosysteme (Germany); Akira Akiba, Koichi Ikeda, Sony Corp. (Japan) [8614-2]

2:10 pm: **Reliability of MEM relays for zero leakage logic**, Yenhao Chen, Rhessa Nathanael, Jack Yaung, Louis Hutin, Tsu-Jae K. Liu, Univ. of California, Berkeley (USA) . . . . . [8614-3]

2:30 pm: **New long scanner metrology and signal analysis for measurement of topography and stress in MEMS and X ray structures**, Wojciech Walecki, Peter Walecki, Sunrise Optical LLC (USA) . . . . . [8614-4]

2:50 pm: **Reliability characteristics of microfabricated Rb mini-lamps for optical pumping in miniature atomic clocks and magnetometers**, Vinu Venkatraman, Yves Pétremand, Nico F. de Rooij, Herbert R. Shea, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8614-5]

3:10 pm: **Reliability studies on MEMS shutters and displays** (*Invited Paper*), Joyce Wu, Lodewyk Steyn, Pixtronix, Inc. (USA) . . . . . [8614-35]

Coffee Break . . . . . Mon 3:30 pm to 3:50 pm

### SESSION 2

**Room: 120 (Exhibit Level) . . . . . Mon 3:50 pm to 6:10 pm**

#### MOEMS-MEMS Reliability II

Session Chair: **Herbert R. Shea**,

Ecole Polytechnique Fédérale de Lausanne (Switzerland)

3:50 pm: **MEMS gratings for wavemeters and tunable light sources** (*Invited Paper*), Maurizio Tormen, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Thomas Overstolz, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Stephan Dasen, Jaques-Andre Porchet, Real Ischer, Branislav Timotijevic, Ross P. Stanley, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland) . . . . . [8614-6]

4:20 pm: **Robustness and reliability of MOEMS for miniature spectrometers**, Anna Rissanen, Uula Kantojärvi, Mari Laamanen, VTT Technical Research Ctr. of Finland (Finland); Mikael Broas, Jussi Hokka, Toni T. Mattila, Aalto Univ. School of Electrical Engineering (Finland); Jarkko E. Antila, Heikki K. Saari, VTT Technical Research Ctr. of Finland (Finland) . . . . . [8614-7]

4:40 pm: **MEMS and MOEMS resonance characterization by digital holographic microscope (DHM)**, Yves Emery, Lyncée Tec SA (Switzerland); Aneta Michalska, Warsaw Univ. of Technology (Poland); Etienne Cuche, Lyncée Tec SA (Switzerland) . . . . . [8614-8]

5:00 pm: **A smaller footprint MEMS sensor for on-chip temperature measurement**, Ali Najafi Sohi, Patricia Nieva, Univ. of Waterloo (Canada) . . . . . [8614-9]

5:20 pm: **Optoelectronic and acoustic properties and their interfacial durability of GnP/PVDF/GnP composite actuators with nano-structural control**, Joung-Man Park, Gyeongsang National Univ. (Korea, Republic of) and The Univ. of Utah (USA); Ga-Young Gu, Dong-Jun Kwon, Zuo-Jia Wang, Gyeongsang National Univ. (Korea, Republic of); Lawrence K. DeVries, The Univ. of Utah (USA) . . . . . [8614-10]

5:40 pm: **Developments in packaging and integration for silicon photonics** (*Invited Paper*), Peter A. O'Brien, Tyndall National Institute (Ireland) . . . [8614-11]

## Tuesday 5 February

### SESSION 3

**Room: 120 (Exhibit Level) . . . . . Tue 8:10 am to 10:20 am**

#### MOEMS/MEMS Packaging

Session Chair: **Rajeshuni Ramesham**, Jet Propulsion Lab. (USA)

8:10 am: **Temperature compensated silicon resonators for space applications** (*Invited Paper*), Mina Rais-Zadeh, Vikram A. Thakar, Zhengzheng Wu, Adam Peczkalski, Univ. Of Michigan (USA) . . . . . [8614-12]

8:40 am: **Wafer level vacuum packaging of scanning micromirrors using glass-frit and anodic bonding methods**, Sergiu Langa, Christian Drabe, Christian Kunath, André Dreyhaupt, Harald Schenk, Fraunhofer-Institut für Photonische Mikrosysteme (Germany) . . . . . [8614-13]

9:00 am: **Influence of ceramic package internal components on the performance of vacuum sealed uncooled bolometric detectors.**, Alex Paquet, Sébastien Deshaies, Yan Desroches, Jeffrey Whalin, Patrice Topart, INO (Canada) . . . . . [8614-14]

9:20 am: **3D-integration of a vacuum sealed carbon nanotube resonator with its driving CMOS chip**, Rokhaya Gueye, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Shih-Wei Lee, ETH Zurich (Switzerland); Terunobu Akiyama, Danick Briand, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Matthias Muoth, Cosmin I. Roman, Christofer Hierold, ETH Zurich (Switzerland); Nico F. de Rooij, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8614-15]

**MOEMS-MEMS**

# Conference 8614 · Room: 120 (Exhibit Level)

9:40 am: **Solar cell packaged by a microlens array and its long-term optical efficiency enhancement**, Minwoo Nam, Kangho Kim, Jaejin Lee, Sang Sik Yang, Kee-Keun Lee, Ajou Univ. (Korea, Republic of) . . . . . [8614-17]

Coffee Break . . . . . Tue 10:20 am to 10:40 am

## SESSION 4

**Room: 120 (Exhibit Level) . . . . . Tue 10:40 am to 12:30 pm**

### **MOEMS/MEMS for Space Applications**

Session Chair: **Herbert R. Shea**,  
Ecole Polytechnique Fédérale de Lausanne (Switzerland)

10:40 am: **Impact of radiations on the electromechanical properties of materials and on the piezoresistive and capacitive transduction mechanisms used in microsystems** (*Invited Paper*), Laurent A. Francis, Petros Gkotsis, Valeriya Kilchytska, Xiaohui Tang, Sylvain Druart, Jean-Pierre Raskin, Denis Flandre, Univ. Catholique de Louvain (Belgium) . . . . . [8614-18]

11:10 am: **MOMS accelerometers utilizing resonant microcantilevers with interrogated single-mode waveguides and Bragg gratings**, Lewis G. Carpenter, Christopher Holmes, James C. Gates, Peter G. R. Smith, Univ. of Southampton (United Kingdom) . . . . . [8614-19]

11:30 am: **Reliability of reworked CCGA packages for deep space applications**, Rajeshuni Ramesham, Jet Propulsion Lab. (USA) . . . . . [8614-20]

11:50 am: **Proton irradiation tolerance of single crystal silicon and SU-8 based MEMS devices**, Tobias Bandi, Ecole Polytechnique Fédérale de Lausanne (Switzerland) and Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); João Gomes, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Antonia Neels, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Herbert R. Shea, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8614-21]

12:10 pm: **Spaceborne linear arrays of 512x3 microbolometers**, Linh Ngo Phong, Canadian Space Agency (Canada); Ovidiu Pancrati, Linda Marchese, François Châteauneuf, INO (Canada) . . . . . [8614-22]

## **Don't miss the Exhibition**

See new products, top companies, potential collaborators, and the best suppliers face-to-face

**5–7 February 2013**  
**South Hall ABC and North Hall D**  
Tuesday · 10:00 am to 5:00 pm  
Wednesday · 10:00 am to 5:00 pm  
Thursday · 10:00 am to 4:00 pm





# Microfluidics, BioMEMS, and Medical Microsystems XI

Conference Chair: **Holger Becker**, microfluidic ChipShop GmbH (Germany)

Conference Co-Chair: **Bonnie L. Gray**, Simon Fraser Univ. (Canada)

Program Committee: **Brian W. Anthony**, Massachusetts Institute of Technology (USA); **Bruce K. Gale**, The Univ. of Utah (USA); **Albert K. Henning**, NanoInk, Inc. (USA); **Yu-Cheng Lin**, National Cheng Kung Univ. (Taiwan); **Yuehe Lin**, Pacific Northwest National Lab. (USA); **Ciara K. O'Sullivan**, Univ. Rovira i Virgili (Spain); **Ian Papautsky**, Univ. of Cincinnati (USA); **Thomas Stieglitz**, Albert-Ludwigs-Univ. Freiburg (Germany); **Albert van den Berg**, Univ. Twente (Netherlands); **Wanjun Wang**, Louisiana State Univ. (USA); **Bernhard H. Weigl**, PATH (USA)

## Sunday 3 February

### SESSION 1

Room: 270 (Mezzanine) . . . . . Sun 8:50 am to 10:10 am

#### Optical Methods in Microfluidics

Session Chair: **Holger Becker**, microfluidic ChipShop GmbH (Germany)

8:50 am: **Integrated liquid jet waveguide for fluorescence spectroscopy on chip**, Gianluca Persichetti, Genni Testa, Romeo Bernini, Istituto per il Rilevamento Elettromagnetico dell'Ambiente (Italy) . . . . . [8615-1]

9:10 am: **Next generation optofluidic flow cytometers using color-space-time coding**, Sung Hwan Cho, Kendall Chuang, Zhe Mei, NanoSort Inc. (USA); Zachery Olson, John Hanks, National Instruments Corp. (USA); Jose Morachis, NanoSort Inc. (USA); Yu-Hwa Lo, Univ. of California, San Diego (USA) . . [8615-2]

9:30 am: **Lab-in-fiber platform for plasmonic photothermal study**, Derrick Yong, A\*STAR Singapore Institute of Manufacturing Technology (Singapore) and Nanyang Technological Univ. (Singapore); Xia Yu, A\*STAR Singapore Institute of Manufacturing Technology (Singapore); Chi Chiu Chan, Nanyang Technological Univ. (Singapore) . . . . . [8615-3]

9:50 am: **Advances in Raman-activated cell sorting using microfluidic chips**, Sebastian Dochow, Martin Becker, Ron Spittel, Institut für Photonische Technologien e.V. (Germany); Claudia Beleites, Institut für Photonische Technologien e.V. (Germany); Sarmiza Stanca, Ines Latka, Kay Schuster, Jens Kobelke, Sonja Unger, Thomas Henkel, Günter Mayer, Jens Albert, Manfred Rothardt, Christoph Krafft, Institut für Photonische Technologien e.V. (Germany); Jürgen Popp, Institut für Photonische Technologien e.V. (Germany) and Friedrich-Schiller-Univ. Jena (Germany) . . . . . [8615-5]

Coffee Break . . . . . Sun 10:10 am to 10:40 am

### SESSION 2

Room: 270 (Mezzanine) . . . . . Sun 10:40 am to 11:50 am

#### Medical Microsystems

Session Chair: **Bonnie L. Gray**, Simon Fraser Univ. (Canada)

10:40 am: **Results update from Second Sight's Argus II retinal prosthesis study** (Invited Paper), Lyndon da Cruz M.D., Andrew Webster M.D., NHS (United Kingdom); Gislin Dagnelie, James Handa M.D., Johns Hopkins Univ. (USA); José-Alain Sahel M.D., Saddek Mohand-Said M.D., Pierre-Olivier Barale M.D., Sarah Scheer M.D., Ctr. Hospitalier National d'Ophthalmologie des Quinze-Vingts (France); Paulo Stanga M.D., Susmito Biswas M.D., George Turner M.D., Manchester Royal Eye Hospital (United Kingdom); Arturo Santos M.D., Enrique Roig M.D., Puerto de Hierro (Mexico); Lisa Olmos M.D., Amani Fawzi M.D., Dean Elliott M.D., Mark Humayun M.D., Rajat Agrawal M.D., Doheny Eye Institute (USA); Jacques Duncan M.D., Eugene de Juan M.D., Univ. of California, San Francisco (USA); David Birch M.D., Eugene Filley M.D., Rand Spencer M.D., Retina Foundation of the Southwest (USA); Farhad Hafezi M.D., Avinoam Safran M.D., Joel Salzmann M.D., Marco Pelizzone, Jorg Sommerhalder, Angelica Perez-Fornos M.D., Univ. Hospital of Geneva (Switzerland); Artur Cideciyan M.D., Samuel Jacobson M.D., Gary Brown M.D., Univ. of Pennsylvania (USA); Allen Ho M.D., Carl Regillo M.D., Julia Haller M.D., Wills Eye Hospital (USA); Lucian del Priore M.D., Columbia Univ. (USA); Aries Arditi, Lighthouse International (USA); Robert J. Greenberg M.D., Second Sight Medical Products, Inc. (USA) . . . . . [8615-6]

11:10 am: **Lissajous scanning endoscopic OCT catheter using asymmetric silicon structures**, Hyeon-Cheol Park, Seung-Burn Yang, Minsuk Lee, KAIST (Korea, Republic of); Minseog Choi, Seungwan Lee, Woonbae Kim, Samsung Advanced Institute of Technology (Korea, Republic of); Ki-Hun Jeong, KAIST (Korea, Republic of) . . . . . [8615-7]

11:30 am: **Multi hybrid instrumentation with smartphones for innovative in-field and POC diagnostics**, Dietrich Hofmann, Paul-Gerald Dittrich, Technology and Innovation Park Jena (Germany); Claudia Gärtner, Richard Klemm, microfluidic ChipShop GmbH (Germany) . . . . . [8615-8]

Lunch Break . . . . . Sun 11:50 pm to 1:30 am

### SESSION 3

Room: 270 (Mezzanine) . . . . . Sun 1:30 pm to 3:20 pm

#### Applications I: Complex Biological Systems and Assays

Session Chair: **Ciara K. O'Sullivan**, Univ. Rovira i Virgili (Spain)

1:30 pm: **Tailoring microfluidic systems for organ-like cell culture applications using multiphysics simulations** (Invited Paper), Britta Hagemeyer, Heiko Kiessling, Julia Schütte, Martin Stelzle, Naturwissenschaftliches und Medizinisches Institut an der Univ. Tübingen (Germany) . . . . . [8615-10]

2:00 pm: **Human organ-on-a-chip BioMEMS devices for testing new diagnostic and therapeutic strategies**, James F. Leary, Pierre-Alexander Vidi, Christy L. Cooper, Ayeeshik Kole, Lisa M. Reece, Sophie A. Lelievre, Purdue Univ. (USA) . . . . . [8615-11]

2:20 pm: **Stationary microfluidics: molecular diagnostic assays by moving magnetic beads through non-moving liquids**, Holger Becker, Cornelia Carstens, microfluidic ChipShop GmbH (Germany); Dirk Kuhlmeier, Fraunhofer-Institut für Zelltherapie und Immunologie (Germany); Christian Zilch, Magna Diagnostics GmbH (Germany); Claudia Gärtner, microfluidic ChipShop GmbH (Germany) . . . . . [8615-12]

2:40 pm: **Optimized release matrices for use in a BioMEMS device to study metastasis**, Ashley N. Clark, James K. Williams, Michael R. Padgen, Jesus Vijay, Univ. at Albany (USA); Patricia J. Keely, Univ. of Wisconsin-Madison (USA); John S. Condeelis, Albert Einstein College of Medicine of Yeshiva Univ. (USA); James Castracane, Univ. at Albany (USA) . . . . . [8615-13]

3:00 pm: **Automation of routine electrochemical sandwich assay for on-chip gene expression analysis of circulating tumorous cells**, Ciara K. O'Sullivan, Univ. Rovira i Virgili (Spain) . . . . . [8615-14]

Coffee Break . . . . . Sun 3:20 pm to 3:50 pm

MOEMS-MEMS

**SESSION 4**

**Room: 270 (Mezzanine) . . . . . Sun 3:50 pm to 5:30 pm**

**Manufacturing Technologies**

Session Chair: **Brian W. Anthony**,  
Massachusetts Institute of Technology (USA)

3:50 pm: **Inkjet printed structures for smart lab-on-chip systems**, Erik Beckert, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Oliver Pabst, Falk Kemper, Zhe Shu, Friedrich-Schiller-Univ. Jena (Germany); Ramona Eberhardt, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Andreas Tünnermann, Jolke Perelaer, Ulrich Schubert, Friedrich-Schiller-Univ. Jena (Germany); Holger Becker, microfluidic ChipShop GmbH (Germany). . . . . [8615-15]

4:10 pm: **Characterizing frangible seals for liquid delivery using blister packs**, Tejas Inamdar, Brian W. Anthony, Massachusetts Institute of Technology (USA) . . . . . [8615-16]

4:30 pm: **Selecting and designing with the right thermoplastic polymer for your microfluidic chip: a close look into cyclo-olefin polymer**, Mark A. Nevitt, Zeon Chemicals L.P. (USA) . . . . . [8615-17]

4:50 pm: **Optimization of bonding in fabrication of gastight picoliter reactors**, Elena V. Petrova, Anupam Aich, Peter G. Vekilov, Univ. of Houston (USA) . . . . . [8615-18]

5:10 pm: **Fabrication of micro/nano-fluidic channels by single-beam direct femtosecond laser writing**, Fadia Dewanda, KAIST (Korea, Republic of); Md. Shamim Ahsan, KAIST (Korea, Republic of) and Khulna Univ. of Engineering & Technology (Bangladesh); Man Seop Lee, KAIST (Korea, Republic of) . [8615-19]

**Monday 4 February**

**MOEMS-MEMS PLENARY SESSION**

**Room: 307 (Esplanade) . . . . . 9:00 am to 12:00 pm**

**Welcome and Announcement of MOEMS-MEMS Best Paper Award and Best Student Paper Award**

**Harald Schenk**, Fraunhofer Institute for Photonic Microsystems (Germany); **David L. Dickensheets**, Montana State Univ. (USA)

9:15 am: **Towards Future Systems with Nano-optics Contributions**  
**Bozena Kaminska**, Simon Fraser Univ. (Canada)

Coffee Break . . . . . Mon 10:00 am to 10:30 am

10:30 am: **MOEMS Pressure Sensors for Geothermal Well Monitoring**  
**Aaron J. Knobloch**, GE Global Research (USA)

11:15 am: **Superaligned Carbon Nanotubes: A Road Toward Real Applications**  
**Kaili Jiang**, Tsinghua Univ. (China)

See page 24 for details.

Lunch Break . . . . . Mon 12:00 pm to 1:30 pm

**SESSION 5**

**Room: 270 (Mezzanine) . . . . . Mon 1:30 pm to 3:20 pm**

**Applications II: Diagnostics**

Session Chair: **Britta Hagmeyer**, Naturwissenschaftliches und Medizinisches Institut an der Univ. Tübingen (Germany)

1:30 pm: **System for portable nucleic acid testing in low resource settings** (*Invited Paper*), Hsiang-Wei Lu, Kristina Roskos, Anna Hickerson, Keck Graduate Institute (USA); Thomas Carey, Harvey Mudd College (USA); Tanya Ferguson, Claremont BioSolutions (USA); Deepali Shinde, Keck Graduate Institute (USA); Robert Doeblner, Ryan Talbot, Claremont BioSolutions (USA); Angelika Niemz, Keck Graduate Institute (USA) . . . . . [8615-20]

2:00 pm: **IFSA: a microfluidic chip-platform for frit-based immunoassay protocols**, Nadine Hlawatsch, microfluidic ChipShop GmbH (Germany); M. Bangert, Peter Miethe, Research Ctr. of Medical Technology and Biotechnology (Germany); Holger Becker, Claudia Gärtner, microfluidic ChipShop GmbH (Germany) . . . . . [8615-21]

2:20 pm: **Integrating sample preparation for magnetic flow cytometry**, Oliver Hayden, Michael Helou, Lukas Richter, Siemens AG (Germany); Mathias Reisbeck, Fachhochschule Regensburg (Germany); Evi Bingart, Sandro F. Tedde, Siemens AG (Germany) . . . . . [8615-22]

2:40 pm: **Rapid screening test for gestational diabetes**, Bernhard H. Weigl, Roger Peck, PATH (USA) . . . . . [8615-23]

3:00 pm: **On-chip trapping of cancer cells using micro-patterned magnetic pathway**, CheolGi Kim, Chungnam National Univ. (Korea, Republic of) [8615-24]

Coffee Break . . . . . Mon 3:20 pm to 3:50 pm

**SESSION 6**

**Room: 270 (Mezzanine) . . . . . Mon 3:50 pm to 5:40 pm**

**Novel Methods and Instruments**

Session Chair: **Bernhard H. Weigl**, PATH (USA)

3:50 pm: **Lensfree on-chip microscopy and tomography toward telemedicine applications** (*Invited Paper*), Aydogan Ozcan, Univ. of California, Los Angeles (USA) . . . . . [8615-25]

4:20 pm: **Rapid white blood cell detection for peritonitis diagnosis**, Tsung-Feng Wu, Zhe Mei, Yu-Jui Chiu, Univ. of California, San Diego (USA); Sung Hwan Cho, Nanosort, Inc. (USA); Yu-Hwa Lo, Univ. of California, San Diego (USA) . . . . . [8615-26]

4:40 pm: **A microfluidic platform utilizing enzymatic assays for lab-free pathogen detection**, Richard Klemm, Nadine Hlawatsch, Sandra Julich, Holger Becker, Claudia Gärtner, microfluidic ChipShop GmbH (Germany) . . . [8615-27]

5:00 pm: **Organic photovoltaic cells based on photoactive bacteriorhodopsin proteins**, Khaled M. Al-Arife, George K. Knopf, Amarjeet S. Bassi, The Univ. of Western Ontario (Canada) . . . . . [8615-28]

5:20 pm: **Instrument-free exothermic heating with phase change temperature control for paper microfluidic devices**, Jered Singleton, Chris Zentner, PATH (USA); Joshua Buser, Univ. of Washington (USA); Paul LaBarre, Bernhard H. Weigl, PATH (USA) . . . . . [8615-29]

**Tuesday 5 February**

**SESSION 7**

**Room: 270 (Mezzanine) . . . . . Tue 8:20 am to 10:00 am**

**Applications III: Surfaces, Cells, and Particles**

Session Chair: **Bernhard H. Weigl**, PATH (USA)

8:20 am: **Laser guidance in a microfluidic biochip**, Wan Qin, Lucas Schmidt, Julie X. Yuan, Clemson Univ. (USA); Xiang Peng, Shenzhen Univ. (China); Xiaocong Yuan, Nankai Univ. (China); Bruce Z. Gao, Clemson Univ. (USA) . . . . . [8615-30]

8:40 am: **Continuous cell lysis in microfluidics through acoustic and optoelectronic tweezers**, Christian Witte, Clemens Kremer, Jonathan M. Cooper, Steven L. Neale, Univ. of Glasgow (United Kingdom) . . . . . [8615-31]

9:00 am: **The same single cell bioanalyzer (SASCA) tracks the same single blood cancer cell over a long duration: simultaneous optical observation and fluorescent measurement**, Avid Khamenehfar, Lukas-Karim Mehri, Paul C. Li, Simon Fraser Univ. (Canada) . . . . . [8615-32]

9:20 am: **Optimization of microfluidic trap-based microsphere arrays**, Xiaoxiao Xu, Pinaki Sarder, Washington Univ. in St. Louis (USA); Zhenyu Li, The George Washington Univ. (USA); Axel Scherer, California Institute of Technology (USA); Arye Nehorai, Washington Univ. in St. Louis (USA) . . . . . [8615-33]

9:40 am: **Multivariate analysis of apoptotic markers versus cell cycle phase in living human cancer cells by microfluidic cytometry**, Jin Akagi, Joanna Skommer, Anna Matuszek, The Univ. of Auckland (New Zealand); Kazuo Takeda, Yuu Fujimura, On-chip Biotechnologies Co., Ltd. (Japan); Khashayar Khoshmanesh, Kourosh Kalantar-Zadeh, Arnan Mitchell, RMIT Univ. (Australia); Rachel J. Errington, Paul J. Smith, Cardiff Univ. (United Kingdom); Zbigniew Darzynkiewicz, New York Medical College (USA); Donald Wlodkovic, The Univ. of Auckland (New Zealand) . . . . . [8615-34]

Coffee Break . . . . . Tue 10:00 am to 10:30 am

**SESSION 8**

**Room: 270 (Mezzanine) . . . . . Tue 10:30 am to 12:00 pm**

**Applications IV: New Approaches**

Session Chair: **Bastian E. Rapp**,  
Karlsruher Institut für Technologie (Germany)

10:30 am: **Programming paper networks for point of care diagnostics** (*Invited Paper*), Barry R. Lutz, Shivani Dharmaraja, Univ. of Washington (USA) . . . . . [8615-35]

11:00 am: **Personal exposure assessment to particulate metals using a paper-based analytical device**, Charles Henry, John Volckens, Colorado State Univ. (USA) . . . . . [8615-36]

11:20 am: **Low-cost microsystems integrating sample treatment and electrochemical detection for the diagnosis of celiac disease through a combination of automated HLA typing and autoantibody measurement**, Ciara K. O'Sullivan, Mayreli Ortiz, Alex Fragoso, Mariluz Botero Gallego, Rovira i Virgili (Spain) . . . . . [8615-37]

11:40 am: **Piezoresistive pens for dip-pen nanolithography**, Albert K. Henning, Joseph S. Fragala, Roger Shile, Pamela Simao, NanoInk, Inc. (USA) . . . . . [8615-38]

Lunch Break . . . . . Tue 12:00 pm to 1:50 pm

**SESSION 9**

**Room: 270 (Mezzanine) . . . . . Tue 1:50 pm to 3:00 pm**

**Devices and Applications I**

Session Chair: **Bonnie L. Gray**, Simon Fraser Univ. (Canada)

1:50 pm: **Rapid biochemical functionalization of technical surfaces by means of a photobleaching based maskless projection lithography process** (*Invited Paper*), Ansgar Waldbaur, Björn Waterkotte, Juerg Leuthold, Karlsruher Institut für Technologie (Germany); Katja Schmitz, Technische Univ. Darmstadt (Germany); Bastian E. Rapp, Karlsruher Institut für Technologie (Germany) . . . . . [8615-39]

2:20 pm: **Development of a new selective biosensor for the early detection and diagnosis of nosocomial infectious pathogens**, Ioanis Katakis, Bruno Teixeira-Dias, Univ. Rovira i Virgili (Spain); Pablo Lozano, Katia Uliague, iMicroQ (Spain); Angel Gonzalez, Univ. Rovira i Virgili (Spain) . . . . . [8615-40]

2:40 pm: **Development of a micro in-situ oil detection device**, Yuxuan Zhou, Wanjun Wang, Louisiana State Univ. (USA) . . . . . [8615-41]

Coffee Break . . . . . Tue 3:00 pm to 3:30 pm

**SESSION 10**

**Room: 270 (Mezzanine) . . . . . Tue 3:30 pm to 5:00 pm**

**Devices and Applications II**

Session Chair: **Holger Becker**, microfluidic ChipShop GmbH (Germany)

3:30 pm: **Electrochemically actuated passive stop-go microvalves for flow control in microfluidic systems** (*Invited Paper*), Ioanis Katakis, Alemayehu Washe, Diego Bejarano Nosas, Univ. Rovira i Virgili (Spain); Pablo Lozano, iMicroQ (Spain); Bruno Teixeira-Dias, Univ. Rovira i Virgili (Spain) . . . . . [8615-43]

4:00 pm: **Computational analysis of evaporation in tailored microchannel evaporators**, Selin Arslan, Lawrence Technological Univ. (USA) . . . . . [8615-44]

4:20 pm: **An all-at-once factorial method to optimize dip-pen deposition of liquid protein inks**, Albert K. Henning, Sergey Rozhok, Joseph S. Fragala, Roger Shile, Kathy Ouyang, NanoInk, Inc. (USA) . . . . . [8615-45]

4:40 pm: **Integrated Fabry-Pérot sensors and separation columns for micro-gas chromatography**, Karthik Reddy, Jing Liu, Maung Kyaw Khaing Oo, Xudong Fan, Univ. of Michigan (USA) . . . . . [8615-47]

**POSTERS-TUESDAY**

**Room: 103 (Exhibit Level) . . . . . Tue 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the MOEMS-MEMS poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

**Transdermal extraction and measurement of interstitial fluid based on a microfluidic system**, Haixia Yu, Dachao Li, Yongjie Ji, Kexin Xu, Tianjin Univ. (China) . . . . . [8615-9]

**A portable instrument based on micro-fluidic chip and micro glucose sensor for glucose continuous monitoring by interstitial fluid transdermal extraction**, Yongjie Ji, Dachao Li, Wenshuai Liang, Tianjin Univ. (China) . . . . . [8615-42]

**Optofluidic spectrometer and scanner**, Sergio Calixto-Carrera, Centro de Investigaciones en Óptica, A.C. (Mexico); Martha Rosete-Aguilar, Univ. Nacional Autónoma de México (Mexico); Ricardo Flores-Hernandez, Centro de Investigaciones en Óptica, A.C. (Mexico); Maria Eugenia Sanchez-Morales, Univ. de Guadalajara (Mexico) . . . . . [8615-48]

**Dynamic analysis of angiogenesis in transgenic zebrafish embryos using a 3D multilayer chip-based technology**, Jin Akagi, Feng Zhu, Chris Hall, The Univ. of Auckland (New Zealand); Khashayar Khoshmanesh, Kourosh Kalantar-Zadeh, Arnan Mitchell, RMIT Univ. (Australia); Kathryn Crosier, Philip Crosier, Donald Wlodkowic, The Univ. of Auckland (New Zealand) . . . . . [8615-49]

**Huge volume fluorescence sensors for parallel measurement in multichannel microfluidic devices**, Georg Meineke, David Flitsch, Achim Lenenbach, Reinhard Noll, Fraunhofer-Institut für Lasertechnik (Germany) . . . . . [8615-50]

**Blister pack bonding process and its relationship with reagents flow pattern**, Aabed S. Saber, Brian W. Anthony, Massachusetts Institute of Technology (USA) . . . . . [8615-51]

**Microfluidic microsphere-trap arrays for simultaneous detection of multiple targets**, Xiaoxiao Xu, Washington Univ. in St. Louis (USA); Zhenyu Li, The George Washington Univ. (USA); Arye Nehorai, Washington Univ. in St. Louis (USA) . . . . . [8615-52]

**Electrochemical (bio)sensors for detection of biochemically relevant liver parameters** Ciara K. O'Sullivan, Alex Fragoso, Carmen Bermudo, Nick Daskalakis, Univ. Rovira i Virgili (Spain) . . . . . [8615-53]

**Enhanced electrochemical detection of nucleic acids via nanostructuring using lyotropic liquid crystalline phases**, Ciara K. O'Sullivan, Thomas Esterle, Samuel Delay, Pablo Lozano, Univ. Rovira i Virgili (Spain) . . . . . [8615-54]

**Ultrasensitive electrochemiluminescent detection of biological pathogens at molecular and immunological level**, Ciara K. O'Sullivan, Mabel Torrens, Thomas Esterle, Mayreli Ortiz, Univ. Rovira i Virgili (Spain); Rainer Gransee, Institut für Mikrotechnik Mainz GmbH (Germany); Diego Bejarano, Univ. Rovira i Virgili (Spain); Julian Höth, Achim Breitruck, Institut für Mikrotechnik Mainz GmbH (Germany) . . . . . [8615-55]

**Multi-responsive water microdroplet adhesions on a superhydrophobic surface**, Daisuke Ishii, Nagoya Institute of Technology (Japan) . . . . . [8615-56]

**Best Student Paper Award**

Microfluidics, BioMEMS, and Medical Microsystems  
(Conf. 8615)

We are pleased to announce that a cash prize will be awarded to the best student paper in this conference.

Qualifying papers and presentations will be evaluated by the awards committee.

Award Sponsors: **Microfluidic-chipshop**  
**Nanoink**

MOEMS-MEMS





# MOEMS and Miniaturized Systems XII

Conference Chairs: **Wibool Piyawattanametha**, NECTEC (Thailand) and Chulalongkorn Univ. (Thailand); **Yong-Hwa Park**, Samsung Advanced Institute of Technology (Korea, Republic of)

Program Committee: **Wyatt O. Davis**, MicroVision, Inc. (USA); **David L. Dickensheets**, Montana State Univ. (USA); **Jean-Christophe Eloy**, Yole Développement (France); **Sonia M. García-Blanco**, Univ. Twente (Netherlands); **Jason C. Heikenfeld**, Univ. of Cincinnati (USA); **Il-Woong Jung**, Argonne National Lab. (USA); **Jonathan T. C. Liu**, Stony Brook Univ. (USA); **Veljko Milanovic**, Mirrorcle Technologies, Inc. (USA); **Harald Schenk**, Fraunhofer Institute for Photonic Microsystems (Germany); **Jason B. Stewart**, MIT Lincoln Lab. (USA); **WanJun Wang**, Louisiana State Univ. (USA); **Guangya Zhou**, National Univ. of Singapore (Singapore)

## Monday 4 February

### MOEMS-MEMS PLENARY SESSION

Room: 307 (Esplanade) ..... 9:00 am to 12:00 pm

**Welcome and Announcement of MOEMS-MEMS Best Paper Award and Best Student Paper Award**

**Harald Schenk**, Fraunhofer Institute for Photonic Microsystems (Germany); **David L. Dickensheets**, Montana State Univ. (USA)

9:15 am: **Towards Future Systems with Nano-optics Contributions**

**Bozena Kaminska**, Simon Fraser Univ. (Canada)

Coffee Break ..... Mon 10:00 am to 10:30 am

10:30 am: **MOEMS Pressure Sensors for Geothermal Well Monitoring**

**Aaron J. Knobloch**, GE Global Research (USA)

11:15 am: **Superaligned Carbon Nanotubes: A Road Toward Real Applications**

**Kaili Jiang**, Tsinghua Univ. (China)

See page 24 for details.

Lunch Break ..... Mon 12:00 pm to 1:30 pm

### SESSION 1

Room: 304 (Esplanade) ..... Mon 1:30 pm to 4:40 pm

#### NOTE ROOM CHANGE

#### Microscopy

Joint Session with Conferences 8616 and 8575

Session Chair: **David L. Dickensheets**, Montana State Univ. (USA)

1:30 pm: **Achromatic surgical MEMS-based dual-axis confocal microscope for delineation of brain tumor margins**, Steven Y. Leigh, Danni Wang, Ye Chen, Jonathan T. C. Liu, Stony Brook Univ. (USA) ..... [8575-28]

1:50 pm: **Handheld multispectral dual-axis confocal microscope for cervical cancer screening**, Pongsak Sarapukdee, Santi Rattanavarin, Numfon Khemthongcharoen, Ungkarn Jarujareet, Romuald Jolivot, National Electronics and Computer Technology Ctr. (Thailand); **Il Woong Jung**, Daniel Lopez, Argonne National Lab. (USA); **Michael J. Mandella**, Stanford Univ. School of Medicine (USA); **Wibool Piyawattanametha**, National Electronics and Computer Technology Ctr. (Thailand) ..... [8575-30]

2:10 pm: **Vertical cross-sectional imaging by multi-color handheld dual-axes confocal microscope**, Zhen Qiu, Xiyu Duan, Haijun Li, Choong-ho C. Rhee, Supang Khondee, Bishinu Joshi, Xiaoming Zhou, Kenn R. Oldham, Katsuo Kurabayashi, Thomas D. Wang, Univ. of Michigan (USA) ..... [8575-31]

Coffee Break ..... Mon 2:50 pm to 3:20 pm

3:20 pm: **Optical probe design with extended depth-of-focus for optical coherence microscopy and optical coherence tomography**, Seungwan Lee, Minseog Choi, Eunsung Lee, Kyu-Dong Jung, Jong-hyeon Chang, Woonbae Kim, Samsung Advanced Institute of Technology (Korea, Republic of) .. [8616-1]

3:40 pm: **Multi-wafer bonding technology for a 3D micro-optical lens scanner**, Christophe Gorecki, Sylwester Bargiel, Nicolas Passilly, Maciej Baranski, FEMTO-ST (France); **Maik Wiemer**, Chenping Jia, Jörg Frömel, Fraunhofer-Institut für Elektronische Nanosysteme (Germany) ..... [8616-2]

4:00 pm: **Electrostatic MEMS resonating micro polygonal scanner for circumferential endoscopic bio-imaging**, Xiaojing Mu, Guangya Zhou, National Univ. of Singapore (Singapore); **Hongbin Yu**, Julius Ming-Lin Tsai, A\*STAR Institute of Microelectronics (Singapore); **Wee Keong Neo**, A. Senthil Kumar, Fook Siong Chau, National Univ. of Singapore (Singapore)..... [8616-3]

4:20 pm: **A water-immersible 2-axis scanning mirror microsystem for ultrasound and photoacoustic microscopic imaging applications**, Chih-Hsien Huang, Texas A&M Univ. (USA) ..... [8616-4]

## Tuesday 5 February

### SESSION 2

Room: 307 (Esplanade) ..... Tue 8:20 am to 10:10 am

#### Microscanner I

Session Chair: **Wibool Piyawattanametha**, National Electronics and Computer Technology Ctr. (Thailand)

8:20 am: **Quasistatic microscanner with linearized raster scanning for an adaptive 3D-laser camera** (*Invited Paper*), Thilo Sandner, Thomas Grasshoff, Markus Schwarzenberg, Harald Schenk, Fraunhofer-Institut für Photonische Mikrosysteme (Germany); **Andreas Tortschanoff**, Carinthian Tech Research AG (Austria) ..... [8616-5]

8:50 am: **Close-loop controlled stainless steel scanner based hyperspectral confocal laser scanning imaging with scanning status monitoring**, Youmin Wang, Nicolas Triesault, Daghan Y. Gokdel, Sheldon F. Bish, Bin Yang, Kazunori Hoshino, Xiaojing Zhang, The Univ. of Texas at Austin (USA) .. [8616-6]

9:10 am: **Optical scanners based on thermo-optical tuning of an integrated-optical waveguide mode**, Eric Markweg, Martin Hoffmann, Technische Univ. Ilmenau (Germany) ..... [8616-7]

9:30 am: **Thin-film PZT actuated vertical translational microscanner stage**, Choong-ho C. Rhee, Zhen Qiu, Jongsoo Choi, Thomas D. Wang, Kenn R. Oldham, Katsuo Kurabayashi, Univ. of Michigan (USA) ..... [8616-8]

9:50 am: **Resonant biaxial 7-mm MEMS mirror for omnidirectional scanning**, Ulrich Hofmann, Joachim Janes, Frank Senger, Vanessa Stenclhy, Hans-Joachim Quenzer, Bernd Wagner, Wolfgang Benecke, Fraunhofer-Institut für Siliziumtechnologie (Germany)..... [8616-9]

Coffee Break ..... Tue 10:10 am to 10:40 am



## SESSION 3

Room: 307 (Esplanade) . . . . . Tue 10:40 am to 12:10 pm

## Microscanner II

Session Chair: **Yong-Hwa Park**, Samsung Advanced Institute of Technology (Korea, Republic of)

10:40 am: **Position sensing and tracking with quasistatic MEMS mirrors** (*Invited Paper*), Stefan Richter, Michel Stutz, Alexander Gratzke, Yvonne Schleitzer, Gerhard M. Krampert, Frank Hoeller, Uwe Wolf, Lisa Riedel, Dirk H. Doering, Carl Zeiss AG (Germany) . . . . . [8616-11]

11:10 am: **Aluminum nitride supported 1D micromirror with static rotation angle >11°**, Stefan Weinberger, Martin Hoffmann, Technische Univ. Ilmenau (Germany) . . . . . [8616-12]

11:30 am: **Wide steering angle microscanner based on curved surface**, Yasser M. Sabry, Univ. Paris-Est Marne-la-Vallée (France) and Si-Ware Systems (Egypt); Diaa Khalil, Ain-Shams Univ. (Egypt) and Si-Ware Systems (Egypt); Bassam Saadany, Si-Ware Systems (Egypt); Tarik Bourounia, Univ. Paris-Est Marne-la-Vallée (France) . . . . . [8616-13]

11:50 am: **SOI based electromagnetic MEMS scanners and applications in laser systems**, James G. Brown, Ralf Bauer, Walter Lubeigt, Deepak G. Uttamchandani, Univ. of Strathclyde (United Kingdom) . . . . . [8616-14]

Lunch/Exhibition Break . . . . . Tue 12:10 pm to 1:30 pm

## SESSION 4

Room: 307 (Esplanade) . . . . . Tue 1:30 pm to 3:20 pm

## Spatial Light Modulator

Joint Session with Conferences 8616 and 8618
--

Session Chair: **Harald Schenk**,  
Fraunhofer-Institut für Photonische Mikrosysteme (Germany)

1:30 pm: **Arrayed beam steering device for advanced 3D displays** (*Invited Paper*), Jungmok Bae, Yoon-Sun Choi, Kyuhwan Choi, Yunhee Kim, Kwon Yongjoo, Hoon Song, Eoksu Kim, Sangyoon Lee, Samsung Advanced Institute of Technology (Korea, Republic of); Seon Hyeong Choi, Junghoon Lee, Seoul National Univ. (Korea, Republic of) . . . . . [8616-15]

2:00 pm: **2D electrostatic micromirror array with high field factor for high-power application**, Sébastien Lani, Dara Bayat, Yves Petremand, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland) . . . . . [8616-16]

2:20 pm: **Fabrication of vertical moving micro-optical switch for display applications**, Dong-Sik Shim, Woonbae Kim, Hyung Choi, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8616-17]

2:40 pm: **Development of a fully programmable MEMS diffraction grating**, Frédéric Zamkotsian, Lab. d'Astrophysique de Marseille (France); Branislav Timotijevic, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Robert Lockhart, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Ross P. Stanley, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Patrick Lanzoni, Lab. d'Astrophysique de Marseille (France); Markus Luetzelschwab, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Michael Canonica, Massachusetts Institute of Technology (USA); Wilfried Noell, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Maurizio Tormen, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland) . . . . . [8616-18]

3:00 pm: **Additive manufacturing of photopolymers using the Texas Instruments DLP lightcrafter**, Markus Hatzzenbichler, Jürgen Stampfl, Technische Univ. Wien (Austria); Matthias Geppert, Rolf Seemann, FOTEC Forschungs- und Technologietransfer GmbH (Austria) . . . . . [8618-9]

Coffee Break . . . . . Tue 3:20 pm to 3:50 pm

## SESSION 5

Room: 307 (Esplanade) . . . . . Tue 3:50 pm to 6:10 pm

## Microspectrometer and Optical Filters

Session Chair: **Guangya Zhou**, National Univ. of Singapore (Singapore)

3:50 pm: **Design and Characterization of a hybrid-integrated MEMS scanning grating spectrometer** (*Invited Paper*), Heinrich Gröger, Jens Knobbe, Tino Pügner, Harald Schenk, Fraunhofer-Institut für Photonische Mikrosysteme (Germany) . . . . . [8616-19]

4:20 pm: **SWIFTS: a groundbreaking integrated technology for high-performance spectroscopy and optical sensors** (*Invited Paper*), Christophe Bonneville, Resolution Spectra Systems (France); Etienne P. Le Coarer, Institut de Planétologie et d'Astrophysique de Grenoble (France); Pierre Benech, IMEP-LAHC (France); Thierry Gonthiez, Fabrice Thomas, Bruno Martin, Renaud Puget, Eric Morino, Resolution Spectra Systems (France); Jumana Boussey, LTM-CNRS/CEA-Leti (France); Sébastien Labau, CEA-LETI (France) . . . . . [8616-20]

4:50 pm: **Fabrication and evaluation of a 500-W cladding-light stripper**, Andrea Kliner, Friedrich-Schiller-Univ. Jena (Germany); Kai-Chung Hou, JDSU (USA); Marco Plötner, Christian Hupel, Thomas Schreiber, Ramona Eberhardt, Andreas Tünnermann, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8616-21]

5:10 pm: **Spatial beam splitting for fully integrated MEMS interferometer**, Kareem Khirallah, Inas Ramsis, Moahemd Serry, The American Univ. in Cairo (Egypt); Mohamed A. Swillam, Univ. of Toronto (Canada) and The American Univ. in Cairo (Egypt); Sherif Sedky, Zewail City of Science and Technology (Egypt) . . . . . [8616-22]

5:30 pm: **In-plane diffraction loss free optical cavity using coated optical fiber and silicon micromachined spherical mirror**, Yasser M. Sabry, Univ. Paris-Est Marne-la-Vallée (France) and Si-Ware Systems (Egypt); Tarik Bourounia, Univ. Paris-Est Marne-la-Vallée (France); Bassam Saadany, Si-Ware Systems (Egypt); Diaa Khalil, Ain-Shams Univ. (Egypt) and Si-Ware Systems (Egypt) . . . . . [8616-23]

5:50 pm: **A tunable split-ladder photonic cavity through MEMS driven nano-deformation**, Feng Tian, Guangya Zhou, Fook Siong Chau, National Univ. of Singapore (Singapore); Jie Deng, Ramam Akkipeddi, Xiaosong Tang, Siew Lang Teo, Yee Cheong Loke, A\*STAR Institute of Materials Research and Engineering (Singapore) . . . . . [8616-24]

## POSTERS-TUESDAY

Room: 103 (Exhibit Level) . . . . . Tue 6:00 pm to 8:00 pm

Conference attendees are invited to attend the MOEMS-MEMS poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <a href="http://spie.org/PWPosterGuidelines">http://spie.org/PWPosterGuidelines</a> .
--

**Closed-loop control driver for quasistatic MOEMS mirrors**, Andreas Tortschanoff, Dominik Holzmann, Martin Lenzhofer, Carinthian Tech Research AG (Austria); Thilo Sandner, Fraunhofer-Institut für Photonische Mikrosysteme (Germany); Andreas Kenda, Carinthian Tech Research AG (Austria) . . . [8616-45]

**Uncooled microbolometers for selective infrared spectral responses**, Jong Yeon Park, Dean P. Neikirk, The Univ. of Texas at Austin (USA) . . . . . [8616-46]

## Wednesday 6 February

### SESSION 6

Room: 307 (Esplanade) . . . . . Wed 8:20 am to 10:10 am

#### MOEMS Components and Systems I

Session Chair: **Jason B. Stewart**, MIT Lincoln Lab. (USA)

8:20 am: **Compact holographic printer using RGB waveguide holographic optical elements** (*Invited Paper*), Kyungsuk P. Pyun, Chilsung Choi, Alexander Morozov, Sunil Kim, Jungkwun An, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8616-25]

8:50 am: **Design and simulation techniques for shaping light using diffractive diffusers and grating cells arrays**, Christian Hellmann, LightTrans GmbH (Germany); Michael Kuhn, Hagen Schweitzer, LightTrans VirtualLab UG (Germany); Frank Wyrowski, Friedrich-Schiller-Univ. Jena (Germany) . . [8616-26]

9:10 am: **Innovative approach to high stroke electrostatic actuators**, Nicolas Lange, Frank C. Wippermann, Erik Beckert, Ramona Eberhardt, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Andreas Tünnermann, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) and Friedrich-Schiller-Univ. Jena (Germany) . . . . . [8616-27]

9:30 am: **Tunable MEMS diffraction gratings with improved displacement profile of the fixed-fixed beams**, Gowri Suresh Vesalapu, Shanti Bhattacharya, Nandita Dasgupta, Indian Institute of Technology Madras (India) . . . . [8616-28]

9:50 am: **Optimization of biogas production using MEMS based near infrared inline-sensor**, Ray Saupe, Thomas Otto, Thomas Seider, Thomas Gessner, Fraunhofer-Institut für Elektronische Nanosysteme (Germany); Volker Stock, TQ Systems GmbH (Germany) . . . . . [8616-29]

Coffee Break . . . . . Wed 10:10 am to 10:40 am

### SESSION 7

Room: 307 (Esplanade) . . . . . Wed 10:40 am to 12:10 pm

#### MOEMS Components and Systems II

Session Chair: **Il-Woong Jung**, Argonne National Lab. (USA)

10:40 am: **Integrated photonic and plasmonic MEMS and NEMS with high optomechanical coupling** (*Invited Paper*), Vladimir A. Aksyuk, Houxun Miao, Yuxiang Liu, Jie Zou, National Institute of Standards and Technology (USA); Brian Dennis, National Institute of Standards and Technology (USA) and Rutgers Univ. (USA); Girsh Blumberg, Rutgers, The State Univ. of New Jersey (USA); Kartik Srinivasan, National Institute of Standards and Technology (USA) . . . . . [8616-31]

11:10 am: **InGaAsP optical device integration on SOI platform by Ar/O<sub>2</sub> plasma assisted bonding**, Akio Higo, Tohoku Univ. (Japan); Ling-Han Li, Eiji Higurashi, Masakazu Sugiyama, Yoshiaki Nakano, The Univ. of Tokyo (Japan) . . . . . [8616-32]

11:30 am: **A new method of fabricating nano-gratings using the high flexibility Of PDMS**, Min Cui, Binzhen Zhang, North Univ. of China (China); Wanjun Wang, Louisiana State Univ. (USA) . . . . . [8616-33]

11:50 am: **Development of a focusing micromirror device with an in-plane stress relief structure in SOI technology**, Wolfgang Kronast, Ulrich Mescheder, Bernhard Müller, Rolf Huster, Hochschule Furtwangen Univ. (Germany) . . . . . [8616-34]

Lunch/Exhibition Break . . . . . Wed 12:10 pm to 2:00 pm

### SESSION 8

Room: 307 (Esplanade) . . . . . Wed 2:00 pm to 3:30 pm

#### Microlenses and Microlens Arrays

Session Chair: **Veljko Milanovic**, Mirrorcle Technologies, Inc. (USA)

2:00 pm: **Development of adaptive liquid microlenses and microlens arrays**, Shaun R. Berry, Todd Thorsen, Jason B. Stewart, Ingrid Guha, MIT Lincoln Lab. (USA) . . . . . [8616-35]

2:30 pm: **Tunable microlenses based on aluminum nitride membranes**, Steffen Leopold, Daniel Pätz, Technische Univ. Ilmenau (Germany); Fabian Knöbber, Oliver Ambacher, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany); Stefan Sinzinger, Martin Hoffmann, Technische Univ. Ilmenau (Germany) . . . . . [8616-37]

2:50 pm: **Liquid lens based on electrowetting: actual developments on larger aperture and multiple electrodes design for image stabilization or beam steering**, Bruno Berge, Jérôme Broutin, Hilario Gatón, Géraldine Malet, Eric Simon, Florent Thieblemont, Varioptic-A BU of Parrot SA (France) [8616-38]

3:10 pm: **The fabrication of out of plane aspherical microlens arrays**, Yong Zhang, North Univ. of China (China); Wanjun Wang, Louisiana State Univ. (USA) . . . . . [8616-39]

Coffee Break . . . . . Wed 3:30 pm to 4:00 pm

### SESSION 9

Room: 307 (Esplanade) . . . . . Wed 4:00 pm to 5:50 pm

#### Imaging

Session Chair: **Wyatt O. Davis**, MicroVision, Inc. (USA)

4:00 pm: **MOEMS-based time-of-flight camera for 3D video capturing** (*Invited Paper*), Jang-Woo You, Yong-Hwa Park, Yong-Chul Cho, Chang-Young Park, Heesun Yoon, Sang-Hun Lee, Jong-Oh Kwon, Seungwan Lee, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8616-40]

4:30 pm: **Simultaneous multispectral imaging using lenslet arrays**, Michele Hinrichs, Pacific Advanced Technology, Inc. (USA) . . . . . [8616-41]

4:50 pm: **Batch fabrication of micro-optical sensing and imaging devices**, Frank C. Wippermann, Andreas Reimann, Antje Oelschlaeger, Peter Dannberg, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Frank Bloehbaum, SICK AG (Germany); Cornelius Koburg, Thorsten Koehler, Continental Automotive GmbH (Germany) . . . . . [8616-42]

5:10 pm: **Diffraction and photometric limits in today's miniature digital camera systems**, Andreas Brückner, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Michael Schöberl, Fraunhofer-Institut für Integrierte Schaltungen (Germany) . . . . . [8616-43]

5:30 pm: **Optical MEMS in space instruments for Earth observation and astronomy**, Frédéric Zamkotsian, Lab. d'Astrophysique de Marseille (France); Arnaud Liotard, Thales Alenia Space (France); Patrick Lanzoni, Lab. d'Astrophysique de Marseille (France); Thierry Viard, Thales Alenia Space (France) . . . . . [8616-44]

### Best Paper Award and Best Student Paper Award

MOEMS and Miniaturized Systems (Conf. 8616)

We are pleased to announce that a cash prize will be awarded to the best paper and best student paper in this conference.

Qualifying papers will be evaluated by the awards committee. The winner will be announced during the session in which their paper will be presented, and they will also be awarded a cash prize.

Award Sponsor: **Bridger-Photonics**

# MEMS Adaptive Optics VII

Conference Chairs: **Scot S. Olivier**, Lawrence Livermore National Lab. (USA); **Thomas G. Bifano**, Boston Univ. (USA); **Joel Kubby**, Univ. of California, Santa Cruz (USA)

Program Committee: **William D. Cowan**, Sandia National Labs. (USA); **Chris Dainty**, National Univ. of Ireland, Galway (Ireland); **Donald Gavel**, Univ. of California, Santa Cruz (USA); **Andreas Gehner**, Fraunhofer-Institut für Photonische Mikrosysteme (Germany); **Wen-Han Jiang**, Institute of Optics and Electronics (China); **Peter A. Kner**, The Univ. of Georgia (USA); **Alexis V. Kudryashov**, Moscow State Open Univ. (Russian Federation); **Sergio R. Restaino**, U.S. Naval Research Lab. (USA); **Ulrich Wittrock**, Fachhochschule Münster (Germany)

## Tuesday 5 February

### POSTERS-TUESDAY

Room: 103 (Exhibit Level) .....Tue 6:00 pm to 8:00 pm

Conference attendees are invited to attend the MOEMS-MEMS poster session on Tuesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Characterization of a MEMS deformable mirror by far field intensity evaluation**, Cherry Greiner, Stacey S. Choi, Nathan Doble, New England College of Optometry (USA) ..... [8617-18]

## Thursday 7 February

### SESSION 1

Room: 270 (Mezzanine) .....Thu 8:00 am to 10:20 am

#### Deformable Mirrors

Session Chair: **Thomas G. Bifano**, Boston Univ. (USA)

8:00 am: **A 19-element segmented MEMS deformable mirror based on electrostatic repulsive-force actuator** (*Invited Paper*), Weimin Wang, Institute of Optics and Electronics (China) and Univ. of Electronic Science and Technology of China (China); Fenggang Tao, Qiang Wang, Chuankai Qiu, Institute of Optics and Electronics (China); Zexiang Chen, Univ. of Electronic Science and Technology of China (China); Jun Yao, Institute of Optics and Electronics (China) ..... [8617-1]

8:30 am: **Modeling of a charge-pump-driven polymeric MEMS adaptive lens**, Alexander L. Hogan, Ian R. Harvey, Univ. of Utah (USA) ..... [8617-2]

8:50 am: **A continuous single-crystal-silicon membrane deformable mirror using bimorph spring**, Tong Wu, Takashi Sasaki, Masayuki Akiyama, Kazuhiro Hane, Tohoku Univ. (Japan) ..... [8617-3]

9:10 am: **Performance analysis of two high actuator count MEMS deformable mirrors** (*Invited Paper*), Peter J. Ryan, Steven Cornelissen, Paul A. Bierden, Boston Micromachines Corp. (USA) ..... [8617-4]

9:40 am: **Development of variable-focal lens with liquid-membrane-liquid structure and 30-mm optical aperture**, Lihui Wang, Hiromasa Oku, Masatoshi Ishikawa, The Univ. of Tokyo (Japan) ..... [8617-5]

10:00 am: **Electrostatic-pneumatic membrane mirror with positive or negative variable optical power**, Mohammad J. Moghimi, David L. Dickensheets, Montana State Univ. (USA) ..... [8617-6]

Coffee Break ..... Thu 10:20 am to 10:50 am

### SESSION 2

Room: 270 (Mezzanine) .....Thu 10:50 am to 12:00 pm

#### Astronomy

Session Chair: **Thomas G. Bifano**, Boston Univ. (USA)

10:50 am: **Wavefront control in space with MEMS deformable mirrors** (*Invited Paper*), Kerri L. Cahoy, Anne D. Marinan, Benjamin Novak, Caitlin Kerr, Matthew Webber, Kezi Cheng, Massachusetts Institute of Technology (USA) ..... [8617-7]

11:20 am: **KAPAO: a MEMS-based natural guide star adaptive optics system**, Scott A. Severson, Sonoma State Univ. (USA); Philip I. Choi, Daniel S. Contreras, Pomona College (USA); Blaine N. Gilbreth, Sonoma State Univ. (USA); Erik Littleton, Harvey Mudd College (USA); Lorcan P. McGonigle, William A. Morrison, Alexander R. Rudy, Jonathan R. Wong, Pomona College (USA); Andrew Xue, Erik R. Spjut, Harvey Mudd College (USA); Christoph Baranec, Reed L. Riddle, California Institute of Technology (USA) ..... [8617-8]

11:40 am: **Performance assessment of competing architectures for real-time woofer/tweeter controllers: simulation and experimental results**, Andrew P. Norton, Don Gavel, Renate Kupke, Srikar Srinath, Marc Reinig, Daren Dillon, Univ. of California, Santa Cruz (USA) ..... [8617-9]

Lunch/Exhibition Break ..... Thu 12:00 pm to 1:30 pm

### SESSION 3

Room: 270 (Mezzanine) .....Thu 1:30 pm to 6:00 pm

#### Biological Imaging

Session Chair: **Joel Kubby**, Univ. of California, Santa Cruz (USA)

1:30 pm: **Deep tissue imaging by iterative multiphoton compensation technique (IMPACT) and ultrasound guided digital phase conjugation** (*Invited Paper*), Reto P. Fiolka, Ke Si, Meng Cui, Howard Hughes Medical Institute (USA) ..... [8617-10]

2:00 pm: **Image transmission through an opaque material** (*Invited Paper*), Sylvain Gigan, Sébastien Popoff, Geoffroy Lerosey, Mathias Fink, A. Claude Boccara, Institut Langevin (France) ..... [8617-11]

2:30 pm: **Focusing through dynamic scattering media** (*Invited Paper*), Thomas G. Bifano, Boston Univ. (USA) ..... [8617-12]

3:00 pm: **Interferometric focusing of guide-stars for direct wavefront sensing** (*Invited Paper*), Xiaodong Tao, Univ. of California, Santa Cruz (USA); Ziah Dean, Univ. of California, Santa Cruz (USA) and Univ. of Michigan (USA); Oscar A. Azucena Jr., Joel Kubby, Univ. of California, Santa Cruz (USA) ..... [8617-13]

Coffee Break ..... Thu 3:30 pm to 4:00 pm

4:00 pm: **Mapping optical aberrations in thick tissues with 3D resolution** (*Invited Paper*), Delphine Débarre, Ctr. National de la Recherche Scientifique (France); Jun Zeng, Pierre Mahou, Marie-Claire Schanne-Klein, Emmanuel Beaurepaire, Ecole Polytechnique (France) ..... [8617-14]

4:30 pm: **New adaptive optics methods for superresolution microscopy** (*Invited Paper*), Martin Booth, Brian Patton, Daniel Burke, Univ. of Oxford (United Kingdom); Travis J. Gould, Joerg Bewersdorf, Yale Univ. (USA) ..... [8617-15]

5:00 pm: **Pupil-segmentation-based adaptive optics for in vivo brain imaging** (*Invited Paper*), Na Ji, Howard Hughes Medical Institute (USA) [8617-16]

5:30 pm: **High-speed phase-control for light focusing through dynamic turbid media** (*Invited Paper*), Donald B. Conkey, Antonio M. Caravaca-Aguirre, Eyal Niv, Rafael Piestun, Univ. of Colorado at Boulder (USA) ..... [8617-17]

MOEMS-MEMS



# Emerging Digital Micromirror Device Based Systems and Applications V

Conference Chairs: **Michael R. Douglass**, Texas Instruments Inc. (USA); **Patrick I. Oden**, Texas Instruments Inc. (USA)

Program Committee: **Michael F. Becker**, The Univ. of Texas at Austin (USA); **Hal Bellis**, Keynote Technologies, LLC (USA); **Sara L. Best**, Univ. of Wisconsin School of Medicine and Public Health (USA); **Jason Geng**, Xigen, LLC (USA); **Benjamin L. Lee**, Texas Instruments Inc. (USA); **Raecine Meza**, Texas Instruments Inc. (USA); **Yuval Kapellner Rabinovitz**, EKB Technologies Ltd. (USA); **Paul Rancuret**, Texas Instruments Inc. (USA); **Charley Yongzhi Yang**, Wintech Digital Systems Technology Corp. (USA); **Karel J. Zuzak**, Digital Light Innovations (USA)

## Tuesday 5 February

### SESSION 1

Room: Room 310 (Esplanade) . . . . . Tue 8:30 am to 10:00 am

#### Biomedical Imaging and Cell Manipulation using a DMD or MEMS Array I

Joint Session with Conferences 8587 and 8618

Session Chairs: **Sara L. Best**, Univ. of Wisconsin School of Medicine and Public Health (USA); **James F. Leary**, Purdue Univ. (USA)

8:30 am: **Medical applications of real-time 3D camera in image-guided radiotherapy** (*Invited Paper*), Shidong Li, Temple Univ. Hospital (USA); Tuotuo Li, Jason Geng, Xigen, LLC (USA) . . . . . [8618-1]

9:00 am: **Performance assessment of 3D surface imaging technique for medical imaging applications**, Tuotuo Li, Jason Geng, Xigen, LLC (USA); Shidong Li, Temple Univ. Hospital (USA) . . . . . [8618-2]

9:20 am: **Automatic respiration tracking for radiotherapy using optical 3D camera**, Tuotuo Li, Xigen, LLC (USA); Shidong Li, Temple Univ. Hospital (USA); Zheng Geng, Xigen, LLC (USA) . . . . . [8618-3]

9:40 am: **Spectral light source distribution variations to enhance discrimination of the common bile duct from surrounds in reflectance hyperspectral images**, Maritoni Litorja, Mira Fein, National Institute of Standards and Technology (USA); Eleanor F. Wehner, The Univ. of Texas at Arlington (USA); Edward Livingston, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Karel J. Zuzak, Digital Light Innovations (USA) . . . . [8618-4]

Coffee Break . . . . . Tue 10:00 am to 10:20 am

### SESSION 2

Room: Room 310 (Esplanade) . . . . . Tue 10:20 am to 12:10 pm

#### Biomedical Imaging and Cell Manipulation using a DMD or MEMS Array II

Joint Session with Conferences 8587 and 8618

Session Chairs: **Karel J. Zuzak**, Digital Light Innovations (USA); **James F. Leary**, Purdue Univ. (USA)

10:20 am: **Utility of active DLP hyperspectral illumination in characterizing DIEP flap perfusion: characterization of perforators and clinical validity** (*Invited Paper*), Michel Saint-Cyr, Mayo Clinic (USA); Chrisovalantis Lakhiani, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Angela Cheng M.D., Emory Univ. (USA); Sumeet Teotia, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA); Karel J. Zuzak, Digital Light Innovations (USA) . . . . . [8618-5]

10:50 am: **Hyperspectral image segmentation of the common bile duct in pancreatoduodenectomies**, Maritoni Litorja, Daniel V. Samarov, National Institute of Standards and Technology (USA); Eleanor F. Wehner, The Univ. of Texas at Arlington (USA); Edward Livingston, The Univ. of Texas Southwestern Medical Ctr. at Dallas (USA) . . . . . [8618-6]

11:10 am: **Fluorescence image detection and reconstruction by subtractive light illumination using a digital micromirror device**, Jong-Ryul Choi, Donghyun Kim, Yonsei Univ. (Korea, Republic of) . . . . . [8618-7]

11:30 am: **Attenuation corrected fluorescence extraction using spatial frequency domain imaging**, Bin Yang, Manu Sharma, Youmin Wang, James W. Tunnell, The Univ. of Texas at Austin (USA) . . . . . [8618-8]

11:50 am: **Sparse-sampling parallel Raman/SERS microspectroscopy for high-throughput molecular analysis of micro and nanoparticles**, Wei-Chuan Shih, Univ. of Houston (USA) . . . . . [8587-72]

Lunch/Exhibition Break . . . . . Tue 12:10 pm to 1:30 pm

### SESSION 3

Room: 307 (Esplanade) . . . . . Tue 1:30 pm to 3:20 pm

#### NOTE ROOM CHANGE

#### Spatial Light Modulator

Joint Session with Conferences 8616 and 8618

Session Chair: **Harald Schenk**, Fraunhofer-Institut für Photonische Mikrosysteme (Germany)

1:30 pm: **Arrayed beam steering device for advanced 3D displays** (*Invited Paper*), Jungmok Bae, Yoon-Sun Choi, Kyuhwan Choi, Yunhee Kim, Kwon Yongjoo, Hoon Song, Eoksu Kim, Sangyoon Lee, Samsung Advanced Institute of Technology (Korea, Republic of); Seon Hyeong Choi, Junghoon Lee, Seoul National Univ. (Korea, Republic of) . . . . . [8616-15]

2:00 pm: **2D electrostatic micromirror array with high field factor for high-power application**, Sébastien Lani, Dara Bayat, Yves Petremand, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland) . . . . . [8616-16]

2:20 pm: **Fabrication of vertical moving micro-optical switch for display applications**, Dong-Sik Shim, Woonbae Kim, Hyung Choi, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8616-17]

2:40 pm: **Development of a fully programmable MEMS diffraction grating**, Frédéric Zamkotsian, Lab. d'Astrophysique de Marseille (France); Branislav Timotijevic, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Robert Lockhart, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Ross P. Stanley, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Patrick Lanzoni, Lab. d'Astrophysique de Marseille (France); Markus Luetzelschwab, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Michael Canonica, Massachusetts Institute of Technology (USA); Wilfried Noell, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Maurizio Tormen, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland) . . . . . [8616-18]

3:00 pm: **Additive manufacturing of photopolymers using the Texas Instruments DLP lightcrafter**, Markus Hatzenbichler, Jürgen Stampfl, Technische Univ. Wien (Austria); Matthias Geppert, Rolf Seemann, FOTEC Forschungs- und Technologietransfer GmbH (Austria) . . . . . [8618-9]



**Wednesday 6 February**

**WELCOME**

**Room: 310 (Esplanade) ..... 8:20 am to 8:30 am**

**Michael R. Douglass**, Texas Instruments Inc. (USA);  
**Patrick I. Oden**, Texas Instruments Inc. (USA)

**SESSION 4**

**Room: 310 (Esplanade) ..... Wed 8:30 am to 10:10 am**

**Spectroscopy and Hyperspectral Imaging**

Session Chairs: **Michael F. Becker**, The Univ. of Texas at Austin (USA);  
**Paul Rancuret**, Texas Instruments Inc. (USA)

8:30 am: **Preliminary proton testing digital micromirror devices (DMDs) for space flight**, Kenneth D. Fourspring, Zoran Ninkov, Bryan Fodness, Rochester Institute of Technology (USA); Massimo Robberto, Space Telescope Science Institute (USA); Sally R. Heap, NASA Goddard Space Flight Ctr. (USA); Alex G. Kim, Lawrence Berkeley National Lab. (USA) ..... [8618-10]

8:50 am: **Full-frame programmable spectral filters based on micromirror arrays**, Steven P. Love, David L. Graff, Los Alamos National Lab. (USA) ..... [8618-11]

9:10 am: **Infrared adaptive spectral imagers for direct detection of spectral signatures and hyperspectral imagery**, Neil Goldstein, Marsha Fox, Steven M. Adler-Golden, Brian Gregor, Spectral Sciences, Inc. (USA) ..... [8618-12]

9:30 am: **A DMD-based multi-object spectrograph on Galileo telescope**, Frédéric Zamkotsian, Lab. d'Astrophysique de Marseille (France); Paolo Spanò, INAF - Osservatorio Astronomico di Brera (Italy); Patrick Lanzoni, William Bon, Lab. d'Astrophysique de Marseille (France); Marco Riva, INAF - Osservatorio Astronomico di Brera (Italy); Luciano Nicastro, INAF - IASF Bologna (Italy); Emilio Molinari, Telescopio Nazionale Galileo (Spain); Paolo Di Marcantonio, INAF - Osservatorio Astronomico di Trieste (Italy); Filippo M. Zerbi, INAF - Osservatorio Astronomico di Brera (Italy); Luca Valenziano, INAF - IASF Bologna (Italy) ..... [8618-13]

9:50 am: **Real-time matched-filter imaging for chemical detection, using a DMD-based programmable filter**, Steven P. Love, David L. Graff, Los Alamos National Lab. (USA) ..... [8618-14]

Coffee Break ..... Wed 10:10 am to 10:40 am

**SESSION 5**

**Room: 310 (Esplanade) ..... Wed 10:40 am to 12:10 pm**

**3D Measurement Systems Using Structured Light**

Session Chairs: **Michael F. Becker**, The Univ. of Texas at Austin (USA);  
**Hal Bellis**, Keynote Technologies, LLC (USA)

10:40 am: **3D shape measurement of translucent objects using digital fringe projection (Invited Paper)**, Rongguang Liang, College of Optical Sciences, The Univ. of Arizona (USA) ..... [8618-15]

11:10 am: **Binary pattern codification strategies in an active stereoscopic system based on flexible image guides**, Erwan Dupont, YingFan Hou, Frederic Lamarque, Univ. de Technologie Compiègne (France); Tanneguy Redarce, Institut National des Sciences Appliquées de Lyon (France) ..... [8618-16]

11:30 am: **Multi-wavelength compressive computational ghost imaging**, Stephen S. Welsh, Matthew P. Edgar, Miles J. Padgett, Univ. of Glasgow (United Kingdom) ..... [8618-17]

11:50 am: **Single-image method to depict 3D profiles**, Kondiparthi Mahesh, Indian Institute of Science (India) ..... [8618-33]

Lunch/Exhibition Break ..... Wed 12:10 pm to 1:50 pm

**SESSION 6**

**Room: 310 (Esplanade) ..... Wed 1:50 pm to 3:20 pm**

**Beam Shaping and Special Image Encoding**

Session Chairs: **Yuval Kapellner Rabinovitz**, EKB Technologies Ltd. (USA); **Benjamin L. Lee**, Texas Instruments Inc. (USA)

1:50 pm: **Super resolved and field of view enhanced DLP based remote imaging configurations (Invited Paper)**, Zeev Zalevsky, Alex Zlotnik, Bar-Ilan Univ. (Israel) ..... [8618-18]

2:20 pm: **DMD-based scanning of steep wavefronts for optical testing of freeform optics**, Stephan Stuerwald, Fraunhofer-Institut für Produktionstechnologie (Germany); Robert Schmitt, Fraunhofer-Institut für Produktionstechnologie (Germany) and RWTH Aachen Univ. (Germany) ..... [8618-19]

2:40 pm: **Encoding complex values using two DLP® spatial light modulators**, Sih-Ying Wu, Michael F. Becker, The Univ. of Texas at Austin (USA) ..... [8618-20]

3:00 pm: **DMD as a diffractive reconfigurable optical switch for telecommunication**, Pierre-Alexandre J. Blanche, Daniel N. Carothers, Nasser N. Peyghambarian, College of Optical Sciences, The Univ. of Arizona (USA) ..... [8618-21]

Coffee Break ..... Wed 3:20 pm to 3:50 pm

**SESSION 7**

**Room: 310 (Esplanade) ..... Wed 3:50 pm to 5:10 pm**

**Advanced and Immersive Displays**

Session Chairs: **Charley Yongzhi Yang**, Wintech Digital Systems Technology Corp. (USA); **Jason Geng**, Xigen, LLC (USA)

3:50 pm: **Highly scalable DLP based head tracking system**, Stephen A. Kupiec, Vladimir B. Markov, Advanced Systems & Technologies, Inc. (USA); Arthur R. Hastings Jr., U.S. Army Night Vision & Electronic Sensors Directorate (USA) ..... [8618-22]

4:10 pm: **An interactive multiview 3D display system**, Zhaoxing Zhang, Zheng Geng, Institute of Automation (China) ..... [8618-23]

4:30 pm: **Single DMD time-multiplexed 64-views autostereoscopic 3D display**, Luigi Loreti, Opto-Electronics s.r.l. (Italy) ..... [8618-24]

4:50 pm: **High-dynamic range DMD-based scene projection**, Julia Rentz Dupuis, David J. Mansur, Robert Vaillancourt, Ryan Benedict-Gill, Scott P. Newbry, OPTRA, Inc. (USA) ..... [8618-25]

**Introducing a new benefit  
for SPIE journal authors—**



**Pay voluntary publication  
charges and get the benefit  
of GOLD OPEN ACCESS  
for your paper!**

### **Gold Open Access**

- Modest page charge fees
- Increases readership for your article
- Allows you to comply with employer and funding agency requirements
- You retain copyright with Creative Commons license

**Publish your article in your SPIE Journal and get  
the benefit of Gold Open Access.**

- Optical Engineering
- Journal of Biomedical Optics
- Journal of Electronic Imaging
- Journal of Micro/Nanolithography, MEMS, and MOEMS
- Journal of Applied Remote Sensing
- Journal of Nanophotonics
- Journal of Photonics for Energy

---

For more information visit [spie.org/JournalsOA](http://spie.org/JournalsOA)  
Contact: [journals@spie.org](mailto:journals@spie.org)

# OPTO

SPIE Photonics West

## Symposium Chair



**David L. Andrews**  
Univ. of East Anglia Norwich  
(United Kingdom)

## Symposium Co-Chairs



**Alexei L. Glebov**  
OptiGrate Corp. (USA)



**Klaus P. Streubel**  
OSRAM AG (Germany)

## Optoelectronic Materials and Devices

Program Chair: **James G. Grote**, Air Force Research Lab. (USA)

- 8619 **Physics and Simulation of Optoelectronic Devices XXI** (Bernd Witzigmann; Marek Osinski; Fritz Henneberger; Yasuhiko Arakawa) . . . 252
- 8620 **Physics, Simulation, and Photonic Engineering of Photovoltaic Devices II** (Alexandre Freundlich; Jean-Francois Guillemoles) . . . . . 256
- 8621 **Optical Components and Materials X** (Michel J. F. Digonnet; Shibin Jiang; J. Christopher Dries) . . . . . 261
- 8622 **Organic Photonic Materials and Devices XV** (Christopher E. Tabor; Francois Kajzar; Toshikuni Kaino; Yasuhiro Koike) . . . . . 264
- 8623 **Ultrafast Phenomena and Nanophotonics XVII** (Markus Betz; Abdulhakem Y. Elezzabi; Jin-Joo Song; Kong-Thon Tsen) . . . . . 267
- 8624 **Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications VI** (Laurence P. Sadwick; Cr  dhe M. O'Sullivan) . . 271
- 8625 **Gallium Nitride Materials and Devices VIII** (Jen-Inn Chyi; Yasushi Nanishi; Hadis Morko ) . . . . . 274
- 8626 **Oxide-based Materials and Devices IV** (Ferechteh H. Teherani; David C. Look; David J. Rogers) . . . . . 279

## Photonic Integration

Program Chair: **Yakov Sidorin**, Quarles & Brady LLP (USA)

- 8627 **Integrated Optics: Devices, Materials, and Technologies XVII** (Jean Emmanuel Broquin; Gualtiero Nunzi Conti) . . . . . 271
- 8628 **Optoelectronic Integrated Circuits XV** (Louay A. Eldada; El-Hang Lee) 283
- 8629 **Silicon Photonics VIII** (Joel Kubby; Graham T. Reed) . . . . . 286
- 8630 **Optoelectronic Interconnects XIII** (Alexei L. Glebov; Ray T. Chen) . . . . . 288
- 8624 **Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications VI** (Laurence P. Sadwick; Cr  dhe M. O'Sullivan) . . 291

## Nanotechnologies in Photonics

Program Chair: **Ali Adibi**, Georgia Institute of Technology (USA)

- 8631 **Quantum Sensing and Nanophotonic Devices X** (Manijeh Razeghi) 294
- 8632 **Photonic and Phononic Properties of Engineered Nanostructures III** (Ali Adibi; Shawn-Yu Lin; Axel Scherer) . . . . . 300
- 8633 **High Contrast Metastructures II** (Connie J. Chang-Hasnain; Fumio Koyama; Alan E. Willner; Weimin Zhou) . . . . . 304

- 8634 **Quantum Dots and Nanostructures: Synthesis, Characterization, and Modeling X** (Kurt G. Eyink; Diana L. Huffaker; Frank Szmulowicz) . . . . . 306
- 8613 **Advanced Fabrication Technologies for Micro/Nano Optics and Photonics VI** (Georg von Freymann; Winston V. Schoenfeld; Raymond C. Rumpf) . . . . . 234

## Advanced Quantum and Optoelectronic Applications

Program Chair: **Zameer U. Hasan**, Temple Univ. (USA)

- 8635 **Advances in Photonics of Quantum Computing, Memory, and Communication VI** (Zameer U. Hasan; Philip R. Hemmer; Hwang Lee; Charles M. Santori) . . . . . 308
- 8636 **Advances in Slow and Fast Light VI** (Selim Shahriar; Frank A. Narducci) . . . . . 312
- 8637 **Complex Light and Optical Forces VII** (Jesper Gl  ckstad; David L. Andrews; Enrique J. Galvez) . . . . . 315
- 8638 **Laser Refrigeration of Solids VI** (Richard I. Epstein; Denis V. Seletskiy; Mansoor Sheik-Bahae) . . . . . 318
- 8631 **Quantum Sensing and Nanophotonic Devices X** (Manijeh Razeghi) 294
- 8634 **Quantum Dots and Nanostructures: Synthesis, Characterization, and Modeling X** (Kurt G. Eyink; Diana L. Huffaker; Frank Szmulowicz) . . . . . 306

## Semiconductor Lasers and LEDs

Program Chair: **Klaus P. Streubel**, OSRAM AG (Germany)

- 8639 **Vertical-Cavity Surface-Emitting Lasers XVII** (Kent D. Choquette; James K. Guenter) . . . . . 209
- 8640 **Novel In-Plane Semiconductor Lasers XII** (Alexey A. Belyanin; Peter M. Smowton) . . . . . 211
- 8641 **Light-Emitting Diodes: Materials, Devices, and Applications for Solid State Lighting XVII** (Klaus P. Streubel; Heonsu Jeon; Li-Wei Tu) . . . . . 252
- 8605 **High-Power Diode Laser Technology and Applications XI** (Mark S. Zediker) . . . . . 274
- 8606 **Vertical-External-Cavity Surface-Emitting Lasers (VECSELs) III** (Jennifer E. Hastie) . . . . . 319
- 8619 **Physics and Simulation of Optoelectronic Devices XXI** (Bernd Witzigmann; Marek Osinski; Fritz Henneberger; Yasuhiko Arakawa) . . . . . 321
- 8625 **Gallium Nitride Materials and Devices VIII** (Jen-Inn Chyi; Yasushi Nanishi; Hadis Morko ) . . . . . 325

## Displays and Holography

Program Chair: **Liang-Chy Chien**, Kent State Univ. (USA)

- 8642 **Emerging Liquid Crystal Technologies VIII** (Liang-Chy Chien) . . . . 329
- 8643 **Advances in Display Technologies III** (Liang-Chy Chien; Sin-Doo Lee; Ming Hsien Wu) . . . . . 331
- 8644 **Practical Holography XXVII: Materials and Applications** (Hans I. Bjelkhagen; V. Michael Bove, Jr.) . . . . . 333

## Optical Communications: Devices to Systems

Program Chair: **Benjamin Dingel**, Nasfine Photonics, Inc. (USA)

- 8645 **Broadband Access Communication Technologies VII** (Benjamin B. Dingel; Raj Jain; Katsutoshi Tsukamoto) . . . . . 221
- 8646 **Optical Metro Networks and Short-Haul Systems V** (Werner Weiershausen; Benjamin B. Dingel; Achyut K. Dutta; Atul K. Srivastava) . . . . . 271
- 8647 **Next-Generation Optical Communication: Components, Sub-Systems, and Systems II** (Guifang Li) . . . . . 288
- 8610 **Free-Space Laser Communication and Atmospheric Propagation XXV** (Hamid Hemmati; Don M. Boroson) . . . . . 291
- 8624 **Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications VI** (Laurence P. Sadwick; Cr  dhe M. O'Sullivan) . . 336
- 8629 **Silicon Photonics VIII** (Joel Kubby; Graham T. Reed) . . . . . 339
- 8630 **Optoelectronic Interconnects XIII** (Alexei L. Glebov; Ray T. Chen) . 342

# OPTO Daily Conference Schedule

Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday
----------	--------	--------	---------	-----------	----------

## Optoelectronic Materials and Devices

Program Chair: **James G. Grote**, Air Force Research Lab. (USA)

8623 <b>Ultrafast Phenomena and Nanophotonics XVII</b> ( <i>Betz, Elezzabi, Song, Tsen</i> )
8626 <b>Oxide-based Materials and Devices IV</b> ( <i>Teherani, Look, Rogers</i> )
8620 <b>Physics, Simulation, and Photonic Engineering of Photovoltaic Devices II</b> ( <i>Freundlich, Guillemoles</i> )
8619 <b>Physics and Simulation of Optoelectronic Devices XXI</b> ( <i>Witzigmann, Osinski, Henneberger, Arakawa</i> )
8622 <b>Organic Photonic Materials and Devices XV</b> ( <i>Tabor, Kajzar, Kaino, Koike</i> )
8625 <b>Gallium Nitride Materials and Devices VIII</b> ( <i>Chyi, Nanishi, Morkoç</i> )
8621 <b>Optical Components and Materials X</b> ( <i>Digonet, Jiang, Dries</i> )
8624 <b>Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications VI</b> ( <i>Sadwick, O'Sullivan</i> )

## Photonic Integration

Program Chair: **Yakov Sidorin**, Quarles & Brady LLP (USA)

8630 <b>Optoelectronic Interconnects XIII</b> ( <i>Glebov, Chen</i> )
8629 <b>Silicon Photonics VIII</b> ( <i>Kubby, Reed</i> )
8627 <b>Integrated Optics: Devices, Materials, and Technologies XVII</b> ( <i>Broquin, Nunzi Conti</i> )
8624 <b>Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications VI</b> ( <i>Sadwick, O'Sullivan</i> )
8628 <b>Optoelectronic Integrated Circuits XV</b> ( <i>Eldada, Lee</i> )

## Nanotechnologies in Photonics

Program Chair: **Ali Adibi**, Georgia Institute of Technology (USA)

8631 <b>Quantum Sensing and Nanophotonic Devices X</b> ( <i>Razeghi</i> )
8632 <b>Photonic and Phononic Properties of Engineered Nanostructures III</b> ( <i>Adibi, Lin, Scherer</i> )
8634 <b>Quantum Dots and Nanostructures: Synthesis, Characterization, and Modeling X</b> ( <i>Eyink, Huffaker, Szmulowicz</i> )
8613 <b>Advanced Fabrication Technologies for Micro/Nano Optics and Photonics VI</b> ( <i>von Freymann, Vaughan Schoenfeld, Rumpf</i> )
8633 <b>High Contrast Metasurfaces II</b> ( <i>Chang-Hasnain, Koyama, Willner, Zhou</i> )

### OPTO Plenary Session

Room: 134 (Exhibit Level) . . . . Tue. 8:00 am to 10:10 am

*Session Chairs* : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)

8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)

8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]

8:50 am: **Group IV photonics for the mid infrared,**  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]

9:30 am: **Light in a twist: optical angular momentum,**  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]

See page 26 for details.



### OPTO Interactive Poster Session

Wednesday 6 February · 6:00 to 8:00 pm · Room 103



Saturday	Sunday	Monday	Tuesday	Wednesday	Thursday			
<b>Advanced Quantum and Optoelectronic Applications</b>			Program Chair: <b>Zameer UI Hasan</b> , Temple Univ. (USA)					
			8631 <b>Quantum Sensing and Nanophotonic Devices X</b> ( <i>Razeghi</i> )					
			8636 <b>Advances in Slow and Fast Light VI</b> ( <i>Shahriar, Narducci</i> )	8638 <b>Laser Refrigeration of Solids VI</b> ( <i>Epstein, Seletskiy, Sheik-Bahae</i> )				
			8634 <b>Quantum Dots and Nanostructures: Synthesis, Characterization, and Modeling X</b> ( <i>Eyink, Huffaker, Szmulowicz</i> )					
			8635 <b>Advances in Photonics of Quantum Computing, Memory, and Communication VI</b> ( <i>Hasan, Hemmer, Lee, Santori</i> )					
			8637 <b>Complex Light and Optical Forces VII</b> ( <i>Glückstad, Andrews, Galvez</i> )					
<b>Semiconductor Lasers and LEDs</b>			Program Chair: <b>Klaus P. Streubel</b> , OSRAM AG (Germany)					
			8606 <b>Vertical External Cavity Surface Emitting Lasers (VECSELs) III</b> ( <i>Hastie</i> )		8639 <b>Vertical-Cavity Surface-Emitting Lasers XVII</b> ( <i>Choquette, Guenter</i> )			
			8605 <b>High-Power Diode Laser Technology and Applications XI</b> ( <i>Zediker</i> )					
			8619 <b>Physics and Simulation of Optoelectronic Devices XXI</b> ( <i>Witzigmann, Osinski, Henneberger, Arakawa</i> )					
			8625 <b>Gallium Nitride Materials and Devices VIII</b> ( <i>Chyi, Nanishi, Morkoç</i> )					
			8640 <b>Novel In-Plane Semiconductor Lasers XII</b> ( <i>Belyanin, Smowton</i> )					
8641 <b>Light-Emitting Diodes: Materials, Devices, and Applications for Solid State Lighting XVII</b> ( <i>Streubel, Jeon, Tu</i> )								
<b>Displays and Holography</b>			Program Chair: <b>Liang-Chy Chien</b> , Kent State Univ. (USA)					
			8644 <b>Practical Holography XXVII: Materials and Applications</b> ( <i>Bjelkhagen, Bove</i> )		8642 <b>Emerging Liquid Crystal Technologies VIII</b> ( <i>Chien</i> )			
						8643 <b>Advances in Display Technologies III</b> ( <i>Chien, Lee, Wu</i> )		
<b>Optical Communications: Devices to Systems</b>			Program Chair: <b>Benjamin Dingel</b> , Nasfinc Photonics, Inc. (USA)					
			8630 <b>Optoelectronic Interconnects XIII</b> ( <i>Glebov, Chen</i> )					
			8629 <b>Silicon Photonics VIII</b> ( <i>Kubby, Reed</i> )					
			8645 <b>Broadband Access Communication Technologies VII</b> ( <i>Dingel, Jain, Tsukamoto</i> )					
			8646 <b>Optical Metro Networks and Short-Haul Systems V</b> ( <i>Weiershausen, Dingel, Dutta, Srivastava</i> )					
			8647 <b>Next-Generation Optical Communication: Components, Sub-Systems, and Systems II</b> ( <i>Li</i> )					
			8624 <b>Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications VI</b> ( <i>Sadwick, O'Sullivan</i> )					
8610 <b>Free-Space Laser Communication and Atmospheric Propagation XXV</b> ( <i>Hemmati, Boroson</i> )								

# Physics and Simulation of Optoelectronic Devices XXI

*Conference Chairs:* **Bernd Witzigmann**, Univ. Kassel (Germany); **Marek Osinski**, The Univ. of New Mexico (USA); **Fritz Henneberger**, Humboldt- Univ. zu Berlin (Germany); **Yasuhiko Arakawa**, The Univ. of Tokyo (Japan)

*Program Committee:* **Hiroshi Amano**, Nagoya Univ. (Japan); **Toshihiko Baba**, Yokohama National Univ. (Japan); **Weng W. Chow**, Sandia National Labs. (USA); **Shun Lien Chuang**, Univ. of Illinois at Urbana-Champaign (USA); **Aldo Di Carlo**, Univ. degli Studi di Roma Tor Vergata (Italy); **Keiichi Edamatsu**, Tohoku Univ. (Japan); **Nicholas J. Ekins-Daukes**, Imperial College London (United Kingdom); **Alexandre Freundlich**, Univ. of Houston (USA); **Ortwin Hess**, Imperial College London (United Kingdom); **Stephan W. Koch**, Philipps-Univ. Marburg (Germany); **Vassilios I. Kovanis**, Air Force Research Lab. (USA); **Nikolay N. Ledentsov**, VI Systems GmbH (Germany); **Cun-Zheng Ning**, Arizona State Univ. (USA); **Joachim Piprek**, NUSOD Institute LLC (USA); **Ikuo Suemune**, Hokkaido Univ. (Japan)

## Monday 4 February

### SESSION 1

Room: 121 (Exhibit Level) . . . . . Mon 8:00 am to 10:20 am

#### Highly Efficient Photon Extraction from Semiconductors

Session Chair: **Bernd Witzigmann**, Univ. Kassel (Germany)

8:00 am: **Photon extraction from semiconductors embedded in metal and coupling to optical fibers**, Ikuo Suemune, Jae-Hoon Huh, Tomoya Asano, Xiangming Liu, Nahid A. Jahan, Hideaki Nakajima, Hokkaido Univ. (Japan); Kouichi Akahane, National Institute of Information and Communications Technology (Japan); Natsuko Kobayashi, Hirotaka Sasakura, Hidekazu Kumano, Hokkaido Univ. (Japan); Masahide Sasaki, National Institute of Information and Communications Technology (Japan). . . . . [8619-1]

8:20 am: **Selectively grown nanowires for efficient single photon emission and detection** (*Invited Paper*), Michael E. Reimer, Val Zwiller, Technische Univ. Delft (Netherlands). . . . . [8619-2]

8:50 am: **On-chip generation and transmission of single photons** (*Invited Paper*), Sokratis Kalliakos, Toshiba Research Europe Ltd. (United Kingdom); Andre Schwagmann, Toshiba Research Europe Ltd. (United Kingdom) and Univ. of Cambridge (United Kingdom); Ian Farrer, Jonathan P. Griffiths, Geb A. C. Jones, David A. Ritchie, Univ. of Cambridge (United Kingdom); Andrew J. Shields, Toshiba Research Europe Ltd. (United Kingdom). . . . . [8619-3]

9:20 am: **Photonic wires and trumpets for ultrabright single photon sources** (*Invited Paper*), Jean-Michel Gerard, Julien Claudon, Joël Bleuse, Matthieu Munsch, Nitin S. Malik, Commissariat à l'Énergie Atomique (France); Jesper Mørk, Niels Gregersen, Technical Univ. of Denmark (Denmark). . . . . [8619-4]

9:50 am: **Ultrabright solid state sources of indistinguishable single photons** (*Invited Paper*), Pascale Senellart, Olivier Gazzano, Steffen Michaelis de Vasconcellos, Anna Nowak, Christophe Arnold, Isabelle Sagnes, Loic Lanco, Aristide Lemaître, Lab. de Photonique et de Nanostructures (France). . . [8619-5]

Coffee Break . . . . . Mon 10:20 am to 10:50 am

### SESSION 2

Room: 121 (Exhibit Level) . . . . . Mon 10:50 am to 12:20 pm

#### Injection Locked Lasers

Session Chair: **Joachim Piprek**, NUSOD Institute LLC (USA)

10:50 am: **Differential gain enhancement in a quantum dash laser using strong optical injection** (*Invited Paper*), Luke F. Lester, Univ. of New Mexico (USA); Frédéric Grillot, Telecom Paristech (France); Nader A. Naderi, Vassilios I. Kovanis, Air Force Research Lab. (USA). . . . . [8619-6]

11:20 am: **Impacts of Carrier Capture and Relaxation Rates on the Modulation Response of Injection-Locked Quantum Dot Lasers**, Cheng Wang, Frédéric Grillot, Jacky Even, Institut National des Sciences Appliquées de Rennes (France). . . . . [8619-7]

11:40 am: **Rate equation analysis of high-speed photon-lifetime-modulated strongly injection-locked semiconductor ring lasers**, HemaShilpa Kalagara, Gennady A. Smolyakov, Marek Osinski, Univ. of New Mexico (USA). . . [8619-8]

12:00 pm: **Extending the direct laser modulation bandwidth by exploiting the photon-photon resonance: modeling, simulations and experiments**, Mihail M. Dumitrescu, Antti I. Laakso, Tampere Univ. of Technology (Finland). . . . . [8619-9]

Lunch Break . . . . . Mon 12:20 pm to 1:50 pm

### SESSION 3

Room: 121 (Exhibit Level) . . . . . Mon 1:50 pm to 3:10 pm

#### Mode Locking and Nonlinearities

Session Chair: **Luke F. Lester**, The Univ. of New Mexico (USA)

1:50 pm: **Characteristics of passive mode-locked quantum dot lasers from 20 to 120 C**, Jesse K. Mee, Air Force Research Lab. (USA); Mark T. Crowley, David Murrell, Ravi Raghunathan, Luke F. Lester, The Univ. of New Mexico (USA). . . . . [8619-10]

2:10 pm: **Modeling and characterization of pulse shape and pulse train dynamics in two-section passively mode-locked quantum dot lasers**, Ravi Raghunathan, Mark T. Crowley, The Univ. of New Mexico (USA); Frédéric Grillot, Telecom Paristech (France); Jesse K. Mee, Air Force Research Lab. (USA) and Univ. of New Mexico, Albuquerque, NM (USA); Vassilios I. Kovanis, Air Force Research Lab. (USA); Luke F. Lester, The Univ. of New Mexico (USA). . . . . [8619-11]

2:30 pm: **Numerical simulation of passively mode-locked fiber laser based on semiconductor optical amplifier**, Jingwen Yang, Dongfang Jia, Zhongyuan Zhang, Jiong Chen, Tonghui Liu, Zhaoying Wang, Tianxin Yang, Tianjin Univ. (China). . . . . [8619-12]

2:50 pm: **Active holographic quantum-well cavities**, Hao Sun, David D. Nolte, Purdue Univ. (USA); Eric S. Harmon, LightSpin Technologies, Inc. (USA). . . . . [8619-13]

Coffee Break . . . . . Mon 3:10 pm to 3:40 pm

### SESSION 4

Room: 121 (Exhibit Level) . . . . . Mon 3:40 pm to 5:00 pm

#### Light Emitting Diodes: Architectures and Materials

Session Chair: **Enrico Bellotti**, The Boston Univ. Photonics Ctr. (USA)

3:40 pm: **computational modelling of surface effects in InGaN/GaN quantum disk nanowire LEDs**, Friedhard Römer, Marcus Deppner, Bernd Witzigmann, Univ. Kassel (Germany) . . . . . [8619-14]

4:00 pm: **Optical and electrical properties of large area stacked graphene for use as transparent conducting electrodes**, Sheng Chun Hung, Chung Wei Chen, Y. H. Chien, Chia-Yuan Chang, G. C. Chi, National Central Univ. (Taiwan) . . . . . [8619-15]

4:20 pm: **A full band Monte-Carlo study of carriers transport properties of InAlN lattice matched to GaN**, Sara Shishhechi, Boston Univ. (USA); Francesco Bertazzi, Politecnico di Torino (Italy); Enrico Bellotti, Boston Univ. (USA) . . . . . [8619-16]

4:40 pm: **Simulation of nanoscale ITO top grating of GaN LED**, Gabriel M. Halpin, California Polytechnic State Univ., San Luis Obispo (USA); Xiaomin Jin, California Polytechnic State Univ., San Luis Obispo (USA) and Peking Univ. (China); Greg Chavoor, California Polytechnic State Univ., San Luis Obispo (USA); XingXing Fu, Xiang-Ning Kang, Guo Yi Zhang, Peking Univ. (China) . . . . . [8619-17]

**Tuesday 5 February**

**OPTO PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . Tue. 8:00 am to 10:10 am**

*Session Chairs* : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
- 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
- 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]
- 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
- 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]
- See page 26 for details.

Coffee Break . . . . . Tue 10:10 am to 10:30 am

**SESSION 5**

**Room: 121 (Exhibit Level) . . . . Tue 10:30 am to 12:10 pm**

**Electromagnetics I**

Session Chair: **Friedhard Römer**, Univ. Kassel (Germany)

- 10:30 am: **Pseudospectral algorithm for numerical integration of Maxwell's Equations**, Gregorio G. Mendoza González, Benemérita Univ. Autónoma de Puebla (Mexico); Juan M. Merlo Ramirez, Tecnológico de Monterrey (Mexico); Arnulfo Luis-Ramos, Benemérita Univ. Autónoma de Puebla (Mexico); Luz del Carmen C. Gómez-Pavón, Erwin A. Marti-Panameno, Benemérita Univ. Autónoma de Puebla (Mexico) . . . . . [8619-18]
- 10:50 am: **Efficient and precise simulation of multiple Mie scattering events using GPUs**, Simon Streicher, Hochschule Heilbronn (Germany); Ronald Kampmann, Roman M. Kleindienst, Stefan Sinzinger, Technische Univ. Ilmenau (Germany); Oliver Kalthoff, Hochschule Heilbronn (Germany) . . . . . [8619-19]
- 11:10 am: **Light extraction by directive sources within optically dense media**, James R. Nagel, Terahertz Device Corp. (USA) . . . . . [8619-20]
- 11:30 am: **Efficient Sensitivity Analysis of Waveguide Structures Using Finite Element Method (FEM)**, Mohamed R. Abdelhafez, The American Univ. in Cairo (Egypt); Mohamed H. Bakr, McMaster Univ. (Canada); Mohamed A. Swillam, Univ. of Toronto (Canada) and The American Univ. (Canada) . [8619-21]
- 11:50 am: **Slow/fast light and nonlinear reflection due to induced dispersion in semiconductor lasers**, HemaShilpa Kalagara, Gennady A. Smolyakov, Univ. of New Mexico (USA); Marek Osinski, Univ. of New Mexico (USA) . . . . [8619-22]
- Lunch/Exhibition Break . . . . . Tue 12:10 pm to 1:40 pm

**SESSION 6**

**Room: 121 (Exhibit Level) . . . . . Tue 1:40 pm to 3:10 pm**

**Plasmonics**

Session Chair: **Horacio Lamela Rivera**, Univ. Carlos III de Madrid (Spain)

- 1:40 pm: **New materials and processes for plasmonic and metamaterial devices** (*Invited Paper*), Mark D. Thoreson, Alexandra Boltasseva, Paul R. West, Gururaj V. Naik, Naresh K. Emani, Purdue Univ. (USA) . . . . . [8619-23]
- 2:10 pm: **A Monte-Carlo FDTD approach to modeling ensembles of polydisperse plasmonic nanoparticles**, Mikhail A. Kats, Herman Gudjonson, Harvard School of Engineering and Applied Sciences (USA); Kun Liu, Gaoxiang Wu, Siyon Chung, Univ. of Toronto (Canada); Zhihong Nie, Univ. of Maryland, College Park (USA); Eugenia Kumacheva, Univ. of Toronto (Canada); Federico Capasso, Harvard School of Engineering and Applied Sciences (USA) . [8619-24]
- 2:30 pm: **Green's function approach to study plasmonic luminescence enhancement in grated multilayer structures**, Toufik Sadi, Jani Oksanen, Jukka Tulkki, Aalto Univ. (Finland) . . . . . [8619-25]
- 2:50 pm: **Wideband sensitivity analysis of plasmonic structures**, Osman S. Ahmed, Mohamed H. Bakr, Xun Li, McMaster Univ. (Canada); Tsuyoshi Nomura, Toyota Research Institute North America (USA) . . . . . [8619-26]
- Coffee Break . . . . . Tue 3:10 pm to 3:40 pm

**SESSION 7**

**Room: 121 (Exhibit Level) . . . . . Tue 3:40 pm to 5:00 pm**

**Electromagnetics II**

Session Chair: **Toufik Sadi**, Aalto Univ. (Finland)

- 3:40 pm: **Metamaterials for visible and near infrared antireflective properties and large surface elaboration**, Jean-Baptiste Brückner, Institut Matériaux Nanoelectronique de Provence (France); Judikaël Le Rouzo, Ludovic Escoubas, François R. Flory, Institut Matériaux Microélectronique Nanosciences de Provence (France); Olivier Calvo-Perez, Nicolas Vukadinovic, Dassault Aviation (France); Gérard Berginc, Thales Optronique S.A.S. (France) . [8619-27]
- 4:00 pm: **Tailoring infrared absorptance with a one-dimensional structure**, Yu-Lung Lo, Nghia Nguyen-Huu, National Cheng Kung Univ. (Taiwan) . [8619-28]
- 4:20 pm: **Top-flat and top-patterned cone gratings for mid-infrared antireflective properties**, Jean-Baptiste Brückner, Judikaël Le Rouzo, Ludovic Escoubas, François R. Flory, Institut Matériaux Microélectronique et Nanosciences de Provence (France); Gérard Berginc, Thales Optronique S.A.S. (France) . . . . . [8619-29]
- 4:40 pm: **Electromagnetic modeling of surface plasmon resonance with Kretschmann configuration for biosensing applications in a CMOS-compatible interface**, Arnoldo Salazar, Sergio Camacho-León, Tecnológico de Monterrey (Mexico); Olivier Rossetto, Univ. Joseph Fourier (France); Sergio O. Martínez-Chapa, Tecnológico de Monterrey (Mexico) . . . . . [8619-30]

**Wednesday 6 February**

**SESSION 8**

**Room: 121 (Exhibit Level) . . . . . Wed 8:30 am to 10:00 am**

**Nano Emitters**

Session Chair: **Michael E. Reimer**, Technische Univ. Delft (Netherlands)

- 8:30 am: **Electrical design of lateral junction photonic crystal lasers** (*Invited Paper*), Jan Petykiewicz, Gary Shambat, Bryan Ellis, Jelena Vuckovic, Stanford Univ. (USA) . . . . . [8619-31]
- 9:00 am: **Bloch-wave engineered submicron-diameter quantum-dot micropillars for cavity QED experiments**, Niels Gregersen, Technical Univ. of Denmark (Denmark); Matthias Lermer, Julius-Maximilians-Univ. Würzburg (Germany); Stephan Reitzenstein, Technische Univ. Berlin (Germany); Sven Höfling, Julius-Maximilians-Univ. Würzburg (Germany); Jesper Moerk, Technical Univ. of Denmark (Denmark); Lukas Worschech, Martin Kamp, Alfred Forchel, Julius-Maximilians-Univ. Würzburg (Germany) . . . . . [8619-32]
- 9:20 am: **A photonic nanowire trumpet for interfacing a quantum dot and Gaussian free-space mode**, Niels Gregersen, Technical Univ. of Denmark (Denmark); Matthieu Munsch, Nitin S. Malik, Joël Bleuse, Adrien Delga, Commissariat à l'Énergie Atomique (France); Jesper Moerk, Technical Univ. of Denmark (Denmark); Jean-Michel Gérard, Julien Claudon, Commissariat à l'Énergie Atomique (France) . . . . . [8619-33]
- 9:40 am: **All-ZnO-based microcavities for strong exciton-photon coupling and lasing**, Simon Halm, Sascha Kalusniak, Sergey Sadofev, Matthias Brandt, Fritz Henneberger, Humboldt-Univ. zu Berlin (Germany) . . . . . [8619-34]
- Coffee Break . . . . . Wed 10:00 am to 10:30 am

**SESSION 9**

**Room: 121 (Exhibit Level) . . . . . Wed 10:30 am to 12:10 pm**

**Edge Emitting Lasers**

Session Chair: **Mark D. Thoreson**, Purdue Univ. (USA)

- 10:30 am: **Self-consistent analysis of thermal blooming in high-power lasers**, Joachim Piprek, NUSOD Institute LLC (USA) . . . . . [8619-35]
- 10:50 am: **Dynamic analysis of high-order quantum dot based laterally-coupled distributed feedback lasers**, Akram Akrouf, Kais Dridi, Trevor J. Hall, Univ. of Ottawa (Canada) . . . . . [8619-36]
- 11:10 am: **Study of the temperature and cavity length effects on threshold current density and wavelength shift in quantum dot lasers**, Dmitry Bykov, Bruno Gonzalez, Horacio L. Rivera, Univ. Carlos III de Madrid (Spain); Vitalii Sichkovskiy, Johan Peter Reithmaier, Univ. Kassel (Germany) . . . . . [8619-37]
- 11:30 am: **Low-temperature characterization of 1.55- $\mu$ m MQW lasers down to 10 K**, Emmanuel Mercado Sotelo, Dipendra Adhikari, Gennady A. Smolyakov, Marek Osinski, The Univ. of New Mexico (USA) . . . . . [8619-38]
- 11:50 am: **Two-wavelength switching with a 1310nm-QDot DFB laser**, Antonio Hurtado, Ctr. for High Technology Materials (USA) and Univ. of Essex (United Kingdom); M. Nami, Ctr. for High Technology Materials (USA); Ian D. Henning, Michael J. Adams, Univ. of Essex (United Kingdom); Luke F. Lester, Ctr. for High Technology Materials (USA) . . . . . [8619-83]
- Lunch/Exhibition Break . . . . . Wed 12:10 pm to 1:20 pm

**SESSION 10**

**Room: 121 (Exhibit Level) . . . . .Wed 1:20 pm to 3:20 pm**

**Active Nanoplasmonics**

Session Chair: **Ikuo Suemune**, Hokkaido Univ. (Japan)

1:20 pm: **Amplification and lasing in nanoplasmonics and metamaterials: an overview** (*Invited Paper*), Ortwin Hess, Imperial College London (United Kingdom) . . . . . [8619-39]

1:50 pm: **The physics of plasmonic lasers** (*Invited Paper*), Rupert F. Oulton, Imperial College London (United Kingdom) . . . . . [8619-40]

2:20 pm: **Electrically driven plasmonic nanocircuits** (*Invited Paper*), Mark Brongersma, Geballe Lab. for Advanced Materials (GLAM) (USA) . . . . . [8619-41]

2:50 pm: **Low-threshold semiconductor plasmonic nanolasers** (*Invited Paper*), Shangjr Gwo, Yu-Juang LU, National Tsing Hua Univ. (Taiwan); Jisun Kim, The Univ. of Texas at Austin (USA); Hung-Ying Chen, National Tsing Hua Univ. (Taiwan); Charlotte E. Sanders, Chihhui Wu, Nima Dabidian, The Univ. of Texas at Austin (USA); Chun-Yuan Wang, Ming-Yen Lu, National Tsing Hua Univ. (Taiwan); Wen-Hao Chang, National Chiao Tung Univ. (Taiwan); Lih-Juann Chen, National Tsing Hua Univ. (Taiwan); Gennady B. Shvets, Chih-Kang Shih, The Univ. of Texas at Austin (USA) . . . . . [8619-42]

Coffee Break . . . . .Wed 3:20 pm to 4:00 pm

**SESSION 11**

**Room: 121 (Exhibit Level) . . . . .Wed 4:00 pm to 5:30 pm**

**Advanced Photovoltaic Device Simulation**

Joint Session with Conferences 8619 and 8620

Session Chair: **Alexandre Freundlich**, Univ. of Houston (USA)

4:00 pm: **Drift-diffusion modeling of InP-based triple junction solar cells** (*Invited Paper*), Matthew P. Lumb, The George Washington Univ. (USA) and U.S. Naval Research Lab. (USA); Maria Gonzalez, Sotera Defense Solutions, Inc. (USA); Christopher G. Bailey, Igor Vurgaftman, Jerry R. Meyer, Michael K. Yakes, Joshua Abell, Joseph G. Tischler, U.S. Naval Research Lab. (USA); Raymond Hoheisel, The George Washington Univ. (USA); Paul N. Stavrinou, Markus Fuhrer, Nicholas J. Ekins-Daukes, Imperial College London (United Kingdom); Robert J. Walters, U.S. Naval Research Lab. (USA) . . . . . [8620-53]

4:30 pm: **3D full-wave optical and electronic modeling of organic bulk-heterojunction solar cells: a predictive approach**, Wee Shing Koh, Yuriy Akimov, A\*STAR Institute of High Performance Computing (Singapore); Wei Peng Goh, A\*STAR Institute of Materials Research and Engineering (Singapore) and Nanyang Technological Univ (Singapore) . . . . . [8619-43]

4:50 pm: **FEM-based optical modeling of silicon thin-film tandem solar cells with randomly textured interfaces in 3D**, Martin Hammerschmidt, Daniel Lockau, Konrad-Zuse-Zentrum für Informationstechnik Berlin (Germany); Sven Burger, Frank Schmidt, Konrad-Zuse-Zentrum für Informationstechnik Berlin (Germany) and JCMwave GmbH (Germany); Christoph Schwanke, Simon Kirner, Sonya Calnan, The Helmholtz Zentrum Berlin (Germany); Bernd Stannowski, Bernd Rech, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany) . . . . . [8620-54]

5:10 pm: **Study of silicon solar cell top and bottom grating location**, Michael J. Marshall, Xiaomin Jin, California Polytechnic State Univ., San Luis Obispo (USA) . . . . . [8619-44]

**POSTERS-WEDNESDAY**

**Room: 103 (Exhibit Level) . . . . .Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

**Laser beam bending cylindrical gradient curved lens under atmospheric conditions**, Remzi Yildirim, Yildirim Beyazit Univ. (Turkey) . . . . . [8619-58]

**Tailoring coaxial fiber parameters for gain flattening in erbium doped fiber amplifiers**, Jyoti Anand, Enakshi K. Sharma, Jagmeet K. Anand, Univ. of Delhi South Campus (India) . . . . . [8619-59]

**Intensity modulation response of injection-locked quantum cascade lasers**, Cheng Wang, Frédéric Grillot, Jacky Even, Institut National des Sciences Appliquées de Rennes (France) . . . . . [8619-60]

**Numerical modeling method for the dispersion characteristics of single-mode and multimode weakly-guiding optical fibers with arbitrary radial refractive index profiles**, Raushan Mussina, David R. Selviah, F. Anibal Fernández, Univ. College London (United Kingdom); Anton G. Tjihuis, Bastiaan P. de Hon, Technische Univ. Eindhoven (Netherlands) . . . . . [8619-61]

**FBG pressure sensor of high pressure electric oil pumps for prestressing**, Zhenwu Guo, Fuwei Ge, Guangwei Liu, Weixiang Li, Nankai Univ. (China) . . . . . [8619-63]

**Optofluidic-core hi-bi photonic crystal fiber for refractive index sensing**, Christos Markos, Univ. of Patras (Greece) and National Hellenic Research Foundation (Greece); Kyriakos G. Vlachos, Univ. of Patras (Greece); George Kakarantzas, National Hellenic Research Foundation (Greece) . . . . . [8619-64]

**Design of a compact polarization splitter composed of multiple-slotted waveguide and silicon nanowire**, Jinbiao Xiao, Jiayuan Wang, Southeast Univ. (China); Xiaohan Sun, Southeast Univ (China) . . . . . [8619-65]

**Polarization engineering in group-III-nitride based ultraviolet light-emitting diodes**, Yu-Rui Lin, National Changhua Univ. of Education (Taiwan); Bo-Ting Liou, Hsiuping Institute of Technology (Taiwan); Jih-Yuan Chang, Yen-Kuang Kuo, National Changhua Univ. of Education (Taiwan) . . . . . [8619-66]

**Plasmonic ring laser cavity with tiny footprint**, Xudong Liu, Feifei Shi, Zhaoyu Zhang, Peking Univ. Shenzhen Graduate School (China) . . . . . [8619-67]

**On-line scanned probe microscopy transparently integrated with DualBeam SEM/FIB systems**, Aaron Lewis, Hebrew Univ. of Jerusalem (Israel); Anatoly Komissar, Andrey Ignatov, Nanonics Imaging Ltd. (Israel) . . . . . [8619-68]

**Fabrication of nanocomposite by graphene for infrared detection device**, Sana M. Baleb, Univ. Teknologi Malaysia (Malaysia) . . . . . [8619-69]

**Estimation of amplified spontaneous emission in erbium doped fibers with phase sensitive structures**, Amita Kapoor, Rashmi Singh, Univ. of Delhi (India); Enakshi K. Sharma, Univ. of Delhi South Campus (India) . . . . . [8619-70]

**EELS investigation of surface plasmon excitation on silver nanowire**, Xiuli Zhou, Univ. of Michigan (USA) . . . . . [8619-71]

**A discrete transmission-matrix method for modeling the distributed feedback arising from continuously varying refractive index profiles**, Derek S. Heeger, Robert M. Bunch, Paul O. Leisher, Rose-Hulman Institute of Technology (USA) . . . . . [8619-72]

**Optimization of AlGaIn/GaN superlattice electron blocking layers by genetic algorithm for high-efficiency GaN-based light-emitting diodes**, Dong-yeong Kim, Junhyuk Park, Sunyong Hwang, Jong Kyu Kim, Pohang Univ. of Science and Technology (Korea, Republic of) . . . . . [8619-73]

**Compact polarization rotator based on slotted optical waveguide with buffer layer using surface plasmon polariton**, Hong-Seung Kim, Tae-Kyeong Lee, Geum-Yoon Oh, Byeong-Hyeon Lee, Chung-Ang Univ. (Korea, Republic of); Doo Gun Kim, Korea Photonics Technology Institute (Korea, Republic of); Young-Wan Choi, Chung-Ang Univ. (Korea, Republic of) . . . . . [8619-74]

**New method for thermal resistance evaluation of optical components by simple electrical characterisation**, Joel Jacquet, Catherine Burcklen, Samuel Spieser, Anthony Philippe, Carl Mugnier, Adrian Iordachescu, Supélec (France) . . . . . [8619-75]

**Photon migration and fluorescence resonance energy transfer in CdSe/ZnS quantum dot colloidal systems**, Adamo F. Monte, Guilherme A. Alves, Tamiris S. Souza, Arnaldo F. Reis, Djalmar N. Messias, Univ. Federal de Uberlândia (Brazil) . . . . . [8619-76]



**Rate equation modeling of current injection efficiency in 1.3- $\mu$ m InAs-InGaAs quantum-dot lasers**, Umesh Singh, Univ. of Central Florida (USA); Amit Dikshit, IBM India Private Ltd. (India); Jon M. Pikal, Univ. of Wyoming (USA) . . . . . [8619-78]

**Propagation of a Gaussian pulse in a coaxial optical fiber**, Jyoti Anand, Enakshi K. Sharma, Jagneet K. Anand, Univ. of Delhi South Campus (India) . . . . . [8619-79]

**Modeling and computation of grating-integrated waveguides in optoelectronic applications**, Meng-Mu Shih, Univ. of Florida (USA) . . [8619-80]

**Light propagation through AgI nanowires for waveguide applications**, Desapogu Rajesh, Univ. of Hyderabad (India) . . . . . [8619-81]

**The photoemission mechanism of multi-alkali cathode**, Xiaofeng Li, North Night Vision Technology Co., Ltd. (China) . . . . . [8619-82]

**Basis functions for solution of non-homogeneous wave equation**, Sina Khorasani, Sharif Univ. of Technology (Iran, Islamic Republic of); Farhad Karimi, Univ. of Wisconsin, Madison (USA) . . . . . [8619-84]

## Thursday 7 February

### SESSION 12

Room: 121 (Exhibit Level) . . . . . Thu 8:30 am to 10:10 am

#### Optical Sensing

Session Chair: **Sokratis Kalliakos**,  
Toshiba Research Europe Ltd. (United Kingdom)

8:30 am: **Design of high sensitive surface plasmon resonance sensor with metallic nanostructure**, Byeong-Hyeon Lee, Geum-Yoon Oh, Hong-Seung Kim, Tae-Kyeong Lee, Young-Wan Choi, Chung-Ang Univ. (Korea, Republic of) . . . . . [8619-45]

8:50 am: **Single and multiprobe apertureless thermal imaging of electromagnetic excitation over a wide range of wavelengths**, Aaron Lewis, Hebrew Univ. of Jerusalem (Israel); Rimma Dekhter, Sophia Kokotov, Patricia Hamra, Boaz Fleischman, Hesham Taha, Nanonics Imaging Ltd. (Israel) . . . . . [8619-46]

9:10 am: **The design and fabrication of the metallic nano-annular structure on the glass and the study of its optical property**, Shu-Sheng Lee, Sheng-En Chen, Yi-Kai Huang, National Taiwan Ocean Univ. (Taiwan) . . . . . [8619-47]

9:30 am: **Development and optimization of an integrated Faraday modulator and compensator design for optical polarimetry**, Brandon W. Clarke, Brent D. Cameron, The Univ. of Toledo (USA) . . . . . [8619-48]

9:50 am: **Gold nanoparticle absorption under a nanoscale tip illuminated by surface-plasmon polaritons**, Gazi M. Huda, J. Todd Hastings, Univ. of Kentucky (USA) . . . . . [8619-49]

Coffee Break . . . . . Thu 10:10 am to 10:40 am

### SESSION 13

Room: 121 (Exhibit Level) . . . . . Thu 10:40 am to 12:10 pm

#### Light Emitting Diodes: Efficiency Droop

Session Chair: **Niels Gregersen**, Technical Univ. of Denmark (Denmark)

10:40 am: **Auger recombination in bulk InGaN and quantum wells: a numerical simulation study (Invited Paper)**, Enrico Bellotti, Boston Univ. (USA); Francesco Bertazzi, Boston Univ. (USA) and Politecnico di Torino (Italy); Michele Goano, Politecnico di Torino (Italy) . . . . . [8619-50]

11:10 am: **Effect of Interband energy separation on the interband auger processes in III-nitride semiconductors**, Chee-Keong Tan, Jing Zhang, Guangyu Liu, Nelson Tansu, Lehigh Univ. (USA) . . . . . [8619-51]

11:30 am: **Carrier-density-dependent recombination rates in GaInN/GaN QW LED structure with V-defect and threading dislocation**, Yong-Hee Cho, Jun-Youn Kim, Jaekyun Kim, Youngsoo Park, Munbo Shim, Sungjin Kim, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . [8619-52]

11:50 am: **Auger recombination and carrier transport effects in III-nitride quantum-well light emitting diodes**, Marcus Deppner, Bernd Witzigmann, Friedhard Römer, Univ. Kassel (Germany) . . . . . [8619-53]

Lunch/Exhibition Break . . . . . Thu 12:10 pm to 1:40 pm

### SESSION 14

Room: 121 (Exhibit Level) . . . . . Thu 1:40 pm to 3:00 pm

#### Detectors

Session Chair: **Yong-Hee Cho**,  
Samsung Advanced Institute of Technology (Korea, Republic of)

1:40 pm: **Hybrid silicon organic high speed electro-optic phase shifter**, Soon Thor Lim, Ching Eng Png, Vivek Dixit, A\*STAR Institute of High Performance Computing (Singapore) . . . . . [8619-54]

2:00 pm: **Memory effect in gated single-photon avalanche diodes: a limiting noise contribution similar to afterpulsing**, Davide Contini, Alberto Dalla Mora, Laura Di Sieno, Rinaldo Cubeddu, Alberto Tosi, Gianluca Boso, Antonio Pifferi, Politecnico di Milano (Italy) . . . . . [8619-55]

2:20 pm: **Design optimization of an optically drivable heterogeneous MOSFET with silicon compatibility**, Seongjae Cho, Stanford Univ. (USA); Hyungjin Kim, Seoul National Univ. (Korea, Republic of); S. J. Ben Yoo, Univ. of California, Davis (USA); Byung-Gook Park, Seoul National Univ. (Korea, Republic of); James S. Harris Jr., Stanford Univ. (USA) . . . . . [8619-56]

2:40 pm: **Simulations of light beam incident on a gainy slab elicit mechanism of amplified TIR**, Tobias S. Mansuripur, Harvard Univ. (USA); Masud Mansuripur, College of Optical Sciences, The Univ. of Arizona (USA) . . . . . [8619-57]

## Don't miss the Exhibition

See new products, top companies, potential collaborators, and the best suppliers face-to-face

**5-7 February 2013**  
**South Hall ABC and North Hall D**

Tuesday · 10:00 am to 5:00 pm

Wednesday · 10:00 am to 5:00 pm

Thursday · 10:00 am to 4:00 pm

# Physics, Simulation, and Photonic Engineering of Photovoltaic Devices II

*Conference Chairs:* **Alexandre Freundlich**, Univ. of Houston (USA); **Jean-Francois Guillemoles**, Institut de Recherche et Développement sur l'Energie Photovoltaïque (France)

*Program Committee:* **Harry Atwater Jr.**, California Institute of Technology (USA); **Sheila G. Bailey**, NASA Glenn Research Ctr. (USA); **Gavin Conibeer**, The Univ. of New South Wales (Australia); **Nicholas J. Ekins-Daukes**, Imperial College London (United Kingdom); **Christiana B. Honsberg**, Arizona State Univ. (USA); **Seth M. Hubbard**, Rochester Institute of Technology (USA); **Daniel Lincot**, Ecole Nationale Supérieure de Chimie de Paris (France); **Antonio Marti**, Univ. Politécnica de Madrid (Spain); **Marek Osinski**, The Univ. of New Mexico (USA); **Mike Scarpulla**, The Univ. of Utah (USA); **Masakazu Sugiyama**, The Univ. of Tokyo (Japan); **Robert J. Walters**, U.S. Naval Research Lab. (USA); **David M. Wilt**, Air Force Research Lab. (USA); **Peichen Yu**, National Chiao Tung Univ. (Taiwan)

## Sunday 3 February

### OPENING REMARKS

Room: 226 (Mezzanine) ..... 1:30 pm to 1:40 pm

Alexandre Freundlich, Univ. of Houston (USA);  
Jean-Francois Guillemoles, Institut de Recherche et Développement  
sur l'Energie Photovoltaïque (France)

### SESSION 1

Room: 226 (Mezzanine) ..... Sun 1:40 pm to 3:30 pm

#### Plasmonics Approaches to PV

Session Chair: **Jean-Francois Guillemoles**, Institut de Recherche et  
Développement sur l'Energie Photovoltaïque (France)

1:40 pm: **Plasmonic and dielectric enhancement of solar cells** (*Invited Paper*), Kylie Catchpole, The Australian National Univ. (Australia) ..... [8620-1]

2:10 pm: **Excitation of Multiple Surface-Plasmon-Polariton Waves at the Interface of a Metal and Photonic Crystal**, Anthony S. Hall, Muhammad Faryad, Greg D. Barber, Akhlesh Lakhtakia, Thomas E. Mallouk, The Pennsylvania State Univ. (USA) ..... [8620-2]

2:30 pm: **Improving photovoltaic devices using silver nanocubes**, Fouad Hejazi, Shuyu Ding, Yao Sun, Adam Bottomley, Carleton Univ. (Canada); Anatoli Ianoul, Carleton Univ. (Canada); Winnie Ye, Carleton Univ. (Canada) ..... [8620-3]

2:50 pm: **Efficiency enhancement of amorphous silicon based solar cell due to multiple surface-plasmon-polariton waves**, Muhammad Faryad, Akhlesh Lakhtakia, The Pennsylvania State Univ. (USA) ..... [8620-4]

3:10 pm: **On energy transfer in metallic nanoparticles: inclusion of nanoparticle size-effect**, Witold A. Jacak, Wrocław Univ. of Technology (Poland) ..... [8620-5]

Coffee Break ..... Sun 3:30 pm to 4:00 pm

### SESSION 2

Room: 226 (Mezzanine) ..... Sun 4:00 pm to 5:30 pm

#### Advanced Characterization Techniques

Session Chair: **Alexandre Freundlich**, Univ. of Houston (USA)

4:00 pm: **Mapping of solar cells optoelectronic properties from luminescence and photocurrent signals** (*Invited Paper*), Laurent Lombez, Institut de Recherche et Développement sur l'Energie Photovoltaïque (France) ..... [8620-79]

4:30 pm: **Intraband carrier dynamics in InAs/GaAs quantum dots studied by two-color excitation spectroscopy**, Yukihiro Harada, Tsuyoshi Maeda, Takashi Kita, Kobe Univ. (Japan) ..... [8620-7]

4:50 pm: **Evaluation of micrometer scale lateral fluctuations of transport properties in CIGS solar cells**, Amaury Delamarre, Daniel Ory, Myriam Paire, Daniel Lincot, Jean-François Guillemoles, Laurent Lombez, Institut de Recherche et Développement sur l'Energie Photovoltaïque (France) . . . [8620-8]

5:10 pm: **Characterization of semiconductor devices, wafer and solar cell materials via time-correlated single-photon counting with sub ns time-resolution**, Volker Buschmann, Felix Koberling, PicoQuant GmbH (Germany); Samantha Fore, PicoQuant North America Inc. (USA); Hannes Hempel, Friedrich-Schiller-Univ. Jena (Germany); Andrea Knigge, Ferdinand-Braun-Institut (Germany); Christian Kraft, Friedrich-Schiller-Univ. Jena (Germany); Uwe Ortmann, PicoQuant GmbH (Germany); Maurizio Roczen, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); Torsten Siebert, Rainer Erdmann, PicoQuant GmbH (Germany) ..... [8620-9]

## Monday 4 February

### SESSION 3

Room: 226 (Mezzanine) ..... Mon 8:30 am to 10:00 am

#### Light Management for Ultra Thin PV Devices

Session Chair: **Gavin Conibeer**,  
The Univ. of New South Wales (Australia)

8:30 am: **Nanophotonics for solar energy harvesting from ultrathin cells** (*Invited Paper*), Mark Brongersma, Geballe Lab for Advanced Materials (GLAM) (USA) ..... [8620-10]

9:00 am: **Broadband light trapping in ultra-thin nano-structured solar cells**, Clément Colin, Lab. de Photonique et de Nanostructures (France) and Ecole Nationale Supérieure de Chimie de Paris (France); Inès Massiot, Andrea Cattoni, Nicolas Vandamme, Christophe Dupuis, Nathalie Bardou, Lab. de Photonique et de Nanostructures (France); Isabelle Gérard, Univ. de Versailles Saint-Quentin-en Yvelines (France); Negar Naghavi, Jean-François Guillemoles, Institut de Recherche et Développement sur l'Energie Photovoltaïque (France); Jean-Luc Pelouard, Stéphane Collin, Lab. de Photonique et de Nanostructures (France) ..... [8620-11]

9:20 am: **Silicon solar cell light-trapping using defect mode photonic crystals**, Kelsey A. Whitesell, Dennis M. Callahan, Harry Atwater, California Institute of Technology (USA) ..... [8620-12]

9:40 am: **GaAs Thin-Film Single-Junction Solar Cells Integrated with a Reflective Back Scattering Structure**, Weiquan Yang, Jingjing Li, Charles Allen, Arizona State Univ. (USA); Hector Cotal, Spectrolab, Inc. (USA); Christopher Fetzer, Spectrolab, Inc. (USA); Shi Liu, Ding Ding, Stuart Farrell, Arizona State Univ. (USA); Nasser Karam, Spectrolab, Inc. (USA); Yong-Hang Zhang, Arizona State Univ. (USA) ..... [8620-13]

Coffee Break ..... Mon 10:00 am to 10:30 am

**SESSION 4**

**Room: 226 (Mezzanine) . . . . . Mon 10:30 am to 12:00 pm**

**Approaches to Spectral Shaping and Light Management**

Session Chair: **Christiana B. Honsberg**, Arizona State Univ. (USA)

10:30 am: **Photon up-conversion as a means for enhancing photovoltaic power conversion efficiency** (*Invited Paper*), Nicholas J. Ekins-Daukes, Roland Piper, Imperial College London (United Kingdom); Tim Schulze, Yuen Y. Cheng, Tyler Troy, Burkhard Fücke, The Univ. of Sydney (Australia); Klaus Lips, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany); Tim Schmidt, The Univ. of Sydney (Australia) . . . . . [8620-14]

11:00 am: **Rare-earths doped planar 2D-photonic crystals for quantum cutting in solar cells**, Thierry Deschamps, Institut des Nanotechnologies de Lyon (France); Antoine Guille, Univ. Claude Bernard Lyon 1 (France); Emmanuel Drouard, Radoslaw Mazurczyk, Regis Orobtcouk, Cecile Jamois, Alain Fave, Romain Peretti, Institut des Nanotechnologies de Lyon (France); Antonio Pereira, Bernard Moine, Univ. Claude Bernard Lyon 1 (France); Christian Seassal, Institut des Nanotechnologies de Lyon (France) . . . . . [8620-15]

11:20 am: **Enhancing absorption in a thin film photovoltaic system with periodic nanostructures obtained by low-cost techniques**, Arthur Le Bris, Saint-Gobain Recherche (France) and Ctr. National de la Recherche Scientifique (France); Barbara Brudieu, Saint-Gobain Recherche (France) and Ecole Polytechnique (France) and Ctr. National de la Recherche Scientifique (France); Jérémie Teisseire, Fabien Sorin, Saint-Gobain Recherche (France) and Ctr. National de la Recherche Scientifique (France) . . . . . [8620-16]

11:40 am: **Broadband Light Absorption Enhancement in Thin-Film Solar Cells by Combining Front Dielectric and Back Metallic Gratings**, Zhaoyu Zhang, Peking Univ. (China); Siyao Guo, Guanyao Su, Deng Xiao, Peking Univ. Shenzhen Graduate School (China) . . . . . [8620-17]

Lunch Break . . . . . Mon 12:00 pm to 1:30 pm

**SESSION 5**

**Room: 226 (Mezzanine) . . . . . Mon 1:30 pm to 3:00 pm**

**Intermediate Band and Quantum Dot Enhanced Devices**

Session Chair: **Robert J. Walters**, U.S. Naval Research Lab. (USA)

1:30 pm: **Six not so easy pieces in intermediate band solar cell research** (*Invited Paper*), Antonio Martí, Univ. Politécnica de Madrid (Spain); Elisa Antolín, Univ. Politécnica de Madrid (Spain) and Consejo Superior de Investigaciones Científicas (Spain); Pablo García-Linares, Iñigo Ramiro, Irene Artacho, Esther López, Estela Hernández, Manuel J. Mendes, Alex Mellor, Ignacio Tobías, David Fuertes Marrón, César Tablero, Ana B. Cristóbal, Antonio Luque, Univ. Politécnica de Madrid (Spain) . . . . . [8620-18]

2:00 pm: **Modification of band alignment at interface of  $\text{Al}_x\text{Ga}_{1-x}\text{As}$  type-II quantum dots by concentrated sunlight in intermediate-band solar cells with separated absorption and depletion regions**, Ara M. Kechiantz, The George Washington Univ. (USA) and National Academy of Sciences of the Republic of Armenia (Armenia); Andrei Afanasev, The George Washington Univ. (USA); Jean-Louis Lazzari, CiNAM - Ctr. Interdisciplinaire de Nanoscience de Marseille (France) . . . . . [8620-20]

2:20 pm: **Investigation of the design parameters of quantum dot enhanced III-V solar cells**, Kristina Driscoll, Mitchell Bennett, Stephen Polly, David V. Forbes, Seth M. Hubbard, Rochester Institute of Technology (USA) . . . [8620-21]

2:40 pm: **Improving photonic-electronic characteristics in quantum-dot solar cells via lattice strain mechanisms**, Wiley P. Kirk, The Univ. of Texas at Arlington (USA); Jateen Gandhi, Univ. of Houston (USA); Choong-Un Kim, The Univ. of Texas at Arlington (USA) . . . . . [8620-22]

Coffee Break . . . . . Mon 3:00 pm to 3:30 pm

**SESSION 6**

**Room: 226 (Mezzanine) . . . . . Mon 3:30 pm to 5:00 pm**

**Antireflective Coatings and Texturing**

Session Chair: **Michael A. Scarpulla**, The Univ. of Utah (USA)

3:30 pm: **Towards high-efficiency triple-junction solar cells with biologically-inspired nanosurfaces** (*Invited Paper*), Peichen Yu, National Chiao Tung Univ. (Taiwan) . . . . . [8620-23]

4:00 pm: **On coupling surface texturing and electrical characteristics for improving solar cell efficiency**, Vijayakumar Venugopal, Fiat Lux Technologies (USA) . . . . . [8620-24]

4:20 pm: **Simulation and development of subwavelength textured ARCs for CPV applications**, Wei Wang, Univ. of Houston (USA); Paul Narchi, Ecole Polytechnique (France); Alexandre Freundlich, Univ. of Houston (USA) . [8620-25]

4:40 pm: **Design of broadband omnidirectional antireflection coatings using ant colony algorithm**, Xia Guo, Shuai Guo, Bao Lu Guan, Beijing Univ. of Technology (China) . . . . . [8620-26]

**Tuesday 5 February**

**OPTO PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am**

Session Chairs : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)

8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)

8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]

8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]

9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]  
See page 26 for details.

Coffee Break . . . . . Tue 10:10 am to 10:30 am

**SESSION 7**

**Room: 226 (Mezzanine) . . . . . Tue 10:30 am to 12:00 pm**

**Emerging Device Concepts**

Session Chair: **Antonio Marti Vega**, Univ. Politécnica de Madrid (Spain)

10:30 am: **Approaches to future-generation photovoltaics and solar fuels: multiple exciton generation in quantum dots, quantum dot arrays, molecular singlet fission, and quantum dot solar cells** (*Keynote Presentation*), Arthur Nozik, National Renewable Energy Lab. (Viet Nam); Matt Beard, Joey Luther, Justin Johnson, Tavi Semonin, National Renewable Energy Lab. (USA); Josef Michl, Univ. of Colorado at Boulder (USA) . . . . . [8620-27]

11:10 am: **Silicon rich carbide as a conductive substrate for Si QD solar cells**, Dongchen Lan, Dawei Di, Gavin J. Conibeer, Xuguang Jia, Lingfeng Wu, ARC Photovoltaics Ctr. of Excellence, The Univ. of New South Wales (Australia) . . . . . [8620-28]

11:30 am: **Non PN junction solar cells using carrier selective contacts** (*Invited Paper*), Stuart Bowden, Kunal Ghosh, Arizona State Univ. (USA) . . . . . [8620-29]

Lunch/Exhibition Break . . . . . Tue 12:00 pm to 1:30 pm

**OPTO**

**SESSION 8**

Room: 226 (Mezzanine) . . . . . Tue 1:30 pm to 3:20 pm

**Radiation Effects in PV Devices**

Session Chair: **David M. Wilt**, Air Force Research Lab. (USA)

- 1:30 pm: **Advanced multi-junction solar cells for space applications: Analysis and modeling of radiation effects and device performance** (*Invited Paper*), Raymond Hoheisel, U.S. Naval Research Lab. (USA) and The George Washington Univ. (USA); Matthew P. Lumb, U.S. Naval Research Lab. (USA) and The George Washington Univ. (USA); Scott R. Messenger, U.S. Naval Research Lab. (USA); Maria Gonzalez, Sotera Defense Solutions, Inc. (USA); Christopher G. Bailey, David A. Scheiman, U.S. Naval Research Lab. (USA); Sergey Maximenko, Sotera Defense Solutions, Inc. (USA); Phillip P. Jenkins, Robert J. Walters, U.S. Naval Research Lab. (USA) . . . . . [8620-20]
- 2:00 pm: **Modeling of defect tolerance of IMM multijunction photovoltaics for space application**, Akhil Mehrotra, Alexandre Freundlich, Univ. of Houston (USA) . . . . . [8620-21]
- 2:20 pm: **Investigation of carrier removal from quantum dot triple junction solar cells**, Christopher Kerestes, David V. Forbes, Mike Welsh, Eli Fernandez, Rochester Institute of Technology (USA); William T. Lotshaw, The Aerospace Corp. (USA); Yong Lin, Benjamin C. Richards, Paul Sharps, Seth M. Hubbard, EMCORE Corp. (USA) . . . . . [8620-22]
- 2:40 pm: **Simulation of radiation effects on solar cells: DLTS vs SRIM for trap data**, Marek Turowski, Timothy Bald, Ashok Raman, Alex Fedoseyev, CFD Research Corp. (USA); Jeffrey Warner, U.S. Naval Research Lab. (USA) . . . . . [8620-23]
- 3:00 pm: **Characterization of radiation tolerance and radiative lifetime effects in doping superlattice solar cells**, Michael A. Slocum, David V. Forbes, Seth M. Hubbard, Rochester Institute of Technology (USA) . . . . . [8620-24]
- Coffee Break . . . . . Tue 3:20 pm to 3:50 pm

**SESSION 9**

Room: 226 (Mezzanine) . . . . . Tue 3:50 pm to 5:20 pm

**Advances in Light Concentration**

Session Chair: **Marek Osinski**, The Univ. of New Mexico (USA)

- 3:50 pm: **Physics of Cu(In,Ga)Se<sub>2</sub> microcells under ultrahigh illumination intensities** (*Invited Paper*), Myriam Paire, Laurent Lombez, Frédérique Donsanti, Marie Jubault, Institut de Recherche et Développement sur l'Energie Photovoltaïque (France) and Ecole Nationale Supérieure de Chimie de Paris (France); Stéphane Collin, Jean-Luc Pelouard, Lab. de Photonique et de Nanostructures (France); Daniel Lincot, Jean-François Guillemoles, Institut de Recherche et Développement sur l'Energie Photovoltaïque (France) and Ecole Nationale Supérieure de Chimie de Paris (France) . . . . . [8620-25]
- 4:20 pm: **Optofluidic planar solar concentrator**, Volker Zagolla, Eric J. Tremblay, Christophe Moser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8620-26]
- 4:50 pm: **Self-tracking planar concentrator using a solar actuated phase-change mechanism**, Eric J. Tremblay, Damien Loterie, Christophe Moser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8620-27]
- 5:10 pm: **Adjustable planar lightguide solar concentrators with liquid-prism structure**, Jong-Woei Whang, Meng-Che Tsai, Tsung-Xian Lee, Yi-Yung Chen, National Taiwan Univ. of Science and Technology (Taiwan) . . . . . [8620-28]

**Wednesday 6 February**

**SESSION 10**

Room: 226 (Mezzanine) . . . . . Wed 8:30 am to 10:00 am

**Emerging PV and TCO Materials**

Session Chair: **Daniel Lincot**, Institut de Recherche et Développement sur l'Energie Photovoltaïque (France)

- 8:30 am: **Multiscale modeling and interface engineering accelerates efficiency enhancements in non-traditional photovoltaic materials** (*Invited Paper*), Riley Brandt, Rupak Chakraborty, Katy Hartman, Massachusetts Institute of Technology (USA); Jaeyeong Heo, Harvard Univ. (USA) and Chonnam National Univ. (Korea, Republic of); Yun Seog Lee, Jonathan Mailoa, Sin Cheng Siah, Massachusetts Institute of Technology (USA); Prasert Sinsermsuksakul, Roy Gordon, Harvard Univ. (USA); Tonio Buonassisi, Massachusetts Institute of Technology (USA) . . . . . [8620-40]
- 9:00 am: **Dielectric function of ZnO and ZnO:Al thin films obtained under different oxygen concentration during deposition**, Nazim T. Mamedov (Mammadov), Eldar Mammadov, Zakir Chahangirli, Oktay Alekperov, Institute of Physics (Azerbaijan); G. Renou, Negar Naghavi, Daniel Lincot, Jean-François Guillemoles, Institut de Recherche et Développement sur l'Energie Photovoltaïque (France) . . . . . [8620-41]
- 9:20 am: **Effects of off-stoichiometry and 2nd phases on Cu<sub>2</sub>ZnSn(S,Se)<sub>4</sub> (CZTS) device parameters**, E. A. Lund, Michael A. Scarpulla, The Univ. of Utah (USA) . . . . . [8620-42]
- 9:40 am: **GaN micro-domes for broadband omnidirectional antireflection for concentrated photovoltaics**, Peng Zhao, Ian V. Kidd, Roger H. French, Hongping Zhao, Case Western Reserve Univ. (USA) . . . . . [8620-43]
- Coffee Break . . . . . Wed 10:00 am to 10:30 am

**SESSION 11**

Room: 226 (Mezzanine) . . . . . Wed 10:30 am to 12:10 pm

**Thin Film Materials and Devices**

Session Chair: **Peichen Yu**, National Chiao Tung Univ. (Taiwan)

- 10:30 am: **Recent progress with chalcogenide thin film solar cells** (*Keynote Presentation*), Daniel Lincot, Institut de Recherche et Développement sur l'Energie Photovoltaïque (France) . . . . . [8620-44]
- 11:10 am: **Ultra-thin defect tolerant In-free III-V tandems: simulation and development**, Alexandre Freundlich, Akhil Mehrotra, Univ. of Houston (USA) . . . . . [8620-45]
- 11:30 am: **Lambertian back reflector in Cu(InGa)Se<sub>2</sub> solar cell: optical modeling and characterization**, Nir Dahan, Univ. Paris-Sud 11 (France); Zacharie Jehl, Jean-François Guillemoles, Daniel Lincot, Negar Naghavi, Institut de Recherche et Développement sur l'Energie Photovoltaïque (France); Jean-Jacques Greffet, Lab. Charles Fabry (France) . . . . . [8620-46]
- 11:50 am: **Effect of nonhomogeneous intrinsic layer in a thin-film amorphous-silicon solar cell**, Akhelsh Lakhtakia, Muhammad Faryad, Mahmoud R. Atalla, The Pennsylvania State Univ. (USA) . . . . . [8620-47]
- Lunch/Exhibition Break . . . . . Wed 12:10 pm to 1:40 pm



## SESSION 12

Room: 226 (Mezzanine) ..... Wed 1:40 pm to 3:30 pm

## Quantum Well Enhanced Devices

Session Chair: **Nicholas J. Ekins-Daukes**,  
Imperial College London (United Kingdom)

- 1:40 pm: **Efficiency gain of quantum-well solar cells by light-trapping structure and sunlight concentration** (*Invited Paper*), Masakazu Sugiyama, Kentaroh Watanabe, Yunpeng Wang, Hassaneet Sodabanlu, Hiromasa Fujii, Boram Kim, Kenjiro Miyano, Yoshiaki Nakano, The Univ. of Tokyo (Japan) ..... [8620-48]
- 2:10 pm: **Thick-well quantum-structured solar cells**, Roger E. Welsler, Magnolia Solar, Inc. (USA) ..... [8620-49]
- 2:30 pm: **Modeling of dilute nitride cascaded quantum well solar cells for high efficiency photovoltaics**, Gopi Krishna Vijaya, Univ. of Houston (USA); Andenet Alemu, First Solar, Inc. (USA); Alexandre Freundlich, Univ. of Houston (USA) ..... [8620-50]
- 2:50 pm: **Thermal up-conversion in nanostructured GaAs solar cells**, Daniel J. Farrell, Hassaneet Sodabanlu, Yunpeng Wang, The Univ. of Tokyo (Japan); Ryo Tamaki, The Univ. of Tokyo (Japan); Masakazu Sugiyama, Yoshitaka Okada, The Univ. of Tokyo (Japan); Markus Führer, Louise C. Hirst, Nicholas J. Ekins-Daukes, Imperial College London (United Kingdom) ..... [8620-51]
- 3:10 pm: **Carrier collection efficiency in multiple quantum well solar cells**, Hiromasa Fujii, Yunpeng Wang, Kentaroh Watanabe, Masakazu Sugiyama, Yoshiaki Nakano, The Univ. of Tokyo (Japan) ..... [8620-52]
- Coffee Break ..... Wed 3:30 pm to 4:00 pm

## SESSION 13

Room: 121 (Exhibit Level) ..... Wed 4:00 pm to 5:30 pm

## NOTE ROOM CHANGE

## Advanced Photovoltaic Device Simulation

Joint Session with Conferences 8619 and 8620

Session Chair: **Alexandre Freundlich**, Univ. of Houston (USA)

- 4:00 pm: **Drift-diffusion modeling of InP-based triple junction solar cells** (*Invited Paper*), Matthew P. Lumb, The George Washington Univ. (USA) and U.S. Naval Research Lab. (USA); Maria Gonzalez, Sotera Defense Solutions, Inc. (USA); Christopher G. Bailey, Igor Vurgaftman, Jerry R. Meyer, Michael K. Yakes, Joshua Abell, Joseph G. Tischler, U.S. Naval Research Lab. (USA); Raymond Hoheisel, The George Washington Univ. (USA); Paul N. Stavrinou, Markus Fuhrer, Nicholas J. Ekins-Daukes, Imperial College London (United Kingdom); Robert J. Walters, U.S. Naval Research Lab. (USA) ..... [8620-53]
- 4:30 pm: **3D full-wave optical and electronic modeling of organic bulk-heterojunction solar cells: a predictive approach**, Wee Shing Koh, Yuriy Akimov, A\*STAR Institute of High Performance Computing (Singapore); Wei Peng Goh, A\*STAR Institute of Materials Research and Engineering (Singapore) and Nanyang Technological Univ (Singapore) ..... [8619-43]
- 4:50 pm: **FEM-based optical modeling of silicon thin-film tandem solar cells with randomly textured interfaces in 3D**, Martin Hammerschmidt, Daniel Lockau, Konrad-Zuse-Zentrum für Informationstechnik Berlin (Germany); Sven Burger, Frank Schmidt, Konrad-Zuse-Zentrum für Informationstechnik Berlin (Germany) and JCMwave GmbH (Germany); Christoph Schwanke, Simon Kirner, Sonya Calnan, The Helmholtz Zentrum Berlin (Germany); Bernd Stannowski, Bernd Rech, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany) ..... [8620-54]
- 5:10 pm: **Study of silicon solar cell top and bottom grating location**, Michael J. Marshall, Xiaomin Jin, California Polytechnic State Univ., San Luis Obispo (USA) ..... [8619-44]

## POSTERS-WEDNESDAY

Room: 103 (Exhibit Level) ..... Wed 6:00 pm to 8:00 pm

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

- Tuning up the performance of intermediate band AlxGa<sub>1-x</sub>As solar cells by doping of AlyGa<sub>1-y</sub>Sb Type-II quantum dots and spacer layers between dots**, Ara M. Kechiantz, Andrei Afanasev, The George Washington Univ. (USA) ..... [8620-64]
- MBE grown dilute nitride quantum well solar cells for high-efficiency photovoltaics**, Gopi Krishna Vijaya, Univ. of Houston (USA); Akhil Mehrotra, Univ. of Houston (USA); Manori Gunasekera, Alexandre Freundlich, Univ. of Houston (USA) ..... [8620-65]
- An innovative static compound parabolic concentrator with prism structure used in natural lighting illumination system**, Jong-Woei Whang, Guan-Wei Chen, Yi-Yung Chen, National Taiwan Univ. of Science and Technology (Taiwan) [8620-67]
- The hybrid coupling element for light-correcting in Natural Light Illumination Systems (NLIS)**, Jong-Woei Whang, Tsung-Xian Lee, Ya-Huei Jhang, Yi-Yung Chen, National Taiwan Univ. of Science and Technology (Taiwan) ..... [8620-68]
- Modular design optical light pipe with high efficiency**, Jong-Woei Whang, Yi-Hsin Yeh, Yi-Yung Chen, National Taiwan Univ. of Science and Technology (Taiwan) ..... [8620-69]
- Improve GaAs solar cells efficiency by using high-transmittance textured PDMS film**, Hau-Vei Han, Hsin-Chu Chen, Chien-Chung Lin, Yu-Lin Tsai, Hao-Chung Kuo, Peichen Yu, National Chiao Tung Univ. (Taiwan) ..... [8620-70]
- Investigation in feasibility of molybdenum as a back contact layer for silicon-based quantum dot solar cells**, Ziyun Lin, Ivan Perez-Wurfl, Lingfeng Wu, Xuguang Jia, Tian Zhang, Haixiang Zhang, Binesh Puthen-Veettil, Dawei Di, Gavin J. Conibeer, The Univ. of New South Wales (Australia) ..... [8620-71]
- Miniaturized concentrator arrays as compact angle transformers for light collection and distribution**, Toralf Scharf, Roland Bitterli, Franz-Josef HAUG, Hans Peter Herzig, Ecole Polytechnique Fédérale de Lausanne (Switzerland) ..... [8620-72]
- Improvement in etching rate for epilayer lift-off with surfactant**, Fan Lei Wu, Ray Hua Horng, Jian Heng Lu, Kao Yu Cheng, Chun Li Chen, National Chung Hsing Univ. (Taiwan) ..... [8620-73]
- ZnO nanowire arrays for photovoltaic and light-emitting devices**, Bitu Janfeshan, Siva Sivoththaman, Univ. of Waterloo (Canada) ..... [8620-74]
- Effect of grain boundary on nanoscale electronic properties of hydrogenated nanocrystalline silicon studied by Kelvin probe force microscopy**, Rubana B. Priti, Sandeep Mahat, Venkat Bommisetty, South Dakota State Univ. (USA) ..... [8620-75]
- Numerical investigation on the structural characteristics of GaN/InGaN solar cells**, Yen-Kuang Kuo, Jih-Yuan Chang, Shih-Hsun Yen, National Changhua Univ. of Education (Taiwan) ..... [8620-76]
- Thin film solar cells based on cavity enhanced grating structure**, Guangyao Su, Fangwang Gou, Chuanhong Liu, Siyao Guo, Zhaoyu Zhang, Peking Univ. Shenzhen Graduate School (China) ..... [8620-77]
- Use free-form reflector method in lighting coupler**, Jong-Woei Whang, Shu Hao Chang, Yi-Yung Chen, National Taiwan Univ. of Science and Technology (Taiwan) ..... [8620-78]

**Thursday 7 February**

**SESSION 14**

**Room: 226 (Mezzanine) . . . . . Thu 8:30 am to 10:10 am**

**III-V Tandem Materials and Devices**

Session Chair: **Masakazu Sugiyama**, The Univ. of Tokyo (Japan)

8:30 am: **High current generation in dilute nitride solar cells grown by molecular beam epitaxy**, Arto Aho, Antti Tukiainen, Ville Polojärvi, Joel Salmi, Mircea Guina, Tampere Univ. of Technology (Finland) . . . . . [8620-55]

8:50 am: **Dilute phosphide nitride semiconductors as photocathodes for electrochemical solar energy conversion**, Vijay Parameshwaran, Xiaoqing Xu, Yangsen Kang, James Harris, H. S. Philip Wong, Bruce Clemens, Stanford Univ. (USA) . . . . . [8620-56]

9:10 am: **Ohmic contacts to n-type GaSb grown on GaAs by the interfacial misfit dislocation technique**, Nassim Rahimi, Orlando S. Romero, The Univ. of New Mexico (USA); Daniel M. Kim, Virginia Polytechnic Institute and State Univ. (USA); Nathan B. J. Traynor, SUNY Geneseo (USA); Andrew A. Aragon, Thomas J. Rotter, Ganesh Balakrishnan, Sayan D. Mukherjee, Luke F. Lester, The Univ. of New Mexico (USA) . . . . . [8620-57]

9:30 am: **Carrier dynamics in bulk 1eV InGaAsNSb materials and epitaxial lift off InGaP-GaAs layers grown by MOVPE for multi-junction solar cells**, Yongkun Sin, Stephen LaLumondiere, William T. Lotshaw, Steven C. Moss, The Aerospace Corp. (USA); Tae Wan Kim, Kamran Forghani, Luke J. Mawst, Thomas F. Kuech, Univ. of Wisconsin-Madison (USA); Rao Tataavarti, Andree Wibowo, Noren Pan, MicroLink Devices, Inc. (USA) . . . . . [8620-58]

9:50 am: **Improved efficiency of InGaN/GaN multiple quantum well solar cells using CdS quantum dots and distributed Bragg reflectors**, Yu-Lin Tsai, Hsin-Chu Chen, Chien-Chung Lin, Kuo-Ju Chen, Hau-Vei Han, National Chiao Tung Univ. (Taiwan); Po-cheng Chen, Jin-Kong Sheu, National Cheng Kung Univ. (Taiwan); Peichen Yu, Hao-Chung Kuo, National Chiao Tung Univ. (Taiwan) . . . . . [8620-59]

Coffee Break . . . . . Thu 10:10 am to 10:40 am

**SESSION 15**

**Room: 226 (Mezzanine) . . . . . Thu 10:40 am to 11:40 am**

**Hybrid PV Devices**

Session Chair: **Seth M. Hubbard**, Rochester Institute of Technology (USA)

10:40 am: **Optical and electrical characteristics of silicon nanocone: Polymer hybrid heterojunction solar cells**, Chun-Yao Lee, National Taiwan Univ. (Taiwan); Hui-Te Pan, Yu-Chih Cheng, National Chiao Tung Univ. (Taiwan); Yuh-Renn Wu, National Taiwan Univ. (Taiwan); Peichen Yu, National Chiao Tung Univ. (Taiwan) . . . . . [8620-60]

11:00 am: **Carbon nanotube-silicon nanowire inversion layer solar cells**, Maureen K. Petterson, Andrew Rinzler, Univ. of Florida (USA) . . . . . [8620-61]

11:20 am: **Enhancement of power conversion efficiency of DSSCs by hybridization of TiO<sub>2</sub> nano-helices array and nanoparticles**, Seung Hee Lee, Jong Kyu Kim, Pohang Univ. of Science and Technology (Korea, Republic of) . . . . . [8620-63]

**CLOSING REMARKS**

**Room: 226 (Mezzanine) . . . . . 11:40 am to 11:50 am**

**Alexandre Freundlich**, Univ. of Houston (USA);  
**Jean-Francois Guillemoles**, Institut de Recherche et Développement sur l'Energie Photovoltaïque (France)



Download the SPIE Conference App



# Optical Components and Materials X

Conference Chairs: **Michel J. F. Digonnet**, Stanford Univ. (USA); **Shibin Jiang**, AdValue Photonics, Inc. (USA); **J. Christopher Dries**, United Silicon Carbide, Inc. (USA)

Program Committee: **Jean-Luc Adam**, Univ. de Rennes 1 (France); **Rolindes Balda**, Univ. del País Vasco (Spain); **Robert P. Dahlgren**, SETI Institute (USA); **Michael D. Gerhold**, U.S. Army Research Office (USA); **Leonid B. Glebov**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); **Min Gu**, Swinburne Univ. of Technology (Australia); **Seppo K. Honkanen**, Univ. of Eastern Finland (Finland); **Lili Hu**, Shanghai Institute of Optics and Fine Mechanics (China); **Jacques Lucas**, Univ. de Rennes 1 (France); **Yasutake Ohishi**, Toyota Technological Institute (Japan); **Aydogan Ozcan**, Univ. of California, Los Angeles (USA); **Giancarlo C. Righini**, Istituto di Fisica Applicata Nello Carrara (Italy); **Feng Song**, Nankai Univ. (China); **Setsumi Tanabe**, Kyoto Univ. (Japan); **John M. Zavada**, National Science Foundation (USA)

## Tuesday 5 February

**OPTO PLENARY SESSION**  
**Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am**  
*Session Chairs* : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)

8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)

8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]

8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]

9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]

See page 26 for details.

Coffee Break . . . . . Tue 10:10 am to 10:30 am

### SESSION 1

**Room: 222 (Mezzanine) . . . . . Tue 10:30 am to 12:10 pm**

#### Nano Photonics

Session Chair: **John M. Zavada**, National Science Foundation (USA)

10:30 am: **Graphene-enabled silver nanoantenna sensors** (*Invited Paper*),  
 Ertugrul Cubukcu, Jason C. Reed, Hai Zhu, Alexander Y. Zhu, Univ. of Pennsylvania (USA) . . . . . [8621-1]

11:00 am: **Carbon nanotube photonics on silicon** (*Invited Paper*), Laurent Vivien, Nicolas Izard, Adrien Noury, Institut d'Électronique Fondamentale (France); Etienne Gaufres, Univ. de Montréal (Canada); Xavier Le Roux, Institut d'Électronique Fondamentale (France); Richard Martel, Univ. de Montréal (Canada); Masa Tange, Toshiya Okazaki, National Institute of Advanced Industrial Science and Technology (Japan) . . . . . [8621-2]

11:30 am: **PbSe quantum dots grown in a high-index low-melting-temperature glass for infrared laser applications**, Pradeesh Kannan, Amol Choudhary, Ben Mills, Vincent Leonard, Dan W. Hewak, Xian Feng, David P. Shepherd, Univ. of Southampton (United Kingdom) . . . . . [8621-3]

11:50 am: **Bismuth nano-particle dispersed organic composite for optical components**, Naoyuki Kitamura, National Institute of Advanced Industrial Science and Technology (Japan); Kohki Takahashi, Tohoku Univ. (Japan); Kohei Fukumi, National Institute of Advanced Industrial Science and Technology (Japan); Iwao Mogi, Satoshi Awaji, Kazuo Watanabe, Tohoku Univ. (Japan) . . . . . [8621-4]

Lunch/Exhibition Break . . . . . Tue 12:10 pm to 1:40 pm

### SESSION 2

**Room: 222 (Mezzanine) . . . . . Tue 1:40 pm to 3:20 pm**

#### New Materials

Session Chair: **Michel J. F. Digonnet**, Stanford Univ. (USA)

1:40 pm: **Cherenkov SiPM development**, Elena Popova, National Research Nuclear Univ. MEPhI (Russian Federation); Razmik Mirzoyan, Max-Planck-Institut für Physik (Germany); Philippe Bérard, Martin Couture, Henri Dautet, Excelitas Canada, Inc. (Canada) . . . . . [8621-5]

2:00 pm: **Polish-like facet preparation via dicing for silica integrated optics**, Lewis G. Carpenter, Christopher Holmes, James C. Gates, Peter G. R. Smith, Univ. of Southampton (United Kingdom) . . . . . [8621-6]

2:20 pm: **High-performance parallel nonlinear photonic processor on photorefractive crystal substrate**, Ramin Pashaie, Mehdi Azimpour, Univ. of Wisconsin-Milwaukee (USA) . . . . . [8621-7]

2:40 pm: **High-sensitivity photoacoustic absorption spectroscopy of nonlinear optical materials**, Frank Kuehnemann, Niklas Waasem, Fraunhofer-Institut für Physikalische Messtechnik (Germany); Karsten Buse, Fraunhofer-Institut für Physikalische Messtechnik (Germany) and Univ. Freiburg (Germany) . . . . . [8621-8]

3:00 pm: **Er,Ce:Y<sub>3</sub>Al<sub>5</sub>O<sub>12</sub> crystal properties under UV, VIS, and IR radiation exposure**, Pavel H. Muzhikyan, Vahan G. Babajanyan, Radik B. Kostanyan, Ashot G. Petrosyan, Institute for Physical Research (Armenia) . . . . . [8621-57]

Coffee Break . . . . . Tue 3:20 pm to 3:50 pm

### SESSION 3

**Room: 222 (Mezzanine) . . . . . Tue 3:50 pm to 5:50 pm**

#### Optical Switch, Modulator, and Detector

Session Chair: **Giancarlo C. Righini**, Istituto di Fisica Applicata Nello Carrara (Italy)

3:50 pm: **Ultra-fast PDLC optical gate**, Pavlo A. Molchanov, Ampac Inc. (USA); Anatoliy Glushchenko, Univ. of Colorado at Colorado Springs (USA); Rudolf Lucente, Ampac Inc. (USA); Richard Billmers, RL Associates Inc. (USA); Olha Asmolova, Thomas Curran, Ampac Inc. (USA) . . . . . [8621-10]

4:10 pm: **An optical pulse width modulation generator based on the injection-locking property of single mode FP-LD**, Hoai Tran Quoc, Bikash Nakarmi, Yong Hyub Won, KAIST (Korea, Republic of) . . . . . [8621-11]

4:30 pm: **Multi-wavelength access gate for WDM-formatted words in optical RAM row architectures**, Dimitrios Fitsios, Theonitsa Alexoudi, Christos Vagionas, Ctr. for Research & Technology - Hellas (Greece) and Aristotle Univ. of Thessaloniki (Greece); Amalia Miliou, Aristotle Univ. of Thessaloniki (Greece); George T. Kanellios, Ctr. for Research & Technology - Hellas (Greece); Nikos Pleros, Ctr. for Research & Technology - Hellas (Greece) and Aristotle Univ. of Thessaloniki (Greece) . . . . . [8621-12]

4:50 pm: **Crystal ion sliced lithium niobate for efficient 100 GHz electro-optic modulation**, Vincent E. Stenger, James E. Toney, Andrea Pollick, SRICO Inc. (USA); James Busch, SRICO, Inc. (USA); Jon Scholl, Peter Pontius, Sri Sriram, SRICO Inc. (USA) . . . . . [8621-13]

5:10 pm: **Development of HgCdTe single-element avalanche photodiode based detectors for low-flux short-wave infrared applications**, Kevin Foubert, Johan Rothman, Gilles Lasfargues, Lydie Mathieu, Gautier Vojetta, Quentin Benoît à la Guillaume, Vincent Calvo, CEA-LETI (France); Fabien Gibert, Ecole Polytechnique Fédérale de Lausanne (France); Jérémy Picot-Clemente, Univ. de Bourgogne (France) . . . . . [8621-14]

5:30 pm: **Wide-band performance of a sinusoidal phase mask coronagraph**, Qing Cao, Ourui Ma, Fanzhen Hou, Shanghai Univ. (China) . . . . . [8621-15]

OPTO

**Wednesday 6 February**

**SESSION 4**

**Room: 222 (Mezzanine) . . . . . Wed 8:00 am to 10:10 am**

**Fiber Sensors and Gratings**

Session Chair: **Leonid Glebov**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA)

8:00 am: **New optical fibers for distributed Brillouin sensors** (*Invited Paper*), Ming-Jun Li, Shenping Li, Kevin W. Bennett, Richard S. Vodhanel, Dragan Pikula, Dawn M. Sutherland, Bruce C. Chow, Corning Incorporated (USA) . . . . . [8621-16]

8:30 am: **High-sensitivity current sensor based on an embedded microfiber loop resonator**, Min-Seok Yoon, Oh-Jang Kwon, Hyun-Joo Kim, Young-Guen Han, Hanyang Univ. (Korea, Republic of) . . . . . [8621-17]

8:50 am: **Versatile chemical molecule sensing using multi-wavelength fiber laser based on inter-core interference in twin-core photonic crystal fiber**, Bong Kyun Kim, Youngjoo Chung, Jihee Han, Khurram Naeem, Gwangju Institute of Science and Technology (Korea, Republic of) . . . . . [8621-18]

9:10 am: **Temperature-insensitive strain sensor based on Mach-Zehnder interferometer with a microfiber**, Sung-Jae Kim, Min-Seok Yoon, Hyun-Joo Kim, Young-Geun Han, Hanyang Univ. (Korea, Republic of) . . . . . [8621-19]

9:30 am: **Characteristics of arc-induced long-period fiber gratings inscribed in asymmetric adiabatic tapers**, Alejandro Martinez-Rios, David Monzon-Hernandez, Guillermo Salceda-Delgado, Centro de Investigaciones en Óptica, A.C. (Mexico) . . . . . [8621-20]

9:50 am: **Fabrication and applications of visible light long-period fiber grating**, Xinwei Lan, Jie Huang, Zhan Gao, Lei Yuan, Hanzheng Wang, Missouri Univ. of Science and Technology (USA); Qun Han, Tianjin Univ. (China); Hai Xiao, Missouri Univ. of Science and Technology (USA) . . . . . [8621-21]

Coffee Break . . . . . Wed 10:10 am to 10:40 am

**SESSION 5**

**Room: 222 (Mezzanine) . . . . . Wed 10:40 am to 12:30 pm**

**Rare-Earth Doped Materials**

Session Chair: **Rolindes Balda**, Univ. del País Vasco (Spain)

10:40 am: **Tailored spectroscopic and optical properties in rare earth-activated glass-ceramics planar waveguides** (*Invited Paper*), Davor Ristic, Istituto di Fotonica e Nanotecnologie (Italy); Thi Thanh Van Tran, Univ. of Sciences (Viet Nam); Belto Dieudonné, Univ. du Maine (France); Armellini Cristina, Istituto di Fotonica e Nanotecnologie (Italy); Simone Berneschi, Museo Storica della Fisica e Ctr Studi e Ricerche Enrico Fermi (Italy) and tuto di Fisica Applicata Nello Carrara (Italy); Andrea Chiappini, Alessandro Chiasera, Stefano Varas, Alessandro Carpentiero, Maurizio Mazzola, Istituto di Fotonica e Nanotecnologie (Italy); Gualtiero Nunzi Conti, Stefano Pelli, Istituto di Fisica Applicata Nello Carrara (Italy); Giorgio Speranza, Fondazione Bruno Kessler (Italy) and Istituto di Fotonica e Nanotecnologie (Italy); Patrice Feron, Ecole Nationale Supérieure des Sciences Appliquées et de Technologie (France); Claire Duverger Arfuso, Univ. du Maine (France); Gilles Cibiel, Ctr. National d'Études Spatiales (France); Sylvia Turrell, Univ. des Sciences et Technologies de Lille (France); Brigitte Boulard, Univ. du Maine (France); Giancarlo C. Righini, Museo Storica della Fisica e Ctr Studi e Ricerche Enrico Fermi (Italy) and tuto di Fisica Applicata Nello Carrara (Italy); Maurizio Ferrari, Istituto di Fotonica e Nanotecnologie (Italy) . . . . . [8621-22]

11:10 am: **Improving Ce<sup>3+</sup> doped scintillating materials for medical imaging applications**, Bruno Viana, Samuel Blahuta, Ecole Nationale Supérieure de Chimie de Paris (France); Vladimir Ouspenski, Compagnie de Saint-Gobain (France); Aurélie Bessière, Ecole Nationale Supérieure de Chimie de Paris (France) . . . . . [8621-23]

11:30 am: **White light emission characteristics of europium doped fluoride materials**, Rami R. Bommareddi, Tomeka S. Colón, Alabama A&M Univ. (USA) . . . . . [8621-24]

11:50 am: **Emission efficiency of erbium ions in III-N epilayers**, John M. Zavada, National Science Foundation (USA); Chris Ugolini, I. W. Feng, Ashok Sedhain, Jingyu Lin, Hongxing Jiang, Texas Tech Univ. (USA) . . . . . [8621-25]

12:10 pm: **Study on SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub>-La<sub>2</sub>O<sub>3</sub>-glasses for nonlinear and laser applications**, Kay Schuster, Doris Litzkendorf, Stephan Grimm, Jens Kobelke, Anka Schwuchow, Anne Ludwig, Martin Leich, Sylvia Jetschke, Jan Dellith, Institut für Photonische Technologien e.V. (Germany); Jean-Louis Auguste, Georges Humbert, Univ. de Limoges (France) . . . . . [8621-26]

Lunch/Exhibition Break . . . . . Wed 12:30 pm to 1:30 pm

**SESSION 6**

**Room: 222 (Mezzanine) . . . . . Wed 1:30 pm to 3:20 pm**

**Active Devices and Beam Control**

Session Chair: **Yasutake Ohishi**, Toyota Technological Institute (Japan)

1:30 pm: **Microresonator-based mid-IR sources** (*Invited Paper*), Ravi K. Jain, Mani Hossein-Zadeh, The Univ. of New Mexico (USA) . . . . . [8621-27]

2:00 pm: **Microcavity-based cascaded Raman microlaser in air and in buffer**, Maria V. Chistiakova, Andrea M. Armani, The Univ. of Southern California (USA) . . . . . [8621-28]

2:20 pm: **Power consumption of semiconductor optical amplifier, Joel Jacquet, Xunqi Wu, Juliette Pochet, Laurie Pontreau, David Allieux, Mickael Faugeron, Y. Houzelle, Jean-Louis Gutzwiller, Supélec (France) . . . . . [8621-29]**

2:40 pm: **On-axis linear-response laser optical beam steerer**, Yair J. Mega, Zhenhua Lai, Charles A. DiMarzio, Northeastern Univ. (USA) . . . . . [8621-30]

3:00 pm: **Polygon mirror scanners in biomedical imaging: a review**, Virgil-Florin Duma, Aurel Vlaicu Univ. of Arad (Romania); Adrian G. Podoleanu, Univ. of Kent (United Kingdom) . . . . . [8621-31]

Coffee Break . . . . . Wed 3:20 pm to 3:50 pm

**SESSION 7**

**Room: 222 (Mezzanine) . . . . . Wed 3:50 pm to 5:20 pm**

**Novel Fibers**

Session Chair: **Shibin Jiang**, AdValue Photonics, Inc. (USA)

3:50 pm: **Photodarkening: investigation, mitigation and figure of merit** (*Invited Paper*), Stefano Taccheo, Hrvoje Gebavi, Swansea Univ. (United Kingdom); Benoit Cadier, Thierry Robin, iXFiber SAS (France); Achille Monteville, Olivier Le Goffic, David Landais, David Méchin, Plate-forme d'Étude et de Recherche sur les Fibres Optiques Spéciales (France); Daniel Milanese, Politecnico di Torino (Italy); Lasse Leick, NKT Photonics A/S (Denmark); Tim Durrant, Gooch & Housego Plc (United Kingdom) . . . . . [8621-32]

4:20 pm: **Anomalous dispersive photonic bandgap fiber for ultra short pulse compression**, Xuesong Yang, Maggie Y. Chen, Texas State Univ. San Marcos (USA) . . . . . [8621-35]

4:40 pm: **Environmental testing and laser transmission results for ruggedized high-power IR fiber cables**, Lynda E. Busse, U.S. Naval Research Lab. (USA); Frederic H. Kung, Univ. Research Foundation (USA); Catalin Florea, Sotera Defense Solutions, Inc. (USA); Brandon Shaw, U.S. Naval Research Lab. (USA); Ishwar D. Aggarwal, Sotera Defense Solutions, Inc. (USA); Jas S. Sanghera, U.S. Naval Research Lab. (USA) . . . . . [8621-36]

5:00 pm: **Elastic stability of a dual-coated fiber subjected to thermal and/or mechanical compression**, Ephraim Suhir, Univ. of California, Santa Cruz (USA) . . . . . [8621-37]



## POSTERS-WEDNESDAY

Room: 103 (Exhibit Level) . . . . . Wed 6:00 pm to 8:00 pm

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

**Supercontinuum generation from a multi-ring holes tellurite microstructure fiber pumped with a 2-micron high-power mode-locked fiber laser.** Dinghuan Deng, Weiqing Gao, Meisong Liao, Takenobu Suzuki, Yasutake Ohishi, Toyota Technological Institute (Japan) . . . . . [8621-33]

**Analysis of soliton self-frequency shift in ZBLAN fiber as a broadband supercontinuum medium.** Xin Yan, Meisong Liao, Takenobu Suzuki, Yasutake Ohishi, Toyota Technological Institute (Japan) . . . . . [8621-34]

**Square-pulse operation in a ring cavity with a single-mode tellurite fiber.** Weiqing Gao, Meisong Liao, Hiroyasu Kawashima, Takenobu Suzuki, Yasutake Ohishi, Toyota Technological Institute (Japan) . . . . . [8621-38]

**All-solid tellurite-phosphate photonic bandgap fiber.** Tonglei Cheng, Toyota Technological Institute (Japan); Meisong Liao, Toyota Technological Institute (Japan); Hoang Tuan Tong, Weiqing Gao, Zhongchao Duan, Takenobu Suzuki, Yasutake Ohishi, Toyota Technological Institute (Japan) . . . . . [8621-39]

**Photoluminescence and anti-deliquescence of cesium iodide and its sodium-doped films deposited by thermal evaporation at high deposition rates.** Jin-Cherng Hsu, Yueh-Sheng Chiang, Yu-Sheng Ma, Fu Jen Catholic Univ. (Taiwan) and Graduate Institute of Applied Science and Engineering (Taiwan) . . . . . [8621-40]

**Optical properties of cerium-codoped high-power laser fibers.** Sonja Unger, Anka Schwuchow, Sylvia Jetschke, Stephan Grimm, Andy Scheffel, Johannes Kirchhof, Institut für Photonische Technologien e.V. (Germany) . . . . . [8621-41]

**Research on SNR parameter test system of MCP in vacuum system.** Yafeng Qiu, Nanjing Univ. of Science and Technology (China) . . . . . [8621-42]

**Fabrication of the reliable (14-18)x1 fiber laser power combiner by the novel double bundling method.** Bok Hyeon Kim, Gwangju Institute of Science and Technology (Korea, Republic of); Seon-Ju Kim, Youngkab Yoon, Lighting Solution Technology Co. Ltd. (Korea, Republic of); Swook Hann, Korea Photonics Technology Institute (Korea, Republic of) . . . . . [8621-43]

**Classical and eclipse optical choppers.** Virgil-Florin Duma, Aurel Vlaicu Univ. of Arad (Romania) . . . . . [8621-44]

**Upconversion and 1.5  $\mu\text{m}$  - 1.6  $\mu\text{m}$  infrared emission studies of  $\text{Er}^{3+}$  doped in the low phonon-energy hosts  $\text{KPb}_2\text{Cl}_5$  and  $\text{KPb}_2\text{Br}_5$  via 1.5  $\mu\text{m}$  laser excitation.** Althea G. Bluiett, T. Searles, T. Jackson, Elizabeth City State Univ. (USA); Ei Ei Brown, U. Hömmerich, Hampton Univ. (USA); S. Trivedi, Brimrose Corp. of America (USA) . . . . . [8621-45]

**Fluorescence quantum efficiency dependent on the concentration of  $\text{Nd}^{3+}$  doped phosphate glass.** Acácio A. Andrade, Viviane Pilla, Univ Federal de Uberlândia (Brazil); Sidney Lourenço, Univ. Tecnológica Federal do Paraná (Brazil); Anielle Silva, Noelio Dantas, Univ Federal de Uberlândia (Brazil) . . . . . [8621-46]

**Elastomer based tunable virtual imaged phased array for reconfigurable optical interconnects.** Philipp Metz, Christopher Behnke, Martina Gerken, Christian-Albrechts-Univ. zu Kiel (Germany); Jost Adam, Univ. of California, Los Angeles (USA) . . . . . [8621-47]

**Characterization of an SiPM dedicated at analytical, life science and medical imaging.** Philippe Bérard, Martin Couture, Frédéric Laforce, Bernicy Fong, Henri Dautet, Excelitas Canada, Inc. (Canada) . . . . . [8621-48]

**A novel tellurite-phosphate glass for hybrid microstructured optical fibers.** Zhongchao Duan, Hoangtuan Tong, Meisong Liao, Toyota Technological Institute (Japan); Motillon Erwan, Univ. of Rennes (France); Koji Asano, Takenobu Suzuki, Yasutake Ohishi, Toyota Technological Institute (Japan) . . . . . [8621-49]

**Mechanism of photonic crystal and wave guide effects in  $\text{ZnO}$  nanorods.** Tae Un Kim, Doo Gun Kim, Seon Hoon Kim, Hyun Chul Ki, Korea Photonics Technology Institute (Korea, Republic of); Jin Hyeok Kim, Chonnam National Univ. (Korea, Republic of) . . . . . [8621-50]

**Optical characterization of Er-doped glasses for solar-pumped laser applications.** Takenobu Suzuki, Yasuyuki Iwata, Kohei Nogata, Toyota Technological Institute (Japan); Shintaro Mizuno, Hiroshi Ito, Kazuo Hasegawa, Toyota Central R&D Labs., Inc. (Japan); Yasutake Ohishi, Toyota Technological Institute (Japan) . . . . . [8621-51]

**UV-enhanced silicon avalanche photodiodes.** Richard A. Myers, Richard Farrell, Mickel McClish, Radiation Monitoring Devices, Inc. (USA) . . . . . [8621-52]

**Fluidic lens of floating oil using jar-shape chamber based on electrowetting.** Hyunhwan Choi, KAIST (Korea, Republic of) . . . . . [8621-53]

**Optical gain medium for plasmonic devices.** Victor A. Rivera, Univ. de São Paulo (Brazil); Yannick Ledemi, Univ. Laval (Canada); Sergio P. Osorio, Fabio A. Ferri, Univ. de São Paulo (Brazil); Younes Messaddeq, Univ. Laval (Canada); Luis A. Nunes, Euclides Marega, Univ. de São Paulo (Brazil) . . . . . [8621-54]

**High near-infrared emission intensity of  $\text{Er}^{3+}$ -doped zirconium oxide films on a Si(100) substrate.** Victor A. Rivera, Fabio A. Ferri, Univ. de São Paulo (Brazil); Jose C. Huaman, Marcelo Kawamura, UFSCAR (Brazil); Marcelo A. Pereira, Luis A. Nunes, Maximo S. Li, Euclides Marega, Univ. de São Paulo (Brazil) . . . . . [8621-55]

**Low cost CMOS silicon photomultipliers with ultrafast timing.** Carl Jackson, Kevin O'Neill, Nikolai Pavlov, Stephen Bellis, SensL (Ireland) . . . . . [8621-56]

**Improving single-beam thermal lens spectroscopy by wavefront spatial filtering.** Carlos Estupiñán-López, Christian Dominguez, UFPE (Brazil); Renato E. de Araujo, Univ. Federal de Pernambuco (Brazil) . . . . . [8621-58]

**A method of distinguishing different types of petrol based on fiber-optic surface plasmon resonance sensor.** Dachao Li, Zhu Rui, Peng Wu, Tianjin Univ. (China) . . . . . [8621-59]

**Filamentation and supercontinuum generation in tellurite glass.** Meisong Liao, Weiqing Gao, Tonglei Cheng, Zhongchao Duan, Xiaojie Xue, Hiroyasu Kawashima, Takenobu Suzuki, Yasutake Ohishi, Toyota Technological Institute (Japan) . . . . . [8621-60]

**Long-period grating in tapered fiber and its equivalent chirped grating for dispersion management.** Krishna C. Patra, Sambalpur Univ. (India); Enakshi K. Sharma, Univ. of Delhi South Campus (India) . . . . . [8621-61]

**Coupled mode analysis for graded index multi-waveguide systems.** Krishna C. Patra, Sambalpur Univ. (India); Sangeeta Srivastava, Univ. of Delhi (India); Enaksh K. Sharma, Univ. of Delhi South Campus (India) . . . . . [8621-62]

**Fiber optic sensor based on radio frequency Bragg grating.** Jie Huang, Xinwei Lan, Lei Yuan, Hanzheng Wang, Lei Hua, Zhan Gao, Hai Xiao, Missouri Univ. of Science and Technology (USA) . . . . . [8621-63]

**$\text{Yb}:\text{CaGdAlO}_4:1 \mu\text{m}$  laser with different architectures.** Bruno Viana, Ecole Nationale Supérieure de Chimie de Paris (France); Sandrine Ricaud, Lab. Charles Fabry (France); Anael Jaffres, Akiko Suganuma, Pascal Loiseau, Ecole Nationale Supérieure de Chimie de Paris (France); B. Weichelt, M. Abdou-Ahmed, T. Graf, Univ. Stuttgart (Germany); Daniel Rytz, FEE GmbH (Germany); M. Delaigue, Eric Mottay, Amplitude Systèmes (France); Frédéric Druon, Francois Belembois, Patrick Georges, Lab. Charles Fabry (France); Julien DidierJean, FiberCryst (France) . . . . . [8621-64]

**Optical properties of porous nano-composites of zinc (hydr)oxide with graphite oxide.** S. M. Z. Islam, Taposch Gayen, Nikola Seredych, Teresa Bandosz, Robert Alfano, The City College of New York (USA) . . . . . [8621-65]

## Organic Photonic Materials and Devices XV

*Conference Chairs:* **Christopher E. Tabor**, Air Force Research Lab. (USA); **Francois Kajzar**, Polytechnical Univ. of Bucharest (Romania); **Toshikuni Kaino**, Tohoku Univ. (Japan); **Yasuhiro Koike**, Keio Univ. (Japan)

*Program Committee:* **Chantal Andraud**, Ecole Normale Supérieure de Lyon (France); **Werner J. Blau**, Trinity College Dublin (Ireland); **Andreas Bräuer**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); **Fabrice Charra**, Commissariat à l'Énergie Atomique (France); **Raluca Dinu**, GigOptix, Inc. (USA); **Manfred Eich**, Technische Univ. Hamburg-Harburg (Germany); **Alain F. Fort**, Institut de Physique et Chimie des Matériaux de Strasbourg (France); **James G. Grote**, Air Force Research Lab. (USA); **F. Kenneth Hopkins**, Air Force Research Lab. (USA); **Alex K. Jen**, Univ. of Washington (USA); **Michael H. C. Jin**, The Univ. of Texas at Arlington (USA); **Eunyoung Kim**, Yonsei Univ. (Korea, Republic of); **Jang-Joo Kim**, Seoul National Univ. (Korea, Republic of); **Nakjoong Kim**, Hanyang Univ. (Korea, Republic of); **Isabelle N. Ledoux-Rak**, École Normale Supérieure de Cachan (France); **Charles Y. C. Lee**, Air Force Office of Scientific Research (USA); **Kwang-Sup Lee**, Hannam Univ. (Korea, Republic of); **Misoon Y. Mah**, Air Force Office of Scientific Research (USA); **Seth R. Marder**, Georgia Institute of Technology (USA); **Antoni C. Mitus**, Wrocław Univ. of Technology (USA); **Jaroslav Mysliwiec**, Wrocław Univ. of Technology (Poland); **Robert L. Nelson**, Air Force Research Lab. (USA); **Robert A. Norwood**, College of Optical Sciences, The Univ. of Arizona (USA); **Jean-Michel Nunzi**, Queen's Univ. (Canada); **Shuji Okada**, Yamagata Univ. (Japan); **Akira Otomo**, National Institute of Information and Communications Technology (Japan); **Ileana Rau**, Polytechnical Univ. of Bucharest (Romania); **Niyazi Serdar Sariciftci**, Johannes Kepler Univ. Linz (Austria); **Devanand K. Shenoy**, Defense Advanced Research Projects Agency (USA); **Kenneth D. Singer**, Case Western Reserve Univ. (USA); **Attila A. Szep**, Air Force Research Lab. (USA); **Rebecca E. Taylor**, Lockheed Martin Space Systems Co. (USA); **Jeong-Weon Wu**, Ewha Womans Univ. (Korea, Republic of); **Shiyoshi Yokoyama**, Kyushu Univ. (Japan); **Roberto Zamboni**, Istituto per la Sintesi Organica e la Fotoreattività (Italy)

### Monday 4 February

#### SESSION 1

Room: 234 (Mezzanine) . . . . . Mon 8:00 am to 10:20 am

##### Fiber and Waveguides

Session Chair: **Christopher E. Tabor**, Air Force Research Lab. (USA)

8:00 am: **Liquid fiber photonics for optical networking and testing** (*Keynote Presentation*), Robert A. Norwood, College of Optical Sciences, The Univ. of Arizona (USA) . . . . . [8622-1]

8:40 am: **Next-generation optical interconnect device technology using photonic polymers** (*Invited Paper*), Okihiko Sugihara, Toshikuni Kaino, Tohoku Univ. (Japan) . . . . . [8622-2]

9:10 am: **Use of polymer and organic/inorganic hybrid materials for optical printed circuit board (O-PCB) and VLSI photonics application** (*Invited Paper*), El-Hang Lee, Yong Ku Kwon, Seung-Gol Lee, Beom-Hoan O, Se-Geun Park, Kyong-Hon Kim, Inha Univ. (Korea, Republic of) . . . . . [8622-3]

9:40 am: **Flexible, stable, and easily processable optical silicones for low loss polymer waveguides**, Brandon W. Swatowski, Chad M. Amb, Sarah K. Breed, David J. Deshazer, W. K. Weidner, Dow Corning Corp. (USA); Roger F. Dangel, Norbert Meier, Bert J. Offrein, IBM Zürich Research Lab. (Switzerland) . . . . . [8622-4]

10:00 am: **Modeling polymer-based hybrid-material photonic waveguides**, Meng-Mu Shih, Univ. of Florida (USA) . . . . . [8622-5]

Coffee Break . . . . . Mon 10:20 am to 10:50 am

#### SESSION 2

Room: 234 (Mezzanine) . . . . . Mon 10:50 am to 12:00 pm

##### Polymer Devices

Session Chair: **Robert A. Norwood**, College of Optical Sciences, The Univ. of Arizona (USA)

10:50 am: **THz planar metamaterials as anisotropic sensors for liquid crystal and carbon nanotube** (*Invited Paper*), Jeong-Weon Wu, J.H. Woo, E. Choi, Boyoung Kang, E. S. Kim, J. Kim, Y.U. Lee, Ewha Womans Univ. (Korea, Republic of); Tae Y. Hong, Jae H. Kim, Yonsei Univ. (Korea, Republic of); Ilha Lee, Young Hee Lee, Sungkyunkwan Univ. (Korea, Republic of) . . . . . [8622-6]

11:20 am: **Polymer cladding silicon-nitride ring resonator for athermal waveguide application**, Shiyoshi Yokoyama, Feng Qiu, Feng Yu, Andrew M. Spring, Kazuhiro Yamamoto, Kyushu Univ. (Japan) . . . . . [8622-7]

11:40 am: **Dielectric elastomer actuators for adaptive photonic microsystems**, Marcus Heimann, Technische Univ. Berlin (Germany); Henning Schröder, Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration (Germany); Sebastian Marx, Klaus-Dieter Lang, Technische Univ. Berlin (Germany) . . . . . [8622-8]

Lunch Break . . . . . Mon 12:00 pm to 1:30 pm

#### SESSION 3

Room: 234 (Mezzanine) . . . . . Mon 1:30 pm to 3:40 pm

##### Nonlinear and Laser Emission

Session Chair: **Chantal Andraud**, Ecole Normale Supérieure de Lyon (France)

1:30 pm: **Organic DSTMS crystals for high-field wide bandwidth THz spectroscopy** (*Keynote Presentation*), Peter Günter, Mojca Jazbinsek, Tobias Bach, Blanca Ruiz, Carolina Medrano, Rainbow Photonics AG (Switzerland) . . . . . [8622-10]

2:10 pm: **Second harmonic generation in non-electrically-poled NLO polymers excited by surface plasmon enhanced electric field**, Atsushi Sugita, Kaname Suto, Tomoyuki Sato, Atsushi Ono, Wataru Inami, Yoshimasa Kawata, Shigeru Tasaka, Shizuoka Univ. (Japan) . . . . . [8622-11]

2:30 pm: **Nonlinear absorption and frequency upconversion of a salicylaldehyde azine**, Amadeu Souza, Márcio A. Alencar, Silvia Cardoso, UFAL (Brazil); Marcelo Valle, UFSJ (Brazil); Renata Diniz, UFJF (Brazil); Jandir Hickmann, UFAL (Brazil) . . . . . [8622-12]

2:50 pm: **Studies of new organic molecules and hybrid systems for lasing applications** (*Invited Paper*), Jaroslav Mysliwiec, Adam Szukalski, Lech Sznitko, Wrocław Univ. of Technology (Poland); Karolina Haupa, Univ. of Wrocław (Poland) . . . . . [8622-13]

3:20 pm: **Polarization properties of dye-based random lasers**, Sebastian Knitter, Michael Kues, Carsten Fallnich, Westfälische Wilhelms-Universität Münster (Germany) . . . . . [8622-14]

Coffee Break . . . . . Mon 3:40 pm to 4:00 pm

#### SESSION 4

Room: 234 (Mezzanine) . . . . . Mon 4:00 pm to 5:40 pm

##### Two Photon Absorption

Session Chair: **Peter Günter**, ETH Zurich (Switzerland)

4:00 pm: **Engineering for near-IR biphotonic applications** (*Invited Paper*), Chantal Andraud, Ecole Normale Supérieure de Lyon (France) . . . . . [8622-15]

4:30 pm: **Water-soluble conjugated polymers for fluorescence biosensors and two-photon biological imaging** (*Invited Paper*), Han Young Woo, Ji-Eun Jeong, Pusan National Univ. (Korea, Republic of) . . . . . [8622-16]

5:00 pm: **Two-photon absorption of hydrocarbons at visible wavelengths**, Kenji Kamada, National Institute of Advanced Industrial Science and Technology (Japan) . . . . . [8622-17]

5:20 pm: **Modified p-phenylene vinylene platinum (II) acetylides with enhanced two-photon absorption: solution vs solid host**, Aleksander K. Rebane, Montana State Univ. (USA); Galyna G. Dubinina, Randy Price, Kirk S. Schanze, Univ. of Florida (USA); Yuriy Stepanenko, Pawel Wnuk, Institute of Physical Chemistry (Poland); Geoffrey Wicks, Mikhail Drobijev, Montana State Univ. (USA) . . . . . [8622-18]

## Tuesday 5 February

## OPTO PLENARY SESSION

Room: 134 (Exhibit Level) ..... 8:00 am to 10:10 am

Session Chairs : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
- 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
- 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) ..... [8637-1]
- 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
- 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]
- See page 26 for details.

Coffee Break ..... Tue 10:10 am to 10:30 am

## SESSION 5

Room: 301 (Esplanade) ..... Tue 10:30 am to 12:30 pm

## NOTE ROOM CHANGE

## Silicon Photonics Meets EO-Polymers

Joint Keynote Session with  
Conferences 8622, 8624, and 8629Session Chair: **James G. Grote**, Air Force Research Lab. (USA)

- 10:30 am: **How will photonic integrated circuits develop?**  
(*Keynote Presentation*), Michael W. Haney, Univ. of Delaware (USA) . . . [8629-20]
- 11:10 am: **Theory-guided nano-engineering of organic electro-optic materials for hybrid silicon photonic, plasmonic, and metamaterial devices**  
(*Keynote Presentation*), Larry R. Dalton, Univ. of Washington (USA) . . . [8622-19]
- 11:50 am: **Plastic solar cells with engineered interfaces**  
(*Keynote Presentation*), Tobin J. Marks, Northwestern Univ. (USA) . . . [8622-20]
- Lunch/Exhibition Break ..... Tue 12:30 pm to 1:30 pm

## SESSION 6

Room: 234 (Mezzanine) ..... Tue 1:30 pm to 3:40 pm

## Bio Photonics

Session Chair: **Ileana Bradusa Rau**,  
Univ. Politehnica of Bucharest (Romania)

- 1:30 pm: **Biontronics: recent progress** (*Keynote Presentation*), James G. Grote, Air Force Research Lab. (USA) ..... [8622-21]
- 2:10 pm: **Multimodal dyes: toward correlative two-photon and electron microscopy** (*Invited Paper*), Frederic Bolze, Hussein Ftouni, Nicoud Jean-François, Univ. de Strasbourg (France); Leoni Piero, Univ. di Pisa (Italy); Yannick Schwab, Institut de Genetique et Biologie Moleculaire et Cellulaire (France); Jean-Luc Rehspringer, Mafouana Rodrigues Roland, Institut de Physique et Chimie des Matériaux de Strasbourg (France) ..... [8622-22]
- 2:40 pm: **All-optical method of sensing the components of the internal local electric field in proteins**, Mikhail Drobizhev, J. Nathan Scott, Patrik Callis, Aleksander Rebane, Montana State Univ. (USA) ..... [8622-23]
- 3:00 pm: **Multiscale analysis of THG microscopy from organized media**, Emmanuel Beaufrepaire, Maxwell Zimmerley, Pierre Mahou, Delphine Débarre, Marie-Claire Schanne-Klein, Ecole Polytechnique (France) ..... [8622-24]
- 3:20 pm: **Space-charge-limited current in DNA-surfactant complex**, I-Ching Chen, Ting-Yu Lin, Yu-Chueh Hung, National Tsing Hua Univ. (Taiwan) ..... [8622-25]
- Coffee Break ..... Tue 3:40 pm to 4:00 pm

## SESSION 7

Room: 234 (Mezzanine) ..... Tue 4:00 pm to 6:20 pm

## EO Polymers

Session Chair: **Frederic Bolze**, Univ. de Strasbourg (France)

- 4:00 pm: **Functionalization and linear as well nonlinear optical properties characterization of DNA biopolymer based complexes** (*Invited Paper*), Ileana Rau, Ana-Maria Manea, Roxana Zgarian, Alexandrina Tane, Aurelia Meghea, Francois Kajzar, Polytechnical Univ. of Bucharest (Romania) ..... [8622-26]
- 4:30 pm: **Inspirations for EO polymer design gained from modeling of chromophore poling by Langevin dynamics** (*Invited Paper*), Martins A. Rutkis, Andrejs Jurgis, Univ. of Latvia (Latvia) ..... [8622-27]
- 5:00 pm: **Electro-optic polymer waveguides made by successive coating of cross-linkable EO polymers**, Akira Otomo, Isao Aoki, Toshiaki Yamada, Kohei Ota, Rieko Ueda, Toshifumi Terui, Shin-ichiro Inoue, National Institute of Information and Communications Technology (Japan) ..... [8622-28]
- 5:20 pm: **All-polymer organic EO material modulator for high frequency low drive voltage applications**, David L. K. Eng, Stephen T. Kozacik, Benjamin C. Olbricht, Shouyuan Shi, Dennis W. Prather, Univ. of Delaware (USA) . . [8622-29]
- 5:40 pm: **Solution phase-assisted reorientation of chromophores**, Benjamin C. Olbricht, Stephen T. Kozacik, David L. K. Eng, Dennis W. Prather, Univ. of Delaware (USA) ..... [8622-30]
- 6:00 pm: **Transparent electroactive polymer gratings for color and intensity modulation**, Xu Yang, Haijin Shin, Thiruvellu Bhuvana, Byeongwan Kim, Eunkyong Kim, Yonsei Univ. (Korea, Republic of) ..... [8622-48]

## Wednesday 6 February

## SESSION 8

Room: 234 (Mezzanine) ..... Wed 8:00 am to 10:00 am

## OLED and OPV I

Session Chair: **Toshikuni Kaino**, Tohoku Univ. (Japan)

- 8:00 am: **Third-generation organic light-emitting diodes**  
(*Keynote Presentation*), Chihaya Adachi, Kyushu Univ. (Japan) ..... [8622-31]
- 8:40 am: **Fabrication of high efficient organic/CdSe quantum dots hybrid OLEDs by spin-coating method**, Ashraf Uddin, The Univ. of New South Wales (Australia) ..... [8622-32]
- 9:00 am: **Electroluminescence enhancement of polymer light-emitting diodes by volume grating in active layer**, Kang Li, Yongkang Gong, Jungang Huang, Juan Martinez, Nigel Copner, Univ. of Glamorgan (United Kingdom); Gene Koch, Lomox, Ltd. (United Kingdom); Antony Davies, Univ. of Glamorgan (United Kingdom); Tao Duan, Yishan Wang, Wei Zhao, Xi'an Institute of Optics and Precision Mechanics (China) ..... [8622-33]
- 9:20 am: **High-performance AC electroluminescence from colloidal quantum dot hybrids**, Cheolmin Park, Sung Hwan Cho, Yonsei Univ. (Korea, Republic of) ..... [8622-34]
- 9:40 am: **Microcavity effect of an OLED heterostructure in a vertical microcavity**, Anthony Coens, Mahmoud Chakaroun, Alexis Fischer, Min Won Lee, Azzedine Boudrioua, Lab. de Physique des Lasers (France); Bernard Geffroy, CEA-IRAMIS (France) ..... [8622-35]
- Coffee Break ..... Wed 10:00 am to 10:30 am



**SESSION 9**

**Room: 234 (Mezzanine) . . . . .Wed 10:30 am to 12:10 pm**

**OLED and OPV II**

Session Chair: **Chihaya Adachi**, Kyushu Univ. (Japan)

10:30 am: **Nanoimprinted polymer solar cell** (*Keynote Presentation*), Wenchuang Hu, Yi Yang, Kamil Mielczarek, Anvar A. Zakhidov, The Univ. of Texas at Dallas (USA) . . . . . [8622-36]

11:10 am: **Broadband transparent electrode for flexible polymer solar cells**, Juyoung Ham, Sungjun Kim, Gwan Ho Jung, Wanjae Dong, Jong Lam Lee, Pohang Univ. of Science and Technology (Korea, Republic of) . . . . . [8622-37]

11:30 am: **Plasmonic nanoparticle inclusions into polymer photovoltaic films**, Christopher E. Tabor, Air Force Research Lab. (USA); Chun-Wan Yen, National Academy of Sciences (USA); Robert C. Wadams, Rutgers The State Univ. of New Jersey (USA); Laura Fabris, Rutgers, The State Univ. of New Jersey (USA); Michael F. Durstock, Air Force Research Lab. (USA) . . . . [8622-38]

11:50 am: **Multilayer hybrid thin film encapsulation for organic electronics**, Rakhi Grover, Indian Institute of Technology Delhi (India); Ritu Srivastava, National Physical Lab. (India); Modeeparampil N. Kamalasanan, National Physical Lab. (United Kingdom); Dalip Singh Mehta, Indian Institute of Technology Delhi (India) . . . . . [8622-62]

Lunch/Exhibition Break . . . . .Wed 12:10 pm to 1:30 pm

**SESSION 10**

**Room: 234 (Mezzanine) . . . . .Wed 1:30 pm to 3:20 pm**

**OLED and OPV III**

Session Chair: **Wenchuang Hu**, The Univ. of Texas at Dallas (USA)

1:30 pm: **Low bandgap polymers for organic thin film transistors and solar cells** (*Invited Paper*), Kwang-Sup Lee, Yun Hyuk Koh, Deepak Chandran, Yi-Seul Han, Sun-Young Nam, Tae-Dong Kim, Hannam Univ. (Korea, Republic of) . . . . . [8622-40]

2:00 pm: **Measurement of the electron mobility by local illumination of an organic photoconductive sensor**, Wouter Woestenborghs, Patrick De Visschere, Filip Beunis, Kristiaan Neyts, Univ. Gent (Belgium); Arnout Vetsuypens, Barco N.V. (Belgium) . . . . . [8622-41]

2:20 pm: **Enhanced efficiency in biopolymer nanocomposite light-emitting devices**, Yi-Wen Chiu, I-Ching Chen, Yu-Chueh Hung, National Tsing Hua Univ. (Taiwan) . . . . . [8622-42]

2:40 pm: **Effect of inserting hole injection layer 2,3,5,6-tetrafluoro-7,7,8,8-tetracyanoquinodimethane on the life time of organic light-emitting device**, Arunandan Kumar, Priyanka Tyagi, Ritu Srivastava, M.N. Kamalasanan, National Physical Lab. (India); Suneet Tuli, Indian Institute of Technology Delhi (India) . . . . . [8622-43]

3:00 pm: **Anode and donor engineering of heterojunction small molecule organic solar cell with 4.52% power efficiency**, Yung-Chih Cheng, Mau-Kuo Wei, National Dong Hwa Univ. (Taiwan); Chi-Feng Lin, National Ming Chi Univ. (Taiwan); Tien-Lung Chiu, Yuan Ze Univ. (Taiwan); Shun-Wei Liu, Ming Chi Univ. of Technology (Taiwan); Chin-Ti Chen, Academia Sinica (Taiwan); Jiun-Haw Lee, National Taiwan Univ. (Taiwan) . . . . . [8622-44]

Coffee Break . . . . .Wed 3:20 pm to 3:50 pm

**SESSION 11**

**Room: 234 (Mezzanine) . . . . .Wed 3:50 pm to 5:20 pm**

**Nano-photonics**

Session Chair: **Kwang-Sup Lee**, Hannam Univ. (Korea, Republic of)

3:50 pm: **Janus tectons: a versatile platform for decoupling self-assembled chromophores from metallic substrates** (*Invited Paper*), André-Jean Attias, David Bléger, Antoine Colas, Amina Bakma, Fabrice Mathevet, David Kreher, Univ. Pierre et Marie Curie (France); Fabrice Charra, Amandine Bocheux, Commissariat à l'Énergie Atomique (France) . . . . . [8622-45]

4:20 pm: **Nanostructured materials and their optical features**, Natalie V. Kamanina, S.I. Vavilov State Optical Institute (Russian Federation) . . . . [8622-46]

4:40 pm: **Organic polymer-metal nanocomposites for opto-electronic sensing of chemicals in agriculture**, Sergey S. Sarkisov Sr., SSS Optical Technologies, LLC (USA); Michael Czarick III, Brian D. Fairchild, The Univ. of Georgia (USA); Yi Liang, Univ. of Arkansas (USA); Tatiana V. Kukhtareva, Michael J. Curley, John C. Corda, Alabama A&M Univ. (USA) . . . . . [8622-47]

5:00 pm: **Optical data storage using fluorescence-modulation of silver nanoparticle polymer films**, Cory W. Christenson, Case Western Reserve Univ. (USA) . . . . . [8622-49]

**POSTERS-WEDNESDAY**

**Room: 103 (Exhibit Level) . . . . .Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Wavelength tunable transparent flexible electrodes**, Sungjun Kim, Pohang Univ. of Science and Technology (Korea, Republic of); Kihyon Hong, Pohang Univ. of Science and Technology (Korea, Republic of) and Univ. of Minnesota (USA); Juyoung Ham, Bonhyeong Koo, Ilhwan Lee, Kisoo Kim, Jong-Lam Lee, Pohang Univ. of Science and Technology (Korea, Republic of) . . . . . [8622-9]

**Effect of metal ions and pH gradation on PS-b-P2VP lamellar film**, Youngbin Baek, DongMyung Shin, Hongik Univ. (Korea, Republic of) . . . . . [8622-50]

**Monolithic quasi-solid-state dye-sensitized solar cells based on graphene modified mesoscopic carbon counter electrodes**, Yaoguang Rong, Xiong Li, Guanghui Liu, Heng Wang, Zhiliang Ku, Mi Xu, Linfeng Liu, Min Hu, Ying Yang, Hongwei Han, Huazhong Univ. of Science and Technology (China) . . . [8622-51]

**Thermal glass-forming nonlinear optical and holographic properties of "push-pull" type azochromophores with triphenyl moieties containing isophorene and pyranilidene fragments**, Elmars Zarins, Riga Technical Univ. (Latvia); Andrejs Tokmakovs, Zane Kalina, Univ. of Latvia (Latvia); Valdis Kokars, Riga Technical Univ. (Latvia); Martins Rutkis, Univ. of Latvia (Latvia); Andris Ozols, Peteris Augustovs, Kristine Lazdovica, Valdis Kampars, Riga Technical Univ. (Latvia) . . . . . [8622-52]

**Nonlinear optical studies of Zn Phthalocyanine in the presence of high-energy materials**, Soma Venugopal Rao, P. T. Anusha, Univ. of Hyderabad (India); Lingamallu Giribabu, Indian Institute of Commerce and Trade (India); Surya P. Tewari, Univ. of Hyderabad (India) . . . . . [8622-53]

**Printing method for organic lighting-emitting device (OLED) lighting**, Hyun Chul Ki, Seon Hoon Kim, Doo Gun Kim, Tae-Un Kim, Korea Photonics Technology Institute (Korea, Republic of); Sang Gi Kim, Linkline Inc. (Korea, Republic of); Kyung Jin Hong, Gwangju Univ. (Korea, Republic of); Soon-Yeol So, Mokpo National Univ. (Korea, Republic of) . . . . . [8622-54]

**Electro-optic waveguide with conductive chromophore contained polymer cladding**, Kazuhiro Yamamoto, Feng Yu, Shiyoshi Yokoyama, Kyushu Univ. (Japan); Akira Otomo, National Institute of Information and Communications Technology (Japan); Kei Yasui, Masaaki Ozawa, Nissan Chemical Industries, Ltd. (Japan) . . . . . [8622-55]

**Polymer optical fiber for sensing application based on multimode interference**, Jie Huang, Xinwei Lan, Hanzheng Wang, Lei Yuan, Zhan Gao, Hai Xiao, Missouri Univ. of Science and Technology (USA) . . . . . [8622-56]

**Synthesis and properties of a suite of mixed neutral and zwitterionic chromophores for second order nonlinear optics**, Andrew Kay, Victoria Peddie, Industrial Research Ltd. (New Zealand); Ayele Teshome, Inge Asselberghs, Koen Clays, Katholieke Univ. Leuven (Belgium) . . . . . [8622-60]

**Effect of interface modification on the injection and transport properties of spiro-TAD**, Omwati Rana, Ritu Srivastava, National Physical Lab. (India); M. Zulfequar, Jamia Millia Islamia Univ. (India); Mushahid Husain, Jamia Millia Islamia Univ. (India); Modeeparampil N. Kamalasanan, National Physical Lab. (India) . . . . . [8622-63]





# Ultrafast Phenomena and Nanophotonics XVII

**Conference Chairs:** **Markus Betz**, Technische Univ. Dortmund (Germany); **Abdulahkem Y. Elezzabi**, Univ. of Alberta (Canada); **Jin-Joo Song**, Univ. of California, San Diego (USA); **Kong-Thon Tsen**, Arizona State Univ. (USA)

**Program Committee:** **Mischa Bonn**, FOM Institute for Atomic and Molecular Physics (Netherlands); **Yujie J. Ding**, Lehigh Univ. (USA); **Jan A. Gaj**, Univ. of Warsaw (Poland); **Kazuhiro Hirakawa**, The Univ. of Tokyo (Japan); **Rupert Huber**, Univ. Regensburg (Germany); **Robert A. Kaindl**, Lawrence Berkeley National Lab. (USA); **Dai-Sik Kim**, Seoul National Univ. (Korea, Republic of); **Torsten Meier**, Univ. Paderborn (Germany); **Walter Pfeiffer**, Univ. Bielefeld (Germany); **Mark I. Stockman**, Georgia State Univ. (USA); **Chi-Kuang Sun**, National Taiwan Univ. (Taiwan); **Fabrice Vallee**, Univ. Claude Bernard Lyon 1 (France); **Klaas Wynne**, Univ. of Glasgow (United Kingdom)

## Sunday 3 February

### SESSION 1

Room: 276 (Mezzanine) ..... Sun 9:00 am to 10:00 am

#### THz Spectroscopy of Water and Biological Molecules I

Session Chair: **Abdulahkem Y. Elezzabi**, Univ. of Alberta (Canada)

9:00 am: **THz Raman of hydrophiles and amphiphiles measured by the ultrafast optical Kerr effect** (*Invited Paper*), Steve Meech, Univ. of East Anglia Norwich (United Kingdom) ..... [8623-1]

9:30 am: **Ultrabroadband terahertz spectroscopies of biomolecules and water** (*Invited Paper*), Klaas Wynne, David Turton, Univ. of Glasgow (United Kingdom) ..... [8623-2]

Coffee Break ..... Sun 10:00 am to 10:30 am

### SESSION 2

Room: 276 (Mezzanine) ..... Sun 10:30 am to 12:00 pm

#### THz Spectroscopy of Water and Biological Molecules II

Session Chair: **Klaas Wynne**, Univ. of Glasgow (United Kingdom)

10:30 am: **Utilizing THz spectroscopy to characterize biological systems** (*Invited Paper*), Emma Pickwell-MacPherson, Hong Kong Univ. of Science and Technology (Hong Kong, China); Vincent P. Wallace, The Univ. of Western Australia (Australia) ..... [8623-3]

11:00 am: **Measuring phonons in protein crystals** (*Invited Paper*), Andrea G. Markelz, Gheorghe Acbas, Katherine Niessen, Rohit Singh, Deepu George, Univ. at Buffalo (USA); Edward Snell, Univ. at Buffalo (USA) and Hauptman Woodward Medical Research Institute (USA) ..... [8623-4]

11:30 am: **Low-frequency dynamics of proteins, amino acids, and aqueous solutions studied by terahertz time-domain spectroscopy** (*Invited Paper*), Keisuke Tominaga, Naoki Yamamoto, Haruka Iguchi, Atsuo Tamura, Kobe Univ. (Japan) ..... [8623-5]

Lunch Break ..... Sun 12:00 pm to 1:30 pm

### SESSION 3

Room: 276 (Mezzanine) ..... Sun 1:30 pm to 3:15 pm

#### Coherent Spin Dynamics

Session Chair: **Markus Betz**, Technische Univ. Dortmund (Germany)

1:30 pm: **Sub-cycle multi-THz dynamics: from spin-density waves to polaritons** (*Invited Paper*), Michael Porer, Jean-Michel Menard, Univ. Konstanz (Germany) and Univ. Regensburg (Germany); Kyungwan Kim, Univ. Konstanz (Germany) and Chungbuk National Univ. (Korea, Republic of); Jure Demsar, Alexej Pashkin, Alfred Leitenstorfer, Univ. Konstanz (Germany); Rupert Huber, Univ. Regensburg (Germany) and Univ. Konstanz (Germany) ..... [8623-6]

2:00 pm: **Ultrafast mid-infrared spectroscopy of charge- and spin-ordered nickelates** (*Invited Paper*), Giacomo Coslovich, Bernhard Huber, Lawrence Berkeley National Lab. (USA); Wei-Sheng Lee, Stanford Univ. (USA); Yi-De Chuang, Yi Zhu, Lawrence Berkeley National Lab. (USA); Takao Sasagawa, Tokyo Institute of Technology (Japan); Zahid Hussain, Hans A. Bechtel, Michael C. Martin, Robert W. Schoenlein, Lawrence Berkeley National Lab. (USA); Zhi-Xun Shen, Stanford Univ. (USA); Robert A. Kaindl, Lawrence Berkeley National Lab. (USA) ..... [8623-7]

2:30 pm: **Hole spin relaxation in Ge/SiGe quantum wells**, Sangam Chatterjee, Philipps-Univ. Marburg (Germany); Giovanni Isella, Daniel Chrastina, Lab. for Epitaxial Nanostructures on Silicon and Spintronics (Italy) and Politecnico di Milano (Italy); Fabio Pezzoli, Lab. for Epitaxial Nanostructures on Silicon and Spintronics (Italy) and Univ. degli Studi di Milano-Bicocca (Italy); Niko S. Köster, Ronja Woscholski, Philipps-Univ. Marburg (Germany); Christoph Lange, Univ. Regensburg (Germany) ..... [8623-8]

2:45 pm: **Spin relaxation in spin light-emitting diodes: Effects of magnetic field and temperature**, Henning Höpfner, Carola Fritsche, Arne Ludwig, Astrid Ludwig, Ruhr-Univ. Bochum (Germany); Frank Stromberg, Heiko Wende, Werner Keune, Univ. Duisburg-Essen (Germany); Dirk Reuter, Andreas D. Wieck, Nils C. Gerhardt, Martin R. Hofmann, Ruhr-Univ. Bochum (Germany) ... [8623-9]

3:00 pm: **Electron spin relaxation dynamics in GaN: influence of temperature, doping density, and crystal orientation**, Jan H. Buss, Jörg Rudolph, Sebastian Starsosielec, Arne Schaefer, Ruhr-Univ. Bochum (Germany); Fabrice Semond, Ctr. de Recherche sur l'Hétéro-Epitaxie et ses Applications (France); Daniel Hägele, Ruhr-Univ. Bochum (Germany) . . . [8623-10]

Coffee Break ..... Sun 3:15 pm to 3:45 pm

### SESSION 4

Room: 276 (Mezzanine) ..... Sun 3:45 pm to 5:45 pm

#### Ultrafast Phenomena in Semiconductors and Insulators

Session Chair: **Stefan Linden**, Rheinische Friedrich-Wilhelms-Univ. Bonn (Germany)

3:45 pm: **Tracking the non-equilibrium properties of the insulator-metal transition VO<sub>2</sub>** (*Invited Paper*), Simon Wall, ICFO - Institut de Ciències Fotòniques (Spain); Daniel Wegkamp, Laura Foglia, Julia Staehler, Martin Wolf, Fritz-Haber-Institut der Max-Planck-Gesellschaft (Germany); Kannatassen Appavoo, Richard Haglund Jr., Vanderbilt Univ. (USA) ..... [8623-11]

4:15 pm: **Ultrafast dynamics in topological insulators** (*Invited Paper*), Chih Wei Luo, National Chiao Tung Univ. (Taiwan) ..... [8623-12]

4:45 pm: **Two-photon physics with quantum-dot biexcitons** (*Invited Paper*), Stefan Schumacher, Univ. Paderborn (Germany) ..... [8623-13]

5:15 pm: **Extraction of the light-driven charge-transfer kinetics at the semiconductor surface using pump-probe spectroscopy**, Jin Suntivich, Yu-Ting Lin, Kasey Phillips, Eric Mazur, Harvard Univ. (USA) ..... [8623-14]

5:30 pm: **Dephasing in Ge/SiGe quantum wells measured by means of coherent oscillations**, Kolja Kolata, Niko S. Köster, Alexej Chernikov, Michael J. Drexler, Philipps-Univ. Marburg (Germany); Eleonora Gatti, Lab. for Epitaxial Nanostructures on Silicon and Spintronics (Italy) and Univ. degli Studi di Milano-Bicocca (Italy); Stefano Cecchi, Daniel Chrastina, Giovanni Isella, Lab. for Epitaxial Nanostructures on Silicon and Spintronics (Italy) and Politecnico di Milano (Italy); Mario Guzzi, Lab. for Epitaxial Nanostructures on Silicon and Spintronics (Italy) and Univ. degli Studi di Milano-Bicocca (Italy); Sangam Chatterjee, Philipps-Univ. Marburg (Germany) ..... [8623-15]

OPTO

**Monday 4 February**

**SESSION 5**

**Room: 276 (Mezzanine) . . . . . Mon 8:00 am to 10:15 am**

**Nonlinear Metamaterials**

Session Chair: **Javier Aizpurua**, Centro de Fisica de Materiales (Spain)

8:00 am: **Ultrafast nonlinearities of metallic 3D metamaterials** (*Invited Paper*), Jeremy J. Baumberg, Silvia Vignolini, Stefano Salvatore, Petros Farah, Ullrich Steiner, Univ. of Cambridge (United Kingdom) . . . . . [8623-16]

8:30 am: **Collective phenomena in photonic metamaterials** (*Invited Paper*), Stefan Linden, Rheinische Friedrich-Wilhelms-Univ. Bonn (Germany); Fabian B. P. Niesler, Karlsruhe Institut für Technologie (Germany); Jens Förstner, Yevgen Grynko, Torsten Meier, Univ. Paderborn (Germany); Martin Wegener, Karlsruher Institut für Technologie (Germany) . . . . . [8623-17]

9:00 am: **Enhancement of 3rd-order nonlinearities in nanoplasmonic metamaterials: figures of merit** (*Invited Paper*), Jacob B. Khurgin, Johns Hopkins Univ. (USA); Greg Sun, Univ. of Massachusetts Boston (USA) [8623-18]

9:30 am: **Active terahertz metamaterials** (*Invited Paper*), Nathaniel Grady, Ranjan Singh, Matthew T. Reiten, Dibakar Roy Chowdhury, Jiangfeng Zhou, Abul K. Azad, Stuart A. Trugman, Quanxi Jia, Antoinette J. Taylor, Hou-Tong Chen, Los Alamos National Lab. (USA) . . . . . [8623-19]

10:00 am: **Optimal second-harmonic generation in split-ring resonator arrays**, Yevgen Grynko, Torsten Meier, Univ. Paderborn (Germany); Stefan Linden, Rheinische Friedrich-Wilhelms-Univ. Bonn (Germany); Fabian B. P. Niesler, Martin Wegener, Karlsruher Institut für Technologie (Germany); Jens Förstner, Univ. Paderborn (Germany) . . . . . [8623-20]

Coffee Break . . . . . Mon 10:15 am to 10:45 am

**SESSION 6**

**Room: 276 (Mezzanine) . . . . . Mon 10:45 am to 12:15 pm**

**Nonlinear THz Interaction and Spectroscopy**

Session Chair: **Rupert Huber**, Univ. Regensburg (Germany)

10:45 am: **Electron-hole recollisions in semiconductors** (*Invited Paper*), Mark S. Sherwin, Ben Zaks, Univ. of California, Santa Barbara (USA); RenBao Liu, The Chinese Univ. of Hong Kong (China); Hunter Banks, Univ. of California, Santa Barbara (USA) . . . . . [8623-21]

11:15 am: **Terahertz semiconductor nonlinear optics** (*Invited Paper*), Dmitry Turchinovich, Max-Planck-Institut für Polymerforschung (Germany) and Technical Univ. of Denmark (Denmark) . . . . . [8623-22]

11:45 am: **Observation of strong and broadband terahertz induced electroabsorption in multiple quantum wells**, Chia-Yeh Li, The Univ. of New Mexico (USA); Denis V. Seletskiy, The Univ. of New Mexico (USA) and Air Force Research Lab. (USA); Jeffrey G. Cederberg, Sandia National Labs. (USA); Mansoor Sheik-Bahae, The Univ. of New Mexico (USA) . . . . . [8623-23]

12:00 pm: **Envelope and field effects in the nonlinear interaction of broadband terahertz fields and optical pulses in air**, Matteo Clerici, Institut National de la Recherche Scientifique (Canada) and Heriot-Watt Univ. (United Kingdom); Daniele Faccio, Heriot-Watt Univ. (United Kingdom); Lucia Caspani, Mostafa Shalaby, Mathieu Giguère, Bruno E. Schmidt, Oded Yaakobi, Institut National de la Recherche Scientifique (Canada); Marco Peccianti, Institut National de la Recherche Scientifique (Canada) and Istituto dei Sistemi Complessi (Italy); François Vidal, François Légaré, Tsuneyuki Ozaki, Roberto Morandotti, Institut National de la Recherche Scientifique (Canada) . . . [8623-24]

Lunch Break . . . . . Mon 12:15 pm to 2:15 pm

**SESSION 7**

**Room: 276 (Mezzanine) . . . . . Mon 2:15 pm to 3:30 pm**

**Ultrafast Processes in Graphene and Carbon Nanotubes I**

Session Chairs: **Jin-Joo Song**, Univ. of California, San Diego (USA); **Mark S. Sherwin**, Univ. of California, Santa Barbara (USA)

2:15 pm: **Photophysics of colloidal graphene quantum dots** (*Invited Paper*), John A. McGuire, Michigan State Univ. (USA) . . . . . [8623-29]

2:45 pm: **Theory of ultrafast carrier and phonon dynamics in graphene** (*Invited Paper*), Andreas Knorr, Torben Winzer, Ermin Malic, Technische Univ. Berlin (Germany) . . . . . [8623-30]

3:15 pm: **Interaction of single-layer CVD graphene with a metasurface of terahertz split-ring resonators**, Federico Valmorra, Giacomo Scalari, Curdin Maissen, ETH Zurich (Switzerland); Wangyang Fu, Univ. of Basel (Switzerland); Christian Schoenenberger, Univ. Basel (Switzerland); Jong Won Choi, Hyung Gyu Park, Matthias Beck, Jérôme Faist, ETH Zurich (Switzerland) . . . . [8623-31]

Coffee Break . . . . . Mon 3:30 pm to 4:00 pm

**SESSION 8**

**Room: 276 (Mezzanine) . . . . . Mon 4:00 pm to 5:45 pm**

**Ultrafast Nanoplasmonics**

Session Chair: **Abdulhakem Y. Elezzabi**, Univ. of Alberta (Canada)

4:00 pm: **Ultrafast plasmonics with multi-material metal-based nanoparticles** (*Invited Paper*), Natalia Del Fatti, Anna Lombardi, Paolo Maioli, Aurelien Crut, Fabrice Vallee, Univ. Claude Bernard Lyon 1 (France) . . [8623-25]

4:30 pm: **Addressing quantum effects in tunneling plasmonics** (*Invited Paper*), Javier Aizpurua, Ruben Esteban, Centro de Fisica de Materiales (Spain); Peter Nordlander, Rice Univ. (USA); Andrei Borissov, Univ. Paris-Sud 11 (France) . . . . . [8623-26]

5:00 pm: **Photo-induced ultrafast magnetization dynamics of self-assembled bimetallic nanoparticles** (*Invited Paper*), Kuniaki Konishi, Makoto Kuwata-Gonokami, The Univ. of Tokyo (Japan) . . . . . [8623-27]

5:30 pm: **Purcell factor of metallic nanoantennas**, Philippe Lalanne, Institut d'Optique Graduate School (France) . . . . . [8623-28]

**Tuesday 5 February**

**OPTO PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am**

Session Chairs : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
  - 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
  - 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]
  - 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
  - 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]
- See page 26 for details.

Coffee Break . . . . . Tue 10:10 am to 10:30 am

**SESSION 9**

**Room: 276 (Mezzanine) . . . . . Tue 10:30 am to 12:15 pm**

**Novel Nanoplasmonic Spectroscopy**

Session Chair: **Markus Betz**, Technische Univ. Dortmund (Germany)

10:30 am: **fs-PEEM as an ideal probe for ultrafast nano-optics** (*Keynote Presentation*), Martin Aeschlimann, Technische Univ. Kaiserslautern (Germany) . . . . . [8623-32]

11:15 am: **Ultrafast phonon dynamic in plasmonic supracrystal** (*Invited Paper*), Pierre-Adrien Mante, National Taiwan Univ. (Taiwan); Meng-Hsien Lin, Hung-Ying Chen, Shangji Gwo, National Tsing Hua Univ. (Taiwan); Chi-Kuang Sun, National Taiwan Univ. (Taiwan) . . . . . [8623-33]

11:45 am: **Nanogap-Enhanced Raman Scattering (NERS) controlled by DNA** (*Invited Paper*), Yung D. Suh, Korea Research Institute of Chemical Technology (Korea, Republic of) . . . . . [8623-34]

Lunch/Exhibition Break . . . . . Tue 12:15 pm to 1:30 pm

**SESSION 10**

**Room: 276 (Mezzanine) . . . . . Tue 1:30 pm to 3:30 pm**

**Strong-Field and Attosecond Phenomena**

Session Chair: **Abdulahkem Y. Elezzabi**, Univ. of Alberta (Canada)

1:30 pm: **Solids in ultrafast and strong optical fields: new phenomena** (*Invited Paper*), Mark I. Stockman, Georgia State Univ. (USA) . . . . . [8623-35]

2:00 pm: **Photoemission at metallic nanostructures: multiphoton and strong-field dynamics** (*Invited Paper*), Claus Ropers, Univ. Göttingen (Germany) . . . . . [8623-36]

2:30 pm: **Probing ultrafast electron dynamics in condensed matter with attosecond photo-emission** (*Invited Paper*), Stefan Neppel, Max-Planck-Institut für Quantenoptik (Germany); Ralph Ernstorfer, Fritz-Haber-Institut der Max-Planck-Gesellschaft (Germany); Adrian L. Cavalieri, Deutsches Elektronen-Synchrotron (Germany); Elisabeth M. Bothschafter, Max-Planck-Institut für Quantenoptik (Germany); Johannes V. Barth, Dietrich Menzel, Technische Univ. München (Germany); Ferenc Krausz, Max-Planck-Institut für Quantenoptik (Germany); Reinhard Kienberger, Peter Feulner, Technische Univ. München (Germany) . . . . . [8623-37]

3:00 pm: **Attosecond physics at a nanotip: a new strong-field physics laboratory** (*Invited Paper*), Michael Krüger, Sebastian Thomas, Michael Förster, Lothar Maisenbacher, Max-Planck-Institut für Quantenoptik (Germany); Georg Wachter, Christoph Lemell, Joachim Burgdörfer, Technische Univ. Wien (Austria); Peter Hommelhoff, Max-Planck-Institut für Quantenoptik (Germany) . . . . . [8623-38]

Coffee Break . . . . . Tue 3:30 pm to 4:00 pm

**SESSION 11**

**Room: 276 (Mezzanine) . . . . . Tue 4:00 pm to 5:30 pm**

**Ultrafast Plasmonic Nanoscopy**

Session Chair: **Claus Ropers**, Univ. Göttingen (Germany)

4:00 pm: **Ultrafast near-field optical control on the nanoscale: impedance matching to quantum systems with optical antennas** (*Invited Paper*), Markus B. Raschke, Univ. of Colorado at Boulder (USA) . . . . . [8623-39]

4:30 pm: **Spontaneous emission control of single emitters by optical antennas** (*Invited Paper*), Kwang-Geol Lee, Hanyang Univ. (Korea, Republic of) . . . . . [8623-40]

5:00 pm: **A nanoantenna for nonlinear spectroscopy of a single nano-object** (*Invited Paper*), Markus Lippitz, Max-Planck-Institut für Festkörperforschung (Germany) . . . . . [8623-41]

**Wednesday 6 February**

**SESSION 12**

**Room: 276 (Mezzanine) . . . . . Wed 8:00 am to 10:15 am**

**Nonlinear and Coherent Optical Phenomena**

Session Chairs: **Jin-Joo Song**, Univ. of California, San Diego (USA); **Markus B. Raschke**, Univ. of Colorado at Boulder (USA)

8:00 am: **Efficient generation of record-short and record-long wavelengths based on backward and forward parametric interaction in lithium niobate** (*Invited Paper*), Yujie J. Ding, Lehigh Univ. (USA) . . . . . [8623-42]

8:30 am: **Passively aligned four-wave mixing apparatus for investigating high-intensity laser-matter interactions**, Amanda K. Meier, Michael Greco, Colorado School of Mines (USA); Jens Thomas, Friedrich-Schiller-Univ. Jena (Germany); Jeff Squier, Charles G. Durfee, Colorado School of Mines (USA) . . . . . [8623-43]

8:45 am: **Laser pulse propagation in relativistically time-dependent media** (*Invited Paper*), Daniele Faccio, Heriot-Watt Univ. (United Kingdom) . . . [8623-44]

9:15 am: **Simultaneous generation and coherent control of terahertz and XUV using two-color laser field**, Aram Gragossian, The Univ. of New Mexico (USA); Denis V. Seletskiy, The Univ. of New Mexico (USA) and Air Force Research Lab. (USA); Mansoor Sheik-Bahae, The Univ. of New Mexico (USA) . . . . . [8623-45]

9:30 am: **Accessing new types of photocurrents using polarization-shaped excitation pulses**, Shekhar Priyadarshi, Klaus Pierz, Mark Bieler, Physikalisch-Technische Bundesanstalt (Germany) . . . . . [8623-46]

9:45 am: **Sub-diffraction quantum interference control of electrical currents in nanodevices**, Markus Betz, Sebastian Thunich, Claudia Ruppert, Technische Univ. Dortmund (Germany); Alexander W. Holleitner, Walter Schottky Institut (Germany) . . . . . [8623-47]

10:00 am: **The competing dynamics in an ultimate fast all-optically switched microcavity**, Emre Yüce, Georgios Cstis, MESA+ Institute for Nanotechnology (Netherlands); Julien Claudon, Emmanuel Dupuy, Commissariat à l'Énergie Atomique (France); Klaus J. Boller, MESA+ Institute for Nanotechnology (Netherlands); Jean-Michel Gérard, Commissariat à l'Énergie Atomique (France); Willem L. Vos, MESA+ Institute for Nanotechnology (Netherlands) . . . . [8623-48]

Coffee Break . . . . . Wed 10:15 am to 10:45 am

**SESSION 13**

**Room: 276 (Mezzanine) . . . . . Wed 10:45 am to 11:45 am**

**Ultrafast Processes in Graphene and Carbon Nanotubes II**

Session Chair: **Andreas Knorr**, Technische Univ. Berlin (Germany)

10:45 am: **Terahertz wave-induced optical non-linearity in graphene** (*Invited Paper*), Koichiro Tanaka, Kyoto Univ. (Japan) . . . . . [8623-49]

11:15 am: **Dynamics of excitons and trions in semiconducting carbon nanotube** (*Invited Paper*), Makoto Okano, Taishi Nishihara, Yasuhiro Yamada, Yoshihiko Kanemitsu, Kyoto Univ. (Japan) . . . . . [8623-50]

11:30 am: **Ultrafast broadband THz spectroscopy of carbon nanotubes and single-layer graphene**, Hyunyoung Choi, Dominik Pfaff, Robert A. Kaindl, Lawrence Berkeley National Lab. (USA) . . . . . [8623-51]

Lunch/Exhibition Break . . . . . Wed 11:45 am to 1:00 pm

**SESSION 14**

**Room: 276 (Mezzanine) . . . . . Wed 1:00 pm to 3:00 pm**

**Ultrafast Nanophotonics**

Session Chair: **Markus Lippitz**,

Max-Planck-Institut für Festkörperforschung (Germany)

1:00 pm: **Ultrafast interactions of ultrashort surface plasmon polaritons on plane metal films and in dielectric waveguides** (*Invited Paper*), Carsten Reinhardt, Wei Cheng, Arune Gaidukeviciute, Urs Zywiets, Andrey B. Evlyukhin, Boris N. Chichkov, Laser Zentrum Hannover e.V. (Germany) . . . . . [8623-52]

1:30 pm: **All-optical modulation in silicon-based nanoplasmonic devices** (*Invited Paper*), Shawn Sederberg, Abdulkhem Y. Elezzabi, Univ. of Alberta (Canada) . . . . . [8623-53]

2:00 pm: **Supported plasmonic nanocrystals improve the performance of novel fiber-based sensors** (*Invited Paper*), Anatoli I. Ianoou, Jacques Albert, Carleton Univ. (Canada) . . . . . [8623-54]

2:30 pm: **Probing ultrafast exciton spin dynamics in self-assembled InGaAs quantum dots**, Kai Müller, Timo Kaldewey, R. Ripszám, Johannes Wildmann, Max Bichler, Gerhard Abstreiter, Jonathan J. Finley, Walter Schottky Institut (Germany) . . . . . [8623-55]

2:45 pm: **Ultrafast control of light trapping and reciprocity in nanophotonic media**, Otto L. Muskens, Thomas Strudley, Univ. of Southampton (United Kingdom); Timmo van der Beek, FOM Institute AMOLF (Netherlands); Erik P. A. M. Bakkers, Technische Univ. Delft (Netherlands); Thomas Wellens, Albert-Ludwigs-Univ. Freiburg (Germany) . . . . . [8623-56]

Coffee Break . . . . .Wed 3:00 pm to 3:30 pm

**Best Student Paper Awards Ceremony**  
**Room: 276 (Mezzanine) . . . . . 3:30 pm to 3:40 pm**  
Join us as we award PhD student or postdoc (within the first two years after graduation) for their best student paper.

**SESSION 15**

**Room: 276 (Mezzanine) . . . . .Wed 3:40 pm to 5:10 pm**

**Plasmonics and Metamaterials**

Session Chair: **Natalia Del Fatti**, Univ. Claude Bernard Lyon 1 (France)

3:40 pm: **Influence of resonator design on ultrastrong coupling between a two-dimensional electron gas and a THz metamaterial**, Curdin Maissen, Giacomo Scalari, Federico Valmorra, Christian Reichl, ETH Zurich (Switzerland); Dieter Schuh, Univ. Regensburg (Germany); Werner Wegscheider, Matthias Beck, ETH Zurich (Switzerland); Simone De Liberato, David Hagenmüller, Cristiano Ciuti, Lab. Matériaux et Phénomènes Quantiques, Univ. Paris 7-Denis Diderot and CNRS (France); Jérôme Faist, ETH Zurich (Switzerland) . . . . . [8623-57]

3:55 pm: **InGaAs amplifier for loss-compensation in nanoplasmonic circuits**, Michael P. Nielsen, Abdul Y. Elezzabi, Univ. of Alberta (Canada) . . . . . [8623-58]

4:10 pm: **Switching spontaneous emission in microcavities in the time domain**, Henri Thyrestrup, Alex Hartsuiker, Univ. Twente (Netherlands); Jean-Michel Gérard, Commissariat à l'Énergie Atomique (France); Willem L. Vos, Univ. Twente (Netherlands) . . . . . [8623-59]

4:25 pm: **Plasmonic slot waveguides with core nonlinearity**, Sherif A. Tawfik, Mohamed A. Swillam, The American Univ. in Cairo (Egypt) . . . . . [8623-60]

4:40 pm: **Evolution of surface plasmon resonance with core thickness in Au/InGaAs slab waveguide hybrid nanostructure**, Seunghyun Kim, Chung-Min Lee, Ki-Ju Yee, Chungnam National Univ. (Korea, Republic of) . . . [8623-61]

4:55 pm: **Measurements of giant second harmonic generation from vertically-aligned silicon nanowires**, Mohamed A. Swillam, Univ. of Toronto (Canada) and The American Univ. in Cairo (Egypt); Mohammadreza Khorasaninejad, Simarjeet Sinai, Univ. of Waterloo (Canada) . . . . . [8623-62]

**POSTERS-WEDNESDAY**

**Room: 103 (Exhibit Level) . . . . .Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Wavelength-tuneable GHz repetition rate picosecond pulse generator using an SBS frequency comb**, Victor Lambin Iezzi, Sébastien Loranger, Raman Kashyap, Ecole Polytechnique de Montréal (Canada) . . . . . [8623-63]

**Investigation of saturation in two- and three-photon nano-photonics absorbers**, Mary Potasek, Gene Parilov, Simphotek Inc. (USA) . . . . . [8623-64]

**Ultrafast degenerate pump-probe studies of Si-GaAs and LT-GaAs**, Soma Venugopal Rao, P. T. Anusha, Surya P. Tewari, Debasis Swain, Univ. of Hyderabad (India) . . . . . [8623-65]

**Air-breakdown coherent detection of terahertz using controlled optical bias**, Chia-Yeh Li, The Univ. of New Mexico (USA); Denis V. Seletskiy, The Univ. of New Mexico (USA) and Air Force Research Lab. (USA); Mansoor Sheik-Bahae, The Univ. of New Mexico (USA) . . . . . [8623-66]

**Time-resolved Faraday effect in layered structures**, Margarita I. Sharipova, Alexander I. Musorin, Artem V. Chetvertukhin, Tatyana V. Dolgova, Andrey A. Fedyanin, Lomonosov Moscow State Univ. (Russian Federation) . . . . [8623-67]



# Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications VI

Conference Chairs: **Laurence P. Sadwick**, InnoSys, Inc. (USA); **Créidhe M. O'Sullivan**, National Univ. of Ireland, Maynooth (Ireland)

Program Committee: **Antao Chen**, Univ. of Washington (USA); **Robert H. Giles**, Univ. of Massachusetts Lowell (USA); **R. Jennifer Hwu**, InnoSys, Inc. (USA); **Anthony Murphy**, National Univ. of Ireland, Maynooth (Ireland); **Michael C. Wanke**, Sandia National Labs. (USA); **Tianxin Yang**, Tianjin Univ. (China)

## Tuesday 5 February

### OPTO PLENARY SESSION

Room: 134 (Exhibit Level) ..... 8:00 am to 10:10 am

Session Chairs : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
- 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
- 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) ..... [8637-1]
- 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
- 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]  
See page 26 for details.

Coffee Break ..... Tue 10:10 am to 10:30 am

### SESSION 1

Room: 301 (Esplanade) ..... Tue 10:30 am to 12:30 pm

#### Silicon Photonics Meets EO-Polymers

Joint Keynote Session with  
Conferences 8622, 8624, and 8629

Session Chair: **James G. Grote**, Air Force Research Lab. (USA)

- 10:30 am: **How will photonic integrated circuits develop?**  
(*Keynote Presentation*), **Michael W. Haney**, Univ. of Delaware (USA) . . . [8629-20]
  - 11:10 am: **Theory-guided nano-engineering of organic electro-optic materials for hybrid silicon photonic, plasmonic, and metamaterial devices**  
(*Keynote Presentation*), **Larry R. Dalton**, Univ. of Washington (USA) . . . [8622-19]
  - 11:50 am: **Plastic solar cells with engineered interfaces**  
(*Keynote Presentation*), **Tobin J. Marks**, Northwestern Univ. (USA) . . . [8622-20]
- Lunch/Exhibition Break ..... Tue 12:30 pm to 1:30 pm

### SESSION 2

Room: 232 (Mezzanine) ..... Tue 1:30 pm to 3:10 pm

#### THz Topics and Advancements

Session Chairs: **Tianxin Yang**, Tianjin Univ. (China);  
**Laurence P. Sadwick**, InnoSys, Inc. (USA)

- 1:30 pm: **A powerful new THz photoconductive source driven at 1550 nm**  
(*Invited Paper*), **Elliott R. Brown**, Wright State Univ. (USA) ..... [8624-1]
  - 2:00 pm: **THz imaging using broadband direct detection** (*Invited Paper*),  
**Zachary D. Taylor**, Ctr. for Advanced Surgical and Interventional Technology (USA); **Nuria Llombart**, Univ. Complutense de Madrid (Spain); **Priyamvada Tewari**, **Neha Bajwa**, **Rahul S. Singh**, **Martin O. Culjat**, Ctr. for Advanced Surgical and Interventional Technology (USA); **Elliott R. Brown**, Wright State Univ. (USA); **Warren S. Grundfest M.D.**, Univ. of California, Los Angeles (USA) ..... [8624-2]
  - 2:30 pm: **Strong optical forces in the mid-IR and terahertz mediated by coupled spoof surface plasmons**, **David Woolf**, **Mikhail Kats**, **Nanfeng Yu**, **Federico Capasso**, Harvard Univ. (USA) ..... [8624-3]
  - 2:50 pm: **CMOS: Compressive Multi-heterodyne Optical Spectroscopy**, **Nikhil Mehta**, The Pennsylvania State Univ. (USA); **Jingbiao Chen**, **Zhigang Zhang**, Peking Univ. (China); **Zhiwen Liu**, The Pennsylvania State Univ. (USA) ..... [8624-4]
- Coffee Break ..... Tue 3:10 pm to 3:40 pm

### SESSION 3

Room: 232 (Mezzanine) ..... Tue 3:40 pm to 5:30 pm

#### THz and Submillimeter Generation and Sources

Session Chairs: **Robert H. Giles**, Univ. of Massachusetts Lowell (USA);  
**Laurence P. Sadwick**, InnoSys, Inc. (USA)

- 3:40 pm: **Microfabrication and cold testing of copper circuits for a 50-watt 220-GHz traveling wave tube** (*Invited Paper*), **Colin D. Joye**, **Alan M. Cook**, **Jeffrey P. Calame**, **David K. Abe**, U.S. Naval Research Lab. (USA); **Khanh T. Nguyen**, **Edward L. Wright**, Beam-Wave Research, Inc. (USA) ..... [8624-5]
- 4:10 pm: **A tunable continuous-wave terahertz generator based on 1.3-µm dual-mode laser diode and travelling-wave photodiode**, **Han-Cheol Ryu**, **Namje Kim**, **Jeong-Woo Park**, **Sang-Pil Han**, **Hyunsung Ko**, **Kiwon Moon**, Electronics and Telecommunications Research Institute (Korea, Republic of); **Min Yong Jeon**, Chungnam National Univ. (Korea, Republic of); **Kyung Hyun Park**, Electronics and Telecommunications Research Institute (Korea, Republic of) ..... [8624-6]
- 4:30 pm: **Sub-mm/THz wave generation/amplification using Cerenkov-transition based device**, **Ahmed I. Nashed**, **Sujeet K. Chaudhuri**, **Safieddin Safavi-Naeini**, Univ. of Waterloo (Canada) ..... [8624-7]
- 4:50 pm: **Room temperature generation of THz radiation in GaN quantum wells structures**, **Alexandre Penot**, **Jérémi Torres**, **Luca Varani**, Univ. Montpellier 2 (France); **Yvon Cordier**, **M. Chmielowska**, Ctr. de Recherche sur l'Hétéro-Epitaxie et ses Applications (France); **Jean-Pierre Faurie**, **Bernard Beaumont**, LUMILOG (France); **Pavel Shiktorov**, **E. Starikov**, Semiconductor Physics Institute (Lithuania) ..... [8624-8]
- 5:10 pm: **An improved design of THz radiation device with hybrid waveguide structures compatible with latest technique of monolithic integration fabrication**, **Tianxin Yang**, **Zhuo Zhang**, **Xuehui Niu**, **Dongfang Jia**, **Mei Sang**, Tianjin Univ. (China) ..... [8624-9]



**Wednesday 6 February**

**SESSION 4**

**Room: 232 (Mezzanine) . . . . . Wed 8:00 am to 10:10 am**

**THz Smart Materials and Imaging**

Session Chairs: **Darragh McCarthy**, National Univ. of Ireland, Maynooth (Ireland); **Laurence P. Sadwick**, InnoSys, Inc. (USA)

8:00 am: **Precise manipulation of light properties in optical domain by RF technology** (*Invited Paper*), Tianxin Yang, Tianhe Wang, Zifei Wang, Chunfeng Ge, Dongfang Jia, Zhaoying Wang, Mei Sang, Tianjin Univ. (China) . . . . . [8624-49]

8:30 am: **Terahertz time-domain spectroscopy of organic semiconductors**, Daniel M. Hailu, Hany Aziz, Safieddin Safavi-Naeini, Univ. of Waterloo (Canada); Daryoosh Saeedkia, TeTechS Inc. (Canada) . . . . . [8624-11]

8:50 am: **3D terahertz beam profiling**, Pernille K. Pedersen, Krzysztof Iwaszczuk, Andrew Strikwerda, Tianwu Wang, Maksim Zalkovskij, Jonas D. Buron, Peter U. Jepsen, Technical Univ. of Denmark (Denmark) . . . . . [8624-12]

9:10 am: **Imaging at 0.2 and 2.5 terahertz**, Arline M. Melo, BR Labs (Brazil); Mauricio A. P. Toledo, Univ. Estadual de Campinas (Brazil); Francisco C. B. Maia, Andre Rocha, Matheus B. Plotegher, BR Labs (Brazil); Daniel Pereira, Flavio C. Cruz, Univ. Estadual de Campinas (Brazil) . . . . . [8624-13]

9:30 am: **Introducing a 388x284 pixel terahertz camera core**, Claude Chevalier, Luc Mercier, François Duchesne, Lucie Gagnon, Bruno Tremblay, Marc Terroux, Linda Marchese, Martin Bolduc, Hubert Jerominek, Alain Bergeron, INO (Canada) . . . . . [8624-14]

9:50 am: **The terahertz spectroscopic investigation of diflubenzuron and theoretical analysis**, Qiang Wang, China Jiliang Univ. (China) . . . . . [8624-15]

Coffee Break . . . . . Wed 10:10 am to 10:40 am

**SESSION 5**

**Room: 232 (Mezzanine) . . . . . Wed 10:40 am to 12:10 pm**

**RF Devices, Sources, and Components**

Session Chairs: **Tianxin Yang**, Tianjin Univ. (China); **Laurence P. Sadwick**, InnoSys, Inc. (USA)

10:40 am: **Millimeter-wave and sub-millimeter-wave vacuum electronics amplifier development at the US Naval Research Laboratory** (*Invited Paper*), David K. Abe, Jeffrey P. Calame, Igor A. Chernyavskiy, Alan M. Cook, Simon Cooke, Colin D. Joye, Baruch Levush, John A. Pasour, Alexander N. Vlasov, U.S. Naval Research Lab. (USA); Khanh T. Nguyen, Dean E. Pershing, Beam-Wave Research, Inc. (USA); David P. Chernin, SAIC (USA) . . . . . [8624-16]

11:10 am: **Integrated RF photonic devices based on crystal ion sliced lithium niobate**, Vincent E. Stenger, James E. Toney, Andrea Pollick, James Busch, Jon Scholl, Peter Pontius, Sri Sriram, SRICO Inc. (USA) . . . . . [8624-17]

11:30 am: **IMDD microwave photonic link modeling using Optsim**, Joseph Haefner, Troy Copenhaver II, Jacob Kurka, Jessika West, Christopher Middlebrook, Michael Maurer, Michigan Technological Univ. (USA) . . . . . [8624-18]

11:50 am: **Toward a widely tunable narrow linewidth RF source utilizing an integrated heterogenous silicon photonic module**, Garrett A. Ejzak, David W. Grund Jr., Garrett J. Schneider, Janusz Murakowski, Shouyuan S. Shi, Dennis W. Prather, Univ. of Delaware (USA) . . . . . [8624-19]

Lunch/Exhibition Break . . . . . Wed 12:10 pm to 1:30 pm

**SESSION 6**

**Room: 232 (Mezzanine) . . . . . Wed 1:30 pm to 3:10 pm**

**Continuous Wave Sources, Devices, Techniques, and Technology**

Session Chairs: **Robert H. Giles**, Univ. of Massachusetts Lowell (USA); **Laurence P. Sadwick**, InnoSys, Inc. (USA)

1:30 pm: **Towards integrated continuous-wave photomixing terahertz systems**, Thorsten Göbel, Dennis Stanze, Ute Troppenz, Jochen Kreissl, Bernd Sartorius, Martin Schell, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany) . . . . . [8624-20]

1:50 pm: **Widely-tunable opto-electronics oscillators based on a dual frequency laser**, Jeremy Maxin, Grégoire Pillet, Loic Morvan, Daniel Dolfi, Thales Research & Technology (France); Khaldoun Saleh, Olivier Llopis, Lab. d'Analyse et d'Architecture des Systèmes (France) . . . . . [8624-21]

2:10 pm: **Study of carbon nanotubes using continuous-wave terahertz spectroscopy**, Sujitha Puthukodan, Horacio L. Rivera, Univ. Carlos III de Madrid (Spain); Guillaume Ducourneau, Jean-François Lampin, Univ. des Sciences et Technologies de Lille (France) . . . . . [8624-22]

2:30 pm: **Continuous-wave terahertz reflection imaging of colorectal cancer**, Pallavi Doradla, Univ. of Massachusetts Lowell (USA); Karim Alavi, Univ. of Massachusetts Medical School (USA); Cecil S. Joseph, Robert H. Giles, Univ. of Massachusetts Lowell (USA) . . . . . [8624-23]

2:50 pm: **Fine structure analysis of nanomaterials by CW terahertz spectroscopy**, Anis Rahman, Anuk K. Rahman, Applied Research & Photonics, Inc. (USA); Nick J. Turro, Columbia Univ. (USA) . . . . . [8624-24]

Coffee Break . . . . . Wed 3:10 pm to 3:40 pm

**SESSION 7**

**Room: 232 (Mezzanine) . . . . . Wed 3:40 pm to 5:00 pm**

**THz and MM-Wave Conductivity, Detectors, Related Measurements, and Techniques**

Session Chairs: **R. Jennifer Hwu**, InnoSys, Inc. (USA); **Laurence P. Sadwick**, InnoSys, Inc. (USA)

3:40 pm: **Sub-terahertz and terahertz detectors based on plasmon excitation in InGaAs/InP HEMT devices**, Nima Nader Esfahani, Air Force Research Lab. (USA) and Solid State Scientific Corp. (USA) and Univ. of Central Florida (USA); Robert E. Peale, Univ. of Central Florida (USA); Walter R. Buchwald, Solid State Scientific Corp. (USA); Joshua Hendrickson, Justin W. Cleary, Air Force Research Lab. (USA) . . . . . [8624-25]

4:00 pm: **Comparison between the electrical conductivity obtained by four-point probe method and terahertz time-domain spectroscopy in multi-walled carbon nanotubes and graphene for transparent thin-films**, Dong-Mok Lee, Sungkyunkwan Univ. (Korea, Republic of); Ehsan Dadrasnia, Univ. Carlos III de Madrid (Spain); Seunghyun Baik, Sungkyunkwan Univ. (Korea, Republic of); Horacio L. Rivera, Univ. Carlos III de Madrid (Spain); Mohan-Babu Kuppam, Frédéric Garet, Jean-Louis Coutaz, IMEP-LAHC (France) . . . [8624-26]

4:20 pm: **Surface conductivity responses of carbon nanostructures thin-films with contactless terahertz time-domain spectroscopy**, Ehsan Dadrasnia, Univ. Carlos III de Madrid (Spain); Dong-Mok Lee, Sungkyunkwan Univ. (Korea, Republic of); Horacio L. Rivera, Univ. Carlos III de Madrid (Spain); Seunghyun Baik, Sungkyunkwan Univ. (Korea, Republic of); Mohan-Babu Kuppam, Frédéric Garet, Jean-Louis Coutaz, IMEP-LAHC (France) . . . [8624-27]

4:40 pm: **Frequency, amplitude, and phase measurements of GHz and THz sources using unstabilized THz frequency combs**, Heiko Füsler, Mark Bieler, Physikalisch-Technische Bundesanstalt (Germany) . . . . . [8624-28]

**POSTERS-WEDNESDAY**

**Room: 103 (Exhibit Level) . . . . . Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

**Tunable THz wave transmission using liquid metal based devices**, Hualiang Zhang, Rongguo Zhou, Jiangtao Cheng, Yuankun Lin, Univ. of North Texas (USA) . . . . . [8624-48]

**Thursday 7 February**

**SESSION 8**

**Room: 232 (Mezzanine) . . . . . Thu 8:00 am to 10:10 am**

**RF to THz Materials, Techniques, Technology and Sources, Detection and Devices I**

Session Chairs: **Antao Chen**, Univ. of Washington (USA); **Laurence P. Sadwick**, InnoSys, Inc. (USA)

8:00 am: **Fabrication and characterization of suspended graphene membranes for miniature Golay cells** (*Invited Paper*), Elizabeth Ledwowska, McGill Univ. (Canada); Abdeladim Guermoune, Mohamed Siaj, Univ. du Québec à Montréal (Canada) and Univ. Laval (Canada); Thomas Szkopek, McGill Univ. (Canada) and RQMP (Canada) . . . . . [8624-29]

8:30 am: **Design and fabrication of an RF GRIN lens using 3D printing technology**, Jeffery W. Allen, Bae-Ian Wu, Air Force Research Lab. (USA) . . . . . [8624-30]

8:50 am: **An FBG sensor interrogation technique based on a precise optical recirculating frequency shifter driven by RF signals**, Zifei Wang, Tianxin Yang, Dongfang Jia, Zhaoying Wang, Mei Sang, Tianjin Univ. (China) . . [8624-31]

9:10 am: **Enhanced terahertz emission from photoconductive emitters using plasmonic contact electrodes**, Christopher W. Berry, Mohammed Reza Hashemi, Mona Jarrahi, Univ. of Michigan (USA) . . . . . [8624-32]

9:30 am: **Organic electro-optic materials as a platform for widely tunable narrow linewidth RF sources**, Stephen T. Kozacik, Maciej Murakowski, David Eng, Mathew J. Zablocki, Univ. of Delaware (USA); Ahmed S. Sharkawy, EM Photonics, Inc. (USA); Janusz Murakowski, Benjamin C. Olbricht, Shouyuan S. Shi, Dennis W. Prather, Univ. of Delaware (USA) . . . . . [8624-33]

9:50 am: **Flat pulse-amplitude rational-harmonic-mode-locking fiber lasers with GHz pulse repetition rates**, Tianhe Wang, Tianxin Yang, Dongfang Jia, Zhaoying Wang, Mei Sang, Tianjin Univ. (China); Neng Bai, Guifang Li, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) . . [8624-34]

Coffee Break . . . . . Thu 10:10 am to 10:40 am

**SESSION 9**

**Room: 232 (Mezzanine) . . . . . Thu 10:40 am to 11:40 am**

**Metamaterials and Related Materials**

Session Chairs: **Tianxin Yang**, Tianjin Univ. (China); **Laurence P. Sadwick**, InnoSys, Inc. (USA)

10:40 am: **Metamaterial films as narrowband terahertz emitters**, Brian T. Kearney, Fabio Alves, Dragoslav Grbovic, Gamani Karunasiri, Naval Postgraduate School (USA) . . . . . [8624-35]

11:00 am: **High-sensitivity metamaterial-based bi-material terahertz sensor**, Fabio Alves, Dragoslav Grbovic, Brian Kearney, Gamani Karunasiri, Naval Postgraduate School (USA) . . . . . [8624-36]

11:20 am: **Numerical simulation of terahertz plasmons in gated graphene structures**, Akira Satou, Victor Ryzhii, Tohoku Univ. (Japan); Fedir T. Vasko, Vladimir V. Mitin, Univ. at Buffalo (USA); Taiichi Otsuji, Tohoku Univ. (Japan) . . . . . [8624-37]

Lunch/Exhibition Break . . . . . Thu 11:40 am to 1:30 pm

**SESSION 10**

**Room: 232 (Mezzanine) . . . . . Thu 1:30 pm to 3:10 pm**

**RF to THz Transmission, Sensors, Sources, and Detection**

Session Chairs: **Michael C. Wanke**, Sandia National Labs. (USA); **Laurence P. Sadwick**, InnoSys, Inc. (USA)

1:30 pm: **Efficient horn antennas for next-generation terahertz and millimeter-wave space telescopes**, Darragh McCarthy, Neil Trappe, Anthony Murphy, Colm Bracken, Stephen Doherty, Marcin L. Gradziel, Créidhe O'Sullivan, National Univ. of Ireland, Maynooth (Ireland) . . . . . [8624-39]

1:50 pm: **Low-loss waveguides for THz guidance and devices**, Azizur Rahman, Christos Themistos, Kejalakshmy Namassivayane, Anita Quadir, City Univ. London (United Kingdom) . . . . . [8624-40]

2:10 pm: **Ultra-broadband wavelength conversion sensor based upon thermochromic liquid crystals**, I-Chun Anderson Chen, North Carolina State Univ. (USA); Dwight L. Woolard, U.S. Army Research Office (USA) . . . [8624-41]

2:30 pm: **Antenna-coupled heterostructure field effect transistors for integrated terahertz heterodyne mixers**, Alessandra Di Gaspare, Istituto di Fotonica e Nanotecnologie (Italy); Valeria Giliberti, Univ. degli Studi di Roma La Sapienza (Italy) and Istituto di Fotonica e Nanotecnologie (Italy); Roberto Casini, Ennio Giovine, Istituto di Fotonica e Nanotecnologie (Italy); Florestano Evangelisti, Univ. degli Studi di Roma Tre (Italy); Dominique Coquillat, Wojciech Knap, Univ. Montpellier 2 (France); Sergey Sadofev, Raffaella Calarco, Paul-Drude-Institut für Festkörperelektronik (Germany); Massimiliano Dispenza, Claudio Lanzieri, SELEX Sistemi Integrati S.p.A. (Italy); Michele Ortolani, Univ. degli Studi di Roma La Sapienza (Italy) and Istituto di Fotonica e Nanotecnologie (Italy) . . . . . [8624-42]

2:50 pm: **Realization of an ultra-broadband voltage pulse standard utilizing time-domain optoelectronic techniques**, Mark Bieler, Heiko Fuser, Physikalisch-Technische Bundesanstalt (Germany) . . . . . [8624-43]

Coffee Break . . . . . Thu 3:10 pm to 3:40 pm

**SESSION 11**

**Room: 232 (Mezzanine) . . . . . Thu 3:40 pm to 5:00 pm**

**RF to THz Materials, Techniques, Technology and Sources, Detection and Devices II**

Session Chairs: **Darragh McCarthy**, National Univ. of Ireland, Maynooth (Ireland); **Laurence P. Sadwick**, InnoSys, Inc. (USA)

3:40 pm: **Electric field sensor based on electro-optic polymer refilled silicon slot waveguide**, Xingyu Zhang, The Univ. of Texas at Austin (USA); Amir Hosseini, Omega Optics, Inc. (USA); Ray Chen, The Univ. of Texas at Austin (USA) . . . . . [8624-44]

4:00 pm: **Technological customization of uncooled amorphous silicon microbolometer for THz real-time imaging**, Stephane Pocas, Pierre Imperinetti, Pierre Brianceau, Jérôme Meilhan, Francois Simoens, Wilfried Rabaud, Agnes Arnaud, CEA-LETI-Minatec (France) . . . . . [8624-45]

4:20 pm: **Generation of frequency tunable and broadband THz pulses in the frequency range 1-20 THz with organic electro-optic crystals OH1 and DSTMS**, Mojca Jazbinsek, Tobias Bach, Blanca Ruiz, Carolina Medrano, Peter Günter, Rainbow Photonics AG (Switzerland) . . . . . [8624-46]

4:40 pm: **THz emission as a probe for silicon-based multilayer systems**, Ulrike Blumröder, Friedrich-Schiller-Univ. Jena (Germany); Patrick Hoyer, Fraunhofer-Gesellschaft (Germany); Gabor Matthäus, Kevin Fuchs, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Stefan Nolte, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) and Friedrich-Schiller-Univ. Jena (Germany) . . . . . [8624-47]



# Gallium Nitride Materials and Devices VIII

**Conference Chairs:** **Jen-Inn Chyi**, National Central Univ. (Taiwan); **Yasushi Nanishi**, Ritsumeikan Univ. (Japan); **Hadis Morkoç**, Virginia Commonwealth Univ. (USA)

**Conference Co-Chairs:** **Joachim Piprek**, NUSOD Institute LLC (USA); **Euijoon Yoon**, Seoul National Univ. (Korea, Republic of); **Hiroshi Fujioka**, The Univ. of Tokyo (Japan)

**Program Committee:** **Hiroshi Amano**, Nagoya Univ. (Japan); **Jong Hyeob Baek**, Korea Photonics Technology Institute (Korea, Republic of); **Shigefusa F. Chichibu**, Tohoku Univ. (Japan); **Bernard Gil**, Univ. Montpellier 2 (France); **Nicolas Grandjean**, Ecole Polytechnique Fédérale de Lausanne (Switzerland); **Hideki Hirayama**, RIKEN (Japan); **Stacia K. Keller**, Univ. of California, Santa Barbara (USA); **Michael Kneissl**, Technische Univ. Berlin (Germany); **Hao-Chung Kuo**, National Chiao Tung Univ. (Taiwan); **Narihiko Maeda**, NTT Photonics Labs. (Japan); **Koh Matsumoto**, Taiyo Nippon Sanso EMC Ltd. (Japan); **Hidetoshi Miyake**, Mie Univ. (Japan); **Yong-Tae Moon**, LG Electronics Inc. (Korea, Republic of); **Ki-Bum Nam**, Seoul Semiconductor (Korea, Republic of); **Ümit Özgür**, Virginia Commonwealth Univ. (USA); **Ulrich T. Schwarz**, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany); **Tae-Yeon Seong**, Korea Univ. (Korea, Republic of); **Jong-In Shim**, Hanyang Univ. (Korea, Republic of); **Chih-Chung Yang**, National Taiwan Univ. (Taiwan)

## Monday 4 February

### SESSION 1

**Room: 111 (Exhibit Level) . . . . . Mon 8:00 am to 10:15 am**

#### Growth I

Session Chair: **Hadis Morkoç**, Virginia Commonwealth Univ. (USA)

8:00 am: **Application of DERI method to InN/InGaN MQW, thick InGaN and InGaN/InGaN MQW structure growth** (*Invited Paper*), Tomohiro Yamaguchi, Kogakuin Univ. (Japan); Ke Wang, Tsutomu Araki, Ritsumeikan Univ. (Japan); Tohru Honda, Kogakuin Univ. (Japan); Euijoon Yoon, Seoul National Univ. (Korea, Republic of); Yasushi Nanishi, Ritsumeikan Univ. (Japan) and Seoul National Univ. (Korea, Republic of) . . . . . [8625-1]

8:30 am: **Semipolar GaN growth on patterned sapphire substrates by hydride vapor phase epitaxy** (*Invited Paper*), Kazuyuki Tadamoto, Narihito Okada, Keisuke Yamane, Hiroshi Furuya, Yamaguchi Univ. (Japan) . . . . [8625-2]

9:00 am: **Ordering in InGaN, AlInN, and AlGaIn alloys** (*Invited Paper*), Jacek A. Majewski, Michal Lopuszynski, Univ. of Warsaw (Poland) . . . . [8625-3]

9:30 am: **GaN on Si and strain control** (*Invited Paper*), Alois J. Krost, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . [8625-4]

10:00 am: **Crack-free growth of InGaN/GaN quantum-well structures on Si substrate with temperature-graded AlN buffer deposition**, Chih-Yen Chen, Yen-Hung Liu, Wen-Ming Chang, Wei-Lun Chung, Chieh Hsieh, Che-Hao Liao, Horng-Shyang Chen, Chih-Chung Yang, National Taiwan Univ. (Taiwan) [8625-5]

Coffee Break . . . . . Mon 10:15 am to 10:45 am

### SESSION 2

**Room: 111 (Exhibit Level) . . . . . Mon 10:45 am to 12:30 pm**

#### Growth II

Session Chair: **Hiroshi Fujioka**, The Univ. of Tokyo (Japan)

10:45 am: **Effect of Internally Focused Laser Processing of Sapphire Substrate on Bowing Management for III-Nitride Epitaxy** (*Invited Paper*), Hideo Aida, Namiki Precision Jewel Co., Ltd. (Japan); Hitoshi Hoshino, DISCO HI-TEC EUROPE GmbH (Germany); Hidetoshi Takeda, Namiki Precision Jewel Co., Ltd. (Japan); Chikara Aikawa, Disco Corp. (Japan); Natsuko Aota, Namiki Precision Jewel Co., Ltd. (Japan); Keiji Honjo, Disco Corp. (Japan) . . . . [8625-6]

11:15 am: **Growth of high quality AlN layer and its polarity control by LPE using Ga-Al flux** (*Invited Paper*), Hiroyuki Fukuyama, Masayoshi Adachi, Mari Takasugi, Tohoku Univ. (Japan); Masashi Sugiyama, Akikazu Tanaka, Sumitomo Metal Mining Co., Ltd. (Japan) . . . . . [8625-7]

11:45 am: **Role and influence of impurities on GaN crystal grown from liquid solution under high nitrogen pressure in multi-feed-seed configuration**, Michal Bockowski, Institute of High Pressure Physics (Poland) and TopGaN Ltd. (Poland) . . . . . [8625-8]

12:00 pm: **Progress on purity, transparency and thermal conductivity of GaN substrates obtained by ammonothermal method**, Marcin Zajac, Roman Doradzinski, Robert Dwilinski, Romuald Stankiewicz, Robert Kucharski, Ammono Sp. z o.o. (Poland); Piotr Wilinski, Ammono Sp. z o.o. (Poland); Andrzej Jezowski, Institute of Low Temperature and Structure Research, Polish Academy of Science (Poland) . . . . . [8625-9]

12:15 pm: **HVPE-GaN growth on ammonothermal GaN crystals**, Tomasz Sochacki, Institute of High Pressure Physics (Poland) . . . . . [8625-10]

Lunch Break . . . . . Mon 12:30 pm to 1:45 pm

### SESSION 3

**Room: 111 (Exhibit Level) . . . . . Mon 1:45 pm to 3:15 pm**

#### Doping

Session Chair: **Tadek Suski**, Institute of High Pressure Physics (Poland)

1:45 pm: **Luminescence of acceptors in Mg-doped GaN** (*Invited Paper*), Bo Monemar, Linköping Univ. (Sweden) . . . . . [8625-11]

2:15 pm: **The role of Mg in p-type InxGa1-xN alloys**, Mary E. Zvanut, William R. Willoughby, The Univ. of Alabama at Birmingham (USA); Dan D Koleske, Sandia National Labs. (USA) . . . . . [8625-12]

2:30 pm: **Lattice-matched AlInN/GaN heterostructures: n- and p-type doping and UV-LEDs** (*Invited Paper*), Yoshitaka Taniyasu, NTT Basic Research Labs. (Japan) and Ecole Polytechnique Fédérale de Lausanne (Switzerland); Jean-François Carlin, Antonino Castiglia, Raphaël Butté, Nicolas Grandjean, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8625-13]

3:00 pm: **MOVPE growth of Si doped AlN on trench patterned template**, Gou Nishio, Mitsuhiro Narukawa, Hideto Miyake, Kazumasa Hiramatsu, Mie Univ. (Japan) . . . . . [8625-14]

Coffee Break . . . . . Mon 3:15 pm to 3:45 pm

### SESSION 4

**Room: 111 (Exhibit Level) . . . . . Mon 3:45 pm to 6:00 pm**

#### Material Characterization

Session Chair: **Alois J. Krost**, Otto-von-Guericke-Univ. Magdeburg (Germany)

3:45 pm: **Defects in nitrides, positron annihilation spectroscopy** (*Invited Paper*), Filip Tuomisto, Aalto Univ. School of Science and Technology (Finland) . . . . . [8625-15]

4:15 pm: **3D atomic scale chemistry of gallium nitride materials and devices studied by atom probe tomography** (*Invited Paper*), George D. W. Smith, M. Müller, Izabela Gorczyca, Grzegorz Staszczak, Institute of High Pressure Physics (Poland); Xinqiang Wang, State Key Lab. of Artificial Microstructure and Mesoscopic Physics (China); Niels E. Christensen, Axel Svane, Aarhus Univ. (Denmark); Emmanouil Dimakis, Univ. of Crete (Greece); Theodore D. Moustakas, Boston Univ. (USA) . . . . . [8625-92]

4:45 pm: **Simultaneous CL and TEM investigation of defects in GaN of various orientation** (*Invited Paper*), Juergen Christen, Otto-von-Guericke-Univ. Magdeburg (Germany) . . . . . [8625-90]

5:15 pm: **Short period InN/nGaIn superlattices: experiment versus theory**, Tadek Suski, Izabela Gorczyca, Grzegorz Staszczak, Institute of High Pressure Physics (Poland); Xinqiang Wang, State Key Lab. of Artificial Microstructure and Mesoscopic Physics (China); Niels E. Christensen, Axel Svane, Aarhus Univ. (Denmark); Emmanouil Dimakis, Univ. of Crete (Greece); Theodore D. Moustakas, Boston Univ. (USA) . . . . . [8625-16]

5:30 pm: **Defect generation and annihilation in GaN grown on patterned silicon substrate**, Nobuhiko Sawaki, Taihei Nakagita, Shogo Ito, Hiroyuki Iwata, Aichi Institute of Technology (Japan); Tomoyuki Tanikawa, Masashi Irie, Yoshio Honda, Masahito Yamaguchi, Hiroshi Amano, Nagoya Univ. (Japan) . . [8625-17]

5:45 pm: **Nonlinear absorption in InN under resonant- and non-resonant excitation**, Hyeeyoung Ahn, Min-Tse Lee, Yuan-Ming Chang, National Chiao Tung Univ. (Taiwan); Shangir Gwo, National Tsing Hua Univ. (Taiwan) . [8625-18]



**Tuesday 5 February**

**OPTO PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am**

*Session Chairs* : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
  - 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
  - 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]
  - 8:50 am: **Group IV photonics for the mid infrared,**  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
  - 9:30 am: **Light in a twist: optical angular momentum,**  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]
- See page 26 for details.

Coffee Break . . . . . Tue 10:10 am to 10:30 am

**SESSION 5**

**Room: 111 (Exhibit Level) . . . . . Tue 10:30 am to 12:30 pm**

**Nano Structures and Devices I**

Session Chair: **Yasushi Nanishi**, Ritsumeikan Univ. (Japan)

- 10:30 am: **High quality factor nanocavities embedding nitride quantum dots** (*Invited Paper*), Christelle Brimont, L2C (France); Thierry Guillet, L2C (France); Diane Sam-Giao, Commissariat à l'Énergie Atomique (France); Delphine Neel, Institut d'Électronique Fondamentale (France); Sylvain Sergent, Ctr. de Recherche sur l'Hétéro-Epitaxie et ses Applications (France); Bruno Gayral, Commissariat à l'Énergie Atomique (France); M.J. Rashid, Commissariat à l'Énergie Atomique (France) and CRHEA-CNRS (France); Fabrice Semond, Ctr. de Recherche sur l'Hétéro-Epitaxie et ses Applications (France); Meletios Mexis, L2C (France); Sylvain David, Xavier Checoury, Philippe Boucaud, Institut d'Électronique Fondamentale (France) . . . . . [8625-19]
  - 11:00 am: **Excitonic Fine-Structure of Quantum Dots Based in Nitrides** (*Invited Paper*), Axel Dr Hoffmann, TU Berlin Servicegesellschaft GmbH (Germany) . . . . . [8625-20]
  - 11:30 am: **Individual GaN quantum dots imaged by low temperature cathodoluminescence scanning transmission electron microscopy**, Frank Bertram, Gordon Schmidt, Markus Mueller, Peter Veit, Juergen Christen, Otto-von-Guericke-Univ. Magdeburg (Germany); Eva Monroy, A. Das, Commissariat à l'Énergie Atomique (France) . . . . . [8625-21]
  - 11:45 am: **Raman spectroscopy of GaN and AlGaIn nanowires: from ensemble to single nanowire study** (*Invited Paper*), Francois Demangeot, Renaud Pechou, Univ. de Toulouse (France); Jiangfeng Wang, Ctr. d'Elaboration de Matériaux et d'Etudes Structurales (France); Ana Cros, Univ. de Valencia (Spain); Bruno Daudin, Rudeesun Songmuang, Commissariat à l'Énergie Atomique (France) . . . . . [8625-22]
  - 12:15 pm: **Photonic Crystal III-Nitride Nanowire Lasers**, Jeremy B. Wright, Sandia National Labs. (USA) and The Univ. of New Mexico (USA); Ganapathi Subramania, Qiming Li, Igal Brener, Ting S. Luk, George T. Wang, Sheng Liu, Sandia National Labs. (USA); Huiwen Xu, Luke F. Lester, The Univ. of New Mexico (USA) . . . . . [8625-23]
- Lunch/Exhibition Break . . . . . Tue 12:30 pm to 2:00 pm

**SESSION 6**

**Room: 111 (Exhibit Level) . . . . . Tue 2:00 pm to 3:30 pm**

**Nano Structures and Devices II**

Session Chair: **Axel Hoffmann**, Technische Univ. Berlin (Germany)

- 2:00 pm: **Nanolithography for 3-Dimensional Nanostructures: Enhancement of Light Output Power in Vertical Light Emitting Diodes** (*Invited Paper*), Jong-Lam Lee, Pohang Univ. of Science and Technology (Korea, Republic of) . . . . . [8625-24]
  - 2:30 pm: **High efficient InGaIn blue LED with embedded nanoporous structure** (*Invited Paper*), Ta-Cheng Hsu, Wei-Chih Peng, Epistar Corp. (Taiwan) . . . . . [8625-25]
  - 3:00 pm: **Low resistivity electrical contacting of porous n-type GaN layers due to reduced workfunction intermetallic seed layers**, Oleksandr V. Bilousov, Joan Josep Carvajal Marti, Univ. Rovira i Virgili (Spain); Colm O'Dwyer, Univ. College Cork (Ireland); Xavier Mateos, Francesc Diaz, Magdalena Aguiló, Univ. Rovira i Virgili (Spain) . . . . . [8625-26]
  - 3:15 pm: **Single-Mode Lasing in Gallium Nitride Nanowires**, Huiwen Xu, The Univ. of New Mexico (USA); Jeremy B. Wright, Sandia National Labs. (USA); Antonio Hurtado, The Univ. of New Mexico (USA); Ting S. Luk, The Univ. of New Mexico (USA) and Sandia National Labs. (USA); Jeffery J. Figiel, Sandia National Labs. (USA); Karen Cross, Sandia National Labs. (USA); Ganesh Balakrishnan, Luke F. Lester, The Univ. of New Mexico (USA); George T. Wang, Igal Brener, Qiming Li, Sandia National Labs. (USA) . . . . . [8625-27]
- Coffee Break . . . . . Tue 3:30 pm to 4:00 pm

**SESSION 7**

**Room: 111 (Exhibit Level) . . . . . Tue 4:00 pm to 6:00 pm**

**FETs**

Session Chair: **Jen-Inn Chyi**, National Central Univ. (Taiwan)

- 4:00 pm: **GaN Power Devices for Automotive Applications** (*Invited Paper*), Tsutomu Uesugi, Tetsu Kachi, Toyota Central R&D Labs., Inc. (Japan) . [8625-28]
- 4:30 pm: **Proton irradiation effects on InAlN/GaN high electron mobility transistors** (*Invited Paper*), Fan Ren, Univ. of Florida (USA); Stephen J. Pearton, Univ. of Florida (USA) . . . . . [8625-29]
- 5:00 pm: **Junction temperature measurements and reliability of GaN FETs** (*Invited Paper*), Martin Kuball, Univ. of Bristol (United Kingdom) . . . . . [8625-30]
- 5:30 pm: **High-sensitivity HFET type photosensors with a p-GaNIn gate**, Mami Ishiguro, Kazuya Ikeda, Masataka Mizuno, Motoaki Iwaya, Tetsuya Takeuchi, Satoshi Kamiyama, Isamu Akasaki, Meijo Univ. (Japan) . . . . [8625-31]
- 5:45 pm: **Traps and defects in pre- and post-proton irradiated AlGaIn-GaN high-electron mobility transistors and AlGaIn Schottky diodes**, Yongkun Sin, Brendan Foran, Stephen LaLumondiere, William T. Lotshaw, Steven C. Moss, The Aerospace Corp. (USA) . . . . . [8625-32]

**Wednesday 6 February**

**SESSION 8**

**Room: 111 (Exhibit Level) . . . . . Wed 8:00 am to 10:00 am**

**Lasers I**

Session Chair: **Joachim Piprek**, NUSOD Institute LLC (USA)

- 8:00 am: **Comparative study of III-nitride vertical-cavity surface-emitting laser diodes and optically-pumped polariton lasers** (*Invited Paper*), Raphaël Butté, Jacques Levrat, Gatien Cosendey, Georg Rossbach, Marlene Glauser, Antonino Castiglia, Eric Feltn, Jean-François Carlin, Nicolas Grandjean, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8625-33]
- 8:30 am: **Nonpolar and semipolar GaN, optical gain and efficiency** (*Invited Paper*), Seoung-Hwan Park, Catholic Univ. of Daegu (Korea, Republic of); Doyeol Ahn, The Univ. of Seoul (Korea, Republic of) . . . . . [8625-34]
- 9:00 am: **True-blue nitride laser diodes grown by plasma assisted MBE on low dislocation density GaN substrates**, Henryk Turski, Institute of High Pressure Physics (Poland); Marcin Siekacz, Institute of High Pressure Physics (Poland) and TopGaN Ltd. (Poland); Grzegorz Muziol, Institute of High Pressure Physics (Poland); Marta Sawicka, Institute of High Pressure Physics (Poland) and TopGaN Ltd. (Poland); Szymon Grzanka, Piotr Perlin, Tadeusz Suski, Institute of High Pressure Physics (Poland); Zbigniew R. Wasilewski, Waterloo Institute for Nanotechnology (Canada); Izabella Grzegory, Sylwester A. Porowski, Institute of High Pressure Physics (Poland); Czesław Skierbiszewski, Institute of High Pressure Physics (Poland) and TopGaN Ltd. (Poland) . [8625-35]

**OPTO**

9:15 am: **Thin AlGaN cladding blue-violet InGaN laser diode with plasmonic GaN substrate**, Piotr Perlin, Institute of High Pressure Physics (Poland) and TopGaN Ltd. (Poland); Szymon Stanczyk, Anna Kafar, Institute of High Pressure Physics (Poland); Robert Kucharski, Ammono Sp. z o.o. (Poland); Tomasz Czystanowski, Technical Univ. of Lodz (Poland); Lucja Marona, Tadek Suski, Institute of High Pressure Physics (Poland); Greg Targowski, TopGaN Ltd. (Poland) . . . . . [8625-36]

9:30 am: **Cathodoluminescence study of degraded InGaN laser diode structures**, Lucja Marona, Przemyslaw Wisniewski, Piotr Perlin, Tadek Suski, Institute of High Pressure Physics (Poland); Robert Czernecki, TopGaN Ltd. (Poland); Mariusz Pluska, Andrzej Czerwinski, Institute of Electron Technology (Poland) . . . . . [8625-37]

9:45 am: **Picosecond pulse generation in monolithic GaN-based multi-section laser diodes**, Katarzyna A. Holc, Thomas Weig, Wilfried Pletschen, Klaus Köhler, Joachim H. Wagner, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany); Ulrich T. Schwarz, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany) and Freiburg Univ. (Germany) . . . . . [8625-38]

Coffee Break . . . . . Wed 10:00 am to 10:30 am

**SESSION 9**

**Room: 111 (Exhibit Level) . . . . . Wed 10:30 am to 12:15 pm**

**Lasers II**

Session Chair: **Raphaël Butté**, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

10:30 am: **Intersubband spontaneous emission from GaN-based THz quantum cascade laser** (*Invited Paper*), Wataru Terashima, Hideki Hirayama, RIKEN (Japan) . . . . . [8625-39]

11:00 am: **Vertical cavity surface emitting terahertz lasers based on GaN** (*Invited Paper*), Alexis Kavokine, Univ. Montpellier 2 (France) . . . . . [8625-40]

11:30 am: **Latest developments in AlGaInN laser diode technology**, Stephen P. Najda, TopGaN Ltd. (Poland); Piotr Perlin, Tadek Suski, Lucja Marona, Michal Bockowski, Institute of High Pressure Physics (Poland); Mike Leszczynski, TopGaN Ltd. (Poland); P. Wisniewski, Robert Czernecki, Grzegorz Targowski, Institute of High Pressure Physics (Poland) . . . . . [8625-41]

11:45 am: **Room-temperature optically pumped AlGaInN-AlN multiple-quantum-well lasers operating at <260nm grown by metalorganic chemical vapor deposition**, Russell D. Dupuis, Zachary Lochner, Xiaohang Li, Jae-Hyun Ryou, Tsung-Ting Kao, Shyh-Chiang Shen, P. Douglas Yoder, Mahbub Satter, Georgia Institute of Technology (USA); Alec Fischer, Fernando Ponce, Arizona State Univ. (USA) . . . . . [8625-42]

12:00 pm: **Tunable light source with GaN-based violet laser diode**, Masaki Omori, Naoki Mori, Norihiro Dejima, Nichia Corp. (Japan) . . . . . [8625-43]

Lunch/Exhibition Break . . . . . Wed 12:15 pm to 1:45 pm

**SESSION 10**

**Room: 111 (Exhibit Level) . . . . . Wed 1:45 pm to 3:15 pm**

**LED I**

Session Chair: **Alexis Kavokine**, Univ. Montpellier 2 (France)

1:45 pm: **Growth, characterization, and fabrication of regularly patterned nanorod LED array** (*Invited Paper*), Che-Hao Liao, Wen-Ming Chang, Yu-Feng Yao, Chia-Ying Su, Chih-Yen Chen, Chieh Hsieh, Hao-Tsung Chen, Horng-Shyang Chen, Chang-Gan Tu, Yean-Woei Kiang, Chih-Chung Yang, National Taiwan Univ. (Taiwan) . . . . . [8625-44]

2:15 pm: **Prospect of GaN light-emitting diodes grown on glass substrates** (*Invited Paper*), Jun-Hee Choi, Chan Wook Baik, Yun Sung Lee, Ho Young Ahn, Sungwoo Hwang, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8625-45]

2:45 pm: **Surface plasmon enhanced high efficiency LEDs** (*Invited Paper*), Seong-Ju Park, Gwangju Institute of Science and Technology (Korea, Republic of) . . . . . [8625-46]

Coffee Break . . . . . Wed 3:15 pm to 3:45 pm

**SESSION 11**

**Room: 111 (Exhibit Level) . . . . . Wed 3:45 pm to 5:30 pm**

**LED II**

Session Chair: **Emmanouil Kioupakis**, Univ. of Michigan (USA)

3:45 pm: **Progress in the development of a-plane nonpolar GaN LED grown on r-plane sapphire substrate** (*Invited Paper*), Hyung-Gu Kim, Kyu-Hyun Bang, Young-Hak Chang, Jina Jeon, Eun-Jeong Kang, Sangwook Byun, Sukkoo Jung, Yoon-Ho Choi, Jeong-Soo Lee, LG Electronics Inc. (Korea, Republic of); Jung-Hoon Song, Kongju National Univ. (Korea, Republic of); Jun Seok Ha, Chonnam National Univ. (Korea, Republic of) . . . . . [8625-47]

4:15 pm: **Excitation dependency of polarized light emission from nonpolar InGaN quantum wells**, Lukas Schade, Ulrich T. Schwarz, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany); Tim Wernicke, Ferdinand-Braun-Institut (Germany); Jens Rass, Simon Ploch, Technische Univ. Berlin (Germany); Markus Weyers, Ferdinand-Braun-Institute (Germany); Michael Kneissl, Technische Univ. Berlin (Germany) . . . . . [8625-48]

4:30 pm: **Effects of local structure on optical properties in green-yellow InGaInGaN quantum wells**, Jongil Hwang, Toshiba Corp. (Japan); Rei Hashimoto, Shinji Saito, Shinya Nunoue, Toshiba Corp. (Japan) . . . . . [8625-49]

4:45 pm: **Studies of Influence of Hole Injection Layer and Electron Blocking Layer on Carrier Distributions in III-Nitride Visible Light-Emitting Diodes**, Russell D. Dupuis, Jeomoh Kim, Mi-Hee Ji, Jae-hyun Ryou, Md. Mahbub Satter, P. Douglas Yoder, Georgia Institute of Technology (USA); Kewei Sun, Reid K. Juday, Alec M. Fischer, Fernando Ponce, Arizona State Univ. (USA) . . . . . [8625-50]

5:00 pm: **Metal middle layers for improving thermal stability of Ag reflector for high-power GaN-based light-emitting diode**, Tae-Yeon Seong, Woong-Sun Yum, Joon-Woo Jeon, Korea Univ. (Korea, Republic of) . . . . . [8625-51]

5:15 pm: **InGaInN-based multi-double heterostructure light-emitting diodes with electron injector layers**, Fan Zhang, Xing Li, Shopan A. Hafiz, Serdal Okur, Vitaliy Avrutin, Ümit Özgür, Hadis Morkoç, Virginia Commonwealth Univ. (USA) . . . . . [8625-52]

**POSTERS-WEDNESDAY**

**Room: 103 (Exhibit Level) . . . . . Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Reducing threading dislocations in GaN grown on (111) Si by double GaN island growth method**, Cheng Lung-Chieh, Liu Hsueh-Hsing, National Central Univ. (Taiwan); Chen-Zi Liao, Industrial Technology Research Institute (Taiwan); Lee Geng-Yen, National Central Univ. (Taiwan); Chyi Jen-Inn, National Central Univ. (Taiwan) and Research Ctr. for Applied Sciences, Academia Sinica (Taiwan) . . . . . [8625-70]

**Thermal properties of InGaN laser diodes and arrays**, Szymon Stanczyk, Anna Kafar, Institute of High Pressure Physics (Poland) and Gdansk Univ. of Technology (Poland); Grzegorz Targowski, Przemek Wisniewski, Irina Makarowa, Tadek Suski, Piotr Perlin, Institute of High Pressure Physics (Poland) . . . . . [8625-71]

**Nonradiative recombination due to point defects in GaInN/GaN quantum wells induced by Ar implantation**, Torsten Langer, Hans-Georg Pietscher, Heiko Bremers, Uwe Rossow, Dirk Menzel, Andreas Hangleiter, Technische Univ. Braunschweig (Germany) . . . . . [8625-72]

**Influence of growth interruption on performance of nitride-based blue LED**, Kazuki Aoyama, Meijo Univ. (Japan); Atsushi Suzuki, Tsukasa Kitano, EL-SEED Corp. (Japan); Naoki Sone, Koito Manufacturing Co., Ltd. (Japan); Satoshi Kamiyama, Tetsuya Takeuchi, Motoaki Iwaya, Isamu Akasaki, Meijo Univ. (Japan) . . . . . [8625-73]

**Design and geometry of hybrid white light-emitted diodes for efficient energy transfer from the quantum well to the nanocrystals**, Oleksii Kopylov, Roza Shirazi, Technical Univ. of Denmark (Denmark); M. Mikulík, Beata Kardynal, Forschungszentrum Jülich GmbH (Germany) . . . . . [8625-74]

**Influence of free-standing GaN substrate on ultraviolet light-emitting diodes by atmospheric-pressure metal-organic chemical vapor deposition**, Chen Yu Shieh, National Central Univ. (Taiwan); Ching-Hsueh Chiu, Po-Min Tu, National Chiao Tung Univ. (Taiwan) and Advanced Optoelectronic Technology Inc. (Taiwan); Zhen Yu Li, Hao Chung Kuo, National Chiao Tung Univ. (Taiwan); Gou Chung Chi, National Central Univ. (Taiwan) and National Chiao Tung Univ. (Taiwan) . . . . . [8625-75]

## Thursday 7 February

## SESSION 12

Room: 111 (Exhibit Level) . . . . . Thu 8:00 am to 10:00 am

## LED III

Session Chair: **Seong-Ju Park**, Gwangju Institute of Science and Technology (Korea, Republic of)8:00 am: **Semipolar GaN-based optoelectronic structures on large area substrates** (*Invited Paper*), Ferdinand Scholz, Dominik Heinz, Robert A. R. Leute, Tobias Meisch, Junjun Wang, Univ. Ulm (Germany) . . . . . [8625-53]8:30 am: **First-principles studies of Auger recombination in InGaN** (*Invited Paper*), Emmanouil Kioupakis, Univ. of Michigan (USA); Daniel Steiauf, Qimim Yan, Chris G. Van de Walle, Univ. of California, Santa Barbara (USA) . . [8625-54]9:00 am: **Investigation of droop-causing mechanisms in GaN-based devices using fully microscopic many-body theory**, Jörg Hader, College of Optical Sciences, The Univ. of Arizona (USA) and Nonlinear Control Strategies Inc. (USA); Jerome V. Moloney, The Univ. of Arizona (USA) and Nonlinear Control Strategies Inc. (USA); Stephan W. Koch, Philipps-Univ. Marburg (Germany) . . . . . [8625-55]9:15 am: **Analysis of nonradiative carrier recombination process by extracting nonradiative current component in InGaN light-emitting diodes**, Kyu-Sang Kim, Sangji Univ. (Korea, Republic of); Il-Gyun Choi, Dong-Pyo Han, Joo-Sun Yun, Jong-Ilk Lee, Dong-Su Shin, Jong-In Shim, Hanyang Univ. (Korea, Republic of) . . . . . [8625-56]9:30 am: **Comparative investigation of induced electroluminescence in InGaN/GaN light-emitting diodes with open- and short-circuit conditions**, Seung-Hyuk Lim, Yong-Hoon Cho, KAIST (Korea, Republic of) . . . . . [8625-57]9:45 am: **Changes in the Mg profile and in dislocations induced by high-temperature annealing of blue LEDs**, Matteo Meneghini, Nicola Trivellin, Marina Berti, Tiziana Cesca, Andrea Gasparotto, Univ. degli Studi di Padova (Italy); Anna Vinattieri, Univ. degli Studi di Firenze (Italy); Franco Bogani, Univ. degli Studi di Firenze (Italy); Dandan Zhu, Colin Humphreys, Univ. of Cambridge (United Kingdom); Gaudenzio Meneghesso, Univ. degli Studi di Padova (Italy); Enrico Zanoni, Univ. degli Studi di Padova (Italy) . . . . . [8625-58]

Coffee Break . . . . . Thu 10:00 am to 10:30 am

## SESSION 13

Room: 111 (Exhibit Level) . . . . . Thu 10:30 am to 11:45 am

## LED IV

Session Chair: **Hidetoshi Miyake**, Mie Univ. (Japan)10:30 am: **Development of 260 nm band deep-ultraviolet light-emitting diodes on Si substrates** (*Invited Paper*), Takuya Mino, RIKEN (Japan) and Panasonic Corp. (Japan); Hideki Hirayama, RIKEN (Japan); Takayoshi Takano, Kenji Tsubaki, RIKEN (Japan) and Panasonic Corp. (Japan); Masakazu Sugiyama, The Univ. of Tokyo (Japan) . . . . . [8625-59]11:00 am: **Studies of hole transport in Mg-doped AlGaN layers for deep-ultraviolet light emitters**, Suk Choi, Bowen Cheng, Zhihong Yang, Clifford Knollenberg, Mark Teepe, Thomas Wunderer, Christopher Chua, John Northrup, Noble Johnson, Palo Alto Research Center, Inc. (USA) . . . . . [8625-60]11:15 am: **High optical power ultraviolet superluminescent InGaN diodes**, Anna Kafar, Institute of High Pressure Physics (Poland) and Gdansk Univ. of Technology (Poland); Szymon Stanczyk, Grzegorz Targowski, Przemek Wisniewski, Mike Leszczynski, Tadek Suski, Piotr Perlin, Institute of High Pressure Physics (Poland) . . . . . [8625-61]11:30 am: **mechanism for in-situ measurement of GaN luminaire chip temperatures**, Daren A. Lock, Univ. of Surrey (United Kingdom); Simon Hall, National Physics Lab. (United Kingdom); Andrew Prins, Stephen J. Sweeney, Univ. of Surrey (United Kingdom) . . . . . [8625-62]

Lunch/Exhibition Break . . . . . Thu 11:45 am to 1:00 pm

**Numerical analysis of using superlattice-AlGaIn/InGaIn as electron blocking layer in green InGaIn light-emitting diodes**, Fang-Ming Chen, National Changhua Univ. of Education (Taiwan); Bo-Ting Liou, Hsiuping Univ. of Science and Technology (Taiwan); Yi-An Chang, Jih-Yuan Chang, Yih-Ting Kuo, Yen-Kuang Kuo, National Changhua Univ. of Education (Taiwan) . . . . . [8625-76]**Role of nonequivalent atomic step edges in the growth of InGaIn by plasma-assisted molecular beam epitaxy**, Henryk Turski, Institute of High Pressure Physics (Poland); Marcin Siekacz, Marta Sawicka, Institute of High Pressure Physics (Poland) and TopGaN Ltd. (Poland); Zbig R. Wasilewski, Univ. of Waterloo (Canada); Sylwester Porowski, Institute of High Pressure Physics (Poland); Czeslaw Skierbiszewski, Institute of High Pressure Physics (Poland) and TopGaN Ltd. (Poland) . . . . . [8625-77]**Diffusion-assisted current spreading for III-nitride light-emitting applications**, Pyry Kivisaari, Jani Oksanen, Jukka Tulkki, Aalto Univ. School of Science and Technology (Finland) . . . . . [8625-78]**Structural and optical characterizations of GaN-based green LEDs growth using TiN buffer layer**, Chen Yu Shieh, National Central Univ. (Taiwan); Zhen Yu Li, Hao-Chung Kuo, National Chiao Tung Univ. (Taiwan); Gou Chung Chi, National Central Univ. (Taiwan) and National Chiao Tung Univ. (Taiwan) [8625-79]**Temperature-dependent external quantum efficiencies of bulk ZnO and GaN**, Nils Rosemann, Philipps-Univ. Marburg (Germany); Melanie Pinnisch, Bruno K. Meyer, Justus-Liebig-Univ. (Germany); Sangam Chatterjee, Philipps-Univ. Marburg (Germany); Martin Eickhoff, Justus-Liebig-Univ. (Germany); Stefan Lautenschläger, Justus-Liebig-Univ. Giessen (Germany) . . . . . [8625-80]**Microwave performance of AlGaIn/AlIn/GaN-based single and coupled channels HFETs**, Romualdo A. Ferreyra, Xing Li, Fan Zhang, Congyong Zhu, Natalia Izyumskaya, Cemil Kayis, Vitaliy Avrutin, Ümit Özgür, Hadis Morkoç, Virginia Commonwealth Univ. (USA) . . . . . [8625-81]**Linewidth reduction of site-controlled InGaIn quantum dots by surface passivation**, Chu-Hsiang Teng, Lei Zhang, Hui Deng, Univ. of Michigan (USA); Pei-Cheng Ku, Univ. of Michigan (USA) . . . . . [8625-82]**Recombination dynamics in non-polar m-plane GaN investigated by polarization- and time-resolved photoluminescence**, Serdal Okur, Virginia Commonwealth Univ. (USA); Kestutis Jarasiunas, Vilnius Univ. (Lithuania); Jacob Leach, Tanya Paskova, Kyra Technologies, Inc. (USA); Vitaliy Avrutin, Hadis Morkoç, Ümit Özgür, Virginia Commonwealth Univ. (USA) . . . . . [8625-83]**Gallium nitride distributed feedback nanowire lasers**, Jeremy B. Wright, Sandia National Labs. (USA) and The Univ. of New Mexico (USA); Qiming Li, Igal Brener, Ting S. Luk, George T. Wang, Sandia National Labs. (USA); Huiwen Xu, Luke F. Lester, The Univ. of New Mexico (USA) . . . . . [8625-84]**GaN-based vertical cavity lasers with all dielectric reflectors and polar and nonpolar crystal orientations**, Fan Zhang, Serdal Okur, Shopan Hafiz, Vitaliy Avrutin, Ümit Özgür, Hadis Morkoç, Virginia Commonwealth Univ. (USA) . . . . . [8625-85]**Depth distribution of carrier lifetimes in semipolar GaN grown by MOCVD on patterned Si substrates**, Natalia Izyumskaya, Serdal Okur, Fan Zhang, Vitaliy Avrutin, Ümit Özgür, Virginia Commonwealth Univ. (USA); Sebastian Metzner, Christopher Karbaum, Frank Bertram, Jürgen Christen, Otto-von-Guericke-Univ. Magdeburg (Germany); Hadis Morkoç, Virginia Commonwealth Univ. (USA) . . . . . [8625-86]**Investigation of microwave and noise properties of InAlIn/GaN HFETs after electrical stress: role of surface effects**, Congyong Zhu, Fan Zhang, Xing Li, Cemil Kayis, Romualdo A. Ferreyra, Vitaliy Avrutin, Ümit Özgür, Hadis Morkoç, Virginia Commonwealth Univ. (USA) . . . . . [8625-87]**Atomic structure and optical properties of GaN surfaces with polar (000-1), nonpolar (1-100) and semi-polar (20-21) crystal orientations**, Oleksandr Romanyuk, Petr Jiricek, Josef Zemek, Pingo Mutombo, Institute of Physics of the ASCR, v.v.i. (Czech Republic); Tania Paskova, North Carolina State Univ. (USA) . . . . . [8625-88]**Mode-polarization effect on the mode-coupling in gallium-nitride-based semiconductor-metal lasers**, Meng-Mu Shih, Univ. of Florida (USA) . [8625-89]

**SESSION 14**

**Room: 111 (Exhibit Level) . . . . . Thu 1:00 pm to 3:15 pm**

**Novel Devices**

Session Chair: **Hadis Morkoç**, Virginia Commonwealth Univ. (USA)

1:00 pm: **Preparation of high-quality AlGaIn and its application for electron-beam-excitation ultraviolet light source** (*Invited Paper*), Hideto Miyake, Mie Univ. (Japan); Fumitsugu Fukuyo, Mie Univ. (Japan) and Hamamatsu Photonics K.K. (Japan); Shunsuke Ochiai, Kazumasa Hiramatsu, Mie Univ. (Japan); Harumasa Yoshida, Yuji Kobayashi, Hamamatsu Photonics K.K. (Japan) . . . . . [8625-63]

1:30 pm: **AlN-based technology for deep UV and high-power applications** (*Invited Paper*), Zlatko Sitar, HexaTech, Inc. (USA) and North Carolina State Univ. (USA); Baxter Moody, S. Craft, Raoul Schlessler, Rafael F. Dalmau, Jinqiao Xie, Seiji Mita, HexaTech, Inc. (USA); T. Rice, J. Tweedy, J. LeBeau, Lindsay Hussey, Ramon Collazo, B. Gaddy, D. Irving, North Carolina State Univ. (USA) . . . . . [8625-91]

2:00 pm: **X-ray detectors based on GaN** (*Invited Paper*), Jean-Yves Duboz, Eric Frayssinet, Sebastien Chenot, Ctr. de Recherche sur l'Hétéro-Epitaxie et ses Applications (France); Jean-Luc Reverchon, Alcatel-Thales III-V Lab. (France); Mourad Idir, Soleil (France) . . . . . [8625-65]

2:30 pm: **Electroabsorption and refractive index modulation induced by intersubband transitions in GaN/AlN heterostructure waveguides**, Anatole Lupu, Institut d'Electronique Fondamentale (France); Salam Sakr, Univ. Paris-Sud 11 (France); Yulia Kotsar, Commissariat à l'Énergie Atomique (France); Maria Tchernycheva, Isac Nathalie, Univ. Paris-Sud 11 (France); Eva Monroy, Commissariat à l'Énergie Atomique (France); François Julien, Univ. Paris-Sud 11 (France) . . . . . [8625-67]

2:45 pm: **Avalanche photodiodes with cutoff wavelengths below 280nm based on AlGaIn grown by pulsed MOCVD**, Puneet Suvarna, Jeffrey M. Leathersich, Pratik Agnihotri, F. Shadi Shahedipour-Sandvik, Univ. at Albany (USA); L. Douglas Bell, Shouleh Nikzad, Jet Propulsion Lab. (USA) . . . [8625-68]

3:00 pm: **High voltage GaN-based photoconductive switches for pulsed power and RF synthesis applications**, Jacob H. Leach, Robert Metzger, Edward Preble, Keith R. Evans, Kyma Technologies, Inc. (USA) . . . . . [8625-69]



# Oxide-based Materials and Devices IV

Conference Chairs: **Ferechteh Hosseini Teherani**, Nanovation (France); **David C. Look**, Wright State Univ. (USA); **David J. Rogers**, Nanovation (France)

Program Committee: **Ivan Bozovic**, Brookhaven National Lab. (USA); **Jean-Jacques Delaunay**, The Univ. of Tokyo (Japan); **Aleksandra B. Djurić**, The Univ. of Hong Kong (Hong Kong, China); **Tamio Endo**, Mie Univ. (Japan); **Michael D. Gerhold**, U.S. Army Research Office (USA); **Hanns-Ulrich Habermeier**, Max-Planck-Institut für Festkörperforschung (Germany); **Axel Hoffmann**, Technische Univ. Berlin (Germany); **Masashi Kawasaki**, Tohoku Univ. (Japan); **Katharina Lorenz**, Instituto Tecnológico e Nuclear (Portugal); **Andreia Luisa da Rosa**, Univ. Bremen (Germany); **Tatsuo Okada**, Kyushu Univ. (Japan); **Thierry Pauporté**, Ecole Nationale Supérieure de Chimie de Paris (France); **Manijeh Razeghi**, Northwestern Univ. (USA); **Bruno Viana**, Ecole Nationale Supérieure de Chimie de Paris (France); **Takafumi Yao**, Tohoku Univ. (Japan)

## Sunday 3 February

### INTRODUCTION AND OPENING REMARKS

Room: 113 (Exhibit Level) ..... 8:20 am to 8:30 am

Ferechteh H. Teherani, Nanovation (France)

### SESSION 1

Room: 113 (Exhibit Level) ..... Sun 8:30 am to 10:05 am

#### Transparent Conducting Oxides

Session Chair: **David C. Look**, Wright State Univ. (USA)

8:30 am: **Thickness dependence of mobility and concentration in highly conductive ZnO**, David C. Look, Wright State Univ. (USA); Kevin D. Leedy, Arnold M. Kiefer, Bruce B. Claffin, Air Force Research Lab. (USA) ..... [8626-1]

8:55 am: **Graphene versus oxides for transparent electronics applications** (*Invited Paper*), Vinod E. Sandana, Graphos (France) ..... [8626-2]

9:20 am: **Impact of degenerate n-doping on the absorption edge in transparent conducting oxides** (*Invited Paper*), Andre Schleife, Lawrence Livermore National Lab. (USA); Claudia Rödl, Karsten Hannewald, Friedhelm Bechstedt, Friedrich-Schiller-Univ. Jena (Germany) ..... [8626-3]

9:45 am: **Application of highly conductive ZnO to plasmonics**, Monica S. Allen, Jeffrey W. Allen, Brett R. Wenner, Air Force Research Lab. (USA); David C. Look, Wright State Univ. (USA); Kevin D. Leedy, Air Force Research Lab. (USA) ..... [8626-4]

Coffee Break ..... Sun 10:05 am to 10:30 am

### SESSION 2

Room: 113 (Exhibit Level) ..... Sun 10:30 am to 12:30 pm

#### Doping

Session Chair: **P. Bove**, Nanovation (France)

10:30 am: **Stability of dopant concentration in heavily doped ZnO** (*Invited Paper*), Bruce B. Claffin, Kevin D. Leedy, Air Force Research Lab. (USA); David C. Look, Wright State Univ. (USA) and Wyle Labs. (USA) and Air Force Research Lab. (USA) ..... [8626-5]

10:55 am: **Prospects on lanthanide-doped wide band gap oxides** (*Invited Paper*), M. J. Soares, J. Rodrigues, Armando J. Neves, Fernanda Madalena Costa, Teresa Monteiro, Univ. de Aveiro (Portugal) ..... [8626-75]

11:20 am: **Multidimensional depth profile analysis of oxide layers by plasma profiling techniques, GD OES and PP TOFMS** (*Invited Paper*), Patrick Chapon, Agnes Tempez, Sébastien Legendre, HORIBA Jobin Yvon S.A.S. (France) ..... [8626-6]

11:45 am: **Optical and electrical properties of aluminum-doped ZnO bulk crystals grown by the hydrothermal technique** (*Invited Paper*), Buguo Wang, Matthew Mann, Bruce B. Claffin, David C. Look, Air Force Research Lab. (USA) ..... [8626-7]

12:10 pm: **Enhancement (100 times) of photoluminescence in pulsed laser deposited ZnO thin films by hydrogen ion implantation**, Saurabh Nagar, Subhananda Chakrabarti, Indian Institute of Technology Bombay (India) [8626-9]

Lunch Break ..... Sun 12:30 pm to 2:00 pm

### SESSION 3

Room: 113 (Exhibit Level) ..... Sun 2:00 pm to 3:05 pm

#### Photoresponsivity and Photodetectors

Session Chair: **Michael D. Gerhold**, U.S. Army Research Office (USA)

2:00 pm: **MOCVD growth of ZnO nanowire arrays for advanced UV detectors** (*Invited Paper*), Tariq Manzur, Naval Undersea Warfare Ctr. (USA); John Zeller, Naval Undersea Warfare Ctr. (USA) and Magnolia Optical Technologies, Inc. (USA); Ashok Sood, Magnolia Optical Technologies, Inc. (USA); Mehdi Anwar, Univ. of Connecticut (USA) ..... [8626-10]

2:25 pm: **Persistent photoconductivity and transient recovery of Al:ZnO:Al planar structures**, James C. Moore, Laura R. Covington, Coastal Carolina Univ. (USA) ..... [8626-11]

2:45 pm: **Study of photoresponsivity in optoelectronic devices based on single crystal  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> epitaxial layers**, Ray-Hua Horng, National Chung Hsing Univ. (Taiwan); Parvaneh Ravadgar, National Cheng Kung Univ. (Taiwan) ..... [8626-12]

Coffee Break ..... Sun 3:05 pm to 3:30 pm

### SESSION 4

Room: 113 (Exhibit Level) ..... Sun 3:30 pm to 5:55 pm

#### Strongly Correlated Complex Oxides

Session Chair: **Hanns-Ulrich Habermeier**, Max-Planck-Institut für Festkörperforschung (Germany)

3:30 pm: **Photon detectors based on oxide heterostructures and superlattices**, Hanns-Ulrich Habermeier, Max-Planck-Institut für Festkörperforschung (Germany) ..... [8626-13]

3:55 pm: **Properties of high-density two-dimensional electron gases at Mott/band insulator interfaces** (*Invited Paper*), Susanne Stemmer, Pouya Moetakef, Daniel Ouellette, Univ. of California, Santa Barbara (USA); James R. Williams, David Goldhaber-Gordon, Stanford Univ. (USA); S. James Allen, Univ. of California, Santa Barbara (USA) ..... [8626-14]

4:20 pm: **Recent progress in highmobility electron gas at MgZnO/ZnO heterointerfaces** (*Invited Paper*), Yusuke Kozuka, Joseph Falson, The Univ. of Tokyo (Japan); Denis Maryenko, RIKEN (Japan); Atsushi Tsukazaki, Soichiro Teraoka, Akira Oiwa, Seigo Tarucha, Masashi Kawasaki, The Univ. of Tokyo (Japan) ..... [8626-15]

4:45 pm: **Controlling electronic orbitals in complex oxide heterostructures**, John W. Freeland, Argonne National Lab. (USA) ..... [8626-16]

5:05 pm: **Access to a buried phase in manganite by field effect carrier control** (*Invited Paper*), Takafumi Hatano, RIKEN (Japan); Yasushi Ogimoto, Fuji Electric Co., Ltd. (Japan); Naoki Ogawa, Zhigao Sheng, Masao Nakamura, Masaki Nakano, RIKEN (Japan); Shimpei Ono, Central Research Institute of Electric Power Industry (Japan); Masashi Kawasaki, The Univ. of Tokyo (Japan); Kenjiro Miyano, National Institute for Materials Science (Japan); Yoshihiro Iwasa, Yoshinori Tokura, The Univ. of Tokyo (Japan) ..... [8626-17]

5:30 pm: **Towards non-silicon technologies: growth and characterisation of complex oxides for multiferroic and resistive memory applications** (*Invited Paper*), Donald A MacLaren, Univ. of Glasgow (United Kingdom) ..... [8626-18]

**Monday 4 February**

**SESSION 5**

**Room: 113 (Exhibit Level) . . . . . Mon 8:00 am to 10:30 am**

**ZnO-based Emitters**

Session Chair: **Seong-Ju Park**, Gwangju Institute of Science and Technology (Korea, Republic of)

8:00 am: **MOCVD growth and characteristics of ZnO-based LEDs** (*Keynote Presentation*), Seong-Ju Park, Gwangju Institute of Science and Technology (Korea, Republic of) . . . . . [8626-19]

8:30 am: **Engineering light-emitting diodes with inexpensive materials: Integrating ZnO and Si into solid state lighting** (*Invited Paper*), Can Bayram, Devendra Sadana, IBM Thomas J. Watson Research Ctr. (USA); Ferechteh Teherani, David Rogers, Nanovation (France); Yinjun Zhang, Simon Gautier, Chu-Young Cho, Erdem Cicek, Zahra Vashaei, Ryan McClintock, Manijeh Razeghi, Northwestern Univ. (USA) . . . . . [8626-20]

8:55 am: **Near UV ZnO LED coupled to QD based phosphors**, Guido Faglia, Camilla Baratto, Elisabetta Comini, Isabella Concina, Giorgio Sberveglieri, Univ. degli Studi di Brescia (Italy) and Institute of Acoustics O. M. Corbino, CNR (Italy) . . . . . [8626-21]

9:15 am: **Cd<sub>x</sub>Zn<sub>1-x</sub>O epilayers grown on MgZnO for red to violet emission** (*Invited Paper*), Andrés Redondo-Cubero, Univ. Técnica de Lisboa (Portugal) and Univ. de Lisboa (Portugal); Matthias Brandt, P. Schäfer, Fritz Henneberger, Humboldt-Univ. zu Berlin (Germany); Nuno Franco, Eduardo Alves, Univ. Técnica de Lisboa (Portugal); Joana Rodrigues, Teresa Monteiro, Univ. de Aveiro (Portugal); Katharina Lorenz, Univ. Técnica de Lisboa (Portugal) and Univ. de Lisboa (Portugal) . . . . . [8626-22]

9:40 am: **Photonic devices on paper** (*Invited Paper*), Magnus Willander, Linköping Univ. (Sweden) . . . . . [8626-23]

10:05 am: **New emissive ZnO-graphene hybrid quantum dots** (*Invited Paper*), Won Kook Choi, Dong-Ick Son, Korea Institute of Science and Technology (Korea, Republic of) . . . . . [8626-24]

Coffee Break . . . . . Mon 10:30 am to 11:00 am

**SESSION 6**

**Room: 113 (Exhibit Level) . . . . . Mon 11:00 am to 12:10 pm**

**Nanomaterials and Related Devices I**

Session Chair: **Magnus Willander**, Linköping Univ. (Sweden)

11:00 am: **Active glass ceramics for photonic applications** (*Invited Paper*), Setsuhisa Tanabe, Jumpei Ueda, Kyoto Univ. (Japan); Takayuki Nakanishi, Hokkaido Univ. (Japan) . . . . . [8626-25]

11:25 am: **Control of the point defects in oxide materials to enhance functionalities in imaging**, Bruno Viana, Aurélie Bessière, Didier Gourier, Ecole Nationale Supérieure de Chimie de Paris (France); Thomas Maldiney, Cyrille Richard, Daniel Scherman, UPCGI (France) . . . . . [8626-26]

11:50 am: **Photocatalytic properties of TiO<sub>2</sub> nanotubes**, Andreas Pfuch, INNOVENT e.V. (Germany); Frank Guell, Univ. de Barcelona (Spain); Tina Toelke, INNOVENT e.V. (Germany); Susanta K. Das, Indian Institute of Technology Guwahati (Germany); Hamza Messaoudi, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Enda McGlynn, Dublin City Univ. (Ireland); Wolfgang Seeber, Friedrich-Schiller-Univ. Jena (Germany); Ruediger Grunwald, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany) . . . . . [8626-27]

Lunch Break . . . . . Mon 12:10 pm to 1:30 pm

**SESSION 7**

**Room: 113 (Exhibit Level) . . . . . Mon 1:30 pm to 2:45 pm**

**Nanomaterials and Related Devices II**

Session Chair: **Magnus Willander**, Linköping Univ. (Sweden)

1:30 pm: **Waveguiding and confinement of light in semiconductor oxide microstructures** (*Invited Paper*), Bianchi Mendez, Teresa Cebriano, Iñaki López, Emilio Nogales, Javier Piqueras, Univ. Complutense de Madrid (Spain) [8626-28]

1:55 pm: **Modification of fiber facet reflection with a ZnO nanowire array**, Igor V. Melnikov, Dmitry G. Gromov, Moscow Institute of Electrical Engineering and Technical Univ. (Russian Federation); Andrey E. Mironov, Moscow Institute of Electrical Engineering and Technical Univ. (Russian Federation) and Univ. of Illinois at Urbana-Champaign (USA); Pavel B. Novozhylov, Michael Y. Nazarkin, Andrey A. Machnev, Moscow Institute of Electrical Engineering and Technical Univ. (Russian Federation) . . . . . [8626-29]

2:15 pm: **Applications of nanosecond laser annealing to fabricating p-n homo junction on ZnO nanowires**, Tetsuya Shimogaki, Taihei Ofuji, Norihiro Tetsuyama, Kota Okazaki, Mitsuhiro Higashihata, Daisuke Nakamura, Hiroshi Ikenoue, Tanemasa Asano, Tatsuo Okada, Kyushu Univ. (Japan) . . . . . [8626-30]

2:30 pm: **Lasng characteristics of optically-pumped single ZnO micro/nanocrystal**, Kota Okazaki, Tetsuya Shimogaki, Koshi Fusazaki, Mitsuhiro Higashihata, Daisuke Nakamura, Tatsuo Okada, Kyushu Univ. (Japan) . [8626-31]

Coffee Break . . . . . Mon 2:45 pm to 3:30 pm

**SESSION 8**

**Room: 113 (Exhibit Level) . . . . . Mon 3:30 pm to 5:35 pm**

**Photovoltaic Applications**

Session Chair: **Thierry Pauporté**, Ecole Nationale Supérieure de Chimie de Paris (France)

3:30 pm: **Influence of defects in ZnO nanomaterials on the performance of dye-sensitized solar cell and photocatalytic activity** (*Invited Paper*), Mu Yao Guo, The Univ. of Hong Kong (Hong Kong, China); Alan Man Ching Ng, South Univ. of Science and Technology of China (China) and The Univ. of Hong Kong (Hong Kong, China); Fang Zhou Liu, Yu Hang Leung, Ka Kan Wong, Annie Ng, Yip Hang Ng, Gang Wang, Aleksandra B. Djurišić, Wai Kin Chan, The Univ. of Hong Kong (Hong Kong, China) . . . . . [8626-32]

3:55 pm: **ZnO:Al with tuned properties for photovoltaic applications: thin layers and high-mobility material** (*Invited Paper*), Florian Ruske, Mark Wimmer, Robert Röbler, Sebastian Neubert, Stefan Kämpfer, Bernd Rech, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH (Germany) . . . . . [8626-33]

4:20 pm: **Design of oxide structured films for dye-sensitized photovoltaic solar cells**, Thierry Pauporté, Ecole Nationale Supérieure de Chimie de Paris (France) . . . . . [8626-35]

4:45 pm: **Laser crystallization of high-mobility aluminum-doped ZnO (AZO) thin films** (*Invited Paper*), Gary Cheng, Purdue Univ. (USA) . . . . . [8626-34]

5:10 pm: **Comparison of chemical and laser lift-off for the transfer of GaN to alternative substrates**, David J. Rogers, Nanovation (France); Abdallah Ougazzaden, Georgia Tech-Lorraine (France); Ferechteh H. Teherani, P. Bove, Nanovation (France); K. Pantzas, Georgia Tech-Lorraine (France); Tarik Moudakir, Gaëlle Orsal, Supélec (France); Mohamed Abid, Georgia Tech-Lorraine (France); Gilles Patriarche, Lab. de Photonique et de Nanostructures (France); Simon Gautier, Supélec (France); Ryan McClintock, Manijeh Razeghi, Northwestern Univ. (USA) . . . . . [8626-36]

**Tuesday 5 February**

**OPTO PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am**

*Session Chairs* : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
  - 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
  - 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]
  - 8:50 am: **Group IV photonics for the mid infrared,**  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
  - 9:30 am: **Light in a twist: optical angular momentum,**  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]
- See page 26 for details.

Coffee Break . . . . . Tue 10:10 am to 10:30 am

**SESSION 9**

**Room: 113 (Exhibit Level) . . . . . Tue 10:30 am to 11:35 am**

**Electronic and Structural Phase Transitions**

*Session Chair*: **Hanns-Ulrich Habermeier**, Max-Planck-Institut für Festkörperforschung (Germany)

- 10:30 am: **Residual stresses, stoichiometry and clamped thermal expansion in LiNbO<sub>3</sub> and LiTaO<sub>3</sub> thin films** (*Invited Paper*), Samuel Margueron, Ctr. National de la Recherche Scientifique (France); Ausrine Bartasyte, Univ. de Lorraine (France); Valentina Plausinaitiene, Abrutis Adulfas, Tomas Murauskas, Vilnius Univ. (Lithuania); Pascal Boulet, Sylvie Robert, Jerome Gleize, Univ. de Lorraine (France); Virgaudas Kubilius, Zita Saltyte, Vilnius Univ. (Lithuania) . . . . . [8626-37]
- 10:55 am: **Electric-field induced bulk phase transition in VO<sub>2</sub>** (*Invited Paper*), Masaki Nakano, RIKEN (Japan); Keisuke Shibuya, National Institute of Advanced Industrial Science and Technology (Japan); Daisuke Okuyama, Takafumi Hatano, RIKEN (Japan); Shimpei Ono, Central Research Institute of Electric Power Industry (Japan); Masashi Kawasaki, Yoshihiro Iwasa, Yoshinori Tokura, The Univ. of Tokyo (Japan) . . . . . [8626-38]
- 11:20 am: **Ion beam synthesis of nanothermochromic diffraction gratings with giant switching contrast at telecom wavelengths**, Johannes Zimmer, Achim Wixforth, Helmut Karl, Hubert Krenner, Univ. Augsburg (Germany) . . . . . [8626-39]

**SESSION 10**

**Room: 113 (Exhibit Level) . . . . . Tue 11:35 am to 12:20 pm**

**Thin Film Transistors**

*Session Chair*: **Vinod Eric Sandana**, Nanovation (France)

- 11:35 am: **The effects of deposition conditions and annealing temperature on the performance of gallium tin zinc oxide thin film transistors** (*Invited Paper*), Shanthy Iyer, Tanina Bradley, Robert Alston, Ward Collis, Olanrewaju Ogedengbe, North Carolina A&T State Univ. (USA); Jay S. Lewis, Garry Cunningham, RTI International (USA) . . . . . [8626-40]
  - 12:00 pm: **TiO<sub>2</sub> thin film transistor by atomic layer deposition**, Ali K. Okyay, Feyza Oruc, Furkan Cimen, Bilkent Univ. (Turkey) . . . . . [8626-41]
- Lunch/Exhibition Break . . . . . Tue 12:20 pm to 2:00 pm

**SESSION 11**

**Room: 113 (Exhibit Level) . . . . . Tue 2:00 pm to 3:00 pm**

**Photonic Materials and Devices I**

*Session Chair*: **Bruno Viana**, Ecole Nationale Supérieure de Chimie de Paris (France)

- 2:00 pm: **Growth of single and multilayer sesquioxide crystal films for lasing applications via pulsed laser deposition**, Katherine A. Sloyan, Robert W. Eason, Univ. of Southampton (United Kingdom); Sebastian Heinrich, Günter Huber, Univ. Hamburg (Germany) . . . . . [8626-43]
  - 2:20 pm: **Atomic force microscopy based morphological, electric, and photoelectric characterization of ZnO** (*Invited Paper*), Christian Teichert, Montan Univ. Leoben (Austria) . . . . . [8626-44]
  - 2:45 pm: **Fabrication of single crystalline ZnO microspheres by laser ablation in superfluid helium**, Shinya Okamoto, Satoshi Ichikawa, Yosuke Minowa, Masaaki Ashida, Osaka Univ. (Japan) . . . . . [8626-50]
- Coffee Break . . . . . Tue 3:00 pm to 3:30 pm

**SESSION 12**

**Room: 113 (Exhibit Level) . . . . . Tue 3:30 pm to 4:40 pm**

**Photonic Materials and Devices II**

*Session Chair*: **Bruno Viana**, Ecole Nationale Supérieure de Chimie de Paris (France)

- 3:30 pm: **Crystallization effect on rare-earth activated biocompatible glass-ceramics** (*Invited Paper*), Rolindes Balda, Univ. del País Vasco (Spain); Daniel Sola, Centro de Física de Materiales (Spain); Jose Ignacio Peña, Univ. de Zaragoza (Spain); Joaquín M. Fernández, Univ. del País Vasco (Spain) . [8626-46]
- 3:55 pm: **Defects study of MOCVD-grown  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> films**, Parvaneh Ravadgar, National Cheng Kung Univ. (Taiwan); Ray-Hua Horng, National Chung Hsing Univ. (Taiwan); Hui-Ping Pan, Shu-De Yao, Peking Univ. (Taiwan) . . . . . [8626-47]
- 4:10 pm: **Nonlinear optical photonic crystal waveguide with TiO<sub>2</sub> material**, Koji Uchijima, Tomohiro Kita, Hirohito Yamada, Tohoku Univ. (Japan) . [8626-48]
- 4:25 pm: **Optimizing anatase-TiO<sub>2</sub> deposition for low-loss planar waveguides**, Lili Jiang, Christopher C. Evans, Orad Reshef, Eric Mazur, Harvard Univ. (USA) . . . . . [8626-49]

**Wednesday 6 February**

**POSTERS-WEDNESDAY**

**Room: 103 (Exhibit Level) . . . . . Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

- Inkjet-printed indium zinc oxide nonvolatile memory thin-film transistors with organic ferroelectric gate Insulator**, Soon-Won Jung, Bock Soon Na, Jae Bon Koo, In-Kyu You, Electronics and Telecommunications Research Institute (Korea, Republic of) . . . . . [8626-42]
- Development of tellurium oxide and lead-bismuth oxide glasses for mid-wave infrared transmission optics**, Beiming Zhou, Charles F. Rapp, John K. Driver, Michael J. Myers, John D. Myers, Kigre, Inc. (USA); Jonathan T. Goldstein, Air Force Research Lab. (USA); Rich Utano, Shantanu Gupta, Fibertek, Inc. (USA) . . . . . [8626-51]
- Synthesis and characterization of core/shell (ZnO/gamma-Fe<sub>2</sub>O<sub>3</sub>) structured nanoparticles**, Nouredine Jouini, Imen Balti, Lab. de Physique des Lasers (France); Laila Samia Smiri, Univ. of Carthage (Tunisia); Pierre Rabu, Institut de Physique et Chimie des Matériaux de Strasbourg (France); Eric Gautron, Philippe Leone, Institut des Matériaux Jean Rouxel (France); Bruno Viana, Ecole Nationale Supérieure de Chimie de Paris (France) and Univ. Pierre et Marie Curie (France) and Collège de France (France) . . . . . [8626-52]
- The effect of moisture on negative bias stability of oxide TFTs**, Yong Han, Xiaoli Nan, Haitao Dai, Shu Guo Wang, Xiao Wei Sun, Tianjin Univ. (China) . . . . . [8626-53]
- The influences of deposition conditions on a-IGZO TFTs and the investigation of stability**, Xiaoli Nan, Yong Han, Haitao Dai, Shu Guo Wang, Xiao Wei Sun, Tianjin Univ. (China) . . . . . [8626-54]

**OPTO**

**Various post-annealing treatments on aluminum doped zinc oxide films fabricated by ion beam co-sputtering**, Jin-Cherng Hsu, Yu-Yun Chen, Yueh-Sheng Chiang, Heng-Ying Cho, Fu-Jen Catholic Univ. (Taiwan) . . . . . [8626-55]

**Effects of O<sub>2</sub> plasma post-treatment on ZnO: Ga thin films grown by H<sub>2</sub>O-thermal ALD**, Yueh-Lin Lee, Jia-Hao Chuang, Tzu-Hsuan Huang, Chong-Long Ho, Meng-Chyi Wu, National Tsing Hua Univ. (Taiwan). . . . . [8626-56]

**Current-voltage characteristics of n-AlMgZnO/p-GaN junction diodes**, Kuang-Po Hsueh, Po-Wei Cheng, Yi-Chang Cheng, Vanung Univ. (Taiwan); Jinn-Kong Sheu, Yu-Hsiang Yeh, National Cheng Kung Univ. (Taiwan); Hsien-Chin Chiu, Hsiang-Chun Wang, Chang Gung Univ. (Taiwan) . . . . . [8626-57]

**ZnO nanorods on V-doped AZO thin films**, Yen-Ju Wu, Yu-Shan Wei, Chih-I Hsieh, Cheng-Yi Liu, National Central Univ. (Taiwan) . . . . . [8626-58]

**Electrodeposited ZnO nanowire-based light-emitting diodes with tunable emission from near-UV to blue**, Thierry Pauporté, Oleg Lupan, Bruno Viana, Ecole Nationale Supérieure de Chimie de Paris (France) . . . . . [8626-59]

**P-type ZnO films by phosphorus doping using plasma immersion ion-implantation technique**, Saurabh Nagar, Subhananda Chakrabarti, Indian Institute of Technology Bombay (India). . . . . [8626-60]

**Synthesis and optical characterization of Gd<sub>2</sub>O<sub>3</sub>:Tb nanoparticles for high-energy photon detection**, Gabriela Palestino, Univ. Autónoma de San Luis Potosí (Mexico); Luis Hernández-Adame, Univ. Autónoma de San Luis Potosí (Mexico); Francisco Javier Medellín-Rodríguez, Univ. Autónoma de San Luis Potosí (Mexico); Antonio Méndez-Blas, Benemérita Univ. Autónoma de Puebla (Mexico); Roger Vega-Acosta, Univ. Autónoma de San Luis Potosí (Mexico). . . . . [8626-61]

**Impact of growth conditions on ZnO homoepitaxial films on ZnO substrates by plasma-assisted molecular beam epitaxy**, Ming Wei, Ryan C. Boutwell, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Winston Schoenfeld, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) and Univ. of Central Florida (USA) . . . . . [8626-62]

**Thin film field effect transistor and ferroelectric memory**, Armen R. Poghosyan, Natella R. Aghamalyan, Tigran A. Aslanyan, Ruben K. Hovsepyan, Institute for Physical Research (Armenia) . . . . . [8626-63]

**Metal-dielectric electronic phase transitions in transparent zinc oxide thin films**, Armen R. Poghosyan, Natella R. Aghamalyan, Tigran A. Aslanyan, Yevgenia A. Kafadaryan, Ruben K. Hovsepyan, Silva I. Petrosyan, Institute for Physical Research (Armenia). . . . . [8626-64]

**ZnO based optical modulator in the visible wavelengths**, Ali K. Okyay, Levent Aygun, Feyza Oruc, Bilkent Univ. (Turkey) . . . . . [8626-65]

**Surface modified-ZSM-5 zeolite-coated long period fiber grating for ammonia detection in water**, Zhan Gao, Xinwei Lan, Jie Huang, Hanzheng Wang, Lei Yuan, Missouri Univ. of Science and Technology (USA); Xiling Tang, Junhang Dong, Univ. of Cincinnati (USA); Hai Xiao, Missouri Univ. of Science and Technology (USA). . . . . [8626-66]

**Effect of transition metal oxide anode interlayer in bulk heterojunction solar cells**, Annie Ng, Xiang Liu, Aleksandra B. Djurišić, The Univ. of Hong Kong (Hong Kong, China); Alan Man Ching Ng, South Univ. of Science and Technology of China (China); Wai Kin Chan, The Univ. of Hong Kong (Hong Kong, China) . . . . . [8626-67]

**Effect of sheet resistance, transmittance, and morphology of ITO electrode on polymer solar cells characteristics**, Xiang Liu, Annie Ng, Aleksandra B. Djurišić, The Univ. of Hong Kong (Hong Kong, China); Alan Man Ching Ng, South Univ. of Science and Technology of China (China); Wai Kin Chan, The Univ. of Hong Kong (Hong Kong, China). . . . . [8626-68]

**Mg and N doping of ZnO thin films grown by PLD**, David J. Rogers, Nanovation (France) . . . . . [8626-73]

**Optical, microstructural, vibrational, and theoretical studies of p-type SrCu<sub>2</sub>O<sub>2</sub>-based and BaCu<sub>2</sub>O<sub>2</sub>-based transparent conductive oxides and alloys**, Jacky Even, L. Pedesseau, Olivier Durand, Institut National des Sciences Appliquées de Rennes (France); Mircea G. Modreanu, Tyndall National Institute (Ireland); Guido Huyberegts, FLAMAC (Belgium); B. Servet, Guy Garry, Thales Research & Technology (France); Odette Chaix-Pluchery, Institut National Polytechnique de Grenoble (France). . . . . [8626-74]



Download the SPIE Conference App





# Integrated Optics: Devices, Materials, and Technologies XVII

Conference Chairs: **Jean Emmanuel Broquin**, IMEP-LAHC (France); **Gualtiero Nunzi Conti**, Istituto di Fisica Applicata Nello Carrara (Italy)

Conference Co-Chairs: **Pierre Berini**, Univ. of Ottawa (Canada); **Christoph M. Greiner**, LightSmyth Technologies, Inc. (USA)

Program Committee: **Pavel Cheben**, National Research Council Canada (Canada); **Xudong Fan**, Univ. of Michigan (USA); **Sonia M. García-Blanco**, Univ. Twente (Netherlands); **Helmut Heidrich**, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany); **Andrea I. Melloni**, Politecnico di Milano (Italy); **Robert L. Nelson**, Air Force Research Lab. (USA); **Min-Cheol Oh**, Pusan National Univ. (Korea, Republic of); **François Royer**, Univ. Jean Monnet Saint-Etienne (France); **Jens H. Schmid**, National Research Council Canada (Canada); **Frank Schmidt**, JCMwave GmbH (Germany); **Yakov Sidorin**, Quarles & Brady LLC (USA); **Stefano Taccheo**, Swansea Univ. (United Kingdom); **Christoph Wächter**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); **Qiwen Zhan**, Univ. of Dayton (USA)

## Tuesday 5 February

### OPTO PLENARY SESSION

Room: 134 (Exhibit Level) ..... 8:00 am to 10:10 am

Session Chairs : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
- 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
- 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) ..... [8637-1]
- 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
- 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]  
See page 26 for details.

Coffee Break ..... Tue 10:10 am to 10:30 am

### SESSION 1

Room: 236 (Mezzanine) ..... Tue 10:30 am to 12:00 pm

#### Waveguide Engineering I

Session Chair: **Jean Emmanuel Broquin**, IMEP-LAHC (France)

- 10:30 am: **Ultrafast laser inscription: a new platform for photonic devices** (*Invited Paper*), **Ajoy K. Kar**, Heriot-Watt Univ. (United Kingdom) ..... [8627-1]
- 11:00 am: **Optical spectrum control circuit with flat pass band characteristics using a high-resolution arrayed-waveguide grating**, **Tatsuhiko Ikeda**, Keio Univ. (Japan); **Takayuki Mizuno**, Hiroshi Takahashi, NTT Photonics Labs. (Japan); **Hiroyuki Tsuda**, Keio Univ. (Japan) ..... [8627-2]
- 11:20 am: **Design and fabrication of EO polymer-clad one-dimensional silicon photonic crystal nanowire modulators**, **Shin-ichiro Inoue**, Akira Otomo, National Institute of Information and Communications Technology (Japan) ..... [8627-3]
- 11:40 am: **Single- and double-energy N<sup>+</sup> - irradiated planar and channel waveguides in eulytine and sillenite type BGO crystals**, **István Bánnyász**, Wigner Research Ctr. for Physics of the H.A.S. (Hungary); **Stefano Pelli**, Istituto di Fisica Applicata Nello Carrara (Italy); **Zsolt Zolnai**, Miklós Fried, Research Institute for Technical Physics and Materials Science (Hungary); **Simone Berneschi**, Enrico Fermi Ctr. for Study and Research (Italy) and Istituto di Fisica Applicata Nello Carrara (Italy); **Tivadar Lohner**, Research Institute for Technical Physics and Materials Science (Hungary); **Gualtiero Nunzi Conti**, Istituto di Fisica Applicata Nello Carrara (Italy); **Giancarlo C. Righini**, Enrico Fermi Ctr. for Study and Research (Italy) and Istituto di Fisica Applicata Nello Carrara (Italy) . [8627-4]
- Lunch/Exhibition Break ..... Tue 12:00 pm to 1:30 pm

### SESSION 2

Room: 236 (Mezzanine) ..... Tue 1:30 pm to 3:10 pm

#### Photonic Integration

Session Chair: **Pavel Cheben**, National Research Council Canada (Canada)

- 1:30 pm: **Ultra-low power CMOS photonic interconnects** (*Invited Paper*), **Ashok V. Krishnamoorthy**, Oracle (USA) ..... [8627-5]
- 2:00 pm: **III-V/silicon photonic integrated circuits for communication and sensing applications** (*Invited Paper*), **Gunther Roelkens**, Shahram Keyvaninia, Stevan Stankovic, Yannick De Koninck, Univ. Gent (Belgium); **Martijn Tassaert**, UGent (Belgium); **Pauline Mechet**, Univ. Gent (Belgium); **Thijs Spuesens**, UGent (Belgium); **Nannicha Hattasan**, Alban Gassenq, Univ. Gent (Belgium); **Muhammad Muneeb**, Eva Ryckeboer, UGent (Belgium); **Samir Ghosh**, Roel G. Baets, Dries Van Thourhout, Univ. Gent (Belgium) ..... [8627-6]
- 2:30 pm: **Design and experimental characterization of an InP photonic integrated circuit working as a receiver for frequency-modulated direct-detection microwave photonic links**, **Javier S. Fandiño**, Iñigo Artundo, Pascual Muñoz, Univ. Politècnica de València (Spain); **José Capmany Francoy**, Univ. Politècnica de Valencia (Spain) ..... [8627-7]
- 2:50 pm: **Low-voltage broadband electro-absorption from Ge/SiGe QWs on silicon**, **Elizabeth H. Edwards**, Edward Fei, Theodore I. Kamins, James S. Harris, David A. B. Miller, Stanford Univ. (USA) ..... [8627-8]
- Coffee Break ..... Tue 3:10 pm to 3:40 pm

### SESSION 3

Room: 236 (Mezzanine) ..... Tue 3:40 pm to 5:00 pm

#### Waveguide Engineering II

Session Chair: **Stefano Taccheo**, Swansea Univ. (United Kingdom)

- 3:40 pm: **Optofluidic fiber optic**, **Genni Testa**, Gianluca Persichetti, Romeo Bernini, Consiglio Nazionale delle Ricerche (Italy) ..... [8627-10]
- 4:00 pm: **Low cross-talk glass integrated polarization splitter**, **Francois Parsy**, Institut National Polytechnique de Grenoble (France) and IMEP-LAHC (France); **Elise Ghibaudo**, Univ. Joseph Fourier (France) and IMEP-LAHC (France); **Damien Jamon**, François Royer, Univ. Jean Monnet Saint-Etienne (France) and LT2C (France); **Jean Emmanuel Broquin**, Institut National Polytechnique de Grenoble (France) and IMEP-LAHC (France) ..... [8627-11]
- 4:20 pm: **Numerical study on the reduction of bend losses in sharp bends by metallic layers**, **Mustafa Akin Sefunc**, T. Dubbink, Markus Pollnau, Sonia M. García-Blanco, Univ. Twente (Netherlands) ..... [8627-12]
- 4:40 pm: **Filters of radial polarization formed by periodically focusing microsphere-chain waveguides**, **Arash Darafsheh**, The Univ. of North Carolina at Charlotte (USA); **Anatole Lupu**, Institut d'Électronique Fondamentale (France); **Vasily N. Astratov**, The Univ. of North Carolina at Charlotte (USA) . . . . [8627-13]

OPTO

**Wednesday 6 February**

**SESSION 4**

**Room: 236 (Mezzanine) . . . . . Wed 8:30 am to 10:00 am**

**On Chip Active Devices**

Session Chair: **Sonia M. García-Blanco**, Univ. Twente (Netherlands)

8:30 am: **Integrated InP based mode-locked lasers and pulse shapers** (*Invited Paper*), Erwin A. Bente, Saeed Tahvili, Valentina Moskalenko, Sylwester Latkowski, Technische Univ. Eindhoven (Netherlands); Mike J. Wale, Technische Univ. Eindhoven (Netherlands) and Oclaro Technology Plc (United Kingdom); Pascal Landais, Dublin City Univ. (Ireland); Julien Javaloyes, Univ. de les Illes Balears (Spain); Meint K. Smit, Technische Univ. Eindhoven (Netherlands) . . . . . [8627-14]

9:00 am: **Integrated pulsed lasers realization for LIDAR applications**, Hana Ouslimani, Lionel Bastard, Jean Emmanuel Broquin, IMEP-LAHC (France) . . . . . [8627-15]

9:20 am: **An AWG-based multi-wavelength laser grown by MOCVD**, Xilin Zhang, Chen Ji, Rui kang Zhang, Dan Lu, Baojun Wang, Lingjuan Zhao, Hongliang Zhu, Wei Wang, Institute of Semiconductors (China) . . . . . [8627-16]

9:40 am: **Analysis of the light coupling between nano-waveguides made of tellurite glasses**, Jhonattan Córdoba Ramírez, Hugo Enrique Hernandez Figueroa, Univ. Estadual de Campinas (Brazil); Ferney O. Amaya, Univ. Pontificia Bolivariana (Colombia); Jorge D. Marconi, UFABC (Brazil); Hugo L. Fragnito, Univ. Estadual de Campinas (Brazil) . . . . . [8627-17]

Coffee Break . . . . . Wed 10:00 am to 10:30 am

**SESSION 5**

**Room: 236 (Mezzanine) . . . . . Wed 10:30 am to 12:20 pm**

**Sensors**

Session Chair: **Xudong Fan**, Univ. of Michigan (USA)

10:30 am: **Spectroscopy-on-chip applications of silicon photonics** (*Invited Paper*), Roel G Baets, Ananth Subramanian, Ashim Dhakal, Shankar K. Selvaraja, Katarzyna Komorowska, Frederic Peyskens, Eva Ryckeboer, Nebiyu A. Yebo, Gunther Roelkens, Nicolas Le Thomas, Univ. Gent (Belgium) . [8627-18]

11:00 am: **Glass integrated optic Fourier transform spectrometer in the spectral bandwidth 700-1000nm: process improvement**, Amélie Creux, Alain Morand, Pierre Benech, IMEP-LAHC (France); Bruno Martin, Resolution Spectra Systems (France); Gregory Grosa, IMEP-LAHC (France); Cedric Cassagnettes, Denis Barbier, Teem Photonics S.A. (France); Etienne P. Le Coarer, Institut de Planétologie et d'Astrophysique de Grenoble (France) . . . . . [8627-19]

11:20 am: **Multiplexed selective detection and identification of TCE and xylene in water by on-chip absorption spectroscopy**, Wei-Cheng Lai, The Univ. of Texas at Austin (USA); Swapnajit Chakravarty, Omega Optics, Inc. (USA); Yi Zou, Ray T. Chen, The Univ. of Texas at Austin (USA) . . . . . [8627-20]

11:40 am: **Integrated slot waveguide sensor on glass for chemical analysis in a hostile environment**, Elsa Jardinier, Davide Bucci, Jean Emmanuel Broquin, IMEP-LAHC (France); Laurent Coustou, Fabrice Canto, Alastair Magnaldo, Commissariat à l'Énergie Atomique (France) . . . . . [8627-21]

12:00 pm: **Sensing explosives with suspended core fibers: identification and quantification using Raman spectroscopy**, Georgios Tsiminis, The Univ. of Adelaide (Australia); Fenghong Chu, Shanghai Univ. of Electric Power (China); Nigel A. Spooner, The Univ. of Adelaide (Australia) and Defence Science & Technology Organisation (Australia); Tanya M. Monro, The Univ. of Adelaide (Australia) . . . . . [8627-22]

Lunch/Exhibition Break . . . . . Wed 12:20 pm to 1:50 pm

**SESSION 6**

**Room: 236 (Mezzanine) . . . . . Wed 1:50 pm to 3:20 pm**

**On Chip Resonators**

Session Chair: **Gualtiero Nunzi Conti**, Istituto di Fisica Applicata Nello Carrara (Italy)

1:50 pm: **On-chip whispering-gallery-mode microlasers and their applications for nanoparticle sensing** (*Invited Paper*), Sahin Kaya K. Özdemir, Lina He, Jiangang Zhu, Obi Kenechukwu, Faraz Monifi, Woosung Kim, Lan Yang, Washington Univ. in St. Louis (USA) . . . . . [8627-23]

2:20 pm: **Controlling the mode volume in high-Q microcavities with high-refractive index coatings**, Ashley J. Maker, Brian A. Rose, Andrea M. Armani, The Univ. of Southern California (USA) . . . . . [8627-24]

2:40 pm: **wavelength-dependent vertical integration of nanoplasmonic circuits utilizing coupled ring resonators**, Michael P Nielsen, Abdulhakem Y. Elezzabi, Univ. of Alberta (Canada) . . . . . [8627-36]

3:00 pm: **Ge/SiGe quantum well resonator modulators**, Elizabeth H. Edwards, Ross M. Audet, Edward Fei, Gary Shambat, Stanford Univ. (USA); Rebecca K. Schaevitz, Corning West Technology Ctr. (USA); Theodore I. Kamins, James S. Harris, David A. B. Miller, Stanford Univ. (USA) . . . . . [8627-26]

Coffee Break . . . . . Wed 3:20 pm to 3:50 pm

**SESSION 7**

**Room: 236 (Mezzanine) . . . . . Wed 3:50 pm to 5:30 pm**

**Diffraction Photonics**

Session Chair: **Christoph M. Greiner**, LightSmyth Technologies, Inc. (USA)

3:50 pm: **Mapping nanoscale chemical and optoelectronic properties by multidimensional plasmonics-based nanospectroscopic imaging**, Jim Schuck, The Molecular Foundry (USA) . . . . . [8627-27]

4:10 pm: **Tilted Bragg grating-based optical components within an integrated planar platform**, Helen L. Rogers, Christopher H. Holmes, Keith R. Daly, Lewis G. Carpenter, James C. Gates, Giampaolo D'Alessandro, Peter G. R. Smith, Univ. of Southampton (United Kingdom) . . . . . [8627-28]

4:30 pm: **Phase modulated direct UV grating writing technique for ultrawide spectrum planar Bragg grating fabrication**, Chaotan Sima, James C. Gates, Helen L. Rogers, Paolo L. Mennea, Christopher H. Holmes, Mikhail N. Zervas, Peter G. R. Smith, Univ. of Southampton (United Kingdom) . . . . . [8627-29]

4:50 pm: **Nanoscale and multifunctional Bragg-grating structures for photonic applications**, Aju S. Jugessur, The Univ. of Iowa (USA) . . . . [8627-30]

5:10 pm: **A transpose optical interconnect utilising metamaterial Luneburg waveguide lenses for switch fabric on-a-chip applications**, Hamdam Nikkhal, Trevor J. Hall, Univ. of Ottawa (Canada) . . . . . [8627-31]

**POSTERS-WEDNESDAY**

**Room: 103 (Exhibit Level) . . . . . Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Fabrication of transparent and flexible all-polymer microring resonators and its application to ultrasound imaging**, Kyu-Tae Lee, Tao Ling, Hyoung Won Baac, Young Jae Shin, L. Jay Guo, Univ. of Michigan (USA) . . . . [8627-25]

**AWG-Parameters: A new software tool to design arrayed waveguide gratings**, Dana Seyringer, Fachhochschule Vorarlberg (Austria) . . . . . [8627-42]

**Finite-element analysis of tapered segmented waveguides**, Ruth E. Rubio, Hugo Enrique Hernandez Figueroa, Univ. Estadual de Campinas (Brazil) . . . . . [8627-43]

**Calculation of defect modes in index contrast of Al<sub>x</sub>Ga<sub>1-x</sub>As waveguides**, Latéf M. Ali, Farah A. Abed, Erbil Technical Institute (Iraq) . . . . . [8627-44]

**Integrated surface plasmon resonance resonator sensor using silicon-on-insulator**, Geum-Yoon Oh, Chung-Ang Univ. (Korea, Republic of); Doo-Gun Kim, Seon Hoon Kim, Hyun Chul Ki, Tae Un Kim, Korea Photonics Technology Institute (Korea, Republic of); Hong-Seung Kim, Tae-Kyeong Lee, Byeong-Hyeon Lee, Young-Wan Choi, Chung-Ang Univ. (Korea, Republic of) . . . [8627-45]

**Maximizing the intensity in TiO<sub>2</sub> waveguides for nonlinear optics applications**, Orad Reshef, Christopher C. Evans, Harvard Univ. (USA); Jonathan D. B. Bradley, Massachusetts Institute of Technology (USA); Eric Mazur, Harvard Univ. (USA) . . . . . [8627-47]

**Integrated-optic polarization controllers based on polymer waveguide**, Jun-Whee Kim, Su-Hyun Park, Woo-Sung Chu, Min-Cheol Oh, Pusan National Univ. (Korea, Republic of) . . . . . [8627-48]

**Near-infrared tunable lasers based on flexible polymeric Bragg reflection waveguide devices**, Chi-Hun Sung, Kyung-Jo Kim, Nam-Seon Son, Jun-Whee Kim, Min-Cheol Oh, Pusan National Univ. (Korea, Republic of) . . . . . [8627-49]

**Single-chip integration of polymer waveguide variable optical attenuators and optical switches**, Guanghao Huang, Jun-Whee Kim, Min-Cheol Oh, Pusan National Univ. (Korea, Republic of) . . . . . [8627-50]

**Impact of thermal oxidation, surface chemistry, and porous silicon morphology on sensing performance**, Silvia Soria, Istituto di Fisica Applicata Nello Carrara (Italy); Irina A. Kolmychek, Denis A. Kopylov, Sergey E. Svakhovskiy, Tatyana V. Murzina, Lomonosov Moscow State Univ. (Russian Federation); Francesco Baldini, Ambra Giannetti, Sara Tombelli, Simone Berneschi, Gualtiero Nunzi Conti, Istituto di Fisica Applicata Nello Carrara (Italy) . . . . . [8627-51]

**Simulating the coupling effects occurring in arrayed waveguide grating (AWG) using the finite difference beam propagation method (FD-BPM)**, Maria Cristina F. de Toledo, Univ. de São Paulo (Brazil) . . . . . [8627-52]

## Thursday 7 February

### SESSION 8

**Room: 236 (Mezzanine) . . . . . Thu 8:30 am to 10:20 am**

#### Plasmonics

Session Chair: **Pierre Berini**, Univ. of Ottawa (Canada)

8:30 am: **Compact antennas for launching surface plasmons** (*Invited Paper*), Philippe Lalanne, Institut d'Optique (France) . . . . . [8627-32]

9:00 am: **Plasmonic modulator based on thin metal-semiconductor-metal waveguide with gain core**, Viktoriia E. Babicheva, Irina V. Kulkova, Radu Malureanu, Kresten Yvind, Andrei V. Lavrinenko, Technical Univ. of Denmark (Denmark) . . . . . [8627-33]

9:20 am: **Metal-dielectric metamaterials for guided wave optics applications**, Natalia Dubrovina, Xavier Le Roux, Institut d'Électronique Fondamentale (France); Sylvain Blaize, Univ. de Technologie Troyes (France); André de Lustrac, Institut d'Électronique Fondamentale (France); Gilles Lérondel, Univ. de Technologie Troyes (France); Anatole Lupu, Institut d'Électronique Fondamentale (France) . . . . . [8627-34]

9:40 am: **Metal nanoridge surface plasmon waveguides**, Zeyu Pan, Junpeng Guo, The Univ. of Alabama in Huntsville (USA); Richard Soref, Univ. of Massachusetts Boston (USA); Walter R. Buchwald, Solid State Scientific Corp. (USA) . . . . . [8627-35]

10:00 am: **Equivalent circuit model for plasmonic slot waveguide networks**, Mohamed A. Swillam, Univ. of Toronto (Canada) and The American Univ. in Cairo (Egypt); Charles Lin, Amr S. Helmy, Univ. of Toronto (Canada) . . [8627-39]

Coffee Break . . . . . Thu 10:20 am to 10:50 am

### SESSION 9

**Room: 236 (Mezzanine) . . . . . Thu 10:50 am to 12:10 pm**

#### Modeling

Session Chair: **Christoph Wächter**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany)

10:50 am: **Efficient design of photonic-integrated circuits (PICs) by combining device- and circuit- level simulation tools**, Cristina Arellano, Igor Koltchanov, Andre Richter, VPIsystems GmbH (Germany); Sergei Mingaleev, VPI Development Ctr. (Belarus); Jan Pomplun, Sven Burger, Frank Schmidt, JCMwave GmbH (Germany) . . . . . [8627-37]

11:10 am: **Efficient optimization of nanoplasmonic devices using space mapping**, Pouya Dastmalchi, Georgios Veronis, Louisiana State Univ. (USA) . . . . . [8627-38]

11:30 am: **Robust optimization of 2x2 multimode interference couplers with fabrication uncertainties**, Samee ur Rehman, Matthijs Langelaar, Fred van Keulen, Technische Univ. Delft (Netherlands) . . . . . [8627-40]

11:50 am: **Equivalent step-index model of multifilament core fibers**, Ron Spittel, Adrian Lorenz, Sylvia Jetschke, Matthias Jäger, Hartmut Bartelt, Institut für Photonische Technologien e.V. (Germany) . . . . . [8627-41]

## Don't miss the Exhibition

See new products, top companies, potential collaborators, and the best suppliers face-to-face

**5-7 February 2013**  
**South Hall ABC and North Hall D**

Tuesday · 10:00 am to 5:00 pm

Wednesday · 10:00 am to 5:00 pm

Thursday · 10:00 am to 4:00 pm

# Optoelectronic Integrated Circuits XV

Conference Chairs: **Louay A. Eldada**, Quanergy, Inc. (USA); **El-Hang Lee**, Inha Univ. (Korea, Republic of)

Program Committee: **Yung-Jui Chen**, Univ. of Maryland, Baltimore County (USA); **Larry A. Coldren**, Univ. of California, Santa Barbara (USA); **Mario Dagenais**, Univ. of Maryland, College Park (USA); **P. Daniel Dapkus**, The Univ. of Southern California (USA); **Yeshaiahu Fainman**, Univ. of California, San Diego (USA); **Chennupati Jagadish**, The Australian National Univ. (Australia); **Richard M. Osgood Jr.**, Columbia Univ. (USA); **Manijeh Razeghi**, Northwestern Univ. (USA); **Giancarlo C. Righini**, Istituto di Fisica Applicata Nello Carrara (Italy); **David J. Rogers**, Nanovation (France)

## Wednesday 6 February

### SESSION 1

Room: 302 (Esplanade) . . . . . Wed 8:00 am to 10:00 am

#### Si Photonics for Optical Interconnects I

Joint Session with Conferences 8628 and 8630

Session Chair: **Ray T. Chen**, The Univ. of Texas at Austin (USA)

8:00 am: **Open foundry processes for silicon photonics** (*Invited Paper*), Michael Hochberg, Univ. of Delaware (USA) . . . . . [8630-39]

8:30 am: **Integrated silicon photonics for on-chip optical interconnects** (*Invited Paper*), Zhen Peng, Marco Fiorentino, Zhihong Huang, Raymond G. Beausoleil, Janet Chen, Hewlett-Packard Labs. (USA) . . . . . [8628-1]

9:00 am: **Towards low energy consumption and high-speed silicon-based circuits** (*Invited Paper*), Laurent Vivien, Delphine Marris-Morini, Papichaya Chaisakul, Mohamed-Said Rouifed, Institut d'Électronique Fondamentale, CNRS (France); Leopold Virost, Institut d'Électronique Fondamentale, CNRS (France) and CEA-LETI (France) and STMicroelectronics (France); Melissa Ziebell, Gilles Rasigade, Nicolas Abadia, Eric Cassan, Institut d'Électronique Fondamentale, CNRS (France); Jacopo Frigerio, Giovanni Isella, Daniel Chrastina, Lab. for Epitaxial Nanostructures on Silicon and Spintronics (Italy) and Politecnico di Milano (Italy); Jean-Michel Hartmann, CEA-LETI (France); Charles Baudot, Frederic Boeuf, STMicroelectronics (France); Jean-Marc Fedeli, CEA-LETI (France) . . . . . [8628-2]

9:30 am: **Silicon photonics for advanced optical communication systems** (*Invited Paper*), Zhiping Zhou, Peking Univ. (China) . . . . . [8630-40]

Coffee Break . . . . . Wed 10:00 am to 10:30 am

### SESSION 2

Room: 302 (Esplanade) . . . . . Wed 10:30 am to 12:30 pm

#### Si Photonics for Optical Interconnects II

Joint Session with Conferences 8628 and 8630

Session Chair: **Louay A. Eldada**, Amprius, Inc. (USA)

10:30 am: **Towards a comprehensive silicon-photonics platform** (*Invited Paper*), Michael Watts, Massachusetts Institute of Technology (USA) . . . [8628-3]

11:00 am: **Low power SOI-CMOS photonic links** (*Invited Paper*), Ivan Shubin, Xueze Zheng, Glenn Li, Hiren Thacker, Ying Luo, Jin Yao, Jin Lee, Kannan Raj, Ashok V. Krishnamoorthy, John E. Cunningham, Oracle (USA) . . . . . [8630-41]

11:30 am: **Very low power and footprint-integrated photonic modulators and switches for ICT** (*Invited Paper*), Lars Thylén, Royal Institute of Technology (Sweden) and Hewlett Packard Labs. (USA); Petter Holmstrom, Lech Wosinski, Royal Institute of Technology (Sweden) . . . . . [8628-4]

12:00 pm: **Integrated high speed hybrid silicon transmitters** (*Invited Paper*), Sudha Srinivasan, Yongbo Tang, Sid Jain, John E. Bowers, Univ. of California, Santa Barbara (USA) . . . . . [8630-42]

Lunch/Exhibition Break . . . . . Wed 12:30 pm to 2:00 pm

### SESSION 3

Room: 302 (Esplanade) . . . . . Wed 2:00 pm to 3:30 pm

#### Hybrid Photonic Integrated Circuits

Session Chair: **Louay A. Eldada**, Amprius, Inc. (USA)

2:00 pm: **Silicon, silica, and germanium photonic integration for electronic and photonic convergence** (*Invited Paper*), Hiroshi Fukuda, Tai Tsuchizawa, Hidetaka Nishi, Rai Kou, Tatsuuro Hiraki, Nippon Telegraph and Telephone Corp. (Japan); Kazumi Wada, Yasuhiko Ishikawa, The Univ. of Tokyo (Japan); Koji Yamada, Nippon Telegraph and Telephone Corp. (Japan) . . . . . [8628-5]

2:30 pm: **Photonic integrated circuits applications based on silica and polymer waveguides** (*Invited Paper*), Tomoyuki Izuhara, Junichiro Fujita, Reinald Gerhardt, Bin Sui, Wenhua Lin, Boris Grek, Enablence (USA) . . . [8628-6]

3:00 pm: **Silicon hybrid nanoplasmonic waveguides and devices** (*Invited Paper*), Sailing He, Daoxin Dai, Joint Research Ctr. of Photonics (China) . . . . . [8628-7]

Coffee Break . . . . . Wed 3:30 pm to 4:00 pm

### SESSION 4

Room: 302 (Esplanade) . . . . . Wed 4:00 pm to 5:20 pm

#### Efficiency in Electronic-Photonic Systems

Session Chair: **El-Hang Lee**, Inha Univ. (Korea, Republic of)

4:00 pm: **Scaling hybrid-integration of silicon photonics in freescale 130 nm to TSMC 40nm-CMOS VLSI drivers for low-power communications** (*Invited Paper*), John E. Cunningham, Oracle (USA) . . . . . [8628-8]

4:30 pm: **Nanoscale SOI silicon light source design for improved efficiency**, Petrus J. Venter, Univ. of Pretoria (South Africa) and INSiAVA (Pty) Ltd. (South Africa); Monuko du Plessis, Univ. of Pretoria (South Africa); Alfons W. Bogalecki, INSiAVA (Pty) Ltd. (South Africa) . . . . . [8628-9]

4:50 pm: **Electrons to photons and RF signals in advanced mobile devices** (*Invited Paper*), Louay A. Eldada, Amprius, Inc. (USA) . . . . . [8628-10]

### POSTERS-WEDNESDAY

Room: 103 (Exhibit Level) . . . . . Wed 6:00 pm to 8:00 pm

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Structure-dependent optical characteristics of one-dimensional photonic crystal hydrogenated amorphous silicon waveguides**, Dong Wook Kim, Heung Sun Jeong, Kyong Hon Kim, Inha Univ. (Korea, Republic of); Sang Chul Jeon, Sang Hyun Park, Dong Eun Yoo, Ki Nam Kim, National Nanofab Ctr. (Korea, Republic of); El-Hang Lee, Inha Univ. (Korea, Republic of) . . . [8628-25]

**Active switching using three-dimensional photonic crystal waveguide**, Choloo Hahn, Nali Yoo, Cha-Hwan Oh, Hanyang Univ. (Korea, Republic of) . . . . . [8628-26]



**Thursday 7 February**

**SESSION 5**

**Room: 302 (Esplanade) Thu 8:10 am to 10:00 am**

**VLSI Photonics**

Session Chair: **Ei-Hang Lee**, Inha Univ. (Korea, Republic of)

8:10 am: **Integrated nanophotonic devices based on plasmonics** (*Invited Paper*), Anatoly V. Zayats, King's College London (United Kingdom) . . . . . [8628-11]

8:40 am: **Computer aided simulation of large-scale high-density photonic integrated circuits** (*Invited Paper*), Wei-Ping Huang, McMaster Univ. (Canada) . . . . . [8628-12]

9:10 am: **All-silicon and epitaxial hybrid III-V-on-silicon photodetectors for on-chip optical interconnection applications** (*Invited Paper*), Andrew W. Poon, Shaoqi Feng, Yu Li, Yu Geng, Kei May Lau, Hong Kong Univ. of Science and Technology (Hong Kong, China) . . . . . [8628-13]

9:40 am: **All-optical logic gates and wavelength conversion via the injection-locking of a Fabry-Perot semiconductor laser**, Evan Harvey, Michael C. Pochet, Timothy Locke, Air Force Institute of Technology (USA); Nicholas G. Usechak, Air Force Research Lab. (USA) . . . . . [8628-14]

Coffee Break . . . . . Thu 10:00 am to 10:30 am

**SESSION 6**

**Room: 302 (Esplanade) Thu 10:30 am to 12:00 pm**

**Metamaterials and Quantum Photonics**

Session Chair: **Louay A. Eldada**, Amprius, Inc. (USA)

10:30 am: **Nonlinear, ultrafast, and quantum optics in photonic integrated circuits** (*Invited Paper*), Chee Wei Wong, James F. McMillan, Tingyi Gu, Jiangjun Zheng, Pin-Chun Hsieh, Serdar Kocaman, Xijuan Li, Ying Li, Junlin Liang, Matthew D. Marko, Nan Shi, Andrzej Veitia, XinAn Xu, Zhenda Xie, Jinghui Yang, Columbia Univ. (USA) . . . . . [8628-15]

11:00 am: **Integrated quantum photonics** (*Invited Paper*), K. Aungkunsiri, Damien Bonneau, J. Carolan, E. Engin, D. Fry, J. P. Hadden, Pruet Kalasuwan, J. Kennard, S. Knauer, T. Lawson, E. Martin-Lopez, Jasmin Meinecke, Guillermo Mendoza, Alberto Peruzzo, Kostantinos Poullos, N. Russell, A. Santamato, Pete Shadbolt, Joshua W. Silverstone, A. Stanley-Clark, Matthaeus Halder, J. Harrison, D. Ho, P. Jiang, Anthony Laing, Mirko Lobino, Jonathan C. F. Matthews, Brian R. Patton, A. Politi, Maria Rodas Verde, Univ. of Bristol (United Kingdom); P. Zhang, Univ. of Bristol (USA); Xiao-Qi Zhou, Martin J. Cryan, John G. Rarity, Mark G. Thompson, Siyuan Yu, Jeremy L. O'Brien, Univ. of Bristol (United Kingdom) . . . . . [8628-16]

11:30 am: **Infrared metamaterial diffractive optics** (*Invited Paper*), Stéphane Larouche, Duke Univ. (USA) . . . . . [8628-17]

Lunch/Exhibition Break . . . . . Thu 12:00 pm to 1:30 pm

**SESSION 7**

**Room: 302 (Esplanade) Thu 1:30 pm to 3:10 pm**

**Heterogeneous Integrated Photonics**

Session Chair: **Louay A. Eldada**, Amprius, Inc. (USA)

1:30 pm: **Light from germanium tin heterostructures on silicon** (*Invited Paper*), Erich Kasper, Univ. Stuttgart (Germany); Martin Kittler, IHP GmbH (Germany) and Brandenburgische Technische Univ. Cottbus (Germany); Michael Oehme, Univ. Stuttgart (Germany); Tzanimir Arguirov, IHP GmbH (Germany) and Brandenburgische Technische Univ. Cottbus (Germany) . . . . . [8628-18]

2:00 pm: **Heterogeneous optoelectronic integration using locally polymerized imprinted hard mask**, Avantika Sodhi, Samuel J. Beach, Luis Chen, Univ. of California, Santa Barbara (USA); Matt Jacob-Mitos, Jonathan E. Roth, Aurion, Inc. (USA); Luke Theogarajan, Univ. of California, Santa Barbara (USA) . . . . . [8628-19]

2:20 pm: **InP-PD integration on silica-based PLC for QPSK receiver** (*Invited Paper*), Mikitaka Itoh, NTT Photonics Labs. (Japan) . . . . . [8628-20]

2:50 pm: **Fabrication of high-efficiency heterogeneous Si/III-V integration and optical vertical interconnect access**, Doris K. Ng, Jing Pu, Qian Wang, Kim-Peng Lim, Yongqiang Wei, Yadong Wang, Yicheng Lai, Seng-Tiong Ho, A\*STAR - Data Storage Institute (Singapore) . . . . . [8628-21]

Coffee Break . . . . . Thu 3:10 pm to 3:40 pm

**SESSION 8**

**Room: 302 (Esplanade) Thu 3:40 pm to 4:50 pm**

**Micro- and Nanophotonic Rings and Disks**

Session Chair: **Ei-Hang Lee**, Inha Univ. (Korea, Republic of)

3:40 pm: **Analysis of high-bandwidth low-power microring links for off-chip interconnects** (*Invited Paper*), Noam Ophir, Keren Bergman, Columbia Univ. (USA) . . . . . [8628-22]

4:10 pm: **Tunable InP Ring Resonator Filters**, Anna Tauke-Pedretti, Gregory A. Vawter, Erik J. Skogen, Gregory M. Peake, Mark Overberg, Charles Alford, David Torres, Florante Cajas, Sandia National Labs. (USA) . . . . . [8628-23]

4:30 pm: **Integrated nanodisk plasmonic laser: design and simulation**, Qian Wang, A\* STAR - Data Storage Institute (Singapore) . . . . . [8628-24]



## Silicon Photonics VIII

*Conference Chairs:* **Joel Kubby**, Univ. of California, Santa Cruz (USA); **Graham T. Reed**, Univ. of Southampton (United Kingdom)

*Program Committee:* **Laurence W. Cahill**, La Trobe Univ. (Australia); **Philippe M. Fauchet**, Vanderbilt Univ. (USA); **L. Cary Gunn**, Genalyte, Inc. (USA); **Siegfried Janz**, National Research Council Canada (Canada); **Andrew P. Knights**, McMaster Univ. (Canada); **Laura Maria Lechuga**, Catalan Institute of Nanoscience and Nanotechnology (Spain); **Sebania Libertino**, Istituto per la Microelettronica e Microsistemi (Italy); **Goran Z. Mashanovich**, Univ. of Southampton (United Kingdom); **Ching Eng Jason Png**, A\*STAR Institute of High Performance Computing (Singapore); **Andrew W. Poon**, Hong Kong Univ. of Science and Technology (Hong Kong, China); **Haisheng Rong**, Intel Corp. (USA); **Holger Schmidt**, Univ. of California, Santa Cruz (USA); **Danxia Xu**, National Research Council Canada (Canada); **Zhiping Zhou**, Peking Univ. (China)

### Monday 4 February

#### SESSION 1

**Room: 301 (Esplanade) . . . . . Mon 8:00 am to 10:00 am**

##### Lab-on-a-Chip I

Session Chair: **Andrew W. Poon**, Hong Kong Univ. of Science and Technology (Hong Kong, China)

8:00 am: **Controlled photonic manipulation of proteins and other biological materials** (*Invited Paper*), David Erickson, Cornell Univ. (USA) . . . . . [8629-2]

8:30 am: **Silicon photonics for functional on-chip optical tweezers devices and circuits** (*Invited Paper*), Hong Cai, Jia W. Wang, Andrew W. Poon, Hong Kong Univ. of Science and Technology (Hong Kong, China) . . . . . [8629-3]

9:00 am: **Ring-resonator based SOI biosensors** (*Invited Paper*), Peter Bienstman, Sam Werquin, Cristina Lerma Arce, Univ. Gent (Belgium); Daan Witters, Robert Puers, Jeroen Lammertyn, KULeuven (Belgium); Tom Claes, Elewout Hallynck, Jan-Willem Hoste, Daan Martens, Univ. Gent (Belgium) . . . . . [8629-4]

9:30 am: **Monolithic silicon interferometric optoelectronic devices for label-free multi-analyte biosensing applications** (*Invited Paper*), Konstantinos Misiakos, Eleni Makarona, Alex Salapatras, Ioannis Raptis, Aimilia Psarouli, Sotirios E. Kakabakos, Panayiota Petrou, National Ctr. for Scientific Research Demokritos (Greece); Marcel Hoekman, Lionix BV (Netherlands); Remco Stoffer, Phoenix B.V. (Netherlands); Kari Tukkiemi, VTT Information Technology (Finland); Gerhard Jobst, Jobst Technologies GmbH (Germany) . . . . . [8629-5]

Coffee Break . . . . . Mon 10:00 am to 10:30 am

#### SESSION 2

**Room: 301 (Esplanade) . . . . . Mon 10:30 am to 12:30 pm**

##### Lab-on-a-Chip II

Session Chair: **Andrew W. Poon**, Hong Kong Univ. of Science and Technology (Hong Kong, China)

10:30 am: **Bioinspired optofluidic lasers for DNA and protein detection** (*Invited Paper*), Xingwang Zhang, Univ. of Michigan (USA); Qishu Chen, Univ. of Michigan (USA); Mike Ritt, Sivaraj Sivaramakrishnan, Xudong Fan, Univ. of Michigan (USA) . . . . . [8629-6]

11:00 am: **Biosensors based on nanoscale porous silicon waveguides and silicon photonic crystals** (*Invited Paper*), Sharon M. Weiss, Vanderbilt Univ. (USA) . . . . . [8629-7]

11:30 am: **Label-free silicon photonic biosensors for use in clinical diagnostics** (*Invited Paper*), Sahba Talebi Fard, The Univ. of British Columbia (Canada); Shon A. Schmidt, Univ. of Washington (USA); Samantha M. Grist, Jonas Flueckiger, Wei Shi, Xu Wang, The Univ. of British Columbia (Canada); Daniel M. Ratner, Univ. of Washington (USA); Lukas Chrostowski, Valentina Donzella, The Univ. of British Columbia (Canada) . . . . . [8629-8]

12:00 pm: **Nanofluidic chips for DNA detection** (*Invited Paper*), Anders Kristensen, Rodolphe Marie, Jonas N. Pedersen, Christopher J. Lüscher, Kristian H. Rasmussen, Lasse H. Thamdrup, Anil H. Thilsted, Johan Eriksen, Henrik K. Flyvbjerg, Technical Univ. of Denmark (Denmark) . . . . . [8629-9]

Lunch Break . . . . . Mon 12:30 pm to 1:30 pm

#### SESSION 3

**Room: 301 (Esplanade) . . . . . Mon 1:30 pm to 3:00 pm**

##### Waveguides I

Session Chair: **Zhiping Zhou**, Peking Univ. (China)

1:30 pm: **Ultracompact polarization diversity components for future large-scale photonic integrated circuits on silicon** (*Invited Paper*), Daoxin Dai, Zhejiang Univ. (China) . . . . . [8629-10]

2:00 pm: **Deeply etched MMI-based components on 4 μm thick SOI for SOA-based optical RAM cell circuits**, Matteo Cherchi, Sami Ylisen, Mikko Harjanne, Markku Kapulainen, Timo Aalto, VTT Technical Research Ctr. of Finland (Finland); George T. Kanellos, Foundation for Research and Technology-Hellas (Greece); Dimitrios Fitsios, Foundation for Research and Technology-Hellas (Greece) and Aristotle Univ. of Thessaloniki (Greece); Nikos Pleros, Aristotle Univ. of Thessaloniki (Greece) . . . . . [8629-11]

2:20 pm: **Bend-size reduction on the SOI rib waveguide platform**, Timo Aalto, Matteo Cherchi, Mikko Harjanne, Sami Ylisen, Markku Kapulainen, VTT Technical Research Ctr. of Finland (Finland) . . . . . [8629-12]

2:40 pm: **Fabrication of low-loss silicon nanophotonic waveguide for photonic device integration**, Doris K. T. Ng, Kim-Peng Lim, Qian Wang, Jing Pu, Kun Tang, Yicheng Lai, Chee-Wei Lee, Seng-Tiong Ho, A\*STAR - Data Storage Institute (Singapore) . . . . . [8629-13]

Coffee Break . . . . . Mon 3:00 pm to 3:30 pm

#### SESSION 4

**Room: 301 (Esplanade) . . . . . Mon 3:30 pm to 5:40 pm**

##### Waveguides II

Session Chair: **Zhiping Zhou**, Peking Univ. (China)

3:30 pm: **Integration of silicon photonics into electronic processes** (*Invited Paper*), Jason S. Orcutt, Rajeev J. Ram, Vladimir Stojanovic, Massachusetts Institute of Technology (USA) . . . . . [8629-14]

4:00 pm: **Ion beam irradiation induced fabrication of vertical coupling photonic structures**, Haidong Liang, Vanga S. Kumar, Jianfeng Wu, Mark Breese, National Univ. of Singapore (Singapore) . . . . . [8629-15]

4:20 pm: **Highly efficient DBR in silicon waveguides with eleventh order diffraction**, Harish Sasikumar, Deepa Venkitesh, Bijoy K. Das, Indian Institute of Technology Madras (India) . . . . . [8629-16]

4:40 pm: **Experimental demonstration of 2D photonic crystal, triangular lattice, small angle, low loss Y-Splitter at microwave frequencies**, Deepak Kaushal, Robert C. Gauthier, Carleton Univ. (Canada) . . . . . [8629-17]

5:00 pm: **Mid-infrared photonics devices in SOI** (*Invited Paper*), Goran Z. Mashanovich, Milos Nedeljkovic, Univ. of Southampton (United Kingdom); Milan M. Milosevic, Univ. of Surrey (United Kingdom); Youfang Hu, Taha M. Ben Masaud, Ehsan Jaberansary, Xia Chen, Univ. of Southampton (United Kingdom); Michael J. Strain, Marc Sorel, Univ. of Glasgow (United Kingdom); Anna C. Peacock, Harold M. H. Chong, Graham T. Reed, Univ. of Southampton (United Kingdom) . . . . . [8629-18]

5:20 pm: **Silicon slot waveguides and their rigorous characterizations**, Aizur Rahman, David Leung, Namassivaye Kejalakshmy, City Univ. London (United Kingdom); Long To, City Univ. of Hong Kong (Hong Kong, China) . . . . . [8629-19]

**Tuesday 5 February**

**OPTO PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am**

*Session Chairs* : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
  - 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
  - 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]
  - 8:50 am: **Group IV photonics for the mid infrared,**  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
  - 9:30 am: **Light in a twist: optical angular momentum,**  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]
- See page 26 for details.

Coffee Break . . . . . Tue 10:10 am to 10:30 am

**SESSION 5**

**Room: 301 (Esplanade) . . . . . Tue 10:30 am to 12:30 pm**

**Silicon Photonics Meets EO-Polymers**

Joint Keynote Session with  
Conferences 8622, 8624, and 8629

Session Chair: **James G. Grote**, Air Force Research Lab. (USA)

- 10:30 am: **How will photonic integrated circuits develop?**  
*(Keynote Presentation)*, Michael W. Haney, Univ. of Delaware (USA) . . [8629-20]
  - 11:10 am: **Theory-guided nano-engineering of organic electro-optic materials for hybrid silicon photonic, plasmonic, and metamaterial devices**  
*(Keynote Presentation)*, Larry R. Dalton, Univ. of Washington (USA) . . [8622-19]
  - 11:50 am: **Plastic solar cells with engineered interfaces**  
*(Keynote Presentation)*, Tobin J. Marks, Northwestern Univ. (USA) . . . [8622-20]
- Lunch/Exhibition Break . . . . . Tue 12:30 pm to 2:00 pm

**SESSION 6**

**Room: 301 (Esplanade) . . . . . Tue 2:00 pm to 2:50 pm**

**Photonic Crystals and Wires**

Session Chair: **Graham T. Reed**,  
Univ. of Southampton (United Kingdom)

- 2:00 pm: **Integrated silicon photonic devices for high-speed and low-power optical signal processing** *(Invited Paper)*, Linjie Zhou, Xiaomeng Sun, Jingya Xie, Liangjun Lu, Zhi Zou, Yanyang Zhou, Lili Sun, Jianping Chen, Shanghai Jiao Tong Univ. (China) . . . . . [8629-21]
  - 2:30 pm: **Reconfigurable 3D photonic crystal structure**, Robert C. Gauthier, Carleton Univ. (Canada) . . . . . [8629-22]
- Coffee Break . . . . . Tue 2:50 pm to 3:20 pm

**SESSION 7**

**Room: 301 (Esplanade) . . . . . Tue 3:20 pm to 5:40 pm**

**Modulators and Detectors I**

Session Chair: **Graham T. Reed**,  
Univ. of Southampton (United Kingdom)

- 3:20 pm:  **$\lambda$ -size silicon-based modulator** *(Invited Paper)*, Volker J. Sorger, The George Washington Univ. (USA) and Univ. of California, Berkeley (USA); Noberto D. Lanzillotti-Kimura, RenMin Ma, Univ. of California, Berkeley (USA); Xiang Zhang, Univ. of California, Berkeley (USA) and Lawrence Berkeley National Lab. (USA) . . . . . [8629-23]
- 3:50 pm: **Silicon-organic hybrid devices** *(Invited Paper)*, Luca Alloatti, Dietmar Korn, Joerg Pfeifle, Robert Palmer, Christian Koos, Wolfgang Freude, Juerg Leuthold, Karlsruhe Institut für Technologie (Germany) . . . . . [8629-24]
- 4:20 pm: **40 Gb/s low-loss self-aligned silicon optical modulator**, Melissa Ziebell, Delphine Marris-Morini, Gilles Rasigade, Univ. Paris 11 (France); Jean-Marc Fédéli, CEA-LETI (France); Eric Cassan, Laurent Vivien, Univ. Paris 11 (France) . . . . . [8629-25]
- 4:40 pm: **Waveguide integrated silicon avalanche photodetectors**, Jason J. Ackert, Kyle Murray, Edgar Huante-Ceron, McMaster Univ. (Canada); Paul E. Jessop, Wilfrid Laurier Univ. (Canada); Andrew P. Knights, McMaster Univ. (Canada) . . . . . [8629-26]
- 5:00 pm: **Accurate high-speed eye diagram simulation of silicon-based modulators**, Ching Eng J. Png, Vivek Dixit, Soon Thor Lim, A\*STAR Institute of High Performance Computing (Singapore); Er Ping Li, A\*STAR - Data Storage Institute (Singapore) . . . . . [8629-27]
- 5:20 pm: **Interferometric switching in CROW based reconfigurable optical device for routing application**, Mattia Mancinelli, Paolo Bettotti, Univ. degli Studi di Trento (Italy); Jean-Marc Fédéli, CEA-LETI (France); Lorenzo Pavesi, Univ. degli Studi di Trento (Italy) . . . . . [8629-28]

**Wednesday 6 February**

**SESSION 8**

**Room: 301 (Esplanade) . . . . . Wed 8:30 am to 10:00 am**

**Modulators and Detectors II**

Session Chair: **Andrew P. Knights**, McMaster Univ. (Canada)

- 8:30 am: **Low-loss high-speed silicon Mach-Zehnder modulator for optical-fiber telecommunications** *(Invited Paper)*, Kensuke Ogawa, Kazuhiro Goi, Hiroyuki Kusaka, Yoshihiro Terada, Fujikura Ltd. (Japan); Tsung-Yang Liow, Xiaoguang Tu, Guo-Qiang Lo, Dim-Lee Kwong, A\*STAR Institute of Microelectronics (Singapore); Vivek Dixit, Soon Thor Lim, Ching Eng J. Png, A\*STAR Institute of High Performance Computing (Singapore) . . . . . [8629-29]
  - 9:00 am: **Graphene optical modulator** *(Invited Paper)*, Ming Liu, Univ. of California, Berkeley (USA) . . . . . [8629-30]
  - 9:30 am: **Silicon photonic modulators: theory, application, and recent advances** *(Invited Paper)*, Michael R. Watts, Massachusetts Institute of Technology (USA) . . . . . [8629-31]
- Coffee Break . . . . . Wed 10:00 am to 10:30 am

**SESSION 9**

**Room: 301 (Esplanade) . . . . . Wed 10:30 am to 12:00 pm**

**Modulators and Detectors III**

- 10:30 am: **Optical modulation using the silicon platform** *(Invited Paper)*, Frederic Y. Gardes, David J. Thomson, Graham T. Reed, Univ. of Southampton (United Kingdom); Kapil Debnath, Liam O'Faolain, Thomas F. Krauss, Univ. of St. Andrews (United Kingdom); Leon J. Lever, Rob W. Kelsall, Zoran Ikonik, Univ. of Leeds (United Kingdom); Maksym Myronov, David R. Leadley, The Univ. of Warwick (United Kingdom) . . . . . [8629-32]
  - 11:00 am: **Simulation and experimental studies of diffusion doped p-i-n structures for silicon photonics**, Sakthivel P., Nandita Dasgupta, Bijoy K. Das, Indian Institute of Technology Madras (India) . . . . . [8629-33]
  - 11:20 am: **A low-power electro-optic polymer clad Mach-Zehnder modulator for high-speed optical interconnects**, Bruce A. Block, Shawa M. Liff, Mauro J. Kobrinsky, Miriam R. Reshotko, Ricky J. Tseng, Ibrahim Ban, Peter Chang, Intel Corp. (USA) . . . . . [8629-34]
  - 11:40 am: **Polarization-independent and dispersion-free integrated optical MZI in SOI substrate for DWDM applications**, Karthik Uppu, Bijoy K. Das, Indian Institute of Technology Madras (India) . . . . . [8629-35]
- Lunch/Exhibition Break . . . . . Wed 12:00 pm to 1:30 pm

**OPTO**

**SESSION 10**

**Room: 301 (Esplanade) . . . . .Wed 1:30 pm to 3:00 pm**

**Emitters and Lasers I**

Session Chair: **Ching Eng Jason Png**, A\*STAR Institute of High Performance Computing (Singapore)

1:30 pm: **Hybrid silicon free-space source with integrated beam steering** (*Invited Paper*), Jonathan K. Doylend, Martijn J. R. Heck, Jock T. Bovington, Jon D. Peters, Michael L. Davenport, John E. Bowers, Univ. of California, Santa Barbara (USA) . . . . . [8629-36]

2:00 pm: **Second-harmonic generation in strained silicon**, Eleonora Luppi, Univ. of California, Berkeley (USA); Elena Degoli, Univ. degli Studi di Modena e Reggio Emilia (Italy) and Istituto di Nanoscienze (Italy); Matteo Bertocchi, Univ. degli Studi di Modena e Reggio Emilia (Italy) and Ecole Polytechnique Palaiseau (France) and European Theoretical Spectroscopy Facility (France); Valerie Veniard, Ecole Polytechnique (France) and European Theoretical Spectroscopy Facility (France); Stefano Ossicini, Univ. degli Studi di Modena e Reggio Emilia (Italy) and Istituto di Nanoscienze (Italy) . . . . . [8629-37]

2:20 pm: **A novel type of ultra-compact lateral-current-injection III/V photonic device integrated on SOI for electronic-photonic chip application**, Jing Pu, Qian Wang, A\*STAR - Data Storage Institute (Singapore); Seng-Tiong Ho, A\*STAR - Data Storage Institute (Singapore) and Northwestern Univ. (USA) . . . . . [8629-38]

2:40 pm: **Role of electron and hole transport processes in conductivity and light emission of silicon nanocrystal field-effect transistors**, Laura Cattoni, Oleksiy Anopchenko, Andrea Tengattini, Univ. degli Studi di Trento (Italy); Joan Manel Ramirez, Federico Ferrarese Lupi, Yonder Berencén, Blas Garrido, Univ. de Barcelona (Spain); Jean-Marc Fédéli, CEA-LETI (France); Lorenzo Pavesi, Univ. degli Studi di Trento (Italy) . . . . . [8629-39]

Coffee Break . . . . .Wed 3:00 pm to 3:30 pm

**SESSION 11**

**Room: 301 (Esplanade) . . . . .Wed 3:30 pm to 4:50 pm**

**Emitters and Lasers II**

Session Chair: **Ching Eng Jason Png**, A\*STAR Institute of High Performance Computing (Singapore)

3:30 pm: **Hole system heating by ultrafast interband energy transfer in optically excited Ge/SiGe quantum wells**, Kolja Kolata, Niko S. Köster, Philipps-Univ. Marburg (Germany); Sebastian Imhof, Technische Univ. Chemnitz (Germany); Stefano Cecchi, Daniel Chrastina, Giovanni Isella, Politecnico di Milano (Italy); John E. Sipe, Univ. of Toronto (Canada); Angela D. Thränhardt, Technische Univ. Chemnitz (Germany); Sangam Chatterjee, Philipps-Univ. Marburg (Germany) . . . . . [8629-40]

3:50 pm: **Experimental demonstration of novel heterogeneously integrated III-V on Si microlaser**, Yannick De Koninck, Univ. Gent (Belgium); Alexandre Bazin, Fabrice Raineri, Rama Raj, Lab. de Photonique et de Nanostructures, CNRS (France); Gunther Roelkens, Roel G. Baets, Univ. Gent (Belgium) . . . . . [8629-41]

4:10 pm: **Temperature-dependent external quantum efficiency of Ga(NAsP) quantum wells**, Nils Rosemann, Björn Metzger, Philipps-Univ. Marburg (Germany); Bernardette Kunert, Philipps-Univ. Marburg (Germany) and NAsP III/V GmbH (Germany); Kerstin Volz, Philipps-Univ. Marburg (Germany); Wolfgang Stolz, Philipps-Univ. Marburg (Germany) and NAsP III/V GmbH (Germany); Sangam Chatterjee, Philipps-Univ. Marburg (Germany) . . . . [8629-42]

4:30 pm: **Room temperature electrically pumped silicon nano-light source at telecommunication wavelengths**, Abdul Shakoob, Univ. of St. Andrews (United Kingdom); Roberto Lo Savio, Univ. degli Studi di Pavia (Italy); Paolo Cardile, Univ. degli Studi di Catania (Italy); Simone L. Portalupi, Dario Gerace, Univ. degli Studi di Pavia (Italy); Karl Welna, Univ. of St. Andrews (United Kingdom); Simona Boninelli, Giorgia Franzò, Francesco Priolo, Univ. degli Studi di Catania (Italy); Thomas F. Krauss, Univ. of St. Andrews (United Kingdom); Matteo Galli, Univ. degli Studi di Pavia (Italy); Liam O'Faolain, Univ. of St. Andrews (United Kingdom) . . . . . [8629-43]

**POSTERS-WEDNESDAY**

**Room: 103 (Exhibit Level) . . . . .Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Bulk silicon as photonic dynamic visible-to-infrared scene converter**, Volodymyr K. Malyutenko, Viacheslav V. Bogatyrenko, Oleg Y. Malyutenko, V. Lashkaryov Institute of Semiconductor Physics (Ukraine) . . . . . [8629-44]

**Responsivity measurements of N-on-P and P-on-N silicon photomultipliers in the continuous wave regime**, Gabriele Adamo, Diego Agrò, Salvatore Stivala, Antonino Parisi, Costantino Giaconia, Alessandro Busacca, Univ. degli Studi di Palermo (Italy); Massimo C. Mazzillo, Nunzio Delfo D. Sanfilippo, Pier Giorgio G. Fallica, STMicroelectronics (Italy) . . . . . [8629-45]

**Hybrid integrated III-V/SOI waveguides forward coupling phase matching engineering using Bragg gratings: fundamental and applications**, Anatole Lupu, Institut d'Électronique Fondamentale (France) . . . . . [8629-46]

**Anomalous localization modes in Bragg-grating based on high index-difference waveguide**, Tomohiro Kita, Koji Uchijima, Hirohito Yamada, Tohoku Univ. (Japan) . . . . . [8629-47]

**All-optical single resonance control using silicon-based Ring-Assisted Mach-Zehnder Interferometer (RAMZI)**, Yule Xiong, Carleton Univ. (Canada); Winnie N. Ye, Carleton Univ. (Canada) . . . . . [8629-48]

**Silicon nanomembrane based photonic crystal waveguide true-time-delay lines on a glass substrate**, Harish Subbaraman, Omega Optics, Inc. (USA); Xiaochuan Xu, Ray T. Chen, The Univ. of Texas at Austin (USA) . . . . . [8629-49]

**Low power consumption in silicon photonics tuning filters based on compound ring resonators**, Carmen Vázquez García, Univ. Carlos III de Madrid (Spain); Salvador Vargas, Univ. Tecnológica de Panamá (Panama); Pedro Contreras Lallana, Univ. Carlos III de Madrid (Spain) . . . . . [8629-50]

**Demonstration of silicon nanomembrane based photonic crystal waveguide PIN modulators on unusual substrates**, Xiaochuan Xu, The Univ. of Texas at Austin (USA); Harish Subbaraman, Amir Hosseini, Omega Optics, Inc. (USA); David N. Kwong, Ray T. Chen, The Univ. of Texas at Austin (USA) . . . . . [8629-51]

**Silicon nanocrystal density effects in sensitizing erbium atoms**, Quamrul Huda, Univ. of Alberta (Canada) . . . . . [8629-52]

**Modeling silicon-based photonic periodic waveguides**, Meng-Mu Shih, Univ. of Florida (USA) . . . . . [8629-53]

**A highly accurate engineering of silicon integrated microring resonators based on the nanofabrication technique**, Mikhail Erdmanis, Aalto Univ. (Finland) . . . . . [8629-54]



# Optoelectronic Interconnects XIII

Conference Chairs: **Alexei L. Glebov**, OptiGrate Corp. (USA); **Ray T. Chen**, The Univ. of Texas at Austin (USA)

Program Committee: **Bill Blubaugh**, US Conec Ltd. (USA); **Swapnajit Chakravarty**, Omega Optics, Inc. (USA); **John E. Cunningham**, Oracle (USA); **Allen M. Earman**, Intersil Corp. (USA); **Michael William Haney**, Univ. of Delaware (USA); **Ruth Houbertz-Krauss**, Fraunhofer-Institut für Silicatsforschung (Germany); **Yidong Huang**, Tsinghua Univ. (China); **Wei Jiang**, Rutgers, The State Univ. of New Jersey (USA); **Ulrich Lohmann**, FernUniv. in Hagen (Germany); **Edris M. Mohammed**, Intel Corp. (USA); **Bert-Jan Offrein**, IBM Zürich Research Lab. (Switzerland); **Hyo-Hoon Park**, KAIST (Korea, Republic of); **Henning Schröder**, Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration (Germany); **Ephraim Suhir**, Univ. of California, Santa Cruz (USA); **Peter Van Daele**, Univ. Gent (Belgium); **Michael R. Wang**, Univ. of Miami (USA); **Ian H. White**, Univ. of Cambridge (United Kingdom); **Tetsuzo Yoshimura**, Tokyo Univ. of Technology (Japan)

## Sunday 3 February

### SESSION 1

Room: 302 (Esplanade) ..... Sun 1:30 pm to 3:20 pm

#### Integration Technologies I

Session Chair: **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 1:30 pm: **Chip-to-board interconnects for high-performance computing** (*Invited Paper*), Markus B. K. Riestler, Maris TechCon Technology and R & D Consulting (Austria); Sönke Steenhuisen, Ruth Houbertz-Krauss, Fraunhofer-Institut für Silicatsforschung (Germany) ..... [8630-1]
- 2:00 pm: **Performance methodologies of a modular miniature photonic turn connector**, Alan Ugolini, Eric Childers, DJ Hastings, Dirk Schoellner, Jillcha Wakjira, US Conec Ltd. (USA) ..... [8630-2]
- 2:20 pm: **Development of low-cost polish-less optical multifiber backplane connector**, Tsuyoshi Aoki, Hidenobu Muranaka, Shigenori Aoki, Fujitsu Labs., Ltd. (Japan); Katsuki Suematsu, Mitsuhiro Iwaya, Masato Shiino, Furukawa Electric Co., Ltd. (Japan) ..... [8630-3]
- 2:40 pm: **Graded-index core polymer optical waveguide circuit fabricated using a microdispenser for high-density on-board optical interconnects**, Kazutomo Soma, Takaaki Ishigure, Keio Univ. (Japan) ..... [8630-4]
- 3:00 pm: **Active or passive fiber-chip-alignment: approaches to efficient solutions**, Gunnar Böttger, Henning Schröder, Rafael C. Jordan, Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration (Germany) ..... [8630-5]
- Coffee Break ..... Sun 3:20 pm to 3:50 pm

### SESSION 2

Room: 302 (Esplanade) ..... Sun 3:50 pm to 5:30 pm

#### Integration Technologies II

Session Chair: **Wei Jiang**, Rutgers, The State Univ. of New Jersey (USA)

- 3:50 pm: **Photonic integration in InP for optical interconnects** (*Invited Paper*), Valery I. Tolstikhin, OneChip Photonics Inc. (Canada) ..... [8630-6]
- 4:20 pm: **Multi-stacked silicon wire waveguides and couplers toward 3D optical interconnects** (*Invited Paper*), JoonHyng Kang, Nobuhiko Nishiyama, Yuki Atsumi, Tomohiro Amemiya, Shigehisa Arai, Tokyo Institute of Technology (Japan) ..... [8630-7]
- 4:50 pm: **Hybrid polymer optical waveguides written by two-photon processing for 3D interconnects**, Sönke Steenhuisen, Ruth Houbertz-Krauss, Timo Grunemann, Fraunhofer-Institut für Silicatsforschung (Germany) ... [8630-8]
- 5:10 pm: **Board-to-board optical interconnects using molded polymer waveguide with 45-degree mirrors and inkjet-printed micro-lenses as proximity vertical coupler**, Xiaohui Lin, The Univ. of Texas at Austin (USA); Amir Hosseini, Omega Optics, Inc. (USA); Xinyuan Dou, The Univ. of Texas at Austin (USA); Harish Subbaraman, Omega Optics, Inc. (USA); Ray T. Chen, The Univ. of Texas at Austin (USA) ..... [8630-9]

## Monday 4 February

### SESSION 3

Room: 302 (Esplanade) ..... Mon 8:30 am to 10:10 am

#### Nanophotonics in OI

Session Chair: **Hyo-Hoon Park**, KAIST (Korea, Republic of)

- 8:30 am: **Monolithically integrated Germanium receivers for optical interconnects** (*Invited Paper*), Solomon Assefa, William M. J. Green, Marwan H. Khater, Swetha Kamapurkar, Huapu Pan, Ciint L. Schow, Alexander Rylyakov, Carol Reinholm, Edward Kiewra, IBM Thomas J. Watson Research Ctr. (USA); Steven M. Shank, IBM Corp. (USA); Yurii A. Vlasov, IBM Thomas J. Watson Research Ctr. (USA) ..... [8630-10]
- 9:00 am: **Compact optical modulators with Si photonic crystals** (*Invited Paper*), Toshihiko Baba, Hong C. Nguyen, Yokohama National Univ. (Japan) ... [8630-11]
- 9:30 am: **2D silicon-based surface normal vertical cavity photonic crystal waveguide array for high-density optical interconnects**, JaeHyun Ahn, Harish Subbaraman, Swapnajit Chakravarty, Emanuel Tutuc, Ray T. Chen, The Univ. of Texas at Austin (USA) ..... [8630-12]
- 9:50 am: **Toward 3D plasmonic circuits: controlled coupling to multilevel plasmonic circuits**, Mohamed El Sherif, Osman S. Ahmed, Mohamed H. Bakr, McMaster Univ. (Canada); Mohamed A. Swillam, The American Univ. in Cairo (Egypt) ..... [8630-13]
- Coffee Break ..... Mon 10:10 am to 10:40 am

### SESSION 4

Room: 302 (Esplanade) ..... Mon 10:40 am to 12:10 pm

#### Parallel Optical Links

Session Chair: **Peter Van Daele**, Univ. Gent (Belgium)

- 10:40 am: **Optical transceivers for interconnections in satellite payloads** (*Invited Paper*), Mikko Karppinen, Veli Heikkinen, Kari Kautio, Jyrki Ollila, Antti Tanskanen, VTT Technical Research Ctr. of Finland (Finland) ..... [8630-14]
- 11:10 am: **Dynamic polymer ribbon couplers for card-to-backplane optical interconnects**, Guomin Jiang, Sarfaraz Baig, Michael R. Wang, Univ. of Miami (USA) ..... [8630-15]
- 11:30 am: **Demonstration of an optical multi-Gbps board-to-board interconnection including integrated FPGA-based diagnostics**, Anton Kuzmin, Dietmar Fey, Friedrich-Alexander-Univ. Erlangen-Nürnberg (Germany); Ulrich Lohmann, Jürgen Jahns, FernUniv. in Hagen (Germany); Hannes Bauer, MICROSENS GmbH & Co. KG (Germany) ..... [8630-16]
- 11:50 am: **A regenerative optical backplane demonstrator for board-level optical interconnects**, Nikolaos Bamiedakis, Aeffendi H. Hashim, Richard V. Penty, Ian H. White, Univ. of Cambridge (United Kingdom) ..... [8630-17]
- Lunch Break ..... Mon 12:10 pm to 1:30 pm

**SESSION 5**

**Room: 302 (Esplanade) . . . . . Mon 1:30 pm to 3:10 pm**

**Data Links and Optical Cables**

Session Chair: **Henning Schröder**, Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration (Germany)

- 1:30 pm: **Optics vs copper: from the perspective of Thunderbolt interconnect technology** (*Invited Paper*), Hengju Cheng, Intel Corp. (USA) . . . . . [8630-18]
- 2:00 pm: **An all-silicon optical PC-to-PC link utilising USB**, Marius E. Goosen, Antonie C. Alberts, INSIAVA (Pty) Ltd. (South Africa); Petrus J. Venter, Monuko du Plessis, Univ. of Pretoria (South Africa); Pieter Rademeyer, INSIAVA (Pty) Ltd. (South Africa) . . . . . [8630-19]
- 2:20 pm: **Active optical cable-based high-resolution long-distance VGA extenders**, Jin-Geun Rhee, Iksu Lee, Heejun Kim, Sungjoon Kim, Terawave Inc. (Korea, Republic of); Hoik Kim, Yeon-Wan Koh, FIBERPRO, Inc. (Korea, Republic of); Jiseok Lim, Chur Kim, Jungwon Kim, KAIST (Korea, Republic of) . . . . . [8630-20]
- 2:40 pm: **An optical interconnect for large-scale systems** (*Invited Paper*), William B. Dress, Lightfleet Corp. (USA) . . . . . [8630-21]
- Coffee Break . . . . . Mon 3:10 pm to 3:40 pm

**SESSION 6**

**Room: 302 (Esplanade) . . . . . Mon 3:40 pm to 5:00 pm**

**WDM Solutions for OI**

Session Chair: **Bert-Jan Offrein**, IBM Zürich Research Lab. (Switzerland)

- 3:40 pm: **Multimode multiplexing on a silicon chip** (*Invited Paper*), Michal Lipson, Cornell Univ. (USA) . . . . . [8630-22]
- 4:10 pm: **Power-efficient hybrid III-V / SOI external cavity lasers for high-density Si-photonics interconnect platform** (*Invited Paper*), Aaron J. Zilkie, Bhavin J. Bijlani, Pegah Seddighian, Saeed Fatholouloumi, Wei Qian, Daniel C. Lee, Roshanak Shafiiha, Dazeng Feng, Kotura, Inc. (USA); Jonathan Luff, Kotura Inc. (USA); John E. Cunningham, Xuezhe Zheng, Ashok V. Krishnamoorthy, Oracle (USA); Mehdi Asghari, Kotura, Inc. (USA) . . . . . [8630-23]
- 4:40 pm: **Scaleable optical transmitter based on cascaded nanoresonator modulators and multiwavelength laser with ultralow switching energies**, Liam O'Faolain, Kapil Debnath, Thomas F. Krauss, Univ. of St. Andrews (United Kingdom); Fred Y. Gardes, Graham T. Reed, Univ. of Southampton (United Kingdom); Andreas G. Steffan, u<sup>2</sup>t Photonics AG (Germany) . . . . . [8630-24]

**Tuesday 5 February**

**OPTO PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am**

Session Chairs : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
  - 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
  - 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]
  - 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
  - 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]
- See page 26 for details.

Coffee Break . . . . . Tue 10:10 am to 10:30 am

**SESSION 7**

**Room: 302 (Esplanade) . . . . . Tue 10:30 am to 12:10 pm**

**Active Components and Devices**

Session Chair: **Michael R. Wang**, Univ. of Miami (USA)

- 10:30 am: **High-power flip-chip-bonded silicon hybrid laser for temperature-control-free operation with micro-ring resonator-based modulator** (*Invited Paper*), Shinsuke Tanaka, Seok-Hwan Jeong, Tomoyuki Akiyama, Shigeaki Sekiguchi, Teruo Kurahashi, Yu Tanaka, Ken Morito, Fujitsu Labs., Ltd. (Japan) . . . . . [8630-26]
- 11:00 am: **Progress on energy efficient and high bit rate VCSELs for optical interconnects spanning nanometers to a kilometer** (*Invited Paper*), James A. Lott, Philip Moser, Dieter Bimberg, Technische Univ. Berlin (Germany) . [8630-27]
- 11:30 am: **Philips' VCSEL and photodiode arrays for parallel optical interconnects**, Roger King, Steffan Intemann, Stefan Wabra, Philipp Gerlach, Michael Riedl, Martin Grabherr, Philips Technologie GmbH U-L-M Photonics (Germany) . . . . . [8630-28]
- 11:50 am: **Substrate induced effects in photonic crystal thermo-optic devices on a silicon-on-insulator platform**, Weiwei Song, Manjit Chahal, George K. Celler, Yogesh Jaluria, Wei Jiang, Rutgers, The State Univ. of New Jersey (USA) . . . . . [8630-29]
- Lunch/Exhibition Break . . . . . Tue 12:10 pm to 1:30 pm

**SESSION 8**

**Room: 302 (Esplanade) . . . . . Tue 1:30 pm to 3:00 pm**

**Optical PCB**

Session Chair: **Ian H. White**, Univ. of Cambridge (United Kingdom)

- 1:30 pm: **Design principles and realization of electro-optical circuit boards** (*Invited Paper*), Felix Betschon, Tobias Lamprecht, Markus Halter, Stefan Beyer, vario-optics ag (Switzerland) . . . . . [8630-30]
- 2:00 pm: **Low-loss 45-degree mirror on GI-core polymer optical waveguide for optical PCB**, Masaki Nakano, Takaaki Ishigure, Keio Univ. (Japan)
- 2:20 pm: **24-ch microlens-integrated no-polish connector for optical interconnection with polymer waveguides**, Takashi Shiraishi, Takatoshi Yagisawa, Fujitsu Labs., Ltd. (Japan); Tadashi Ikeuchi, Osamu Daikuhara, Fujitsu Ltd. (Japan); Kazuhiro Tanaka, Fujitsu Labs., Ltd. (Japan) . . . . [8630-32]
- 2:40 pm: **Rigorous calculation of optical modes and their interference induced power distribution in arbitrary numbered coupled slab waveguides**, Guiru Gu, Xuejun Lu, Univ. of Massachusetts Lowell (USA) . . . . . [8630-33]
- Coffee Break . . . . . Tue 3:00 pm to 3:30 pm

**SESSION 9**

**Room: 302 (Esplanade) ..... Tue 3:30 pm to 5:30 pm**

**Materials for OI**

Session Chair: **Ruth Houbertz-Krauss**, Fraunhofer-Institut für Silicatiforschung (Germany)

- 3:30 pm: **Polymer-based optical interconnects using nanoimprint lithography** (*Invited Paper*), Arjen Boersma, Peter Harmsma, Sjoukje Wiegersma, TNO Science and Industry (Netherlands) ..... [8630-34]
- 4:00 pm: **Embedded planar glass waveguide optical interconnect for data centre applications** (*Invited Paper*), Richard C. Pitwon, Xyratex Technology Ltd. (United Kingdom); Henning Schroder, Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration (IZM) (Germany); Lars Brusberg, Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration (Germany); Jasper Graham-Jones, Plymouth Univ. (United Kingdom); Kai Wang, Xyratex Technology Ltd. (United Kingdom) ..... [8630-35]
- 4:30 pm: **Hybrid polymers for data and telecom applications**, Sönke Steenhusen, Ruth Houbertz, Fraunhofer-Institut für Silicatiforschung (Germany); Zarah Falk, Benedikt Stender, Julius-Maximilians-Univ. Würzburg (Germany); Gerhard Sextl, Fraunhofer-Institut für Silicatiforschung (Germany) ..... [8630-36]
- 4:50 pm: **Compact silicon oxynitride waveguides on silicon chips for optical delay line applications**, Lianghong Yin, Rutgers, The State Univ. of New Jersey (USA); Ming Lu, Brookhaven National Lab. (USA); Leszek Wielunski, Jun Tan, Weiwei Song, Yicheng Lu, Wei Jiang, Rutgers, The State Univ. of New Jersey (USA) ..... [8630-37]
- 5:10 pm: **Low loss polycrystalline silicon waveguides and devices for multilayer on-chip optical interconnects**, David N. Kwong, Amir Hosseini, John Covey, Yang Zhang, Xiaochuan Xu, Ray T. Chen, The Univ. of Texas at Austin (USA) ..... [8630-38]

**Wednesday 6 February**

**SESSION 10**

**Room: 302 (Esplanade) ..... Wed 8:00 am to 10:00 am**

**Si Photonics for Optical Interconnects I**

Joint Session with Conferences 8628 and 8630

Session Chair: **Ray T. Chen**, The Univ. of Texas at Austin (USA)

- 8:00 am: **Open foundry processes for silicon photonics** (*Invited Paper*), Michael Hochberg, Univ. of Delaware (USA) ..... [8630-39]
- 8:30 am: **Integrated silicon photonics for on-chip optical interconnects** (*Invited Paper*), Zhen Peng, Marco Fiorentino, Zhihong Huang, Raymond G. Beausoleil, Janet Chen, Hewlett-Packard Labs. (USA) ..... [8628-1]
- 9:00 am: **Towards low energy consumption and high-speed silicon-based circuits** (*Invited Paper*), Laurent Vivien, Delphine Marris-Morini, Papichaya Chaisakul, Mohamed-Said Rouifed, Institut d'Électronique Fondamentale, CNRS (France); Leopold Virost, Institut d'Électronique Fondamentale, CNRS (France) and CEA-LETI (France) and STMicroelectronics (France); Melissa Ziebell, Gilles Rasigade, Nicolas Abadia, Eric Cassan, Institut d'Électronique Fondamentale, CNRS (France); Jacopo Frigerio, Giovanni Isella, Daniel Chrastina, Lab. for Epitaxial Nanostructures on Silicon and Spintronics (Italy) and Politecnico di Milano (Italy); Jean-Michel Hartmann, CEA-LETI (France); Charles Baudot, Frederic Boeuf, STMicroelectronics (France); Jean-Marc Fedeli, CEA-LETI (France) ..... [8628-2]
- 9:30 am: **Silicon photonics for advanced optical communication systems** (*Invited Paper*), Zhiping Zhou, Peking Univ. (China) ..... [8630-40]
- Coffee Break ..... Wed 10:00 am to 10:30 am

**SESSION 11**

**Room: 302 (Esplanade) ..... Wed 10:30 am to 12:30 pm**

**Si Photonics for Optical Interconnects II**

Joint Session with Conferences 8628 and 8630

Session Chair: **Louay A. Eldada**, Amprius, Inc. (USA)

- 10:30 am: **Towards a comprehensive silicon-photonic platform** (*Invited Paper*), Michael Watts, Massachusetts Institute of Technology (USA) . . . [8628-3]
- 11:00 am: **Low power SOI-CMOS photonic links** (*Invited Paper*), Ivan Shubin, Xuezhe Zheng, Glenn Li, Hiren Thacker, Ying Luo, Jin Yao, Jin Lee, Kannan Raj, Ashok V. Krishnamoorthy, John E. Cunningham, Oracle (USA) ..... [8630-41]
- 11:30 am: **Very low power and footprint-integrated photonic modulators and switches for ICT** (*Invited Paper*), Lars Thylén, Royal Institute of Technology (Sweden) and Hewlett Packard Labs. (USA); Petter Holmstrom, Lech Wosinski, Royal Institute of Technology (Sweden) ..... [8628-4]
- 12:00 pm: **Integrated high speed hybrid silicon transmitters** (*Invited Paper*), Sudha Srinivasan, Yongbo Tang, Sid Jain, John E. Bowers, Univ. of California, Santa Barbara (USA) ..... [8630-42]

**POSTERS-WEDNESDAY**

**Room: 103 (Exhibit Level) ..... Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

- Ultracompact high conversion-efficiency polarization rotator based on silicon nanowire**, Seung Beom Kang, Electronics and Telecommunications Research Institute (Korea, Republic of) ..... [8630-43]
- Broadband thermo-optic switch based on a W2 photonic crystal waveguide**, Kaiyu Cui, Xue Feng, Yidong Huang, Qiang Zhao, Zhilei Huang, Wei Zhang, Tsinghua Univ. (China) ..... [8630-44]
- Vertically integrated double-layer on-chip crystalline silicon nanomembranes based on adhesive bonding**, Yang Zhang, Xiaochuan Xu, The Univ. of Texas at Austin (USA); Amir Hosseini, Omega Optics, Inc. (USA); David N. Kwong, Ray T. Chen, The Univ. of Texas at Austin (USA) . . . [8630-45]
- Beam form control in polymer photonic crystals and its impact on optical interconnect devices**, Jun Tan, Weiwei Song, Wei Jiang, Rutgers, The State Univ. of New Jersey (USA) ..... [8630-46]
- Silicon Schottky-type plasmonic-crystal modulators**, Jong-Bum You, Wook-Jae Lee, Kyung Mook Kwon, Kyoungsik Yu, KAIST (Korea, Republic of) ..... [8630-47]
- Subwavelength grating couplers for efficient light coupling into silicon nanomembrane based photonic devices**, Harish Subbaraman, Omega Optics, Inc. (USA); Xiaochuan Xu, John Covey, Ray T. Chen, The Univ. of Texas at Austin (USA) ..... [8630-48]

**OPTO**

# Quantum Sensing and Nanophotonic Devices X

Conference Chair: **Manijeh Razeghi**, Northwestern Univ. (USA)

Conference Co-Chairs: **Eric Tournie**, Univ. Montpellier 2 (France); **Gail J. Brown**, Air Force Research Lab. (USA)

Program Committee: **Jong Hyeob Baek**, Korea Photonics Technology Institute (Korea, Republic of); **Can Bayram**, IBM Thomas J. Watson Research Ctr. (USA); **Vincent Berger**, Univ. Paris 7-Denis Diderot (France); **David A. Cardimona**, Air Force Research Lab. (USA); **Vincent A. Cassella**, U.S. Naval Research Lab. (USA); **Raffaele Colombelli**, Institut d'Électronique Fondamentale (France); **Henry O. Everitt**, Duke Univ. (USA), U.S. Army Research, Development and Engineering Command (United States); **Siamak Forouhar**, Jet Propulsion Lab. (USA); **Michael D. Gerhold**, U.S. Army Research Office (USA); **Robin K. Huang**, TeraDiode, Inc. (USA); **John E. Hubbs**, Ball Aerospace & Technologies Corp. (USA); **Jean-Pierre Huignard**, Jphopto (France); **Christine A. Jhabvala**, NASA Goddard Space Flight Ctr. (USA); **Woo-Gwang Jung**, Kookmin Univ. (Korea, Republic of); **Tsukuru Katsuyama**, Sumitomo Electric Industries, Ltd. (Japan); **Shigeyuki Kuboya**, The Univ. of Tokyo (Japan); **Patrick Kung**, The Univ. of Alabama (USA); **Armin Lambrecht**, Fraunhofer-Institut für Physikalische Messtechnik (Germany); **Tariq Manzur**, Naval Undersea Warfare Ctr. (USA); **Ryan P. McClintock**, Northwestern Univ. (USA); **Jerry R. Meyer**, U.S. Naval Research Lab. (USA); **Jan Misiewicz**, Wrocław Univ. of Technology (Poland); **Vaidya Nathan**, Air Force Research Lab. (USA); **Joseph G. Pellegrino**, U.S. Army Night Vision & Electronic Sensors Directorate (USA); **Nicolas Péré-Laperne**, Lab. de Photonique et de Nanostructures (France); **Alan V. Sahakian**, Northwestern Univ. (USA); **Marija Strojnik**, Ctr. de Investigaciones en Óptica, A.C. (Mexico); **Rengarajan Sudharsanan**, Spectrolab, Inc. (USA); **Eric B. Takeuchi**, Daylight Solutions Inc. (USA); **Ferechteh Hosseini Teherani**, Nanovation (France); **Meimei Z. Tidrow**, U.S. Army Night Vision & Electronic Sensors Directorate (USA); **Miriam S. Vitiello**, Consiglio Nazionale delle Ricerche (Italy); **Sheng Wu**, California Institute of Technology (USA); **John M. Zavada**, National Science Foundation (USA)

## Sunday 3 February

### KEYNOTE SESSION

Room: 122 (Exhibit Level) ..... 8:40 am to 9:10 am

Session Chair: **Manijeh Razeghi**, Northwestern Univ. (USA)

8:40 am: **Monolithic QCL design approaches for improved reliability and affordability** (*Keynote Presentation*), Kwok Keung Law, Naval Air Warfare Ctr. Weapons Div. (USA) ..... [8631-93]

### SESSION 1

Room: 122 (Exhibit Level) ..... Sun 9:10 am to 10:25 am

#### THz QCLs

Session Chairs: **Jerry R. Meyer**, U.S. Naval Research Lab. (USA); **John M. Zavada**, National Science Foundation (USA)

9:10 am: **Stabilisation of terahertz quantum cascade lasers to frequency combs: coherent imaging and characterization of the frequency noise spectral density** (*Invited Paper*), Stefano Barbieri, Marco Ravaro, Univ. Paris 7-Denis Diderot (France); Giorgio Santarelli, Lab. National de Metrologie et d'Essais (France) and Univ. Pierre et Marie Curie (France) and Observatoire de Paris (France); Vishal Jagtap, Christophe Manquest, Carlo Sirtori, Univ. Paris 7-Denis Diderot (France); Suraj P. Khanna, Edmund H. Linfield, Univ. of Leeds (United Kingdom) ..... [8631-2]

9:30 am: **Widely-tuned room-temperature terahertz quantum cascade laser sources** (*Invited Paper*), Quan-Yong Lu, Neelanjan Bandyopadhyay, Steven Slivken, Yanbo Bai, Manijeh Razeghi, Northwestern Univ. (USA) ..... [8631-97]

9:50 am: **Quantum-limited linewidth in THz quantum cascade lasers** (*Invited Paper*), Miriam S. Vitiello, Consiglio Nazionale delle Ricerche (Italy); Luigi Consolino, CNR- Istituto Nazionale di Ottica and LENS (Italy); Saverio Bartalini, Andrea Taschin, CNR, Istituto Nazionale di Ottica and LENS (Italy); Alessandro Tredicucci, NEST, CNR, Istituto Nanoscienze and Scuola Normale Superiore (Italy); Massimo Inguscio, CNR, Istituto Nazionale di Ottica and LENS (Italy) and Univ. degli Studi di Firenze (Italy); Paolo De Natale, CNR, Istituto Nazionale di Ottica and LENS (Italy) ..... [8631-3]

10:10 am: **Dynamical stability in terahertz quantum cascade lasers subjected to strong optical feedback**, Lorenzo Columbo, Francesco Paolo Mezzapesa, CNR-IFN UOS Bari (Italy); Massimo Brambilla, Maurizio Dabbicco, Univ. degli Studi di Bari (Italy) and CNR-IFN UOS Bari (Italy); Simone Borri, CNR-IFN UOS Bari (Italy); Gaetano Scamarcio, Univ. degli Studi di Bari (Italy) and CNR-IFN UOS Bari (Italy) ..... [8631-4]

Coffee Break ..... Sun 10:25 am to 10:50 am

### SESSION 2

Room: 122 (Exhibit Level) ..... Sun 10:50 am to 12:15 pm

#### IR Spectroscopy Techniques

Session Chairs: **Jae Su Yu**, Kyung Hee Univ. (Korea, Republic of); **Sven Höfling**, Julius-Maximilians-Univ. Würzburg (Germany)

10:50 am: **Cavity-enhanced optical frequency comb spectroscopy** (*Invited Paper*), Bryce J. Bjork, JILA (USA); Adam J. Fleisher, Jun Ye, Univ. of Colorado at Boulder (USA) and JILA (USA) ..... [8631-6]

11:10 am: **Reflection-absorption infrared spectroscopy of thin films using an external cavity quantum cascade laser**, Mark C. Phillips, Ian M. Craig, Thomas A. Blake, Pacific Northwest National Lab. (USA) ..... [8631-7]

11:25 am: **A field-deployable compound-specific isotope analyzer based on quantum cascade laser and hollow waveguide**, Sheng Wu, California Institute of Technology (USA) and Power Environmental & Energy Research Institute (USA); Andrei Deev, California Institute of Technology (USA) ..... [8631-8]

11:40 am: **Progress toward mid-IR chip-scale integrated-optic TDLAS gas sensors** (*Invited Paper*), Michael B. Frish, Physical Sciences Inc. (USA); Raji Shankar, Irfan Bulu, Ian Frank, Harvard Univ. (USA); Matthew Laderer, Richard Wainner, Mark Allen, Physical Sciences Inc. (USA); Marko Loncar, Harvard Univ. (USA) ..... [8631-9]

12:00 pm: **Phase-locking of surface-emitting THz quantum cascade laser arrays**, Gangyi Xu, Yacine Halioua, Raffaele Colombelli, Institut d'Électronique Fondamentale (France); Suraj P. Khanna, Lianhe Li, Edmund H. Linfield, Giles Davies, Univ. of Leeds (United Kingdom); Harvey Beere, David Ritchie, Univ. of Cambridge (United Kingdom) ..... [8631-5]

Lunch Break ..... Sun 12:15 pm to 1:30 pm

### SESSION 3

Room: 122 (Exhibit Level) ..... Sun 1:30 pm to 2:55 pm

#### Plasmon Sensing

Session Chairs: **Agnes Maitre**, Univ. Pierre et Marie Curie (France); **Stefano Barbieri**, Univ. Paris 7-Denis Diderot (France)

1:30 pm: **Hole-mask colloidal nanolithography for large-area low-cost metamaterials and sensing applications** (*Invited Paper*), Harald Giessen, Jun Zhao, Stefano Cataldo, Univ. Stuttgart (Germany); Frank Neubrech, Ruprecht-Karls-Univ. Heidelberg (Germany); Bettina Frank, Univ. Stuttgart (Germany); Chunjie Zhang, Paul V. Braun, Univ. of Illinois at Urbana-Champaign (USA) ..... [8631-10]

1:50 pm: **Nanoantenna-based thermoplasmonic infrared detector**, Ertugrul Cubukcu, Fei Yi, Hai Zhu, Univ. of Pennsylvania (USA) ..... [8631-11]

2:05 pm: **Plasmonics for infrared detection and imaging** (*Invited Paper*), Riad Haidar, ONERA (France) ..... [8631-12]



2:25 pm: **Differential Fano interference spectroscopy of subwavelength hole arrays for mid-infrared mass sensors**, Michele Ortolani, Istituto di Fotonica e Nanotecnologie (Italy) and Univ. degli Studi di Roma La Sapienza (Italy); Odeta Limaj, Fausto D'Apuzzo, Univ. degli Studi di Roma La Sapienza (Italy); Valeria Giliberti, Univ. degli Studi di Roma La Sapienza (Italy) and Istituto di Fotonica e Nanotecnologie (Italy); Alessandra Di Gaspare, Francesco Mattioli, Roberto Leoni, Istituto di Fotonica e Nanotecnologie (Italy); Simona Sennato, Fabio Domenici, Federico Bordi, Stefano Lupi, Univ. degli Studi di Roma La Sapienza (Italy) ..... [8631-13]

2:40 pm: **Tailoring MSM structures for IR photodetection**, Matthieu Duperron, Daivid Fowler, Jérôme Le Perchec, Salim Boutami, Giacomo Badano, François Boulard, Olivier Gravrand, Gerard Destefanis, Roch Espiau de Lamaestre, CEA-LETI-Minatec (France) ..... [8631-14]

Coffee Break ..... Sun 2:55 pm to 3:30 pm

**SESSION 4**

**Room: 122 (Exhibit Level) ..... Sun 3:30 pm to 5:15 pm**

**Mid-IR QCLs**

Session Chairs: **Kwok Keung Law**, Naval Air Warfare Ctr. Weapons Div. (USA); **Carlo Sirtori**, Univ. Paris 7-Denis Diderot (France)

3:30 pm: **Lateral mode competition in broad-ridge quantum cascade lasers** (*Invited Paper*), Nader A. Naderi, Chi Yang, Michael L. Tilton, Gregory C. Dente, Ron Kaspi, Air Force Research Lab. (USA); Stanley Tsao, Selamnesh Nida, Manijeh Razeghi, Northwestern Univ. (USA) ..... [8631-17]

3:50 pm: **Continuous-wave room-temperature operation of  $\lambda \sim 3 \mu\text{m}$  quantum cascade laser**, Neelanjan Bandyopadhyay, Yanbo Bai, Stanley Tsao, Selamnesh Nida, Steven Slivken, Manijeh Razeghi, Northwestern Univ. (USA) ..... [8631-100]

4:05 pm: **Broadly-tunable high-resolution CW lasers based on QC devices: new benchmarks and applications** (*Invited Paper*), Leigh Bromley, Michael Pushkarsky, Alexander Dromaretsky, Timothy Day, Daylight Solutions Inc. (USA) ..... [8631-18]

4:25 pm: **Quantum cascade lasers optimized for low dissipation and broad gain**, Stéphane Blaser, Tobias Gresch, Romain Terazzi, Antoine Muller, Alpes Lasers SA (Switzerland) ..... [8631-19]

4:40 pm: **Dual section quantum cascade lasers with wide electrical tuning** (*Invited Paper*), Steven Slivken, Neelanjan Bandyopadhyay, Stanley Tsao, Selamnesh Nida, Yanbo Bai, Quanyong Lu, Manijeh Razeghi, Northwestern Univ. (USA) ..... [8631-21]

5:00 pm: **Mid-IR wavelength tunable quantum cascade lasers**, Chung-en Zah, Feng Xie, Abdou Diba, Catherine Caneau, Lawrence C. Hughes, Herve P. LeBlanc, Sean Coleman, Ming-Tsung Ho, Corning Incorporated (USA) [8631-22]

**Monday 4 February**

**KEYNOTE SESSION**

**Room: 122 (Exhibit Level) ..... 8:00 am to 8:30 am**

Session Chair: **Manijeh Razeghi**, Northwestern Univ. (USA)

8:00 am: **Issues in nanophotonics: coupling and phase in resonant tunneling** (*Keynote Presentation*), Raphael Tsu, The Univ. of North Carolina at Charlotte (USA) ..... [8631-23]

**SESSION 5**

**Room: 122 (Exhibit Level) ..... Mon 8:30 am to 9:55 am**

**QWIPS/QDIPs**

Session Chairs: **Marija Strojnik Scholl**, Ctr. de Investigaciones en Óptica, A.C. (Mexico); **Philippe Christol**, Institut d'Electronique du Sud (France)

8:30 am: **Multi-color QWIP FPAs for hyperspectral thermal emission instruments** (*Invited Paper*), Alexander Soibel, Edward M. Luong, Jason M. Mumolo, John Liu, Sir B. Rafol, Sam A. Keo, William R. Johnson, Dan Wilson, Cory J. Hill, David Z. Ting, Sarath Gunapala, Jet Propulsion Lab. (USA) [8631-24]

8:50 am: **Modulation transfer function measurements of QWIP and superlattice focal plane arrays** (*Invited Paper*), Sarath Gunapala, David Z. Ting, Sir B. Rafol, Alexander Soibel, Aezou khoshakhlagh, C. Hill, John K. Liu, Jason M. Mumolo, Sam A. Keo, Jet Propulsion Lab. (USA) ..... [8631-25]

9:10 am: **Dark current in GaAs/Al<sub>0.1</sub>Ga<sub>0.9</sub>As quantum well infrared detectors**, Vaidya Nathan, Air Force Research Lab. (USA) ..... [8631-26]

9:25 am: **A bowtie optical antenna coupled quantum dot infrared photodetector with high operating temperature**, Jarrod Vaillancourt, Applied NanoFemto Technologies (USA); Xuejun Lu, Univ. of Massachusetts Lowell (USA) ..... [8631-27]

9:40 am: **Dual-gated L-QDIPs for tunable infrared detection**, Christian P. Morath, Dustin Guidry, David A. Cardimona, Air Force Research Lab. (USA); Yagya Sharma, Sanjay Krishna, Ctr. for High Technology Materials (USA) ..... [8631-28]

Coffee Break ..... Mon 9:55 am to 10:30 am

**SESSION 6**

**Room: 122 (Exhibit Level) ..... Mon 10:30 am to 12:15 pm**

**Environmental Monitoring**

Session Chairs: **Tariq Manzur**, Naval Undersea Warfare Ctr. (USA); **Sheng Wu**, California Institute of Technology (USA)

10:30 am: **Mid- infrared semiconductor laser based trace gas sensor technologies for environmental monitoring and industrial process control** (*Invited Paper*), Rafal Lewicki, Mohammad Jahjah, Yufei Ma, Frank K. Tittel, Rice Univ. (USA); Przemyslaw Stefanski, Jan Tarka, Wroclaw Univ. of Technology (Poland) ..... [8631-29]

10:50 am: **Advanced sensors for Earth-sciences applications** (*Invited Paper*), David M. Sonnenfroh, Krishnan Parameswaran, Physical Sciences Inc. (USA); John Bruno, Maxion Technologies (USA); Kevin Repasky, Montana State University (USA) ..... [8631-30]

11:10 am: **Atmospheric and environmental sensing by photonic absorption spectroscopy** (*Invited Paper*), Weidong Chen, Univ. du Littoral Côte d'Opale (France); Tao Wu, Univ. du Littoral Côte d'Opale (France) and Anhui Institute of Optics and Fine Mechanics (China) and Nanchang Hangkong Univ. (China); Weixiong Zhao, Univ. du Littoral Côte d'Opale (France) and Anhui Institute of Optics and Fine Mechanics (China); Gerard Wysocki, Princeton Univ. (USA); Xiaojuan Cui, Univ. du Littoral Côte d'Opale (France) and Anhui Institute of Optics and Fine Mechanics (China); Christophe Lengignon, Rabih Maamary, Eric Fertein, Univ. du Littoral Côte d'Opale (France); Cécile Coeur, Univ. du Littoral Côte d'Opale (France); Andy Cassez, Univ. du Littoral Côte d'Opale (France); Yingjian Wang, Weijun Zhang, Xiaoming Gao, Wenqing Liu, Fengzhong Dong, Anhui Institute of Optics and Fine Mechanics (China); George Zha, The Hong Kong Polytechnic Univ. (China); Xu Zheng, The Hong Kong Polytechnic Univ. (Hong Kong, China); Tao Wang, The Hong Kong Polytechnic Univ. (China) ..... [8631-31]

11:30 am: **Part-per-trillion level detection of SF<sub>6</sub> using a single-mode fiber-coupled quantum cascade laser and a quartz enhanced photoacoustic sensor**, Vincenzo Spagnolo, Politecnico di Bari (Italy); Pietro Patimisco, Univ. degli Studi di Bari (Italy); Simone Borri, CNR-INF UOS Bari (Italy); Gaetano Scamarcio, Univ. degli Studi di Bari (Italy); Bruce E. Bernacki, Pacific Northwest National Lab. (USA); Jason M. Kriesel, Opto Knowledge Systems, Inc. (USA) ..... [8631-32]

11:45 am: **Infrared scattering scanning near-field optical microscopy using an external cavity quantum cascade laser for nanoscale chemical imaging and spectroscopy of explosive residues**, Ian M. Craig, Mark C. Phillips, Matthew S. Taubman, Pacific Northwest National Lab. (USA); Erik E. Josberger, Markus B. Raschke, Univ. of Colorado at Boulder (USA) ..... [8631-37]

12:00 pm: **Precision measurement of motion using localised evanescent fields**, Robin M. Cole, Warwick Bowen, Queensland Quantum Optics Lab. (Australia); Anna Swan, Boston Univ. (USA) ..... [8631-38]

Lunch Break ..... Mon 12:15 pm to 1:45 pm

**SESSION 7**

**Room: 122 (Exhibit Level) . . . . . Mon 1:45 pm to 2:55 pm**

**III-V on Si Integration**

Session Chairs: **Shigeyuki Kuboya**, The Univ. of Tokyo (Japan);  
**Michael D. Gerhold**, U.S. Army Research Office (USA)

1:45 pm: **Gallium nitride on silicon for consumer and scalable photonics** (*Invited Paper*), Can Bayram, Kuen-Ting Shiu, Yu Zhu, Cheng-Wei Cheng, Devendra K. Sadana, IBM Thomas J. Watson Research Ctr. (USA); Zahra Vashaei, Erdem Cicek, Ryan McClintock, Manijeh Razeghi, Northwestern Univ. (USA) . . . . . [8631-33]

2:05 pm: **multiplexed monolithic tunable single source in the mid-IR for spectroscopy** (*Invited Paper*), Mathieu Carras, Alcatel-Thales III-V Lab (France); Grégory Maisons, Virginie Trinité, Bouzid Simozrag, Alcatel-Thales III-V Lab. (France); Mickael Brun, Pierre Labeye, Sergio Nicoletti, CEA-LETI-Minatec (France) . . . . . [8631-34]

2:25 pm: **Integrated thin-film GaSb-based Fabry-Perot lasers: towards a fully integrated spectrometer on a SOI waveguide circuit**, Nannicha Hattasan, Alban A. Gassenq, Univ. Gent (Belgium); Laurent Cerutti, Jean-Baptiste Rodriguez, Eric Tournié, Univ. Montpellier 2 (France); Gunther Roelkens, Univ. Gent (Belgium) . . . . . [8631-35]

2:40 pm: **Ultraviolet light-emitting diode on Si substrate**, Yinjun Zhang, Simon Gautier, Chu-Young Cho, Ryan McClintock, Manijeh Razeghi, Northwestern Univ. (USA) . . . . . [8631-102]

Coffee Break . . . . . Mon 2:55 pm to 3:30 pm

**SESSION 8**

**Room: 122 (Exhibit Level) . . . . . Mon 3:30 pm to 5:10 pm**

**Nanomaterials I**

Session Chairs: **Tsukuru Katsuyama**, Sumitomo Electric Industries, Ltd. (Japan); **Alberto Piqué**, U.S. Naval Research Lab. (USA)

3:30 pm: **Monodisperse carbon nanomaterials in electronic, optoelectronic, sensing, and energy conversion technologies** (*Invited Paper*), Mark C. Hersam, Northwestern Univ. (USA) . . . . . [8631-39]

3:50 pm: **Nano photoconductive switches for microwave applications** (*Invited Paper*), Charlotte Tripon-Canseliet, Univ. Pierre et Marie Curie (France); Salim Faci, Conservatoire National des Arts Métiers (France); Didier Decoster, Univ. des Sciences et Technologies de Lille (France); Antoine Pagies, IEMN (France); Soon Fatt Yoon, Nanyang Technological Univ. (Singapore); Kin Leong Pey, SUTD (Singapore); Jean Chazelas, Thales Airborne Systems (France) . . . . . [8631-40]

4:10 pm: **Ultra-short channel field effect transistors based on Ge/Si core/shell nanowires** (*Invited Paper*), Binh-Minh Nguyen, Los Alamos National Lab. (USA); Wei Tang, Univ. of California, Los Angeles (USA) and Los Alamos National Lab. (USA); Shadi A. Dayeh, S. Tom Picraux, Los Alamos National Lab. (USA) . . . . . [8631-41]

4:30 pm: **Tailoring of optical properties of porous nanocolumnar structures and their device applications by oblique angle deposition** (*Invited Paper*), Jae Su Yu, Jung Woo Leem, Kyung Hee Univ. (Korea, Republic of) . . . [8631-42]

4:50 pm: **THz oscillations and soft parametric resonances for hot carriers in graphene** (*Invited Paper*), Jean-Pierre Leburton, Univ. of Illinois at Urbana-Champaign (USA) . . . . . [8631-43]

**Tuesday 5 February**

**OPTO PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am**

Session Chairs : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)

8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)

8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]

8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]

9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]  
See page 26 for details.

Coffee Break . . . . . Tue 10:10 am to 10:30 am

**KEYNOTE SESSION**

**Room: 122 (Exhibit Level) . . . . . 10:30 am to 11:00 am**

Session Chair: **Armin Lambrecht**,  
Fraunhofer-Institut für Physikalische Messtechnik (Germany)

10:30 am: **On the foundational equations of the classical theory of electrodynamics: applications to optomechanical sensors and actuators** (*Keynote Presentation*), Masud Mansuripur, College of Optical Sciences, The Univ. of Arizona (USA) . . . . . [8631-1]

**SESSION 9**

**Room: 122 (Exhibit Level) . . . . . Tue 11:00 am to 12:30 pm**

**Si APDs**

Session Chairs: **Jong Hyeob Baek**,  
Korea Photonics Technology Institute (Korea, Republic of);  
**Siamak Forouhar**, Jet Propulsion Lab. (USA)

11:00 am: **Large-area CMOS SPADs with very low dark counting rate**, Danilo Bronzi, Federica A. Villa, Simone Bellisai, Politecnico di Milano (Italy); Simone Tisa, Micro Photon Devices S.r.l. (Italy); Alberto Tosi, Giancarlo Ripamonti, Franco Zappa, Politecnico di Milano (Italy); Sascha Weyers, Daniel Durini, Werner Brockherde, Uwe Paschen, Fraunhofer-Institut für Mikroelektronische Schaltungen und Systeme (Germany) . . . . . [8631-44]

11:15 am: **Low afterpulsing and narrow timing response InGaAs/InP Single-Photon Avalanche Diode**, Alberto Tosi, Fabio Acerbi, Michele Anti, Franco Zappa, Politecnico di Milano (Italy) . . . . . [8631-45]

11:30 am: **A 48-pixel array of single photon avalanche diodes for multispot single molecule analysis**, Angelo Gulinatti, Ivan Rech, Politecnico di Milano (Italy); Piera Maccagnani, Istituto per la Microelettronica e Microsistemi (Italy); Massimo Ghioni, Politecnico di Milano (Italy) and Micro Photon Devices S.r.l. (Italy) . . . . . [8631-46]

11:45 am: **Comparison of SiPM and PMT as detectors for a spectrophotometry system**, Roberto Pagano, Salvatore Lombardo, Domenico Corso, Consiglio Nazionale delle Ricerche (Italy); Giuseppina Valvo, Beatrice Carbone, Angelo Piana, Massimo Cataldo Mazzillo, Nunzio Delfo Sanfilippo, Pier Giorgio Fallica, STMicroelectronics (Italy); Sebania Libertino, Consiglio Nazionale delle Ricerche (Italy) . . . . . [8631-47]

12:00 pm: **Monolithic time-to-digital converter chips for time-correlated single-photon counting and fluorescence lifetime measurements**, Bojan Markovic, Davide Tamborini, Simone Bellisai, Andrea Bassi, Antonio Pifferi, Federica A. Villa, Giorgio Michele Padovini, Alberto Tosi, Politecnico di Milano (Italy) . . . . . [8631-48]

12:15 pm: **InGaAs/InP SPAD photon-counting module with auto-calibrated gate-width generation and remote control**, Alberto Tosi, Alessandro Ruggeri, Andrea Bahgat Shehata, Adriano Della Frera, Carmelo Scarcella, Politecnico di Milano (Italy); Simone Tisa, Andrea Giudice, Micro Photon Devices S.r.l. (Italy) . . . . . [8631-49]

Lunch/Exhibition Break . . . . . Tue 12:30 pm to 1:30 pm

**SESSION 10**

**Room: 122 (Exhibit Level) . . . . . Tue 1:30 pm to 3:10 pm**

**High-Temperature Photodetectors**

Session Chairs: **Christian P. Morath**, Air Force Research Lab. (USA);  
**Joseph G. Pellegrino**, U.S. Army Night Vision & Electronic Sensors  
Directorate (USA)

1:30 pm: **Challenges for ultimate HOT quantum IR detectors**  
(*Invited Paper*), Olivier Gravrand, Wala Hassis, Johan Rothman, CEA-LETI-  
Minatec (France) . . . . . [8631-50]

1:50 pm: **InAs/InAsSb type-II superlattice infrared nBn photodetectors and  
their potential for operation at high temperatures**, Oray O. Cellek, Zhao-Yu  
He, Zhiyuan Lin, Ha Sul Kim, Shi Liu, Yong-Hang Zhang, Arizona State Univ.  
(USA) . . . . . [8631-51]

2:05 pm: **High operation temperature of HgCdTe photodiodes by bulk  
defect passivation** (*Invited Paper*), Paul Boieriu, Silviu Velicu, Ramana  
Bommena, Chris Buurma, Caleb Blisset, EPIR Technologies, Inc. (USA); C.  
Grein, Sivananthan Laboratories, Inc. (USA) and Univ. of Illinois at Chicago  
(USA); Sivalingam Sivananthan, EPIR Technologies, Inc. (USA); Ping Hagler,  
Missile Defense Agency (USA) . . . . . [8631-52]

2:25 pm: **High performance bias-selectable dual-band Short-/Mid-  
wavelength Infrared Photodetectors based on Type-II InAs/GaSb/AlSb  
superlattices**, Anh Minh Hoang, Guanxi Andy Chen, Abbas Haddadi, Manijeh  
Razeghi, Northwestern Univ. (USA) . . . . . [8631-98]

2:40 pm: **Effect of gating technique on the type-II InAs/GaSb long-  
wavelength infrared photodetectors**, Guanxi Andy Chen, Anh Minh Hoang,  
Simeon Bogdanov, Shaban Ramezani Darvish, Manijeh Razeghi, Northwestern  
Univ. (USA) . . . . . [8631-99]

2:55 pm: **Noise in InAs/GaSb type-II superlattice photodiodes**, Robert  
H. Rehm, Andreas Wörl, Martin Walther, Fraunhofer-Institut für Angewandte  
Festkörperphysik (Germany) . . . . . [8631-56]

Coffee Break . . . . . Tue 3:10 pm to 3:40 pm

**SESSION 11**

**Room: 122 (Exhibit Level) . . . . . Tue 3:40 pm to 5:15 pm**

**6.1 A Materials and Lasers**

Session Chairs: **Patrick Kung**, Univ. of Alabama (USA);  
**Steven Slivken**, Northwestern Univ. (USA)

3:40 pm: **Towards the production of very low defect GaSb and InSb  
substrates: bulk crystal growth, defect analysis and scaling challenges**  
(*Invited Paper*), Rebecca Martinez, Sasson Amirhaghi, Brian Smith, Andrew  
Mowbray, Mark J. Furlong, Wafer Technology Ltd. (United Kingdom); Patrick  
J. Flint, Gordon Dallas, Greg Meshew, John Trevethan, Galaxy Compound  
Semiconductors, Inc. (USA) . . . . . [8631-57]

4:00 pm: **Mid-IR distributed-feedback interband cascade lasers** (*Invited  
Paper*), Chul S. Kim, U.S. Naval Research Lab. (USA); Mijin Kim, Sotera Defense  
Solutions, Inc. (USA); Joshua Abell, William W. Bewley, Charles D. Merritt,  
Chadwick L. Canedy, Igor Vurgaftman, Jerry R. Meyer, U.S. Naval Research  
Lab. (USA) . . . . . [8631-58]

4:20 pm: **Low threshold interband cascade lasers** (*Invited Paper*), Sven  
Höfling, Robert Weih, Adam Bauer, Alfred Forchel, Martin Kamp, Julius-  
Maximilians-Univ. Würzburg (Germany) . . . . . [8631-59]

4:40 pm: **InAs-based dilute nitride materials and devices for the mid-  
infrared spectral range** (*Invited Paper*), Anthony Krier, Martin de la Mare,  
Lancaster Univ. (United Kingdom); Qian Zhuang, Lancaster Univ (United  
Kingdom); Peter J. Carrington, Lancaster Univ. (United Kingdom); Amalia  
Patane, The Univ. of Nottingham (United Kingdom) . . . . . [8631-60]

5:00 pm: **Mid-infrared external cavity lasing through suppression of Fabry-  
Perot oscillation**, Quamrul Huda, Univ. of Alberta (Canada); John Tulip, Boreal  
Laser, Inc. (Canada); Wolfgang Jaeger, Univ. of Alberta (Canada) . . . . . [8631-61]

**Wednesday 6 February**

**KEYNOTE SESSION**

**Room: 122 (Exhibit Level) . . . . . 8:00 am to 8:30 am**

Session Chair: **Jean-Pierre Huignard**, Jphopto (France)

8:00 am: **Room temperature GaN-based spin polarized emitters**  
(*Keynote Presentation*), A. G. Melton, The Univ. of North Carolina at  
Charlotte (USA); B. Kucukgok, UNC Charlotte (USA); Zhiqiang Liu, UNC  
(USA) and R&D Ctr. for Semiconductor Lighting (China); N. Dietz, Georgia  
State Univ. (USA); N. Lu, UNC Charlotte (USA); Ian T. Ferguson, The Univ. of  
North Carolina at Charlotte (USA) . . . . . [8631-63]

**SESSION 12**

**Room: 122 (Exhibit Level) . . . . . Wed 8:30 am to 10:10 am**

**Non-Linear Optics**

Session Chairs: **Anthony Krier**, Lancaster Univ. (United Kingdom);  
**Eric Tournié**, Univ. Montpellier 2 (France)

8:30 am: **The Micro-OPO: an alternative for ultra-compact largely tuneable  
mid-infrared sources** (*Invited Paper*), Myriam Raybaut, Jean-Baptiste  
Dherbecourt, Jean-Michel Melkonian, A. Godard, Michel Lefebvre, ONERA  
(France); Emmanuel Rosencher, ONERA (France) and Ecole Polytechnique  
(France) . . . . . [8631-64]

8:50 am: **Fabrication and characterization of lateral polar GaN structures  
for second harmonic generation** (*Invited Paper*), Marc Hoffmann, North  
Carolina State Univ. (USA); Michael D. Gerhold, U.S. Army Research Office  
(USA); Ronny Kirste, Anthony Rice, Christer-Rajiv Akouala, North Carolina State  
Univ. (USA); Jinqiao Q Xie, HexaTech (USA); Seiji Mita, HexaTech, Inc. (USA);  
Ramon Collazo, Zlatko Sitar, North Carolina State Univ. (USA) . . . . . [8631-65]

9:10 am: **Non-linear frequency mixing in THz quantum cascade lasers**  
(*Invited Paper*), Carlo Sirtori, Univ. Paris 7-Denis Diderot (France); Pierrick  
Cavalié, Julien Madeo, Jerome Tignon, Sukhdeep S. Dhillon, Ecole Normale  
Supérieure (France) . . . . . [8631-66]

9:30 am: **Mid-wave infrared and terahertz quantum cascade lasers based  
on resonant nonlinear frequency mixing** (*Invited Paper*), Augustinas Vizbaras,  
Brolis Semiconductors, Inc. (Lithuania); Karun Vijayraghavan, The Univ. of Texas  
at Austin (USA); Frederic Demmerle, Walter Schottky Institut (Germany); Min  
Jang, The Univ. of Texas at Austin (USA); Gerhard Boehm, Ralf Meyer, Walter  
Schottky Institut (Germany); Mikhail A. Belkin, The Univ. of Texas at Austin  
(USA); Markus C. Amann, Walter Schottky Institut (Germany) . . . . . [8631-67]

9:50 am: **Recent developments in high-power two-wavelength vertical  
external-cavity surface-emitting lasers** (*Invited Paper*), Mahmoud Fallahi,  
Chris Hessenius, Michal Lukowski, College of Optical Sciences, The Univ. of  
Arizona (USA) . . . . . [8631-68]

Coffee Break . . . . . Wed 10:10 am to 10:40 am

**SESSION 13**

**Room: 122 (Exhibit Level) . . . . . Wed 10:40 am to 12:20 pm**

**Plasmonics**

Session Chairs: **Miriam S. Vitiello**, Consiglio Nazionale delle Ricerche  
(Italy); **Matthew Grayson**, Northwestern Univ. (USA)

10:40 am: **Emission in patch plasmonic nano-antennas** (*Invited Paper*),  
Agnes Maitre, Cherif Belacel, Univ. Pierre et Marie Curie (France); Benjamin  
Habert, Florian Bigourdan, François Marquier, Jean-Paul Hugonin, Institut  
d'Optique Graduate School (France); Xavier Lafosse, Lab. de Photonique et  
de Nanostructures, CNRS (France); Laurent Coolen, Catherine Schwob, Univ.  
Pierre et Marie Curie (France); Clementine Javaux, Benoit Dubertret, Ecole  
Supérieure de Physique et de Chimie Industrielles (France); Jean-Jacques  
Greffet, Institut d'Optique Graduate School (France); Pascale Senellart, Lab. de  
Photonique et de Nanostructures, CNRS (France) . . . . . [8631-69]

11:00 am: **Micro- and nano-fabrication of metamaterial and plasmonic  
structures by laser processing** (*Invited Paper*), Alberto Piqué, Nicholas A.  
Charipar, Matthew A. Kirleis, Kristin M. Metkus, Heungsoo Kim, Ray C. Y.  
Auyeung, Scott A. Mathews, U.S. Naval Research Lab. (USA) . . . . . [8631-70]

11:20 am: **nanophotonic cavity enhanced IR photodetectors** (*Invited Paper*),  
Roch Espiau de Lamaestre, David Fowler, Salim Boutami, Matthieu Duperron,  
Jérôme Le Perchec, Giacomo Badano, François Boulard, Olivier Gravrand,  
Gerard Destefanis, CEA-LETI-Minatec (France) . . . . . [8631-71]

OPTO



# Conference 8631 · Room: 122 (Exhibit Level)

11:40 am: **GaSb-based all-semiconductor mid-IR plasmonics** (*Invited Paper*), Thierry Taliercio, Vilianne Ntsame Guilengui, Laurent Cerutti, Jean-Baptiste Rodriguez, Eric Tourmié, Univ. Montpellier 2 (France) . . . . . [8631-72]

12:00 pm: **Near-field investigations of active plasmonic devices** (*Invited Paper*), Yannick De Wilde, Institut Langevin (France) . . . . . [8631-36]

Lunch/Exhibition Break . . . . . Wed 12:20 pm to 2:00 pm

## SESSION 14

Room: 122 (Exhibit Level) . . . . . Wed 2:00 pm to 3:10 pm

### Nanophotonics

Session Chairs: **Jingyu Lin**, Texas Tech Univ. (USA); **Woo-Gwang Jung**, Kookmin Univ. (Korea, Republic of)

2:00 pm: **Infrared spectral filters based on guided-mode resonance with subwavelength structures** (*Invited Paper*), Emilie Sakat, Grégory Vincent, ONERA (France); Petru Ghenuche, Nathalie Bardou, Stéphane Collin, Fabrice Pardo, Jean-Luc Pelouard, Lab. de Photonique et de Nanostructures (France); Riad Haïdar, ONERA (France) . . . . . [8631-74]

2:20 pm: **Ultrastrong optical modulation in waveguides by conducting interfaces**, Farhad Karimi, Sharif Univ. of Technology (Iran, Islamic Republic of); Sina Khorasani, Georgia Institute of Technology (USA) . . . . . [8631-75]

2:35 pm: **Fabrication of high-quality large-area plasmonic oligomers by angle-controlled colloidal nanolithography**, Jun Zhao, Univ. Stuttgart (Germany); Sven Burger, Konrad-Zuse-Zentrum für Informationstechnik Berlin (Germany); Bettina Frank, Harald Giessen, Univ. Stuttgart (Germany) . . [8631-76]

2:50 pm: **Nanostructured photonic and plasmonic materials for enhanced resonant light absorption** (*Invited Paper*), Koray Aydin, Northwestern Univ. (USA) . . . . . [8631-103]

Coffee Break . . . . . Wed 3:10 pm to 3:40 pm

## SESSION 15

Room: 122 (Exhibit Level) . . . . . Wed 3:40 pm to 5:10 pm

### Nanomaterials II

Session Chairs: **Grzegorz Sek**, Wroclaw Univ. of Technology (Poland); **Ferechteh Hosseini Teherani**, Nanovation (France)

3:40 pm: **Structural and optical properties of (In,Ga)As/GaP quantum dots and (GaAsPN/GaPN) diluted-nitride nanolayers coherently grown onto GaP and Si substrates for photonics and photovoltaics applications** (*Invited Paper*), Olivier Durand, Cédric Robert, Institut National des Sciences Appliquées de Rennes (France); Tra Nguyen Thanh, Samy Almosni, Institut National des Sciences Appliquées de Rennes (France); Thomas Quinci, Institut National des Sciences Appliquées de Rennes (France) and Institut National de l'Énergie Solaire (France); Jitesh Kuyyalil, Institut National des Sciences Appliquées de Rennes (France); Charles Cornet, Antoine Létoublon, Institut National des Sciences Appliquées de Rennes (France); Christophe Levallois, Jean-Marc Jancu, Jacky Even, Laurent Pédeseau, Mathieu Perrin, Nicolas Bertru, A. Sakri, Institut National des Sciences Appliquées de Rennes (France); Nathalie Boudet, G2Elab (France); Anne Ponchet, Ctr. d'Elaboration de Matériaux et d'Études Structurales (France); P. Rale, Ecole Nationale Supérieure de Chimie de Paris (France); Laurent Lombez, Jean-François Guillemoles, Institut de Recherche et Développement sur l'Énergie Photovoltaïque (France); Xavier Marie, Institut National des Sciences Appliquées de Toulouse (France); A. Balocchi, Univ. de Toulouse (France); P. Turban, Sylvain Tricot, Institut de Physique de Rennes (France); Mircea Modreanu, Tyndall National Institute-University College Cork, Lee Maltings, Prospect Row (Ireland); Slimane Loualiche, Alain Le Corre, Institut National des Sciences Appliquées de Rennes (France) . . . . . [8631-78]

4:00 pm: **Short-wave infrared colloidal quantum dot photodetectors on silicon**, Chen Hu, Alban A. Gassenq, Yolanda Justo, Univ. Gent (Belgium); Sergij Yakunin, Wolfgang Heiss, Johannes Kepler Univ. Linz (Austria); Zeger Hens, Gunther Roelkens, Univ. Gent (Belgium) . . . . . [8631-79]

4:15 pm: **Optoelectronic properties of hexagonal boron nitride epilayers** (*Invited Paper*), X. K. Cao, Texas Tech Univ. (USA); S. Majety, J. Li, Jingyu Lin, Hongxing Jiang, Texas Tech Univ. (USA) . . . . . [8631-80]

4:35 pm: **Thermal conductivity tensor of semiconductor layers using two-wire 3-omega method**, Chuanle Zhou, Northwestern Univ. (USA); Gregor Koblmüller, Max Bichler, Gerhard Abstreiter, Walter Schottky Institut (Germany); Matthew Grayson, Northwestern Univ. (USA) . . . . . [8631-94]

4:50 pm: **Transport properties related to spin-orbit interaction** (*Invited Paper*), Henri-Jean Drouhin, Ecole Polytechnique (France); Federico Bottegoni, Ecole Polytechnique (France) and Politecnico di Milano (Italy); Alberto Ferrari, Politecnico di Milano (Italy); Hoai T. Nguyen, Vietnamese Academy of Science and Technology (Viet Nam); Jean-Eric Wegrowe, Ecole Polytechnique (France); Guy Fishman, Univ. Paris-Sud 11 (France) . . . . . [8631-73]

## POSTERS-WEDNESDAY

Room: 103 (Exhibit Level) . . . . . Wed 6:00 pm to 8:00 pm

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Investigation of temperature dependence on heterojunction bipolar light-emitting transistors embedded InGaAs/GaAs quantum wells**, Tzu-hsuan Huang, Heng-Jui Chang, Kuo-Min Huang, Shao-Yen Chiu, Yueh-Lin Lee, National Tsing Hua Univ. (Taiwan); Wei-Jiun Hong, National Tsing Hua University (Taiwan); Chong-Long Ho, Meng-Chyi Wu, National Tsing Hua Univ. (Taiwan) . . . . . [8631-90]

**Nanostructured enhanced chemical sensing surfaces for mid-IR molecular absorption**, Andrea Dunbar, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Edward Threlfall, Photon Design (United Kingdom); Rolf Eckert, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Silvia Angeloni, CSEM SA (Switzerland); Ross P. Stanley, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland) . . . . . [8631-91]

**The response properties of NbN superconductor nanowire for multi-photon**, Lin Kang, Yu Zhou, Labao Zhang, Pei-Heng Wu, Nanjing Univ. (China) . . . . . [8631-92]

**High-speed InGaAs/InP single-photon avalanche photodiode with tunable gating frequency**, Yixin Zhang, Xuping Zhang, Shun Wang, Nanjing Univ. (China) . . . . . [8631-96]

## Thursday 7 February

### KEYNOTE SESSION

Room: 122 (Exhibit Level) . . . . . 8:00 am to 8:30 am

Session Chair: **Manijeh Razeghi**, Northwestern Univ. (USA)

8:00 am: **Advanced PV technologies: challenges and opportunities** (*Keynote Presentation*), Devendra K. Sadana, IBM Thomas J. Watson Research Ctr. (USA) . . . . . [8631-77]

### SESSION 16

Room: 122 (Exhibit Level) . . . . . Thu 8:30 am to 10:00 am

### THz and Infrared Technology

Session Chairs: **Can Bayram**, IBM Thomas J. Watson Research Ctr. (USA); **Emmanuel Rosencher**, ONERA (France), Ecole Polytechnique (France)

8:30 am: **Quantum-dot micropillars for parametric THz emission** (*Invited Paper*), Silvia Mariani, Alessio Andronico, Ivan Favero, Sara Ducci, Yanko Todorov, Carlo Sirtori, Univ. Paris 7-Denis Diderot (France); Martin Kamp, Julius-Maximilians-Univ. Würzburg (Germany); Julien Claudon, Jean-Michel Gérard, Univ. Joseph Fourier (France) and Commissariat à l'Énergie Atomique (France); Tianwu Wang, Peter U. Jepsen, Technical Univ. of Denmark (Denmark); Giuseppe Leo, Univ. Paris 7-Denis Diderot (France) . . . . . [8631-81]

8:50 am: **Electronic temperature in phonon-photon-phonon terahertz quantum cascade devices with high-operating temperature performance**, Gaetano Scamarcio, Pietro Patimisco, Maria V. Santacroce, Pasquale Tempesta, Univ. degli Studi di Bari (Italy); Vincenzo Spagnolo, Politecnico di Bari (Italy); Miriam S. Vitiello, Lab. NEST (Italy) and Scuola Normale Superiore di Pisa (Italy); Emmanuel Dupont, Saeed Fatholoulumi, Sylvain R. Laframboise, National Research Council Canada (Canada); Seyed G. Razavipour, Zbigniew Wasilewski, Dayan Ban, Univ. of Waterloo (Canada); H. C. Liu, Shanghai Jiao Tong Univ. (China) . . . . . [8631-82]

9:05 am: **Far-infrared InAs/AlSb quantum cascade lasers** (*Invited Paper*), Roland Teissier, Michael Bahriz, Guillaume Lollia, Alexei N. Baranov, Univ. Montpellier 2 (France); Adel Bousseksou, Raffaele Colombelli, Univ. Paris-Sud 11 (France) . . . . . [8631-83]

9:25 am: **Room-temperature nanowire terahertz photodetectors**, Lorenzo Romeo, Scuola Normale Superiore di Pisa (Italy); Dominique Coquillat, Univ. Montpellier 2 (France); Leonardo Viti, Daniele Ercolani, Lucia Sorba, Scuola Normale Superiore di Pisa (Italy); Wojciech Knap, Univ. Montpellier 2 (France); Alessandro Tredicucci, Lab. NEST (Italy); Miriam S. Vitiello, Univ. degli Studi di Roma La Sapienza (Italy) . . . . . [8631-84]



9:40 am: **Rapid screening and identification of illicit drugs by IR absorption spectroscopy and gas chromatography** (*Invited Paper*), Sandro Mengali, Nicola Liberatore, Domenico Luciani, Roberto Viola, Consorzio CREO (Italy); Giancarlo Cardinali, Ivan Elmi, Consiglio Nazionale delle Ricerche (Italy); Antonella Poggi, Stefano Zampolli, Istituto per la Microelettronica e Microsistemi (Italy); Elisa Biavardi, Enrico Dalcanale, Univ. degli Studi di Parma (Italy); Pierre Esseiva, Olivier Delemont, Francesco Saverio Romolo, Univ. de Lausanne (Switzerland); Federica Bonadio, Institut de Police Scientifique, Universite´ de Lausanne, Batochime (Switzerland) . . . . . [8631-85]

Coffee Break . . . . . Thu 10:00 am to 10:30 am

**SESSION 17**

**Room: 122 (Exhibit Level) . . . . . Thu 10:30 am to 11:50 am**

**IR Spectroscopy**

Session Chairs: **Stefano Barbieri**, Univ. Paris 7-Denis Diderot (France); **Henri-Jean Drouhin**, Ecole Polytechnique (France)

10:30 am: **CW DFB RT diode laser based sensor for trace-gas detection of ethane using novel compact multipass gas absorption cell**

, Mohammad Jahjah, Rafal Lewicki, Frank K. Tittel, Rice Univ. (USA); Karol Krzempek, Przemyslaw Stefanski, Wroclaw Univ. of Technology (Poland); Stephen So, David Thomazy, Sentinel Photonics (USA) . . . . . [8631-87]

10:45 am: **Quantum cascade laser based standoff photoacoustic detection of explosives using ultra-sensitive microphone and sound reflector**, Xing Chen, Dingkai Guo, Fow-Sen Choa, Univ. of Maryland, Baltimore County (USA); Chen-chia Wang, Sudhir Trivedi, Brimrose Corp. of America (USA); Jenyu Fan, AdTech Optics, Inc. (USA) . . . . . [8631-87]

11:00 am: **Broadband-tunable external-cavity quantum cascade lasers for the spectroscopic detection of hazardous substances** (*Invited Paper*), Stefan Hugger, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany); Frank Fuchs, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Jan Jarvis, Michel Kinzer, Quankui K. Yang, Rachid Driad, Rolf Aidam, Joachim Wagner, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany) . . . . . [8631-15]

11:20 am: **QCL: Creating new frontiers of infrared spectroscopy**, Frederick G. Haibach, Erik R. Deutsch, Alexander Mazurenko, Jim Ye, Block Engineering, LLC (USA) . . . . . [8631-16]

11:35 am: **Same-frequency detector and laser utilizing bi-functional quantum cascade active region**, Benedikt Schwarz, Peter Reininger, Herman Detz, Tobias Zederbauer, Aaron M. Andrews, Technische Univ. Wien (Austria) and Technische Univ. Wien (Austria); Werner Schrenk, Oskar Baumgartner, Hans Kosina, Technische Univ. Wien (Austria); Gottfried Strasser, Technische Univ. Wien (Austria) and Technische Univ. Wien (Austria) . . . . . [8631-20]

Lunch/Exhibition Break . . . . . Thu 11:50 am to 1:20 pm

**SESSION 18**

**Room: 122 (Exhibit Level) . . . . . Thu 1:20 pm to 2:30 pm**

**Mid-IR Lasers**

Session Chairs: **Gail J. Brown**, Air Force Research Lab. (USA); **Frank K. Tittel**, Rice Univ. (USA)

1:20 pm: **Single QCL-based sensor measuring the simultaneous displacement of independent targets**, Lorenzo Colombo, Francesco Paolo Mezzapesa, CNR-IFN UOS Bari (Italy); Massimo Brambilla, Maurizio Dabbicco, Gaetano Scamarcio, Univ. degli Studi di Bari (Italy) and CNR-IFN UOS Bari (Italy) . . . . . [8631-88]

1:35 pm: **Toward on-chip mid-infrared chem/bio sensors using quantum cascade lasers and substrate-integrated semiconductor waveguides**, Xiaofeng Wang, Markus Sieger, Boris Mizaikoff, Univ. Ulm (Germany) . [8631-89]

1:50 pm: **Tunable excitation of mid-infrared optically pumped semiconductor lasers** (*Invited Paper*), Linda J. Olafsen, Jeremy Kunz, Baylor Univ. (USA); Andrew P. Ongstad, Ron Kaspi, Air Force Research Lab. (USA) . . . . . [8631-62]

2:10 pm: **Recent advances in GaSb-based structures for mid-infrared emitting lasers: spectroscopic study** (*Invited Paper*), Grzegorz Sek, Marcin Motyka, Filip Janiak, Krzysztof Ryczko, Jan Misiewicz, Wroclaw Univ. of Technology (Poland); Adam Bauer, Matthias Dallner, Robert Weihs, Sven Hoefling, Alfred Forchel, University of Wuerzburg (Germany); Sofiane Belahsene, Guilhem Boissier, Yves Rouillard, University of Montpellier 2 (France) . [8631-95]

Coffee Break . . . . . Thu 3:00 pm to 3:30 pm

**SESSION 19**

**Room: 122 (Exhibit Level) . . . . . Thu 3:30 pm to 4:40 pm**

**Mid-IR Detectors**

Session Chairs: **Binh-Minh Nguyen**, Los Alamos National Lab. (USA); **Eric Tournié**, Univ. Montpellier 2 (France)

3:30 pm: **InAs/GaSb superlattice pin photodiode: choice of the SL period to enhance the temperature operation in the MWIR domain** (*Invited Paper*), Philippe Christol, Rachid Taalat, Marie Delmas, Jean-Baptiste Rodriguez, Univ. Montpellier 2 (France); Edouard Giard, Isabelle Ribet-Mohamed, ONERA (France) . . . . . [8631-53]

3:50 pm: **Radiation tolerance of type-II strained layer superlattice based interband cascade MWIR detector**, Vincent M. Cowan, Christian P. Morath, Air Force Research Lab. (USA); Stephen Myers, Nutan Gautam, Sanjay Krishna, Ctr. for High Technology Materials (USA) . . . . . [8631-54]

4:05 pm: **Ga-free InAs/InAsSb type-II superlattice: its past, present, and future** (*Invited Paper*), Yong-Hang Zhang, Arizona State Univ. (USA) . . [8631-55]

# Photonic and Phononic Properties of Engineered Nanostructures III

*Conference Chairs:* **Ali Adibi**, Georgia Institute of Technology (USA); **Shawn-Yu Lin**, Rensselaer Polytechnic Institute (USA); **Axel Scherer**, California Institute of Technology (USA)

*Program Committee:* **Ali Asghar Eftekhar**, Georgia Institute of Technology (USA); **Shanhui Fan**, Stanford Univ. (USA); **Abdelkrim Khelif**, Georgia Tech-Lorraine (France); **Maryanne C. J. Large**, Canon Information Systems Research Australia Pty. Ltd. (Australia); **Marko Loncar**, Harvard Univ. (USA); **Susumu Noda**, Kyoto Univ. (Japan); **Masaya Notomi**, NTT Basic Research Labs. (Japan); **Ekmel Özbay**, Bilkent Univ. (Turkey); **Dennis W. Prather**, Univ. of Delaware (USA); **Yong Xu**, Virginia Polytechnic Institute and State Univ. (USA); **Eli Yablonovitch**, Univ. of California, Berkeley (USA); **Rashid Zia**, Brown Univ. (USA)

## Sunday 3 February

### SESSION 1

Room: 110 (Exhibit Level) . . . . . Sun 1:30 pm to 3:20 pm

#### Novel Phenomena and Devices in Photonic Crystals I

Session Chair: **Ali Adibi**, Georgia Institute of Technology (USA)

1:30 pm: **Wetting in color: From photonic fingerprinting of liquids to optical control of liquid percolation** (*Invited Paper*), Ian B. Burgess, Wyss Institute for Biologically Inspired Engineering (USA); Bryan A. Neger, Kevin P. Raymond, Wyss Institute for Biologically Inspired Engineering (USA) and Univ. of Waterloo (Canada); Alexis Goulet-Hanssens, Thomas A. Singleton, McGill Univ. (Canada); Mackenzie H. Kinney, Wyss Institute for Biologically Inspired Engineering (USA) and Univ. of Waterloo (Canada); Christopher J. Barrett, McGill Univ. (Canada); Marko Loncar, Harvard Univ. (USA); Joanna Aizenberg, Wyss Institute for Biologically Inspired Engineering (USA) and Harvard Univ. (USA) . . . . . [8632-1]

2:00 pm: **Funneling single photons into ridge-waveguide photonic integrated circuits**, Sartoon Fattah poor, Leonardo Midolo, Technische Univ. Eindhoven (Netherlands); Thang Hoang, Technische Univ. Eindhoven (Netherlands); Lianhe Li, Edmund Linfield, Univ. of Leeds (United Kingdom); Tian Xia, Frank W. M. van Otten, Technische Univ. Eindhoven (Netherlands); Andrea Fiore, Technische Univ. Eindhoven (Netherlands). . . . . [8632-2]

2:20 pm: **Enhanced localized surface plasmonic resonance in dielectric photonic band gap structure: FP nanocavity and photonic crystal slot waveguide**, Dihan Md. Nuruddin Hasan, Alan X. Wang, Oregon State Univ. (USA) . . . . . [8632-3]

2:40 pm: **Efficient single-photon frequency conversion using a Sagnac interferometer**, Matthew Bradford, Jung-Tsung Shen, Washington Univ. in St. Louis (USA) . . . . . [8632-4]

3:00 pm: **High-speed high-sensitivity carbon nanotube-based composite bolometers**, Trevor J. Simmons, Rensselaer Polytechnic Institute (USA); Gustavo Vera-Reveles, Univ. Autónoma de San Luis Potosi (Mexico); Gabriel Gonzalez, Tecnológico de Monterrey (Mexico); Hugo Navarro-Contreras, Univ. Autónoma de San Luis Potosi (Mexico); Francisco J. Gonzalez, Univ. Autónoma de San Luis Potosi (Mexico) . . . . . [8632-5]

Coffee Break . . . . . Sun 3:20 pm to 3:50 pm

### SESSION 2

Room: 110 (Exhibit Level) . . . . . Sun 3:50 pm to 5:30 pm

#### Novel Phenomena and Devices in Photonic Crystals II

Session Chair: **Ian B. Burgess**, Harvard Univ. (USA)

3:50 pm: **Optical absorption enhancement in three-dimensional simple cubic woodpile nanostructures for thin film solar cell applications**, Ping Kuang, Shawn-Yu Lin, Rensselaer Polytechnic Institute (USA) . . . . . [8632-6]

4:10 pm: **Large area selective emitters/absorbers based on 2D tantalum photonic crystals for high-temperature energy applications**, Veronika Rinnerbauer, Yi Xiang Yeng, Jay J. Senkevich, John D. Joannopoulos, Marin Soljacic, Ivan Celanovic, Massachusetts Institute of Technology (USA) . [8632-7]

4:30 pm: **Real-time tailoring of the spectral shape of infrared transmission filters using anti-resonant anomalies**, Thomas Estruch, Julien Jaeck, Sophie Derelle, ONERA (France); Fabrice Pardo, Lab. de Photonique et de Nanostructures (France); Jérôme Primot, Riad Haidar, ONERA (France) . [8632-8]

4:50 pm: **Plasmonic photonic-crystal slab as an ultrasensitive and robust optical biosensor**, Alexander V. Baryshev, Toyohashi Univ. of Technology (Japan); Alexander M. Merzlikin, Institute for Theoretical & Applied Electromagnetics (Russian Federation); Mitsuteru Inoue, Toyohashi Univ. of Technology (Japan) . . . . . [8632-9]

5:10 pm: **Sunflower photonic quasicrystals**, Yufeng Liao, Haitao Dai, Yang Yang, Shu Guo Wang, Xiao Wei Sun, Tianjin Univ. (China). . . . . [8632-10]

## Monday 4 February

### SESSION 3

Room: 110 (Exhibit Level) . . . . . Mon 8:00 am to 10:00 am

#### Recent Advances in Engineered Nanostructures

Session Chair: **Ali Adibi**, Georgia Institute of Technology (USA)

8:00 am: **Optoelectronic silicon-based nanostructures** (*Invited Paper*), Axel Scherer, Sameer Walavalkar, Andrew Homyk, Se-Heon Kim, Aditya Rajagopal, California Institute of Technology (USA) . . . . . [8632-11]

8:30 am: **Plasmonic nanoscale energy converters: hot carrier and plasmoelectric energy generation** (*Invited Paper*), Harry A. Atwater Jr., Matthew T. Sheldon, California Institute of Technology (USA); Ana M. Brown, Stanford Univ. (USA); Andrew J. Leenheer, Prineha Narang, California Institute of Technology (USA) . . . . . [8632-12]

9:00 am: **2D-photonic crystals for record solar cell efficiency** (*Invited Paper*), Eli Yablonovitch, Owen Miller, Vidya Ganapati, Gregg Scranton, Univ. of California, Berkeley (USA) . . . . . [8632-13]

9:30 am: **Light trapping, strong exciton-photon coupling, and BEC in photonic band gap materials** (*Invited Paper*), Sajeew John, Univ. of Toronto (Canada) . . . . . [8632-14]

Coffee Break . . . . . Mon 10:00 am to 10:30 am

### SESSION 4

Room: 110 (Exhibit Level) . . . . . Mon 10:30 am to 12:00 pm

#### Fabrication and Characterization of Photonic Crystal Structures

Session Chair: **Axel Scherer**, California Institute of Technology (USA)

10:30 am: **Genetic algorithm design and phase mask holography of 3D photonic crystals and metamaterials** (*Invited Paper*), Paul V. Braun, Univ. of Illinois at Urbana-Champaign (USA) . . . . . [8632-15]

11:00 am: **Fiber based holographic lithography for fabrication of period tunable two-dimensional photonic crystal templates**, Kai Shen, Michael R. Wang, Univ. of Miami (USA) . . . . . [8632-16]

11:20 am: **Free-standing monolithic LiNbO<sub>3</sub> photonic crystal slabs**, Jun Deng, Vanga S. Kumar, Hongwei Gao, National Univ. of Singapore (Singapore); Ching Eng J. Png, A\*STAR Institute of High Performance Computing (Singapore); Ning Xiang, Andrew A. Bettiol, Aaron J. Danner, National Univ. of Singapore (Singapore). . . . . [8632-17]

11:40 am: **Spectroscopic ellipsometry study of novel nanostructured transparent conducting oxide structures**, Akram Amooali Khosroabadi, Palash Gangopadhyay, Robert A. Norwood, College of Optical Sciences, The Univ. of Arizona (USA) . . . . . [8632-18]

Lunch Break . . . . . Mon 12:00 pm to 1:30 pm

**SESSION 5**

**Room: 110 (Exhibit Level) . . . . . Mon 1:30 pm to 3:00 pm**

**Microstructured and Photonic Crystal Fibers**

Session Chair: **Paul V. Braun**, Univ. of Illinois at Urbana-Champaign (USA)

- 1:30 pm: **Optomechanical and optoacoustic phenomena in microstructured silica fibers** (*Invited Paper*), Anna Butsch, M. S. Kang, Tijmen G. Euser, Philip S. Russell, Max Planck Institute for the Science of Light (Germany) . . . . . [8632-19]
- 2:00 pm: **Modeling loss and backscattering in a hollow-core photonic-bandgap fiber using strong perturbation theory**, Kiarash Zamani Aghaie, Michel J. F. Digonnet, Shanhui Fan, Stanford Univ. (USA) . . . . . [8632-20]
- 2:20 pm: **Guided-mode based Faraday rotation spectroscopy within a photonic bandgap fiber**, Florian V. Englich, The Univ. of Adelaide (Australia); Michal Grabka, Jagiellonian Univ. in Krakow (Poland); David G. Lancaster, Tanya M. Monro, The Univ. of Adelaide (Australia) . . . . . [8632-21]
- 2:40 pm: **Soft glass film deposition in silica solid and hollow core photonic crystal fiber**, Christos Markos, National Hellenic Research Foundation (Greece); Kyriakos G. Vlachos, Univ. of Patras (Greece); Thomas Vassiliadis, Vasilios Dracopoulos, Foundation for Research and Technology-Hellas (Greece); George Kakarantzas, National Hellenic Research Foundation (Greece); Spyros N. Yannopoulos, Foundation for Research and Technology-Hellas (Greece) and Univ. of Patras (Greece) . . . . . [8632-22]
- Coffee Break . . . . . Mon 3:00 pm to 3:30 pm

**SESSION 6**

**Room: 110 (Exhibit Level) . . . . . Mon 3:30 pm to 5:30 pm**

**Photonic Crystal Resonators and Emitters**

Session Chair: **Anna Butsch**,  
Max Planck Institute for the Science of Light (Germany)

- 3:30 pm: **Room-temperature high-performance laser diodes from 3 μm to 300 μm** (*Invited Paper*), Manijeh Razeghi, Northwestern Univ. (USA) . . . [8632-23]
- 4:00 pm: **Nonlinear optics with nW optical powers in photonic crystals** (*Invited Paper*), Sonia Buckley, Kelley Rivoire, Arka Majumdar, Jelena Vuckovic, Stanford Univ. (USA) . . . . . [8632-24]
- 4:30 pm: **Spontaneous emission control of single quantum dots by electrostatic tuning of a double-slab photonic crystal cavity**, Leonardo Midolo, Francesco Pagliano, Thang B. Hoang, Tian Xia, Frank W. M. van Otten, Technische Univ. Eindhoven (Netherlands); Lian H. Li, Edmund H. Linfield, Univ. of Leeds (United Kingdom); Matthias Lerner, Sven Höfling, Julius-Maximilians-Univ. Würzburg (Germany); Andrea Fiore, Technische Univ. Eindhoven (Netherlands) . . . . . [8632-25]
- 4:50 pm: **Remote control of spontaneous emission using coupled cavity quantum electrodynamics**, Chaoyuan Jin, Eindhoven Univ. of Technology (Netherlands); Milo Y. Swinkels, Robert Johnne, Thang B. Hoang, Leonardo Midolo, René P. J. van Veldhoven, Andrea Fiore, Technische Univ. Eindhoven (Netherlands) . . . . . [8632-26]
- 5:10 pm: **Strongly inhibited spontaneous emission of semiconductor quantum dots in 3D photonic band gap crystals**, Elahe Yeganegi, Ad Lagendijk, Allard P. Mosk, Willem L. Vos, Univ. Twente (Netherlands) . . [8632-27]

**Tuesday 5 February**

**OPTO PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am**

Session Chairs : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
  - 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
  - 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]
  - 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
  - 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]
- See page 26 for details.

Coffee Break . . . . . Tue 10:10 am to 10:30 am

**SESSION 7**

**Room: 110 (Exhibit Level) . . . . . Tue 10:30 am to 12:20 pm**

**Phononic Crystals, Acoustic Metamaterials, and Optomechanical Structures I**

Session Chair: **Ali Adibi**, Georgia Institute of Technology (USA)

- 10:30 am: **Effective dynamic properties of micro-architected composites: theory and applications** (*Invited Paper*), Siavouche Nemat-Nasser, Ankit Srivastava, Univ. of California, San Diego (USA) . . . . . [8632-28]
- 11:00 am: **Adaptive acoustic metamaterials through nonlinear interactions** (*Invited Paper*), Massimo Ruzzene, Georgia Institute of Technology (USA) . . . . . [8632-29]
- 11:30 am: **Comprehensive enhancement of the thermoelectric figure-of-merit using phononic crystals and low-dimensional materials** (*Invited Paper*), Charles M. Reinke, Sandia National Labs. (USA); Mehmet F. Su, The Univ. of New Mexico (USA); Byung-II Kim, Sandia National Labs. (USA); P. Hopkins, Univ. of Virginia (USA); D. Goettler, Z. Leseman, The Univ. of New Mexico (USA); Roy H. Olsson III, Sandia National Labs. (USA); Ihab El-Kady, Sandia National Labs. (USA) and The Univ. of New Mexico (USA) . . . . [8632-30]
- 12:00 pm: **Cavity optomechanics and the Casimir force: dynamics and applications**, David Woolf, Pui-Chuen Hui, Harvard Univ. (USA); Alejandro Rodriguez, Harvard Univ. (USA) and Massachusetts Institute of Technology (USA); Eiji Iwase, Waseda Univ. (Japan); Mughees Khan, Ray Ng, Harvard Univ. (USA); Steven G. Johnson, Massachusetts Institute of Technology (USA); Federico Capasso, Harvard School of Engineering and Applied Sciences (USA); Marko Loncar, Harvard Univ. (USA) . . . . . [8632-35]
- Lunch/Exhibition Break . . . . . Tue 12:20 pm to 1:50 pm

**SESSION 8**

**Room: 110 (Exhibit Level) . . . . . Tue 1:50 pm to 3:30 pm**

**Phononic Crystals, Acoustic Metamaterials, and Optomechanical Structures II**

Session Chair: **Massimo Ruzzene**, Georgia Institute of Technology (USA)

- 1:50 pm: **Phononic crystals: tailoring the light-sound interaction at the nanoscale** (*Invited Paper*), Alejandro Martinez, Univ. Politècnica de València (Spain) . . . . . [8632-31]
- 2:20 pm: **Optomechanics with photonic crystals in diamond and silicon** (*Invited Paper*), Marko Loncar, Harvard Univ. (USA) . . . . . [8632-32]
- 2:50 pm: **Metallic-pillar-based phononic crystal structures for radio frequency applications**, Reza Pourabolghasem, Saeed Mohammadi, Ali A. Eftekhar, Ali Adibi, Georgia Institute of Technology (USA) . . . . . [8632-33]
- 3:10 pm: **Electrostatically-tunable high-Q and low-mode-volume one-dimensional photonic crystal resonators**, Mehdi Miri, Georgia Institute of Technology (USA) and Sharif Univ. of Technology (Iran, Islamic Republic of); Ali A. Eftekhar, Majid Sodagar, Ali Adibi, Georgia Institute of Technology (USA) . . . . . [8632-34]
- Coffee Break . . . . . Tue 3:30 pm to 4:00 pm

**OPTO**



# Conference 8632 · Room: 110 (Exhibit Level)

## SESSION 9

Room: 110 (Exhibit Level) . . . . . Tue 4:00 pm to 6:00 pm

### Modeling and Simulation of Nanophotonic Structures

Session Chair: **Marko Loncar**, Harvard Univ. (USA)

4:00 pm: **Conformal transformation of photonic crystal structures**, Marco Zocca, Matthijs Langelaar, Fred van Keulen, Technische Univ. Delft (Netherlands) . . . . . [8632-36]

4:20 pm: **Mapping the absolute electromagnetic field strength of individual field components inside a photonic crystal**, Thomas Denis, Bob Reijnders, Joan H. H. Lee, Univ. of Twente (Netherlands); Peter J. M. van der Slot, Willem L. Vos, Klaus J. Boller, Univ. Twente (Netherlands) . . . . . [8632-37]

4:40 pm: **A theory of extraordinary optical transmission in aperture arrays**, Ross P. Stanley, L. Andrea Dunbar, Rolf Eckert, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland) . . . . . [8632-38]

5:00 pm: **Photonic quasi-crystals in Fourier and Fourier-Bessel space**, Scott R. Newman, Robert C. Gauthier, Carleton Univ. (Canada) . . . . . [8632-39]

5:20 pm: **Optical metrology for randomly distribution of nanoparticles on multilayer films with cluster effects**, Yia-Chung Chang, Academia Sinica (Taiwan); Huai-Yi Xie, National Taiwan Univ. (Taiwan) . . . . . [8632-40]

5:40 pm: **Femtosecond direct laser writing of permanent and stable second-harmonic generation properties in silver-containing glass**, Gautier Papon, Arnaud Royon, Nicolas Marquestaut, Univ. Bordeaux 1 (France); Marc Dussauze, Institut de Chimie de la Matière Condensée de Bordeaux (France); Yannick G. Petit, Institut de Chimie de la Matière Condensée de Bordeaux (France) and Univ. Bordeaux 1 (France); Thierry Cardinal, Institut de Chimie de la Matière Condensée de Bordeaux (France); Lionel S. Canioni, Univ. Bordeaux 1 (France) . . . . . [8632-41]

## Wednesday 6 February

## SESSION 10

Room: 110 (Exhibit Level) . . . . . Wed 8:10 am to 10:00 am

### Design and Characterization of Plasmonic Structures

Session Chair: **Luca Dal Negro**, Boston Univ. (USA)

8:10 am: **Holographic plasmonic couplers for vortex beams and non-diffracting surface waves** (*Invited Paper*), Patrice Genevet, Harvard School of Engineering and Applied Sciences (USA); Jiao Lin, Harvard School of Engineering and Applied Sciences (USA) and A\*STAR Singapore Institute of Manufacturing Technology (Singapore); Jean Dellinger, Benoit Cluzel, Frédérique A. De Fornel, Univ. de Bourgogne (France); Mikhail A. Kats, Federico Capasso, Harvard School of Engineering and Applied Sciences (USA) . . . . . [8632-42]

8:40 am: **Plasmonic mode engineering with template self-assembled nanoclusters**, Jonathan A. Fan, Harvard Univ. (USA) and Univ. of Illinois at Urbana-Champaign (USA); Li Sun, Harvard Univ. (USA); Kui Bao, Rice Univ. (USA); Jiming Bao, Univ. of Houston (USA); Vinodhan N. Manoharan, Harvard Univ. (USA); Peter Nordlander, Rice Univ. (USA); Federico Capasso, Harvard School of Engineering and Applied Sciences (USA) . . . . . [8632-43]

9:00 am: **Large-area fabrication of broadband absorbing tapered nanoresonators**, Alex F. Kaplan, Lingjie Guo, Univ. of Michigan (USA) [8632-44]

9:20 am: **Characterization of dielectric and plasmonic resonances in periodic arrays of Au-coated Si nanopillars**, Francisco J. Bezares, Joshua D. Caldwell, James P. Long, Orest J. Glembocki, Ronald W. Rendell, Jeffrey Owrutsky, Blake S. Simpkins, U.S. Naval Research Lab. (USA); Richard Kasica, National Institute of Advanced Industrial Science and Technology (USA); Loretta Shirey, U.S. Naval Research Lab. (USA) . . . . . [8632-45]

9:40 am: **High-performance broadband absorber in visible by engineered dispersion and geometry of metal-dielectric-metal stack**, Peng Zhu, Harbin Institute of Technology (China); L. Jay Guo, Univ. of Michigan (USA) . . . . . [8632-47]

Coffee Break . . . . . Wed 10:00 am to 10:30 am

## SESSION 11

Room: 110 (Exhibit Level) . . . . . Wed 10:30 am to 12:00 pm

### Field Enhancement in Plasmonic Structures

Session Chair: **Patrice Genevet**, Harvard School of Engineering and Applied Sciences (USA)

10:30 am: **Enhanced light-matter interactions with engineered photonic-plasmonic nanostructures** (*Invited Paper*), Luca Dal Negro, Boston Univ. (USA) . . . . . [8632-48]

11:00 am: **Optically characterized nanogaps for dramatic electric field enhancement**, Jesse Theiss, Stephen B. Cronin, The Univ. of Southern California (USA) . . . . . [8632-49]

11:20 am: **Field enhancement in linear and triangular oligomers of plasmonic nanoparticles**, Salvatore Campione, Univ. of California, Irvine (USA); Sarah M. Adams, Regina Ragan, Univ. of California, Irvine (USA); Filippo Capolino, Univ. of California, Irvine (USA) . . . . . [8632-50]

11:40 am: **Plasmonic-photonic-fluidic hybrid structures for on-chip sensing and spectroscopy applications**, Maysamreza Chamanzar, Siva Yegnanarayanan, Zhixuan Xia, Ali Adibi, Georgia Institute of Technology (USA) . . . . . [8632-51]

Lunch/Exhibition Break . . . . . Wed 12:00 pm to 1:30 pm

## SESSION 12

Room: 110 (Exhibit Level) . . . . . Wed 1:30 pm to 2:50 pm

### Nanoplasmonic Structures and Devices

Session Chair: **Kenneth B. Crozier**, Harvard Univ. (USA)

1:30 pm: **Deep subwavelength focusing using optical nanoantenna with enhanced characteristics for near and far field applications**, Mohamed A. Swillam, Univ. of Toronto (Canada) and The American Univ. in Cairo (Egypt); Mohamed A. Nasr, The American Univ. in Cairo (Egypt) . . . . . [8632-52]

1:50 pm: **Thermal imaging in gold nanoantennas using heterodyne holography**, Ariadna Martinez Marrades, Institut Langevin (France); Pascal Desfonds, Institut Langevin (France); Nathalie Bardoux, Lab. de Photonique et de Nanostructures (France) and Ctr. National de la Recherche Scientifique (France); Stéphane Collin, Lab. de Photonique et de Nanostructures (France); Gilles Tessier, Institut Langevin (France) and Ecole Supérieure de Physique et de Chimie Industrielles (France) . . . . . [8632-53]

2:10 pm: **Platinum optical nano-antenna fabricated by electron beam induced deposition**, Eun-Khwang Lee, Jung-Hwan Song, Min-Kyo Seo, KAIST (Korea, Republic of) . . . . . [8632-54]

2:30 pm: **New plasmonic materials in visible spectrum through electrical charging**, Jiangrong Cao, Canon U.S.A., Inc. (USA); Rajesh Balachandran, Manish Keswani, Krishna Muralidharan, The Univ. of Arizona (USA); Slimane Laref, The Univ. of Arizona (USA); Richard W. Ziolkowski, The Univ. of Arizona (USA); Keith Runge, The Univ. of Arizona (USA); Pierre A. Deymier, Srin Raghavan, The Univ. of Arizona (USA); Mamoru Miyawaki, Canon U.S.A., Inc. (USA) . . . . . [8632-55]

Coffee Break . . . . . Wed 2:50 pm to 3:20 pm

## SESSION 13

Room: 110 (Exhibit Level) . . . . . Wed 3:20 pm to 5:30 pm

### Novel Phenomena in Plasmonic Structures

Session Chair: **Maysamreza Chamanzar**, Georgia Institute of Technology (USA)

3:20 pm: **Plasmonic and photonic structures for nanoparticle trapping, color filtering, and single molecule SERS** (*Invited Paper*), Kenneth B. Crozier, Harvard Univ. (USA) . . . . . [8632-56]

3:50 pm: **Effect of non-conformality gold deposition on SERS related plasmonic effects**, Swe Z. Oo, Univ. of Southampton (United Kingdom); Martin D. B. Charlton, Univ. of Southampton (United Kingdom) . . . . . [8632-57]

4:10 pm: **Extraordinary plasmon-quantum dot coupling for enhanced infrared absorption**, Rajeev V. Shenoi, James A. Bur, Rensselaer Polytechnic Institute (USA); Danhong Huang, Air Force Research Lab. (USA); Shawn-Yu Lin, Rensselaer Polytechnic Institute (USA) . . . . . [8632-58]



4:30 pm: **Low-power plasmon-soliton waves in feasible in realistic nonlinear chalcogenide planar structures**, Gilles Renversez, Aix-Marseille Univ. (France) and Institut Fresnel (France); Wiktor Walasik, Aix-Marseille Univ. (France) and ICFO - Institut de Ciències Fotòniques (Spain); Virginie Nazabal, Univ. de Rennes 1 (France); Mathieu Chauvet, Univ. de Franche-Comté (France) and FEMTO-ST (France); Yaroslav V. Kartashov, Institute of Spectroscopy (Russian Federation) . . . . . [8632-59]

4:50 pm: **Angle independent nearly perfect absorbers by light funneling effect**, Yi-Kuei R. Wu, Univ. of Michigan (USA); Andrew E. Hollowell, Univ. of Michigan (USA) and Sandia National Labs. (USA); Jay Guo, Univ. of Michigan (USA) . . . . . [8632-60]

5:10 pm: **Nanoscale interference patterns of gap-mode multipolar plasmonic fields**, Keiji Sasaki, Akio Sanada, Yoshito Tanaka, Hokkaido Univ. (Japan) . . . . . [8632-61]

**POSTERS-WEDNESDAY**

**Room: 103 (Exhibit Level) . . . . . Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Numerical analysis and the effective parameter retrieval of helical metamaterials**, Hsiang-Hung Huang, Yu-Chueh Hung, National Tsing Hua Univ. (Taiwan) . . . . . [8632-75]

**Design and fabrication of active spectral filter with metal-insulator-metal structure for visible light communication**, Kensuke Murai, National Institute of Advanced Industrial Science and Technology (Japan); Yasushi Oshikane, Takaya Higashi, Fumihiko Yamamoto, Motohiro Nakano, Haruyuki Inoue, Osaka Univ. (Japan) . . . . . [8632-76]

**Effect of V-shape on the light transmission of subwavelength slits in metallic thin films**, Otávio Silva de Brito, Fabio A. Ferri, Univ. de São Paulo (Brazil); Victor A. G. Rivera, Instituto de Física de São Carlos (Brazil); Sergio P. A. Osório, Euclides Marega Jr., Univ. de São Paulo (Brazil) . . . . . [8632-77]

**Resonant near-infrared emission of Er<sup>3+</sup> ions in plasmonic arrays of subwavelength square holes**, Victor A. G. Rivera, Univ. de São Paulo (Brazil) and Univ. Laval (Canada); Yannick Ledemi, Mohammed El-Amraoui, Younes Messaddeq, Univ. Laval (Canada); Euclides Marega Jr., Univ. de São Paulo (Brazil) . . . . . [8632-78]

**Absorption capabilities of hyperbolic materials**, Caner Guclu, Salvatore Campione, Filippo Capolino, Univ. of California, Irvine (USA) . . . . . [8632-79]

**Anderson localized optical fibers**, Salman Karbasi, Univ. of Wisconsin-Milwaukee (USA); Karl W. Koch, Corning Incorporated (USA); Arash Mafi, Univ. of Wisconsin-Milwaukee (USA) . . . . . [8632-80]

**On-chip superfocusing of surface plasmon using metal-coat tapered optical fiber pairs with nano-gap structures**, Kazuhiro Yamamoto, Shiyoshi Yokoyama, Kyushu Univ. (Japan); Akira Otomo, National Institute of Advanced Industrial Science and Technology (Japan) . . . . . [8632-81]

**Mid IR invisibility cloak through manual rolling**, Hemi H. Gandhi, Philip A. Munoz, Mathias Kolbe, Eric Mazur, Harvard Univ. (USA) . . . . . [8632-82]

**Thursday 7 February**

**SESSION 14**

**Room: 110 (Exhibit Level) . . . . . Thu 8:00 am to 9:50 am**

**Photonic Metamaterials I**

Session Chair: **Xiang Zhang**, Univ. of California, Berkeley (USA)

8:00 am: **Metamaterial based nanobiosensors and nanophotodetectors** (*Invited Paper*), Ekmel Özbay, Bilkent Univ. (Turkey) . . . . . [8632-62]

8:30 am: **Strong coupling between metamaterial resonators and AIAs nano layers**, Sheng Liu, Alexander Benz, John L. Reno, Igal Brener, Sandia National Labs. (USA) . . . . . [8632-63]

8:50 am: **Mid-infrared metamaterials strongly coupled to intersubband transition**, Alexander Benz, Sandia National Labs. (USA); Salvatore Campione, Univ. of California, Irvine (USA); Young Chul Jun, John F. Klem, Michael B. Sinclair, Eric A. Shaner, Sandia National Labs. (USA); Filippo Capolino, Univ. of California, Irvine (USA); Igal Brener, Sandia National Labs. (USA) . . . . . [8632-64]

9:10 am: **Harmonic generation, optical multistability, and nonlocal effects in near-zero permittivity metamaterial slabs near the pseudo-Brewster angle**, Domenico de Ceglia, The AEGIS Technologies Group, Inc. (USA); Salvatore Campione, Univ. of California, Irvine (USA); Maria A. Vincenti, The AEGIS Technologies Group, Inc. (USA); Filippo Capolino, Univ. of California, Irvine (USA); Michael Scalora, U.S. Army Aviation and Missile Command (USA) . . . . . [8632-65]

9:30 am: **Realizing effective magnetic field for photons by controlling the phase of dynamic modulation**, Kejie Fang, Zongfu Yu, Shanhuai Fan, Stanford Univ. (USA) . . . . . [8632-66]

Coffee Break . . . . . Thu 9:50 am to 10:30 am

**SESSION 15**

**Room: 110 (Exhibit Level) . . . . . Thu 10:30 am to 12:00 pm**

**Photonic Metamaterials II**

Session Chair: **Ekmel Özbay**, Bilkent Univ. (Turkey)

10:30 am: **Symmetry breaking in optical metamaterials** (*Invited Paper*), Xiang Zhang, Univ. of California, Berkeley (USA) . . . . . [8632-67]

11:00 am: **Ultra-thin tunable perfect absorber**, Mikhail A. Kats, Deepika Sharma, Jiao Lin, Patrice Genevet, Romain Blanchard, Zheng Yang, Harvard School of Engineering and Applied Sciences (USA); M. Mumtaz Qazilbash, The College of William & Mary (USA); Dmitri N. Basov, Univ. of California, San Diego (USA); Shriram Ramanathan, Federico Capasso, Harvard School of Engineering and Applied Sciences (USA) . . . . . [8632-68]

11:20 am: **Microscroll invisibility cloak**, Philip A. Munoz, Eric Mazur, Harvard Univ. (USA) . . . . . [8632-69]

11:40 am: **Theoretical and experimental investigation of hybrid broadband terahertz metamaterial absorber**, Mohammad Hokmabadi, Univ. of Alabama (USA); David S. Wilbert, Patrick Kung, Seongsin M. Kim, Univ. of Alabama (USA) . . . . . [8632-70]

Lunch/Exhibition Break . . . . . Thu 12:00 pm to 1:30 pm

**SESSION 16**

**Room: 110 (Exhibit Level) . . . . . Thu 1:30 pm to 3:30 pm**

**Special Session on Nanophotonic-Based Detection for Security Applications**

Session Chair: **Ekmel Özbay**, Bilkent Univ. (Turkey)

1:30 pm: **Surface plasma wave enhanced infrared detection** (*Invited Paper*), Steven R. J. Brueck, Seung Chang Lee, Sanjay Krishna, The Univ. of New Mexico (USA) . . . . . [8632-71]

2:00 pm: **Passive and active metamaterial based ultrathin optical filters and switches** (*Invited Paper*), Koray Aydin, Northwestern Univ. (USA) . . . . . [8632-72]

2:30 pm: **Fano-resonant metamaterials for ultra-sensitive spectroscopy and Stokes polarimetry in the infrared** (*Invited Paper*), Gennady B. Shvets, The Univ. of Texas at Austin (USA) . . . . . [8632-73]

3:00 pm: **Metamaterial-based imaging for potential security applications** (*Invited Paper*), David Shrekenhamer, Willie J. Padilla, Boston College (USA) . . . . . [8632-74]



## High Contrast Metastructures II

**Conference Chairs:** **Connie J. Chang-Hasnain**, Univ. of California, Berkeley (USA); **Fumio Koyama**, Tokyo Institute of Technology (Japan); **Alan Eli Willner**, The Univ. of Southern California (USA); **Weimin Zhou**, U.S. Army Research Lab. (USA)

**Program Committee:** **Markus Christian Amann**, Walter Schottky Institut (Germany); **Il-Sug Chung**, Technical Univ. of Denmark (Denmark); **David Fattal**, Hewlett-Packard Labs. (USA); **Weiwei Hu**, Peking Univ. (China); **Ernst-Bernhard Kley**, Friedrich-Schiller-Univ. Jena (Germany); **Philippe Lalanne**, Institut d'Optique (France); **Rainer F. Mahrt**, IBM Zürich Research Lab. (Switzerland); **Pierre Viktorovitch**, Ecole Centrale de Lyon (France); **Ming C. Wu**, Univ. of California, Berkeley (USA)

### Tuesday 5 February

#### OPTO PLENARY SESSION

**Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am**

*Session Chairs :* **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
  - 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
  - 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]
  - 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
  - 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]
- See page 26 for details.

Coffee Break . . . . . Tue 10:10 am to 10:30 am

#### SESSION 1

**Room: 112 (Exhibit Level) . . . . . Tue 10:30 am to 11:50 am**

#### Harnessing Light

*Session Chair:* **Weimin Zhou**, U.S. Army Research Lab. (USA)

- 10:30 am: **High contrast gratings: physics and applications** (*Invited Paper*),  
**Connie J. Chang-Hasnain**, Univ. of California, Berkeley (USA) . . . . . [8633-1]
  - 11:00 am: **Double photonic crystal vertical-cavity surface-emitting lasers** (*Invited Paper*),  
**Pierre Viktorovitch**, Ecole Centrale de Lyon (France); **Corrado Sciancalepore**, Ecole Centrale de Lyon (France) and **CEA-LETI** (France); **Badhise Ben Bakir**, CEA-LETI (France); **Xavier Letartre**, Christian Seassal, Ecole Centrale de Lyon (France) . . . . . [8633-2]
  - 11:30 am: **Physics of high contrast gratings: a band diagram insight**,  
**Weijian Yang**, **Connie J. Chang-Hasnain**, Univ. of California, Berkeley (USA) . . . [8633-3]
- Lunch/Exhibition Break . . . . . Tue 11:50 am to 1:30 pm

#### SESSION 2

**Room: 112 (Exhibit Level) . . . . . Tue 1:30 pm to 3:10 pm**

#### Slow Light

*Session Chair:* **Fumio Koyama**, Tokyo Institute of Technology (Japan)

- 1:30 pm: **Is the Wood anomaly a plasmonic phenomenon?** (*Invited Paper*),  
**Philippe Lalanne**, Institut d'Optique Graduate School (France); **Haitao Liu**, Nankai Univ. (China) . . . . . [8633-4]
  - 2:00 pm: **Demonstration of a slow light high contrast metastructure cage waveguide** (*Invited Paper*),  
**Weimin Zhou**, **Gerard Dang**, **Monica Taysing-Lara**, U.S. Army Research Lab. (USA); **Connie J. Chang-Hasnain**, Univ. of California, Berkeley (USA) . . . . . [8633-5]
  - 2:30 pm: **Three-dimensional hollow-core waveguide based on high-contrast grating**,  
**Tianbo Sun**, **Stephen A. Gerke**, **Weijian Yang**, Univ. of California, Berkeley (USA); **Philippe Lalanne**, Institut d'Optique Graduate School (France); **Weimin Zhou**, U.S. Army Research Lab. (USA); **Connie J. Chang-Hasnain**, Univ. of California, Berkeley (USA) . . . . . [8633-6]
  - 2:50 pm: **Fabrication technique development for 3D high-contrast-metastructure cage waveguides**,  
**Monica Taysing-Lara**, **Gerard Dang**, **Weimin Zhou**, U.S. Army Research Lab. (USA) . . . . . [8633-7]
- Coffee Break . . . . . Tue 3:10 pm to 3:40 pm

#### SESSION 3

**Room: 112 (Exhibit Level) . . . . . Tue 3:40 pm to 5:20 pm**

#### VCSELS

*Session Chair:* **Gunther Roelkens**, Univ. Gent (Belgium)

- 3:40 pm: **Speed enhancement in VCSELS employing grating mirrors** (*Invited Paper*),  
**Il-Sug Chung**, **Jesper Mørk**, Technical Univ. of Denmark (Denmark) . . . . . [8633-8]
- 4:10 pm: **VCSELS with a high-index-contrast grating for space division multiplexing**,  
**Qijiang Ran**, **Il-Sug Chung**, Technical Univ. of Denmark (Denmark) . . . . . [8633-9]
- 4:30 pm: **A three-dimensional and vectorial optical solver for HCG tunable VCSELS** (*Invited Paper*),  
**Pierluigi Debernardi**, **Renato Orta**, Politecnico di Torino (Italy) . . . . . [8633-10]
- 5:00 pm: **Fano resonances GaN-based high contrast grating surface-emitting lasers**,  
**Tzeng-Tsong Wu**, **Shu-Hsien Wu**, **Tien-Chang Lu**, **Hao-Chung Kuo**, **Shing-Chung Wang**, National Chiao Tung Univ. (Taiwan) . . . . . [8633-11]

### Wednesday 6 February

#### SESSION 4

**Room: 112 (Exhibit Level) . . . . . Wed 9:00 am to 10:00 am**

#### Novel Physics

*Session Chair:* **David W. Peters**, Sandia National Labs. (USA)

- 9:00 am: **Metallic metastructures for THz optoelectronics: high power extraction surface-emitting lasers and sub-diffraction-limit resonators** (*Invited Paper*),  
**Raffaele Colombelli**, Institut d'Électronique Fondamentale (France) . . . . . [8633-12]
  - 9:30 am: **Novel diffraction properties of high-contrast gratings** (*Invited Paper*),  
**Bala Pesala**, CSIR Madras Complex (India) . . . . . [8633-13]
- Coffee Break . . . . . Wed 10:00 am to 10:30 am

**SESSION 5**

**Room: 112 (Exhibit Level) . . . . .Wed 10:30 am to 12:10 pm**

**Beam Steering**

Session Chair: **David Fattal**, Hewlett-Packard Labs. (USA)

10:30 am: **Super-high resolution beam steering based on Bragg reflector waveguides with high-contrast metastructures** (*Invited Paper*), Fumio Koyama, Xiaodong Gu, Tokyo Institute of Technology (Japan) . . . . . [8633-14]

11:00 am: **Optical phased array using single crystalline silicon high contrast grating for beamsteering** (*Invited Paper*), Byung-Wook Yoo, Univ. of California, Berkeley (USA); Trevor K. Chan, Univ. of California, Davis (USA); Mischa Megens, Tianbo Sun, Weijian Yang, Yi Rao, Univ. of California, Berkeley (USA); David A. Horsley, Univ. of California, Davis (USA); Connie J. Chang-Hasnain, Ming C. Wu, Univ. of California, Berkeley (USA) . . . . . [8633-15]

11:30 am: **High-speed optical phased array using two-dimensional high-contrast grating all-pass filters**, Weijian Yang, Tianbo Sun, Yi Rao, Trevor K. Chan, Mischa Megens, Byung-Wook Yoo, Univ. of California, Berkeley (USA); David A. Horsley, Univ. of California, Davis (USA); Ming C. Wu, Connie J. Chang-Hasnain, Univ. of California, Berkeley (USA) . . . . . [8633-16]

11:50 am: **Tunable optical beaming with subwavelength metallic gratings sandwiched in asymmetric dielectric layers**, Zhonghua Wang, Anshi Xu, Peking Univ. (China) . . . . . [8633-17]

Lunch/Exhibition Break . . . . .Wed 12:10 pm to 1:30 pm

**SESSION 6**

**Room: 112 (Exhibit Level) . . . . .Wed 1:30 pm to 3:10 pm**

**Novel Lenses**

Session Chair: **Pierre Viktorovitch**, Ecole Centrale de Lyon (France)

1:30 pm: **Flat optics with optical antenna metasurfaces** (*Invited Paper*), Federico Capasso, Harvard School of Engineering and Applied Sciences (USA) . . . . . [8633-18]

2:00 pm: **Applications of amorphous silicon grating lenses** (*Invited Paper*), David Fattal, Sonny Vo, Zhen Peng, Marco Fiorentino, Ray Beausoleil, Hewlett-Packard Labs. (USA) . . . . . [8633-19]

2:30 pm: **Aberration-free ultra-thin flat lenses and axicons at telecom wavelengths based on plasmonic metasurfaces**, Francesco Aieta, Patrice Genevet, Mikhail A. Kats, Nanfang Yu, Zeno Gaburro, Federico Capasso, Harvard School of Engineering and Applied Sciences (USA) . . . . . [8633-20]

2:50 pm: **1550-nm silicon-on-insulator Planar lenses using high-contrast gratings**, Tianbo Sun, Weijian Yang, Fanglu Lu, Connie J. Chang-Hasnain, Univ. of California, Berkeley (USA) . . . . . [8633-21]

Coffee Break . . . . .Wed 3:10 pm to 3:40 pm

**SESSION 7**

**Room: 112 (Exhibit Level) . . . . .Wed 3:40 pm to 5:30 pm**

**Novel Functions**

Session Chair: **Raffaële Colombelli**, Institut d'Électronique Fondamentale (France)

3:40 pm: **High-contrast gratings for high-precision metrology** (*Invited Paper*), Stefanie Kroker, Thomas Käsebier, Ernst-Bernhard Kley, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8633-22]

4:10 pm: **High-contrast grating mirrors for radiation-pressure optomechanics** (*Invited Paper*), John R. Lawall, National Institute of Standards and Technology (USA); Utku Kemiktarak, Mathieu Durand, National Institute of Standards and Technology (USA) and Joint Quantum Institute (USA) . . . . . [8633-23]

4:40 pm: **Experimental realization of high-contrast grating based broadband circular polarizer** (*Invited Paper*), Ekmel Özbay, Bilkent Univ. (Turkey) . . . . . [8633-24]

5:10 pm: **Omnidirectional antireflective mechanism based on buried nano-antennas**, Ali Kabiri, Harvard School of Engineering and Applied Sciences (USA); Emad Girgis, Harvard Univ. (USA); Federico Capasso, Harvard School of Engineering and Applied Sciences (USA) . . . . . [8633-25]

**Thursday 7 February**

**SESSION 8**

**Room: 112 (Exhibit Level) . . . . . Thu 9:00 am to 10:00 am**

**Metastructures**

Session Chair: **Philippe Lalanne**, Institut d'Optique Graduate School (France)

9:00 am: **Anomalous reflectivity and absorptivity of metastructures combined with metal and dielectric** (*Invited Paper*), Yufei Wang, Anjin Liu, Wanhua Zheng, Institute of Semiconductors (China) . . . . . [8633-26]

9:30 am: **A polychromatic approach to far field superlensing with microwave, sound, and light** (*Invited Paper*), Fabrice Lemoult, Mathias Fink, Geoffroy Lerosey, Institut Langevin (France) . . . . . [8633-27]

Coffee Break . . . . . Thu 10:00 am to 10:30 am

**SESSION 9**

**Room: 112 (Exhibit Level) . . . . . Thu 10:30 am to 11:50 am**

**Integrated Optics**

Session Chair: **Ekmel Özbay**, Bilkent Univ. (Turkey)

10:30 am: **High-index contrast gratings for silicon photonic integrated circuits** (*Invited Paper*), Gunther Roelkens, Univ. Gent (Belgium); Diederik Vermeulen, Acacia Communications Inc. (USA); Yanlu Li, Univ. Gent (Belgium); Muhammad Muneeb, Nannicha Hattasan, Eva Ryckeboer, UGent (Belgium); Yannick Deconinck, Dries Van Thourhout, Roel G. Baets, Univ. Gent (Belgium) . . . . . [8633-28]

11:00 am: **Transfer printed photonic crystal nanomembrane lasers for integrated silicon photonics** (*Invited Paper*), Weidong Zhou, The Univ. of Texas at Arlington (USA); Zhenqiang Ma, Univ. of Wisconsin-Madison (USA); Hongjun Yang, Semerane, Inc. (USA) . . . . . [8633-29]

11:30 am: **Optical multiplexer based on vertical coupler using high contrast**, Li Zhu, Weijian Yang, Connie J. Chang-Hasnain, Univ. of California, Berkeley (USA) . . . . . [8633-30]

Lunch/Exhibition Break . . . . . Thu 11:50 am to 1:10 pm

**SESSION 10**

**Room: 112 (Exhibit Level) . . . . . Thu 1:10 pm to 3:30 pm**

**Filters and Detectors**

Session Chair: **Weidong Zhou**, The Univ. of Texas at Arlington (USA)

1:10 pm: **Cavity-resonator-integrated guided-mode resonance filters** (*Invited Paper*), Shogo Ura, Kyoto Institute of Technology (Japan); Kenji Kintaka, National Institute of Advanced Industrial Science and Technology (Japan); Junichi Inoue, Kenzo Nishio, Yasuhiro Awatsuji, Kyoto Institute of Technology (Japan) . . . . . [8633-31]

1:40 pm: **Angular sensitivity of guided mode resonant filters in classical and conical mounts** (*Invited Paper*), David W. Peters, Robert R. Boye, Shanalyn A. Kemme, Sandia National Labs. (USA) . . . . . [8633-32]

2:10 pm: **Modeling and fabrication of angular dependent Si high-contrast grating mirror for transverse mode control of VCSELs**, Junichi Kashino, Hayato Sano, Akihiro Matsutani, Takahiro Sakaguchi, Fumio Koyama, Tokyo Institute of Technology (Japan) . . . . . [8633-33]

2:30 pm: **Tunable resonant-cavity-enhanced photodetector with double high-index-contrast grating mirrors**, Supanee Learkthanakhachon, Kresten Yvind, Il-Sug Chung, Technical Univ. of Denmark (Denmark) . . . . . [8633-34]

2:50 pm: **Asymmetric direction selective filter elements based on high-contrast gratings**, Stefan Steiner, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Stefanie Kroker, Thomas Käsebier, Ernst-Bernhard Kley, Friedrich-Schiller-Univ. Jena (Germany); Andreas Tünnermann, Friedrich-Schiller-Univ. Jena (Germany) and Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8633-35]

3:10 pm: **Suspended Si/air high-contrast subwavelength gratings for long-wavelength infrared reflectors**, Justin Foley, Jamie D. Phillips, Univ. of Michigan (USA) . . . . . [8633-36]

OPTO



# Quantum Dots and Nanostructures: Synthesis, Characterization, and Modeling X

**Conference Chairs:** Kurt G. Eyink, Air Force Research Lab. (USA); Diana L. Huffaker, Univ. of California, Los Angeles (USA); Frank Szmulowicz, Univ. of Dayton Research Institute (USA)

**Program Committee:** Massimo De Vittorio, Univ. del Salento (Italy); Michael D. Gerhold, U.S. Army Research Office (USA); Axel Hoffmann, Technische Univ. Berlin (Germany); Vinod M. Menon, Queen's College (USA); Philip J. Poole, National Research Council Canada (Canada); Jian Xu, The Pennsylvania State Univ. (USA)

## Monday 4 February

### SESSION 1

Room: 232 (Mezzanine) . . . . . Mon 8:00 am to 10:00 am

#### Devices I

Session Chairs: **Alberto Bramati**, Univ. Pierre et Marie Curie (France); **Andrew J. Shields**, Toshiba Research Europe Ltd. (United Kingdom)

8:00 am: **Selective control of blinking and polarization of single-photon emission in colloidal semiconductor nanocrystals** (*Invited Paper*), Alberto Bramati, Univ. Pierre et Marie Curie (France) . . . . . [8634-1]

8:30 am: **Teleportation with electrically-generated entangled light** (*Invited Paper*), R. Mark Stevenson, Toshiba Research Europe Ltd. (United Kingdom); J. Nilsson, K. H. A. Chan, Toshiba Research Europe Ltd. (United Kingdom) and Univ. of Cambridge (United Kingdom); J. Skiba-Szymanska, Martin B. Ward, Anthony J. Bennett, Toshiba Research Europe Ltd. (United Kingdom); C. L. Salter, Toshiba Research Europe Ltd. (United Kingdom) and Univ. of Cambridge (United Kingdom); Ian Farrer, David A. Ritchie, Univ. of Cambridge (United Kingdom); Andrew J. Shields, Toshiba Research Europe Ltd. (United Kingdom) . . . . . [8634-2]

9:00 am: **Engineering CdSe/CdS dot-in-rod nanocrystals as novel single photon source and as versatile gain material for lasing application**, Gabriele Raino, IBM Zürich Research Lab (Switzerland); Iwan Moreels, Univ. Gent (Belgium); Thilo Stoeferle, IBM Zürich Research Lab. (Switzerland); Raquel Gomes, Zeger Hens, Univ. Gent (Belgium); Rainer F. Mahrt, IBM Zürich Research Lab. (Switzerland) . . . . . [8634-3]

9:20 am: **Fiber-coupled single photon sources based on photonic crystal cavities**, Byeong-Hyeon Ahn, Chang-Min Lee, Hee-Jin Lim, Yong-Hee Lee, KAIST (Korea, Republic of) . . . . . [8634-4]

9:40 am: **Systematic investigation of the temperature behavior of InAs/InP quantum nanostructure passively mode-locked lasers**, Kamil KLAIMÉ, Rozenn Piron, Institut National des Sciences Appliquées de Rennes (France); Frederic Grillot, Institut National des Sciences Appliquées de Rennes (France) and Telecom ParisTech (France); Madhoussoudhana Dontabactouny, Slimane Loualiche, Alain Le Corre, Institut National des Sciences Appliquées de Rennes (France); Kresten Yvind, Technical Univ. of Denmark (Denmark) . . . . . [8634-5]

Coffee Break . . . . . Mon 10:00 am to 10:20 am

### SESSION 2

Room: 232 (Mezzanine) . . . . . Mon 10:20 am to 11:20 am

#### Devices II

10:20 am: **Biexciton binding energy and polar exciton-LO-phonon interaction as probe of the built-in fields in GaN/AlN QDs**, Andrei Schliwa, Gerald Hönig, J. Settker, Gordon Callsen, J. Brunmeier, Christian Thomsen, Technische Univ. Berlin (Germany); Satoshi Kako, Yasuhiko Arakawa, The Univ. of Tokyo (Japan); Axel Hoffmann, Technische Univ. Berlin (Germany) . . . . . [8634-29]

10:40 am: **Effect of excited states in quantum dots on the modulation bandwidth of a quantum dot laser**, Yuchang Wu, Virginia Polytechnic Institute and State Univ. (USA); Robert A. Suris, Ioffe Physico-Technical Institute (Russian Federation); Levon V. Asryan, Virginia Polytechnic Institute and State Univ. (USA) . . . . . [8634-7]

11:00 am: **Influence of low energy H- ion implantation on the electrical and material properties of quaternary alloy (In<sub>0.21</sub>Al<sub>0.21</sub>Ga<sub>0.58</sub>As) capped InAs/GaAs n-i-n QDIPs**, Arjun Mandal, Hemant Ghadi, Indian Institute of Technology Bombay (India); Keshav L. Mathur, Sardar Vallabhbhai National Institute of Technology (India); Arindam Basu, N. B. V. Subrahmanyam, P. Singh, Bhabha Atomic Research Ctr. (India); Subhananda Chakrabarti, Indian Institute of Technology Bombay (India) . . . . . [8634-6]

### SESSION 2

Room: 232 (Mezzanine) . . . . . Mon 11:20 am to 12:50 pm

#### Growth and Characterization I

Session Chair: **Zetian Mi**, McGill Univ. (Canada)

11:20 am: **Molecular beam epitaxial growth and characterization of InGaN/GaN dot-in-a-wire nanoscale heterostructures: towards ultrahigh-efficiency phosphor-free white light-emitting diodes** (*Invited Paper*), Zetian Mi, Hieu P. T. Nguyen, Shaofei Zhang, Kai Cui, Mehrdad Djavid, McGill Univ. (Canada) . . . . . [8634-8]

11:50 am: **Quantum dots formed by annealing strained-flat epilayers**, Haeyeon Yang, Casey M. Clegg, South Dakota School of Mines and Technology (USA) . . . . . [8634-9]

12:10 pm: **Strain engineered Volmer-Weber-like growth of epitaxial InAs dots on GaAs (001)**, Alexandre Freundlich, Manori V. Gunasekera, Univ. of Houston (USA) . . . . . [8634-10]

12:30 pm: **Atomic structure of InGaAs/GaAs quantum dots in a GaP matrix**, Holger Eisele, Christopher Prohl, Andrea Lenz, Dominik Roy, Josephine Schuppang, Mario Daehne, Gernot Stracke, Andre Strittmatter, Udo W. Pohl, Dieter Bimberg, Technische Univ. Berlin (Germany) . . . . . [8634-11]

Lunch Break . . . . . Mon 12:50 pm to 2:00 pm

### SESSION 3

Room: 232 (Mezzanine) . . . . . Mon 2:00 pm to 3:30 pm

#### Plasmonics/Colloidal I

Session Chair: **Jeffrey Owrutsky**, U.S. Naval Research Lab. (USA)

2:00 pm: **Spectroscopy and dynamics of plasmonic metal nanorods** (*Invited Paper*), Jeff Owrutsky, Ryan E. Compton, Blake S. Simpkins, James P. Long, Joshua D. Caldwell, U.S. Naval Research Lab. (USA) . . . . . [8634-12]

2:30 pm: **Using confocal microscopy to characterize nanoplasmonic structures responsible to light excitation**, Mariana T. Carvalho, Univ. de São Paulo (Brazil); Marcel T. Bezerra, Univ. Federal de Pernambuco (Brazil) and Univ. de São Paulo (Brazil); Euclides Marega Jr., Ben-Hur B. Borges, Univ. de São Paulo (Brazil); Frederico D. Nunes, Univ. Federal de Pernambuco (Brazil) and Univ. de São Paulo (Brazil) . . . . . [8634-13]

2:50 pm: **Probing light-matter interactions at the nanoscale with a deterministically-positioned single quantum dot**, Chad Ropp, Zachary Cummins, Sanghee Nah, John T. Fourkas, Benjamin Shapiro, Edo Waks, Univ. of Maryland, College Park (USA) . . . . . [8634-14]

3:10 pm: **High-efficiency quantum dot light-emitting diodes in conjunction with various metal nanoparticle structures**, Hyun-Chul Park, Yong-Hoon Cho, Song-Mei Li, Isnaeni., KAIST (Korea, Republic of) . . . . . [8634-15]

Coffee Break . . . . . Mon 3:30 pm to 4:00 pm



## SESSION 4

Room: 232 (Mezzanine) ..... Mon 4:00 pm to 5:30 pm

## Plasmonics/Colloidal II

Session Chair: **Alexander L. Efros**, U.S. Naval Research Lab. (USA)4:00 pm: **Non-blinking semiconductor nanocrystals: suppression of nonradiative Auger processes** (*Invited Paper*), Alexander L. Efros, U.S. Naval Research Lab. (USA) ..... [8634-16]4:30 pm: **Energy transfer in monodisperse quantum dot solids in the presence of self-organized array of metallic nanoparticles**, Seyed M. Sadeghi, Robert G. West, The Univ. of Alabama in Huntsville (USA) ... [8634-17]4:50 pm: **Control of photophysical and photochemistry of colloidal quantum dots via metal and metal-oxide coated substrates**, Seyed M. Sadeghi, Ali Nejat, The Univ. of Alabama in Huntsville (USA) ..... [8634-18]5:10 pm: **Effects of multi shell passivation on the thermal stability of the quantum dots**, Hyosook Jang, Shinae Jun, Eunjoo Jang, Samsung Advanced Institute of Technology (Korea, Republic of) ..... [8634-19]

## Tuesday 5 February

## OPTO PLENARY SESSION

Room: 134 (Exhibit Level) ..... 8:00 am to 10:10 am

Session Chairs : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) ..... [8637-1]8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]

See page 26 for details.

Coffee Break ..... Tue 10:10 am to 10:30 am

## SESSION 5

Room: 232 (Mezzanine) ..... Tue 10:30 am to 12:40 pm

## Growth and Characterization II

Session Chair: **Andre Strittmatter**, Technische Univ. Berlin (Germany)10:30 am: **Buried-stressor concept for quantum dot site-control** (*Invited Paper*), Andre Strittmatter, Technische Univ. Berlin (Germany) . [8634-20]11:00 am: **GaAs/GaSb(001) nanostructures at the atomic scale**, Andrea Lenz, Josephine Schuppang, Technische Univ. Berlin (Germany); Alban Gassenq, Thierry Taliercio, Eric Tournie, Univ. Montpellier 2 (France); Mario Daehne, Holger Eisele, Technische Univ. Berlin (Germany) ..... [8634-21]11:20 am: **Efficient Ga(As)Sb quantum dot emission in AlGaAs by GaAs intermediate layer**, Thomas H. Loeber, Johannes Richter, Johannes H. Strassner, Carina Heisel, Christina Kimmle, Henning Fouckhardt, Technische Univ. Kaiserslautern (Germany) ..... [8634-22]11:40 am: **Data analysis procedure for near infrared time-resolved emission experiments**, Elahe Yeganegi, Univ. Twente (Netherlands); Allard P. Mosk, Willem L. Vos, Univ. Twente (Netherlands) ..... [8634-23]12:00 pm: **Unveiling structural properties of self-assembled quantum dots using RHEED**, Manori V. Gunasekera, Alexandre Freundlich, Univ. of Houston (USA) ..... [8634-24]12:20 pm: **Doped semiconductor nanocrystals**, Latha Nataraj, Aaron Jackson, Lily Giri, Mark Bundy, U.S. Army Research Lab. (USA) ..... [8634-25]

## Wednesday 6 February

## POSTERS-WEDNESDAY

Room: 103 (Exhibit Level) ..... Wed 6:00 pm to 8:00 pm

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

**Stability of lead sulfide colloidal quantum dot films on GaAs**, Joanna Wang, Bruno Ullrich, Gail J. Brown, Howard E. Smith, Lawrence Grazulis, Air Force Research Lab. (USA) ..... [8634-26]

**Energy transfer in mixtures of quantum dots of different sizes studied by thermal lens technique**, Djalmir N. Messias, Vanessa M. Martins, Adamo G. Monte, Acacio A. Andrade, Univ. Federal de Uberlândia (Brazil) ..... [8634-27]

**Demonstration of multi-spectral In(Ga)As/GaAs-based quantum dot infrared photo detectors with quaternary (InAlGaAs) capping operate at low bias voltage**, Sourav Adhikary, Indian Institute of Technology Bombay (India); Yigit Aytac, A.G. U. Perera, Georgia State Univ. (USA); Subhananda Chakrabarti, Indian Institute of Technology Bombay (India) ..... [8634-28]

**3D nanopillar optical antenna avalanche detectors**, Pradeep N. Senanayake, Chung-Hong Hung, Alan Farrell, Univ. of California, Los Angeles (USA); David Alejandro Ramirez, The Univ. of New Mexico (USA); Joshua N. Shapiro, Univ. of California, Los Angeles (USA); Chi-Kang Li, Yuh-Renn Wu, National Taiwan Univ. (Taiwan); Majeed Hayat, The Univ. of New Mexico (USA); Diana L. Huffaker, Univ. of California, Los Angeles (USA) ..... [8634-30]

# Advances in Photonics of Quantum Computing, Memory, and Communication VI

*Conference Chairs:* **Zameer Ul Hasan**, Temple Univ. (USA); **Philip R. Hemmer**, Texas A&M Univ. (USA); **Hwang Lee**, Louisiana State Univ. (USA); **Charles M. Santori**, Hewlett-Packard Labs. (USA)

*Program Committee:* **Dmitry Budker**, Univ. of California, Berkeley (USA); **Alan E. Craig**, Montana State Univ. (USA); **Jonathan Dowling**, Louisiana State Univ. (USA); **Gurudev Dutt**, Univ. of Pittsburgh (USA); **James D. Franson**, Univ. of Maryland, Baltimore County (USA); **Kai-Mei C. Fu**, Univ. of Washington (USA); **David Hughes**, Air Force Research Lab. (USA); **Fedor Jelezko**, Univ. Stuttgart (Germany); **Seth Lloyd**, Massachusetts Institute of Technology (USA); **Hideo Mabuchi**, Stanford Univ. (USA); **Alan L. Migdall**, National Institute of Standards and Technology (USA); **Aleksander K. Rebane**, Montana State Univ. (USA); **Selim Shahriar**, Northwestern Univ. (USA); **Alan Eli Willner**, The Univ. of Southern California (USA); **Jörg Wrachtrup**, Univ. Stuttgart (Germany); **Horace P. Yuen**, Northwestern Univ. (USA); **M. Suhail Zubairy**, Texas A&M Univ. (USA)

## Monday 4 February

### SESSION 1

Room: 236 (Messanine) . . . . . Mon 1:30 pm to 3:20 pm

#### Nonbleaching and Ultrasmall Fluorescent Tags I

Session Chair: **Philip R. Hemmer**, Texas A&M Univ. (USA)

- 1:30 pm: **Fluorinated nanodiamonds for charge detection in cells and biological systems** (*Invited Paper*), Miloš Nesladek, IMEC (Belgium) . . . [8635-1]
- 2:00 pm: **High-brightness fluorescent nanodiamonds for biolabeling applications** (*Invited Paper*), Huan-Cheng Chang, Academia Sinica (Taiwan) . . . . . [8635-2]
- 2:30 pm: **Upconverting fluorescent nanoparticles for biodetection and photoactivation** (*Invited Paper*), Kai Huang, WenKai Li, Muthu Kumara Gnanasammandhan Jayakumar, Yong Zhang, National Univ. of Singapore (Singapore) . . . . . [8635-3]
- 3:00 pm: **Rare-earth doped nanoparticles as fluorescent tags for biological applications**, Zameer Ul Hasan, Temple Univ. (USA) . . . . . [8635-4]
- Coffee Break . . . . . Mon 3:20 pm to 3:50 pm

### SESSION 2

Room: 305 (Esplanade) . . . . . Mon 3:50 pm to 6:00 pm

#### NOTE ROOM CHANGE

#### Nonbleaching and Ultrasmall Fluorescent Tags II

Joint Session with Conferences 8596 and 8635

Session Chairs: **Ramesh Raghavachari**, U.S. Food and Drug Administration (USA); **Philip R. Hemmer**, Texas A&M Univ. (USA)

- 3:50 pm: **Nanodiamond imaging: molecular imaging with optically-detected spin resonance of nitrogen-vacancy centers in nanodiamonds** (*Invited Paper*), Alex Hegyi, Eli Yablonovitch, Univ. of California, Berkeley (USA) . . . . . [8635-5]
- 4:20 pm: **The diamond bionic eye** (*Invited Paper*), Steven Prawer, Univ. of Melbourne (Australia). . . . . [8635-6]
- 4:50 pm: **Probing intra-cellular drug release event using activatable (OFF/ON) CdS:Mn/ZnS quantum dots** (*Invited Paper*), Swadeshmukul Santra, UCF NanoScience Technology Ctr. (USA) . . . . . [8596-12]
- 5:20 pm: **Lanthanide-doped nanoparticles for hybrid x-ray/optical imaging**, Sudheendra Lakshmana, Gautom K. Das, Changqing Li, Simon R. Cherry, Ian M. Kennedy, Univ. of California, Davis (USA) . . . . . [8596-13]
- 5:40 pm: **Multimodal microspheres for targeted PET and Cerenkov luminescence-excited fluorescence imaging of angiogenesis**, Joanne Li, Lawrence W. Dobrucki, Marina Marjanovic, Eric J. Chaney, Stephen A. Boppart, Univ. of Illinois at Urbana-Champaign (USA) . . . . . [8596-15]

## Tuesday 5 February

### OPTO PLENARY SESSION

Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am

*Session Chairs :* **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
- 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
- 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]
- 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
- 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]

Coffee Break . . . . . Tue 10:10 am to 10:30 am

### SESSION 3

Room: 123 (Exhibit Level) . . . . . Tue 10:30 am to 12:30 pm

#### Spin-based Computing

Session Chair: **Charles M. Santori**, Hewlett-Packard Labs. (USA)

- 10:30 am: **Highly-enriched 28Si: a 'semiconductor vacuum' allowing optical readout and control of electronic and nuclear spin qubits** (*Invited Paper*), Mike L. W. Thewalt, Simon Fraser Univ. (Canada) . . . . . [8635-7]
- 11:00 am: **"Listening" to the intrinsic spin fluctuations of holes coupled to nuclear spin baths in InGaAs quantum dots** (*Invited Paper*), Scott A. Crooker, Los Alamos National Lab. (USA) . . . . . [8635-8]
- 11:30 am: **Optical generation and electrical control of valley polarization in atomically thin semiconductor** (*Invited Paper*), Xiaodong Xu, Univ. of Washington (USA) . . . . . [8635-9]
- 12:00 pm: **Ultrafast optical control of individual electron and hole spin qubits: entanglement between a single quantum dot electron spin and a downconverted 1560-nm single photon** (*Invited Paper*), Kristiaan De Greve, Peter McMahon, Leo Yu, Jason Pelc, Chandra Natarajan, David Press, Na Young Kim, Eisuke Abe, Stanford Univ. (USA); Dirk Bisping, Sebastian Maier, Christian Schneider, Martin Kamp, Sven Hoeffling, Julius-Maximilians-Univ. Würzburg (Germany); Robert Hadfield, Heriot-Watt Univ. (United Kingdom); Alfred Forchel, Julius-Maximilians-Univ. Würzburg (Germany); Martin Fejer, Yoshihisa Yamamoto, Stanford Univ. (USA) . . . . . [8635-10]
- Lunch/Exhibition Break . . . . . Tue 12:30 pm to 1:30 pm

**SESSION 4**

**Room: 123 (Exhibit Level) . . . . . Tue 1:30 pm to 3:20 pm**

**Spin and Single-Defect Photonics**

Session Chair: **Kai-Mei C. Fu**, Univ. of Washington (USA)

1:30 pm: **Electron spin resonance of nitrogen-vacancy centers in optically trapped nanodiamonds** (*Invited Paper*), Viva R. Horowitz, Benjamin J. Alemán, David J. Christle, Andrew N. Cleland, David D. Awschalom, Univ. of California, Santa Barbara (USA) . . . . . [8635-11]

2:00 pm: **A spin qubit coupled to a photonic crystal cavity**, Timothy M. Sweeney, Samuel G. Carter, U.S. Naval Research Lab. (USA); Mijin Kim, Sotera Defense Solutions, Inc. (USA); Chul Soo Kim, Dmitry Solenov, Sophia E. Economou, Thomas L. Reinecke, Lily Yang, Allan S. Bracker, Daniel Gammon, U.S. Naval Research Lab. (USA) . . . . . [8635-12]

2:20 pm: **Microring resonator-based diamond opto-thermal switch: a building block for a quantum computing network**, Zhihong Huang, Hewlett-Packard Labs. (USA); Andrei Faraon, Hewlett-Packard Labs. (USA) and California Institute of Technology (USA); Charles M. Santori, Victor Acosta, Raymond G. Beausoleil, Hewlett-Packard Labs. (USA) . . . . . [8635-13]

2:40 pm: **NV centre emission in a substrate-free low-index environment**, Faraz A. Inam, Macquarie Univ. (Australia); Michael D. W. Grogan, Boston Univ. (USA) and Univ. of Bath (United Kingdom); Mathew Rollings, Univ. of Bath (United Kingdom); Torsten Gaebel, Stefania Castelletto, Jana M. Say, Carlo Bradac, Macquarie Univ. (Australia); Tim A. Birks, William J. Wadsworth, Univ. of Bath (United Kingdom); James R. Rabeau, Micheal Steel, Macquarie Univ. (Australia) . . . . . [8635-14]

3:00 pm: **Three-dimensional quantum photonic elements based on nanodiamonds in laser-written 3D microstructures**, Andreas W. Schell, Humboldt-Univ. zu Berlin (Germany); Johannes Kaschke, Joachim Fischer, Karlsruher Institut für Technologie (Germany); Rico Henze, Janik Wolters, Humboldt-Univ. zu Berlin (Germany); Martin Wegener, Karlsruher Institut für Technologie (Germany); Oliver Benson, Humboldt-Univ. zu Berlin (Germany) . . . . . [8635-15]

Coffee Break . . . . . Tue 3:20 pm to 3:50 pm

**SESSION 5**

**Room: 123 (Exhibit Level) . . . . . Tue 3:50 pm to 6:00 pm**

**Quantum Computing with Photons**

Session Chair: **Alexander V. Sergienko**, Boston Univ. (USA)

3:50 pm: **Photonic quantum computing** (*Invited Paper*), Jeremy L. O'Brien, Univ. of Bristol (United Kingdom) . . . . . [8635-16]

4:20 pm: **Large-scale cluster entanglement in the optical frequency comb: new developments** (*Invited Paper*), Olivier Pfister, Univ. of Virginia (USA); Nicolas Menicucci, The Univ. of Sydney (Australia); Moran Chen, Pei Wang, Univ. of Virginia (USA) . . . . . [8635-17]

4:50 pm: **Polar-activation of noisy optical quantum channels**, Laszlo Gyongyosi, Sandor Imre, Budapest Univ. of Technology and Economics (Hungary) . . . . . [8635-18]

5:10 pm: **Protecting entanglement from decoherence using weak quantum measurement** (*Invited Paper*), Yong-Su Kim, Jong-Chan Lee, Osung Kwon, Yoon-Ho Kim, Pohang Univ. of Science and Technology (Korea, Republic of) . . . . . [8635-19]

5:40 pm: **High numerical aperture diffractive optical elements for neutral atom quantum computing**, Amber L. Young, Shanalyn A. Kemme, Joel R. Wendt, Tony R. Carter, Sally Samora, Sandia National Labs. (USA) . . . [8635-20]

**Wednesday 6 February**

**SESSION 6**

**Room: 123 (Exhibit Level) . . . . . Wed 8:30 am to 10:00 am**

**Rare-Earth-Doped Quantum Memories I**

Session Chairs: **Zameer Ul Hasan**, Temple Univ. (USA); **Philip R. Hemmer**, Texas A&M Univ. (USA)

8:30 am: **Optical detection of a single rare-earth species in a crystal** (*Invited Paper*), Roman L. Kolesov, Kangwei Xia, Rolf Reuter, Rainer Stoehr, Andrea Zappe, Univ. Stuttgart (Germany); Jan Meijer, Ruhr-Univ. Bochum (Germany); Philip R. Hemmer, Texas A&M Univ. (USA); Jörg Wrachtrup, Univ. Stuttgart (Germany) . . . . . [8635-21]

9:00 am: **Solid-state photon-echo quantum memory for quantum repeaters** (*Invited Paper*), Wolfgang Tittel, Erhan Saglamyurek, Neil Sinclair, Hassan Mallahzadeh, Jeongwan Jin, Joshua A. Slater, Daniel Oblak, Univ. of Calgary (Canada); Mathew George, Raimund Ricken, Wolfgang Sohler, Univ. Paderborn (Germany) . . . . . [8635-22]

9:30 am: **Rephasing spontaneous emission in a rare-earth ion-doped Solid** (*Invited Paper*), Matthew J. Sellars, Sarah E. Beavan, Kate Ferguson, The Australian National Univ. (Australia); Morgan P. Hedges, Univ. of Calgary (Canada) . . . . . [8635-23]

Coffee Break . . . . . Wed 10:00 am to 10:30 am

**SESSION 7**

**Room: 123 (Exhibit Level) . . . . . Wed 10:30 am to 12:20 pm**

**Quantum Metrology**

Session Chair: **Olivier Pfister**, Univ. of Virginia (USA)

10:30 am: **Cavity-aided atomic spin squeezing for quantum-enhanced metrology** (*Invited Paper*), Mark A. Kasevich, Onur Hosten, Nils Engelsen, Rajiv Krishnakumar, Stanford Univ. (USA) . . . . . [8635-24]

11:00 am: **Optimal detuning for writing warm-atomic-vapor quantum memory in the presence of collisional fluorescence and four-wave mixing**, Igor Vurgaftman, Mark Bashkansky, U.S. Naval Research Lab. (USA) . . [8635-25]

11:20 am: **Experimental demonstration of adaptive quantum state estimation** (*Invited Paper*), Ryo Okamoto, Hokkaido Univ. (Japan) and The Institute of Scientific and Industrial Research (Japan); Minako Iefuji, Satoshi Oyama, The Institute of Scientific and Industrial Research (Japan); Koichi Yamagata, Osaka Univ. (Japan); Hiroshi Imai, Univ. degli Studi di Pavia (Italy); Akio Fujiwara, Osaka Univ. (Japan); Shigeki Takeuchi, Hokkaido Univ. (Japan) and The Institute of Scientific and Industrial Research (Japan) . . . . . [8635-26]

11:50 am: **Entropy, information, and compressive sensing in the quantum domain** (*Invited Paper*), John C. Howell, Gregory Howland, James Schneeloch, Univ. of Rochester (USA) . . . . . [8635-27]

Lunch/Exhibition Break . . . . . Wed 12:20 pm to 1:30 pm



**SESSION 8**

**Room: 123 (Exhibit Level) . . . . . Wed 1:30 pm to 3:00 pm**

**Quantum I**

Joint Session with Conferences 8635 and 8637

Session Chair: **David L. Andrews**,  
Univ. of East Anglia Norwich (United Kingdom)

1:30 pm: **Orbital angular momentum of photons, atoms, and electrons** (*Invited Paper*), Sonja Franke-Arnold, Univ. of Glasgow (United Kingdom) . . . . . [8637-23]

2:00 pm: **Production of two-photon cluster states in polarization and spatial modes**, Enrique J. Galvez, William H. Schubert, Michael A. Senatore, Colgate Univ. (USA) . . . . . [8637-24]

2:20 pm: **Down-converted bi-photons in a Bessel-Gaussian basis**, Filippos S. Roux, Melanie McLaren, CSIR National Laser Ctr. (South Africa); Miles J. Padgett, Univ. of Glasgow (United Kingdom); Andrew Forbes, CSIR National Laser Ctr. (South Africa); Thomas Konrad, Univ. of KwaZulu-Natal (South Africa) . . . . . [8637-25]

2:40 pm: **The generation of entangled matter waves**, Wolfgang A. Ertmer, Bernd Luecke, Manuel Scherer, Jens Kruse, Oliver Topic, Jan Peise, Luis Santos, Frank Deuretzbacher, Leibniz Univ. Hannover (Germany); Jan J. Arlt, Aarhus Univ. (Denmark); Carsten Klempt, Leibniz Univ. Hannover (Germany); Augusto Smerzi, Luca Pezze, European Lab. for Non-linear Spectroscopy (Italy); Philipp Hyllus, Univ. del Pais Vasco (Spain) . . . . . [8637-26]

Coffee Break . . . . . Wed 3:00 pm to 3:30 pm

**SESSION 9**

**Room: 123 (Exhibit Level) . . . . . Wed 3:30 pm to 5:40 pm**

**Quantum II**

Joint Session with Conferences 8635 and 8637

Session Chair: **John C. Howell**, Univ. of Rochester (USA)

3:30 pm: **Multi-bit-per-photon QKD system based on encoding in orbital-angular-momentum states of light** (*Invited Paper*), Robert W. Boyd, Univ. of Ottawa (Canada) and Univ. of Rochester (USA); Jonathan Leach, Univ. of Ottawa (Canada); Omar Magaña Loaiza, Mehul Malik, Mohammad Mirhosseini, Brandon Rodenburg, Zhimin Shi, Mahmudur Siddiqui, Colin O'Sullivan, Univ. of Rochester (USA) . . . . . [8635-28]

4:00 pm: **Quantum key distribution with Fibonacci states** (*Invited Paper*), Alexander V. Sergienko, Boston Univ. (USA); David S. Simon, Stonehill College (USA) and Boston Univ. (USA); Nate Lawrence, Jacob Trevino, Luca Dal Negro, Boston Univ. (USA) . . . . . [8635-29]

4:30 pm: **The orbital angular momentum of spatially complex modes** (*Invited Paper*), William N. Plick, Mario Krenn, Sven Ramelow, Robert Fickler, Anton Zeilinger, Institut für Quantenoptik und Quanteninformation (Austria) . . . . . [8635-30]

5:00 pm: **Mode structure reconstruction with multiphoton statistics**, Elizabeth A. Goldschmidt, National Institute of Standards and Technology (USA); Fabrizio Piacentini, Istituto Nazionale di Ricerca Metrologica (Italy); Sergey V. Polyakov, National Institute of Standards and Technology (USA); Giorgio Brida, Ivo P. Degiovanni, Marco Genovese, Istituto Nazionale di Ricerca Metrologica (Italy); Alan L. Migdall, National Institute of Standards and Technology (USA); Ivano Ruo Berchera, Istituto Nazionale di Ricerca Metrologica (Italy) . . . . . [8635-31]

5:20 pm: **Spectral properties of ultra-broadband entangled photons generated from chirped-MgSLT crystal towards monocycle entanglement generation**, Akira Tanaka, Ryo Okamoto, Hokkaido Univ. (Japan) and The Institute of Scientific and Industrial Research (Japan); Hwan Hong Lim, National Institute for Materials Science (Japan); Shanthi Subashchandran, Masayuki Okano, Hokkaido Univ. (Japan) and The Institute of Scientific and Industrial Research (Japan); Labao Zhang, Lin Kang, Jian Chen, Pei-Heng Wu, Nanjing Univ. (China); Toru Hirohata, Hamamatsu Photonics K.K. (Japan); Sunao Kurimura, National Institute for Materials Science (Japan); Shigeki Takeuchi, Hokkaido Univ. (Japan) and The Institute of Scientific and Industrial Research (Japan) . . . . . [8635-32]

**Thursday 7 February**

**SESSION 10**

**Room: 123 (Exhibit Level) . . . . . Thu 8:30 am to 10:00 am**

**Rare-Earth-Doped Quantum Memories II**

Session Chairs: **Philip R. Hemmer**, Texas A&M Univ. (USA); **Zameer Ul Hasan**, Temple Univ. (USA)

8:30 am: **Controlling rare-earth fluorescent states in lightly-doped nanoparticles** (*Invited Paper*), Aras Konjodovic, Temple Univ. (USA) . . [8635-33]

9:00 am: **Quantum memory in a rare-earth doped crystal: from multiple to single excitation regime** (*Invited Paper*), Elizabeth A. Goldschmidt, Joffrey Peters, Sergey V. Polyakov, Alan L. Migdall, Joint Quantum Institute (USA) . . . . . [8635-34]

9:30 am: **Towards broadband time separated entanglement using rephased amplified spontaneous emission** (*Invited Paper*), Jevon J. Longdell, Patrick M. Ledingham, William R. Naylor, Univ. of Otago (New Zealand) . . . . . [8635-35]

Coffee Break . . . . . Thu 10:00 am to 10:30 am

**SESSION 11**

**Room: 123 (Exhibit Level) . . . . . Thu 10:30 am to 12:00 pm**

**Ultra-Low-Power Switching in Quantum and Nonlinear Photonics I**

Session Chair: **Charles M. Santori**, Hewlett-Packard Labs. (USA)

10:30 am: **Message-passing and stochastic architectures for nanophotonic information processing** (*Invited Paper*), Dmitri S. Pavlichin, Hideo Mabuchi, Stanford Univ. (USA) . . . . . [8635-36]

11:00 am: **Nonlinear optics at the few-photon level in Rb-filled photonic band-gap fiber** (*Invited Paper*), Alexander L. Gaeta, Cornell Univ. (USA) . . . . . [8635-37]

11:30 am: **Low photon number nonlinear optics with a single quantum dot in a cavity** (*Invited Paper*), Edo Waks, Ranojoy Bose, Univ. of Maryland, College Park (USA); Deepak Sridharan, Intel Corp. (USA); Glenn S. Solomon, National Institute of Standards and Technology (USA) . . . . . [8635-38]

Lunch/Exhibition Break . . . . . Thu 12:00 pm to 1:30 pm

**SESSION 12**

**Room: 123 (Exhibit Level) . . . . . Thu 1:30 pm to 3:30 pm**

**Ultra-Low-Power Switching in Quantum and Nonlinear Photonics II**

Session Chair: **Hideo Mabuchi**, Stanford Univ. (USA)

1:30 pm: **All-optical integrated RAMs based on nanocavities** (*Invited Paper*), Masaya Notomi, Kengo Nozaki, Akihiko Shinya, NTT Basic Research Labs. (Japan); Shinji Matsuo, NTT Photonics Labs. (Japan); Eiichi Kuramochi, NTT Basic Research Labs. (Japan); Tomonari Sato, NTT Photonics Labs. (Japan); Hideaki Taniyama, NTT Basic Research Labs. (Japan) . . . . . [8635-39]

2:00 pm: **Ultra-low power nonlinear optics in optical nanostructures** (*Invited Paper*), Kelley Rivoire, Hewlett-Packard Labs. (USA) . . . . . [8635-40]

2:30 pm: **Ultra-low power all-optical switching with a single quantum dot in a photonic-crystal cavity** (*Invited Paper*), Michal Bajcsy, Arka Majumdar, Stanford Univ. (USA); Dirk Englund, Stanford Univ. (USA) and Columbia Univ. (USA); Jelena Vuckovic, Stanford Univ. (USA) . . . . . [8635-41]

3:00 pm: **Coupling of quantum fluctuations in a two-component condensate** (*Invited Paper*), Collin M. Trail, Barry Sanders, Univ. of Calgary (Canada) . . . . . [8635-42]

Coffee Break . . . . . Thu 3:30 pm to 4:00 pm



# OPTO

SPIE PRESS



Visit the onsite Bookstore to browse these and other SPIE Press Books



**Displays for Defense Applications**  
by Daniel D. Desjardins • Vol. TT95



**Sensor and Data Fusion: A Tool for Information Assessment and Decision Making, Second Edition** by Lawrence A. Klein • Vol. PM222



**Field Guide to Optomechanical Design and Analysis** by Katie Schwertz, Jim Burge • Vol. FG26



**Field Guide to Adaptive Optics, Second Edition** by Robert K. Tyson, Benjamin W. Frazier • Vol. FG24



**Field Guide to Terahertz Sources, Detectors, and Optics** by Cr idhe O'Sullivan, J. Anthony Murphy  
Vol. FG28



**Field Guide to Image Processing** by Khan Iftekharuddin, Abdul Awwal • Vol. FG25



**Basic Optics for the Astronomical Sciences**  
by James B. Breckinridge • Vol. PM202



**Optical Scattering: Measurements and Analysis, Third Edition** by John C. Stover • Vol. PM224



**Hyperspectral Remote Sensing** by Michael T. Eismann • Vol. PM210



**Field Guide to Probability, Random Processes, and Random Data Analysis** by Larry C. Andrews, Ronald L. Phillips • Vol. FG22



**Integrated Optomechanical Analysis, Second Edition** by Keith B. Doyle, Victor L. Genberg, Gregory J. Michels • Vol. PM223

## SESSION 13

Room: 123 (Exhibit Level) . . . . . Thu 4:00 pm to 5:50 pm

### Nonclassical Light Sources and Detectors

Session Chair: **Kai-Mei C. Fu**, Univ. of Washington (USA)

4:00 pm: **Semiconductor sources of photon pairs** (*Invited Paper*), Gregor Weihs, Univ. Innsbruck (Austria) and Univ. of Waterloo (Canada); Rolf Horn, Univ. of Waterloo (Canada); Payam Abolghasem, Bhavin J. Bijlani, Dongpeng Kang, Amr S. Helmy, Univ. of Toronto (Canada); Daniel F oger, Stephanie Grabher, Harishankar Jayakumar, Ana Predojevi , Tobias Huber, Thomas Kauten, Univ. Innsbruck (Austria); Glenn S. Solomon, National Institute of Standards and Technology (USA) . . . . . [8635-43]

4:30 pm: **Semiconductor source of entangled photons at room temperature**, Adeline Orioux, Andreas Eckstein, Univ. Paris 7-Denis Diderot (France); Aristide Lema tre, Lab. de Photonique et de Nanostructures (France); Pascal Filloux, Thomas Coudreau, Perola Milman, Univ. Paris 7-Denis Diderot (France); Arne Keller, Institut des Sciences Mol culaires d'Orsay (France); Ivan Favero, Giuseppe Leo, Sara Ducci, Univ. Paris 7-Denis Diderot (France) . . . . . [8635-44]

4:50 pm: **A novel method for single photon generation: Incoherent photon conversion in selectively infiltrated hollow-core photonic crystal fibers**, Tim Schr oder, Humboldt-Univ zu Berlin (Germany); Ping Jiang, China Univ. of Petroleum (China); Michael Barth, Humboldt-Univ. zu Berlin (Germany); Vladimir Lesnyak, Nikolai Gaponik, Alexander Eychmu ller, Technische Univ. Dresden (Germany); Oliver Benson, Humboldt-Univ. zu Berlin (Germany) . . . . . [8635-45]

5:10 pm: **Waveguide superconducting single-photon autocorrelators for quantum photonic applications**, Dondu Sahin, Technische Univ. Eindhoven (Netherlands); Alessandro Gaggero, Istituto di Fotonica e Nanotecnologie (Italy); Giulia Frucci, Johannes P. Sprengers, Saeedeh Jahanmirinejad, Cobra Research School (Netherlands); Francesco Mattioli, Roberto Leoni, Istituto di Fotonica e Nanotecnologie (Italy); Johannes Beetz, Matthias Lerner, Martin Kamp, Sven H ofling, Julius-Maximilians-Univ. W urzburg (Germany); Rosendo Sanjines, Ecole Polytechnique F d rale de Lausanne (Switzerland); Andrea Fiore, Cobra Research School (Netherlands) . . . . . [8635-46]

5:30 pm: **Squeezing of radiation in coherent antistokes hyper Raman scattering**, Partha S. Gupta, Indian School of Mines (India) . . . . . [8635-47]

[www.spie.org/publications](http://www.spie.org/publications)

OPTO

# Advances in Slow and Fast Light VI

Conference Chairs: **Selim Shahriar**, Northwestern Univ. (USA); **Frank A Narducci**, Naval Air Systems Command (USA)

Program Committee: **Tony Abi-Salloum**, Widener Univ. (USA); **Shanhui Fan**, Stanford Univ. (USA); **Daniel Joseph Gauthier**, Duke Univ. (USA); **Kohzo Hakuta**, The Univ. of Electro-Communications (Japan); **Ortwin Hess**, Imperial College London (United Kingdom); **John C. Howell**, Univ. of Rochester (USA); **Jacob B. Khurgin**, Johns Hopkins Univ. (USA); **Uriel Levy**, The Hebrew Univ. of Jerusalem (Israel); **Irina Novikova**, The College of William & Mary (USA); **Gour S. Pati**, Delaware State Univ. (USA); **Jacob Scheuer**, Tel Aviv Univ. (Israel); **David D. Smith**, NASA Marshall Space Flight Ctr. (USA)

## Sunday 3 February

### SESSION 1

Room: 272 (Mezzanine) ..... Sun 8:00 am to 10:05 am

#### Resonators

Session Chair: **Philip R. Hemmer**, Texas A&M Univ. (USA)

8:00 am: **Slow light in SNAP coupled microresonators** (*Invited Paper*), Misha Sumetsky, OFS Labs. (USA) ..... [8636-1]

8:25 am: **EIT analogs using orthogonally polarized modes of a single whispering-gallery microresonator** (*Invited Paper*), Albert T. Rosenberger, Oklahoma State Univ. (USA) ..... [8636-2]

8:50 am: **Targeted design of low-loss CROW waveguides for slow light applications** (*Invited Paper*), Michelle L. Povinelli, The Univ. of Southern California (USA) ..... [8636-3]

9:15 am: **Compact coupled resonators for slow-light sensor applications** (*Invited Paper*), Michel J. F. Digonnet, Stanford Univ. (USA) ..... [8636-4]

9:40 am: **Resonant multimode photonic structures on-chip** (*Invited Paper*), Michal F. Lipson, Cornell Univ. (USA) ..... [8636-5]

Coffee Break ..... Sun 10:05 am to 10:30 am

### SESSION 2

Room: 272 (Mezzanine) ..... Sun 10:30 am to 12:40 pm

#### Integrated and Solid-State Optics

Session Chair: **Misha Sumetsky**, OFS Labs. (USA)

10:30 am: **Slow light and optically detected ultrasound** (*Invited Paper*), Philip R. Hemmer, Texas A&M Univ. (USA) ..... [8636-6]

10:55 am: **Slow light through tightly-coupled light waves and acoustic waves in nanoscale waveguides** (*Invited Paper*), Zheng Wang, The Univ. of Texas at Austin (USA); Wenjun Qiu, Massachusetts Institute of Technology (USA); Peter Rakich, Yale Univ. (USA); Heedeuk Shin, Sandia National Labs. (USA); Hui Dong, The Univ. of Texas at Austin (USA) ..... [8636-7]

11:20 am: **Slow light in dye-doped chiral liquid crystals** (*Invited Paper*), Stefania Residori, Institut Non Linéaire de Nice Sophia Antipolis (France); Dong Wei, Institut Non Linéaire de Nice Sophia Antipolis (France) and Xiamen Univ. (China); Umberto Bortolozzo, Institut Non Linéaire de Nice Sophia Antipolis (France); Jean-Pierre Huignard, Jphopto (France) ..... [8636-8]

11:45 am: **Observation of slowed light and darkness through a ruby window**, Emma Wisniewski-Barker, Graham Gibson, Sonja Franke-Arnold, Univ. of Glasgow (United Kingdom); Robert W. Boyd, Univ. of Rochester (USA); Miles J. Padgett, Univ. of Glasgow (United Kingdom) ..... [8636-9]

12:00 pm: **Progress towards the demonstration of a superluminal DPAL ring laser**, Joshua Yablon, Shih Tseng, Selim M. Shahriar, Northwestern Univ. (USA) ..... [8636-10]

12:15 pm: **Slow light for integrated photonics** (*Invited Paper*), Jesper Mørk, Sara Ek, Yaohui Chen, Mikkel Heuck, Kresten Yvind, Technical Univ. of Denmark (Denmark) ..... [8636-11]

Lunch Break ..... Sun 12:40 pm to 1:40 pm

### SESSION 3

Room: 272 (Mezzanine) ..... Sun 1:40 pm to 3:20 pm

#### Vapors

Session Chair: **Jesper Mørk**, Technical Univ. of Denmark (Denmark)

1:40 pm: **Tunable lossless slow and fast light in a four-level N-system** (*Invited Paper*), Irina Novikova, Eugeny E. Mikhailov, The College of William & Mary (USA); Logan Stagg, The Univ. of North Carolina at Asheville (USA); Simon Rochester, Rochester Scientific, LLC (USA); Dmitry Budker, Univ. of California, Berkeley (USA) ..... [8636-12]

2:05 pm: **A comprehensive study of light shift in optical Ramsey interference for estimating the performance of a rubidium vapor cell atomic clock** (*Invited Paper*), Gour S. Pati, Zachary Warren, Delaware State Univ. (USA); Selim M. Shahriar, Northwestern Univ. (USA) ..... [8636-13]

2:30 pm: **Integration of nanophotonic devices with alkaly vapors for on chip manipulations of light propagation** (*Invited Paper*), Uriel Levy, The Hebrew Univ. of Jerusalem (Israel) ..... [8636-14]

2:55 pm: **Dispersion enhancement in atom-cavity and coupled cavity systems** (*Invited Paper*), David D. Smith, NASA Marshall Space Flight Ctr. (USA); Krishna Myneni, U.S. Army Research, Development and Engineering Command (USA); Hongrok Chang, The Univ. of Alabama in Huntsville (USA) ..... [8636-15]

Coffee Break ..... Sun 3:20 pm to 3:50 pm

### SESSION 4

Room: 272 (Mezzanine) ..... Sun 3:50 pm to 6:00 pm

#### PC I

Session Chair: **Michelle L. Povinelli**, The Univ. of Southern California (USA)

3:50 pm: **Ultrannarrow transmission resonances, slow and backward light in room-temperature 4He\*** (*Invited Paper*), Rupamanjari Ghosh, Jawaharlal Nehru Univ. (India) ..... [8636-16]

4:15 pm: **Fast light and quantum correlations in atomic vapor** (*Invited Paper*), Ulrich Vogl, Ryan T. Glasser, Paul D. Lett, National Institute of Standards and Technology (USA) ..... [8636-17]

4:40 pm: **Towards the on-chip integration of atomic cladding photonic resonators**, Liron Stern, Ilya Goykhman, Boris Desiatov, Uriel Levy, The Hebrew Univ. of Jerusalem (Israel) ..... [8636-18]

4:55 pm: **Atomic-vapor photonic microcells** (*Invited Paper*), Fetah Benabid, Univ. of Bath (United Kingdom) ..... [8636-19]

5:20 pm: **Versatile all-fiber slow-light assisted sensor** (*Invited Paper*), Mikel Bravo Acha, Univ. Pública de Navarra (Spain); Xabier Angulo-Vinuesa, Sonia Martin-López, Consejo Superior de Investigaciones Científicas (Spain) and Univ. de Alcalá (Spain); Manuel Lopez-Amo, Univ. Pública de Navarra (Spain); Miguel González-Herráez, Univ. de Alcalá (Spain) ..... [8636-20]

5:45 pm: **Light trapping with THz field in a photonic crystals**, Igor V. Melnikov, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) ..... [8636-21]

**Monday 4 February**

**SESSION 5**

**Room: 272 (Mezzanine) . . . . . Mon 8:00 am to 10:10 am**

**Sensors I**

Session Chair: **Luc Thévenaz**, Ecole Polytechnique Fédérale de Lausanne (Switzerland)

8:00 am: **The solid-state ring laser gyro: current and future trends** (*Invited Paper*), Sylvain Schwartz, Thales Research & Technology (France); Thomas Lauprêtre, Fabienne Goldfarb, Fabien Bretenaker, Lab. Aimé Cotton, Univ Paris-Sud 11, CNRS (France); Rupamanjari Ghosh, Jawaharlal Nehru Univ. (India); Iacopo Carusotto, Univ. degli Studi di Trento (Italy) . . . . . [8636-22]

8:25 am: **Brillouin fast-light fiber laser super-sensor** (*Invited Paper*), Jacob Scheuer, Omer Kotlicki, Tel Aviv Univ. (Israel); Selim M. Shahriar, Northwestern Univ. (USA) . . . . . [8636-23]

8:50 am: **Slow light, fast light, and their applications (Tutorial Presentation)**, Robert W. Boyd, Univ. of Ottawa (Canada) . . . . . [8636-24]

9:30 am: **Two-ring Mach-Zehnder interferometer for biochemical sensing** (*Invited Paper*), Yundong Zhang, Jing Zhang, Qinghai Song, Jingfang Wang, Ping Yuan, Harbin Institute of Technology (China) . . . . . [8636-25]

9:55 am: **Fast-light enhanced integrated on-chip laser gyroscope for rotation sensing**, Sisheng Deng, Zhisong Xiao, Hao Zhang, Long Zhao, Anping Huang, Beihang Univ. (China) . . . . . [8636-26]

Coffee Break . . . . . Mon 10:10 am to 10:40 am

**SESSION 6**

**Room: 272 (Mezzanine) . . . . . Mon 10:40 am to 12:20 pm**

**Plasmonics and Metamaterials**

Session Chair: **Selim M. Shahriar**, Northwestern Univ. (USA)

10:40 am: **Slow and stopped-light lasing in active nanoplasmonic metamaterials** (*Invited Paper*), Ortwin Hess, Imperial College London (United Kingdom) . . . . . [8636-27]

11:05 am: **Slow light, plasmonics, and metamaterials: how do they relate?** (*Invited Paper*), Jacob B. Khurgin, Johns Hopkins Univ. (USA) . . . . . [8636-28]

11:30 am: **Dispersion tailored slow metamaterials for enhanced emission and nonlinearity** (*Invited Paper*), Meir Orenstein, Technion-Israel Institute of Technology (Israel) . . . . . [8636-29]

11:55 am: **Reciprocal and non-reciprocal slow light propagation using metamaterials** (*Invited Paper*), Gennady B. Shvets, Chihhui Wu, Alexander Khanikaev, The Univ. of Texas at Austin (USA) . . . . . [8636-30]

Lunch Break . . . . . Mon 12:20 pm to 1:20 pm

**SESSION 7**

**Room: 272 (Mezzanine) . . . . . Mon 1:20 pm to 3:05 pm**

**PC II**

Session Chair: **Ortwin Hess**, Imperial College London (United Kingdom)

1:20 pm: **Rapidly reconfigurable atomic photonic crystal** (*Invited Paper*), John C. Howell, Univ. of Rochester (USA) . . . . . [8636-31]

1:45 pm: **CMOS-process-compatible photonic crystal slow light devices** (*Invited Paper*), Toshihiko Baba, Yokohama National Univ. (Japan) . . . . . [8636-32]

2:10 pm: **Electrically-controlled photonic crystal slow light device and its application to optical correlator**, Norihiro Ishikura, Ryo Hayakawa, Ryo Hosoi, Mizuki Shinkawa, Hong C. Nguyen, Naoya Yazawa, Toshihiko Baba, Yokohama National Univ. (Japan) . . . . . [8636-33]

2:25 pm: **Narrow band phase sensitive amplifiers and optical comb generators based on slow light propagation in fibers and photonic crystal waveguides** (*Invited Paper*), Gadi Eisenstein, Technion-Israel Institute of Technology (Israel) . . . . . [8636-34]

2:50 pm: **Nonlinear-induced ultrafast slow-light tuning in photonic crystal waveguide**, Keisuke Kondo, Mizuki Shinkawa, Yohei Hamachi, Yuji Saito, Yoshiki Arita, Toshihiko Baba, Yokohama National Univ. (Japan) . . . . . [8636-35]

Coffee Break . . . . . Mon 3:05 pm to 3:30 pm

**SESSION 8**

**Room: 272 (Mezzanine) . . . . . Mon 3:30 pm to 6:05 pm**

**Quantum Optics**

Session Chair: **Jacob B. Khurgin**, Johns Hopkins Univ. (USA)

3:30 pm: **Quantum state tomography of slow and stored light** (*Invited Paper*), Andrew M. Dawes, Noah Holte, Hunter Dassonville, Pacific Univ. (USA) [8636-36]

3:55 pm: **EIT-based optical memory in NV-diamond** (*Invited Paper*), Victor Acosta, Hewlett-Packard Labs. (USA) . . . . . [8636-37]

4:20 pm: **Towards scalable photonics via quantum storage** (*Invited Paper*), Joshua Nunn, Univ. of Oxford (United Kingdom); Nathan K. Langford, Royal Holloway Univ. (United Kingdom); Tessa F. M. Champion, Michael R. Sprague, Patrick S. Michelberger, Ka Chung Lee, Univ. of Oxford (United Kingdom); XianMin Jin, Shanghai Jiao Tong Univ. (China); Duncan G. England, William S. Kolthammer, Marco Barbieri, Ian A. Walmsley, Univ. of Oxford (United Kingdom) . . . . . [8636-38]

4:45 pm: **Optical nanofibers for quantum photonic circuit** (*Invited Paper*), Kohzo Hakuta, The Univ. of Electro-Communications (Japan) . . . . . [8636-39]

5:10 pm: **Single-photon optical precursor** (*Invited Paper*), Shengwang Du, Hong Kong Univ. of Science and Technology (Hong Kong, China) . . . . . [8636-40]

5:35 pm: **Measurement of the velocity of a quantum object: a role of group velocity**, Yuri Rostovtsev, Univ. of North Texas (USA) . . . . . [8636-41]

5:50 pm: **Slow and fast light propagation of quantum optical fields under the conditions of multi-photon resonances in a coherent atomic vapor**, Irina Novikova, The College of William and Mary (USA); Gleb Romanov, Travis Horrom, Eugeny E. Mikhailov, The College of William & Mary (USA) . . . . . [8636-42]

**Tuesday 5 February**

**OPTO PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am**

Session Chairs : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
  - 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
  - 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]
  - 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
  - 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]
- See page 26 for details.

Coffee Break . . . . . Tue 10:10 am to 10:30 am



**SESSION 9**

**Room: 272 (Mezzanine) . . . . . Tue 10:30 am to 12:35 pm**

**Theory**

Session Chair: **Sean M. Spillane**, Los Gatos Research, Inc. (USA)

10:30 am: **Distortion in a linear slow light system (Tutorial Presentation)** (*Invited Paper*), Luc Thevenaz, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8636-43]

10:55 am: **Slow light in lossy and amplifying periodic media** (*Invited Paper*), N. Asger Mortensen, Technical Univ. of Denmark (Denmark) . . . . . [8636-44]

11:20 am: **Group velocity dispersion engineering** (*Invited Paper*), Daniel Gauthier, Yunhui Zhu, Joel Greenberg, Nor A. Husein, Duke Univ. (USA) . . . . . [8636-45]

11:45 am: **Deterministic crisis at the origin of extreme events** (*Invited Paper*), Jorge R. Tredicce, Univ. de la Nouvelle-Calédonie (New Caledonia); Jose Rios Leite, Univ. Federal de Pernambuco (Brazil); Cristina Masoller, Jordi Zamora-Munt, Univ. Politècnica de Catalunya (Spain); Stephane Barland, Institut Non Linéaire de Nice Sophia Antipolis (France); Bruno Garbin, Univ. de Nice Sophia Antipolis (France); Massimo Giudici, Institut Non Linéaire de Nice Sophia Antipolis (France) . . . . . [8636-46]

12:10 pm: **Information theory for the design and analysis of slow light systems** (*Invited Paper*), Mark A. Neifeld, The Univ. of Arizona (USA) . . [8636-47]

Lunch/Exhibition Break . . . . . Tue 12:35 pm to 1:35 pm

**SESSION 10**

**Room: 272 (Mezzanine) . . . . . Tue 1:35 pm to 2:50 pm**

**Sensors II**

Session Chairs: **Yunhui Zhu**, Duke Univ. (USA); **Daniel Joseph Gauthier**, Duke Univ. (USA)

1:35 pm: **Enhanced sensing in a double-Raman superluminal active ring laser** (*Invited Paper*), Tony Abi-Salloum, Widener Univ. (USA) . . . . . [8636-48]

2:00 pm: **Detecting Coriolis force via slow light** (*Invited Paper*), Yuri Rostovtsev, Sankar Davuluri, Univ. of North Texas (USA) . . . . . [8636-49]

2:25 pm: **Superluminal enhancement in a SOA ring laser cavity** (*Invited Paper*), Sean M. Spillane, Los Gatos Research, Inc. (USA); Selim M. Shahriar, Northwestern Univ. (USA) . . . . . [8636-50]

Coffee Break . . . . . Tue 2:50 pm to 3:20 pm

**SESSION 11**

**Room: 272 (Mezzanine) . . . . . Tue 3:20 pm to 6:15 pm**

**Telecom and NLO**

Session Chair: **Robert W. Boyd**, Univ. of Ottawa (Canada)

3:20 pm: **Wide band optical switch via an incoherently pumped fast light medium** (*Invited Paper*), M. Suhail Zubairy, Texas A&M Univ. (USA) . . . [8636-51]

3:45 pm: **Implementing and exploiting synthetic magnetic field in photonic systems: towards robust delay lines and isolators** (*Invited Paper*), Mohammad Hafezi, Joint Quantum Institute (USA) . . . . . [8636-52]

4:10 pm: **Tunable storage of optical data packets modulated in spectrally efficient formats** (*Invited Paper*), Thomas Schneider, Deutsche Telekom AG (Germany) . . . . . [8636-53]

4:35 pm: **Cavity lifetime control by slow-light and nonlinear effects** (*Invited Paper*), Patricio Grinberg, Philippe Hamel, Lab. de Photonique et de Nanostructures (France); Maia Brunstein, Ctr. National de la Recherche Scientifique (France); Kamel Bencheikh, Alejandro Yacomotti, Ariel Levenson, Lab. de Photonique et de Nanostructures (France); Yannick Dumeige, Ecole Nationale Supérieure des Sciences Appliquées et de Technologie (France) . . . . . [8636-54]

5:00 pm: **Slowing light down by low magnetic fields: pulse delay by transient spectral hole-burning in ruby** (*Invited Paper*), Hans Riesen, The Univ. of New South Wales Canberra (Australia); Aleksander K. Rebane, Montana State Univ. (USA); Alex Szabo, National Research Council Canada (Canada); Ivana Carcellera, The Univ. of New South Wales Canberra (Australia) . . . . . [8636-55]

5:25 pm: **Nonlinear switching with frozen light in modulated waveguides** (*Invited Paper*), Nadav Gutman, The Univ. of Sydney (Australia); Andrey A. Sukhorukov, The Australian National Univ. (Australia); Falk Eilenberger, Friedrich-Schiller-Univ. Jena (Germany); Martijn de Sterke, The Univ. of Sydney (Australia) . . . . . [8636-56]

5:50 pm: **Linear and nonlinear optics in photonic crystals: from all-photonic management of the speed of light to laser accelerator** (*Invited Paper*), Igor V. Melnikov, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation) . . . . . [8636-57]



# Complex Light and Optical Forces VII

Conference Chairs: **Jesper Glückstad**, Technical Univ. of Denmark (Denmark); **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Enrique J. Galvez**, Colgate Univ. (USA)

Conference Co-Chair: **Marat S. Soskin**, Institute of Physics (Ukraine)

Program Committee: **Robert R. Alfano**, The City College of New York (USA); **Shu-Chun Chu**, National Cheng Kung Univ. (Taiwan); **Kishan Dholakia**, Univ. of St. Andrews (United Kingdom); **Wolfgang A. Ertmer**, Leibniz Univ. Hannover (Germany); **David G. Grier**, New York Univ. (USA); **Ruediger Grunwald**, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); **Gerard Nienhuis**, Leiden Univ. (Netherlands); **Miles J. Padgett**, Univ. of Glasgow (United Kingdom); **Darwin Palima**, Technical Univ. of Denmark (Denmark); **Monika Ritsch-Marte**, Innsbruck Medical Univ. (Austria); **Halina Rubinsztein-Dunlop**, The Univ. of Queensland (Australia); **Grover Swartzlander**, Rochester Institute of Technology (USA); **Juan P. Torres**, ICFO - Institut de Ciències Fotòniques (Spain); **Ewan Malcolm Wright**, College of Optical Sciences, The Univ. of Arizona (USA)

## Tuesday 5 February

### OPTO PLENARY SESSION

Room: 134 (Exhibit Level) ..... 8:00 am to 10:10 am

Session Chairs : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
- 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
- 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) ..... [8637-1]
- 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
- 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]  
See page 26 for details.

### OPENING REMARKS

Room: 238 (Mezzanine) ..... 1:25 pm to 1:30 pm

**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)

### SESSION 1

Room: 238 (Mezzanine) ..... Tue 1:30 pm to 3:20 pm

#### Optical Angular Momentum

Session Chair: **Marat S. Soskin**, Institute of Physics (Ukraine)

- 1:30 pm: **Group symmetry and the total angular momentum of light** (*Invited Paper*), Giovanni Milione, The City College of New York (USA); Daniel A. Nolan, Corning Incorporated (USA); Stefan Evans, Joseph L. Birman, Robert R. Alfano, The City College of New York (USA) ..... [8637-3]
- 2:00 pm: **Measurement of orbital angular momentum in the focal region of a high-numerical aperture beam**, Daryl C. Preece, Timo A. Nieminen, Halina Rubinsztein-Dunlop, The Univ. of Queensland (Australia) ..... [8637-4]
- 2:20 pm: **Intensity correlation between fractional incoherent vortices**, Eduardo Jorge da Silva Fonseca, Alcenisio Jesus-Silva, Jandir M. Hickmann, Univ. Federal de Alagoas (Brazil). ..... [8637-5]
- 2:40 pm: **Multipole polarization-state patterns in Poincare beams**, Enrique J. Galvez, Brett Rojec, Kevin McCullough, Colgate Univ. (USA) ..... [8637-6]
- 3:00 pm: **Directions in optical angular momentum**, David L. Andrews, Matt M. Coles, Univ. of East Anglia Norwich (United Kingdom) ..... [8637-7]
- Coffee Break ..... Tue 3:20 pm to 3:50 pm

### SESSION 2

Room: 238 (Mezzanine) ..... Tue 3:50 pm to 6:20 pm

#### Optical Forces

Session Chair: **Enrique J. Galvez**, Colgate Univ. (USA)

- 3:50 pm: **The flatland of pulling light: tractor beam, light escalator, and controversy** (*Invited Paper*), Cheng-Wei Qiu, National Univ. of Singapore (Singapore) ..... [8637-8]
- 4:20 pm: **Self-trapping and back-action effects in hollow photonic crystal cavity optical traps**, Nicolas Deschermes, Ulagalandha Perumal Dharanipathy, Zhaolu Diao, Mario Tonin, Romuald Houdré, Ecole Polytechnique Fédérale de Lausanne (Switzerland) ..... [8637-9]
- 4:40 pm: **Calculation of the force acting on a micro-sized particle with optical vortex array laser beam tweezers**, Kuo Chun-Fu, Shu-Chun Chu, National Cheng Kung Univ. (Taiwan). ..... [8637-10]
- 5:00 pm: **Three-dimensional photophoretic micromanipulation**, Christina Alpmann, Michael Esseling, Patrick Rose, Cornelia Denz, Westfälische Wilhelms-Univ. Münster (Germany)..... [8637-11]
- 5:20 pm: **Characterization of optically trapped magnetic particles by external magnetic field: Effect of anionic surfactant as trapping medium**, Vivek S. Jadhav, Univ. of Pune (India) and The AU-KBC Research Ctr. (India) and Trinity College Dublin (Ireland); Gauri R. Kulkarni, Univ. of Pune (India); B. M. Jaffar Ali, Pondicherry Univ. (India) ..... [8637-12]
- 5:40 pm: **Complete azimuthal decomposition of optical fields**, Angela Dudley, Igor Litvin, Filippus S. Roux, Andrew Forbes, CSIR National Laser Ctr. (South Africa) ..... [8637-42]
- 6:00 pm: **Principal states and vortex modes in optical fiber for spatial communications**, Daniel A. Nolan, Corning Incorporated (USA); Giovanni Milione, Robert R. Alfano, The City College of New York (USA) and Graduate Ctr. of the City Univ. of New York (USA) ..... [8637-50]

OPTO

## Wednesday 6 February

### SESSION 3

Room: 238 (Mezzanine) ..... Wed 8:00 am to 10:10 am

#### Dynamic Optics I

Session Chair: **Ruediger Grunwald**, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany)

- 8:00 am: **Dynamic optics for high-resolution microscopy and photonic engineering** (*Invited Paper*), Martin Booth, Univ. of Oxford (United Kingdom) ..... [8637-13]
- 8:30 am: **Shaping the light transmission through a multimode waveguides: complex transformation analysis and applications**, Tomáš Čižmár, Kishan Dholakia, Univ. of St. Andrews (United Kingdom) ..... [8637-14]
- 8:50 am: **Beacon guided digital phase conjugation through multimode fibers**, Salma Farahi, Ioannis N. Papadopoulos, Demetri Psaltis, Christophe Moser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) ..... [8637-15]
- 9:10 am: **The role of propagation invariant light modes in single and multi-photon imaging**, Tom Vettenburg, Heather I. C. Dalgarno, Tomáš Čižmár, Frank J. Gunn-Moore, Kishan Dholakia, Univ. of St. Andrews (United Kingdom) ..... [8637-16]
- 9:30 am: **Optical twistors: wavefront encoded Helico-Conical beams**, Jesper Glückstad, Technical Univ. of Denmark (Denmark) ..... [8637-17]

# Conference 8637 · Room: 238 (Mezzanine)

9:50 am: **Vortex birth at Fraunhofer plane**, Eduardo Jorge da Silva Fonseca, Alencio Jesus-Silva, Jandir M. Hickmann, Univ. Federal de Alagoas (Brazil) ..... [8637-18]  
Coffee Break ..... Wed 10:10 am to 10:40 am

## SESSION 4

**Room: 238 (Mezzanine) ..... Wed 10:40 am to 12:10 pm**

### Dynamic Optics II

Session Chair: **Miles J. Padgett**, Univ. of Glasgow (United Kingdom)

10:40 am: **Patterned multiphoton excitation deep inside scattering tissue** (*Invited Paper*), Valentina Emiliani, René Descartes Univ. (France) and INSERM (France); Eirini Papagiakoumou, René Descartes Univ. (France) and INSERM (France); Aurélien Bègue, René Descartes Univ. (France) and INSERM (France); Osip Schwartz, Ben Leshem, Dan Oron, Weizmann Institute of Science (Israel) ..... [8637-19]

11:10 am: **MEMS axicons for nondiffracting line shaping of ultrashort pulses**, Alexander Treffer, Susanta K. Das, Martin Bock, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Jens Brunne, Ulrike Wallrabe, Albert-Ludwigs-Universität Freiburg (Germany); Ruediger Grunwald, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany) ..... [8637-20]

11:30 am: **A method to calculate arbitrary linear polarized laser beam evolutions in GRIN lenses**, Ko-Fan Tsai, Shu-Chun Chu, National Cheng Kung Univ. (Taiwan) ..... [8637-21]

11:50 am: **Arbitrary femtosecond highly non-paraxial accelerating beams**, Amaury Mathis, Francois Courvoisier, Luc Froehly, Maxime Jacquot, John M. Dudley, FEMTO-ST (France) and Univ. de Franche-Comté (France) ... [8637-22]

Lunch Break ..... Wed 12:10 pm to 1:30 pm

## SESSION 5

**Room: 123 (Exhibit Level) ..... Wed 1:30 pm to 3:00 pm**

### NOTE ROOM CHANGE

#### Quantum I

Joint Session with Conferences 8635 and 8637

Session Chair: **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)

1:30 pm: **Orbital angular momentum of photons, atoms, and electrons** (*Invited Paper*), Sonja Franke-Arnold, Univ. of Glasgow (United Kingdom) ..... [8637-23]

2:00 pm: **Production of two-photon cluster states in polarization and spatial modes**, Enrique J. Galvez, William H. Schubert, Michael A. Senatore, Colgate Univ. (USA) ..... [8637-24]

2:20 pm: **Down-converted bi-photons in a Bessel-Gaussian basis**, Filippus S. Roux, Melanie McLaren, CSIR National Laser Ctr. (South Africa); Miles J. Padgett, Univ. of Glasgow (United Kingdom); Andrew Forbes, CSIR National Laser Ctr. (South Africa); Thomas Konrad, Univ. of KwaZulu-Natal (South Africa) ..... [8637-25]

2:40 pm: **The generation of entangled matter waves**, Wolfgang A. Ertmer, Bernd Luecke, Manuel Scherer, Jens Kruse, Oliver Topic, Jan Peise, Luis Santos, Frank Deuretzbacher, Leibniz Univ. Hannover (Germany); Jan J. Artl, Aarhus Univ. (Denmark); Carsten Klempt, Leibniz Univ. Hannover (Germany); Augusto Smerzi, Luca Pezce, European Lab. for Non-linear Spectroscopy (Italy); Philipp Hyllus, Univ. del Pais Vasco (Spain) ..... [8637-26]

Coffee Break ..... Wed 3:00 pm to 3:30 pm

## SESSION 6

**Room: 123 (Exhibit Level) ..... Wed 3:30 pm to 5:40 pm**

### NOTE ROOM CHANGE

#### Quantum II

Joint Session with Conferences 8635 and 8637

Session Chairs: **John C. Howell**, Univ. of Rochester (USA); **John C. Howell**, Univ. of Rochester (USA)

3:30 pm: **Multi-bit-per-photon QKD system based on encoding in orbital-angular-momentum states of light** (*Invited Paper*), Robert W. Boyd, Univ. of Ottawa (Canada) and Univ. of Rochester (USA); Jonathan Leach, Univ. of Ottawa (Canada); Omar Magaña Loaiza, Mehul Malik, Mohammad Mirhosseini, Brandon Rodenburg, Zhimin Shi, Mahmudur Siddiqui, Colin O'Sullivan, Univ. of Rochester (USA) ..... [8635-28]

4:00 pm: **Quantum key distribution with Fibonacci states** (*Invited Paper*), Alexander V. Sergienko, Boston Univ. (USA); David S. Simon, Stonehill College (USA) and Boston Univ. (USA); Nate Lawrence, Jacob Trevino, Luca Dal Negro, Boston Univ. (USA) ..... [8635-29]

4:30 pm: **The orbital angular momentum of spatially complex modes** (*Invited Paper*), William N. Plick, Mario Krenn, Sven Ramelow, Robert Fickler, Anton Zeilinger, Institut für Quantenoptik und Quanteninformation (Austria) ..... [8635-30]

5:00 pm: **Mode structure reconstruction with multiphoton statistics**, Elizabeth A. Goldschmidt, National Institute of Standards and Technology (USA); Fabrizio Piacentini, Istituto Nazionale di Ricerca Metrologica (Italy); Sergey V. Polyakov, National Institute of Standards and Technology (USA); Giorgio Brida, Ivo P. Degiovanni, Marco Genovese, Istituto Nazionale di Ricerca Metrologica (Italy); Alan L. Migdall, National Institute of Standards and Technology (USA); Ivano Ruo Berchera, Istituto Nazionale di Ricerca Metrologica (Italy) ..... [8635-31]

5:20 pm: **Spectral properties of ultra-broadband entangled photons generated from chirped-MgSLT crystal towards monocycle entanglement generation**, Akira Tanaka, Ryo Okamoto, Hokkaido Univ. (Japan) and The Institute of Scientific and Industrial Research (Japan); Hwan Hong Lim, National Institute for Materials Science (Japan); Shanthi Subashchandran, Masayuki Okano, Hokkaido Univ. (Japan) and The Institute of Scientific and Industrial Research (Japan); Labao Zhang, Lin Kang, Jian Chen, Pei-Heng Wu, Nanjing Univ. (China); Toru Hirohata, Hamamatsu Photonics K.K. (Japan); Sunao Kurimura, National Institute for Materials Science (Japan); Shigeki Takeuchi, Hokkaido Univ. (Japan) and The Institute of Scientific and Industrial Research (Japan) ..... [8635-32]

## POSTERS-WEDNESDAY

**Room: 103 (Exhibit Level) ..... Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Photocatalytic 3D nano-optical trapping using TiO<sub>2</sub> nanosphere pairs mediated with Mie scattered near-field**, Toshiyuki Honda, Mitsuhiro Terakawa, Minoru Obara, Keio Univ. (Japan) ..... [8637-45]

**Efficient sorting of Bessel beams**, Angela Dudley, Thandeka Mhlanga, Andre McDonald, Filippus S. Roux, CSIR National Laser Ctr. (South Africa); Martin Lavery, Miles Padgett, Univ. of Glasgow (United Kingdom); Andrew Forbes, CSIR National Laser Ctr. (South Africa) ..... [8637-46]

**Effect of chemical environment on membrane stiffness of EC cells using optical tweezers**, Punam S. Sonar, Univ. degli Studi di Modena e Reggio Emilia (Italy) and Univ. of Pune (India) and AU-KBC Research Ctr. (India); Vivek S. Jadhav, Univ. of Pune (India) and The AU-KBC Research Ctr. (India) and Trinity College Dublin (Ireland); Krishna priya M., Suvro Chatterje, The AU-KBC Research Ctr. (India); B. M. Jaffar Ali, Pondicherry Univ. (India) ..... [8637-47]

**Sorting optical angular momentum from a multimode optical fiber**, Thien An Nguyen, Giovanni Milione, The City College of New York (USA); Daniel A. Nolan, Corning Incorporated (USA); Martin P. J. Lavery, Miles J. Padgett, Univ. of Glasgow (United Kingdom); Robert R. Alfano, The City College of New York (USA) ..... [8637-51]

## Thursday 7 February

## SESSION 7

Room: 238 (Mezzanine) ..... Thu 8:00 am to 9:50 am

## Complex Light Synthesis and Propagation

Session Chair: **Wolfgang A. Ertmer**, Leibniz Univ. Hannover (Germany)8:00 am: **New horizons for Supercontinuum light sources: from UV to mid-IR** (*Invited Paper*), Carsten L. Thomsen, Frederik D. Nielsen, Jeppe Johansen, Peter M. Moselund, NKT Photonics A/S (Denmark) ..... [8637-27]8:30 am: **Topological ergodic dynamics of optical singularities in laser-induced speckle field following "optical damage" of photorefractive LiNbO<sub>3</sub>:Fe crystal**, Marat S. Soskin, Vasyi Vasil'ev, Institute of Physics (Ukraine) ..... [8637-28]8:50 am: **LC nanocomposites: induced optical singularities, managed nano/micro structure, and electrical conductivity**, Vladislav V. Ponevchinsky, Institute of Physics (Ukraine); Andrii I. Goncharuk, F. D. Ovcharenko Institute of Biocolloidal Chemistry (Ukraine); Sergey S. Minenko, Institute for Scintillation Materials (Ukraine); Longin N. Lisetski, Institute for Scintillation Materials (Ukraine); Nikolai I. Lebovka, F. D. Ovcharenko Institute of Biocolloidal Chemistry (Ukraine); Marat S. Soskin, Institute of Physics (Ukraine) ... [8637-29]9:10 am: **Measurements on optical transmission matrices of strongly scattering nanowire layers**, Duygu Akbulut, Univ. Twente (Netherlands); Tom Strudley, Univ. of Southampton (United Kingdom); Jacopo Bertolotti, Univ. Twente (Netherlands) and Univ. of Florence (Italy); Tilman Zehender, Technische Univ. Eindhoven (Netherlands); Erik P.A. M. Bakkers, Technische Univ. Eindhoven (Netherlands) and Technische Univ. Delft (Netherlands); Willem L. Vos, Univ. Twente (Netherlands); Otto L. Muskens, Univ. of Southampton (United Kingdom); Allard P. Mosk, Univ. Twente (Netherlands) ..... [8637-30]9:30 am: **Higher order mode propagation in ultrathin optical fibers for atom traps**, Fredrik K. Fatemi, U.S. Naval Research Lab. (USA); Sylvain Ravets, Lab. Charles Fabry (France); Jonathan E. Hoffman, Joint Quantum Institute (USA) and Univ. of Maryland, College Park (USA) and National Institute of Standards and Technology (USA); Guy Beadie, U.S. Naval Research Lab. (USA); Luis A. Orozco, Steven L. Rolston, Joint Quantum Institute (USA) and Univ. of Maryland, College Park (USA) and National Institute of Standards and Technology (USA) ..... [8637-31]

Coffee Break ..... Thu 9:50 am to 10:20 am

## SESSION 8

Room: 238 (Mezzanine) ..... Thu 10:20 am to 12:00 pm

## Light, Microstructures, and Optical Robotics

Session Chair: **Halina Rubinsztein-Dunlop**,  
The Univ. of Queensland (Australia)10:20 am: **Optical robotics: optimising both light and matter**, Jesper Glückstad, Technical Univ. of Denmark (Denmark) ..... [8637-32]10:50 am: **Optical micro-assembling of non-spherical particles**, Sarah Isabelle Ksouri, Reza Ghadiri, Andreas Aumann, Andreas Ostendorf, Ruhr-Univ. Bochum (Germany) ..... [8637-33]11:10 am: **Optimising forces and torques for optical micromanipulation**, Simon Hanna, Stephen H. Simpson, David Phillips, Univ. of Bristol (United Kingdom) ..... [8637-34]11:30 am: **Impedance matching an optical nano-antenna to a waveguided optical (dielectric) waveguide** (*Invited Paper*), Lars Rindorf, Danish Technological Institute (Denmark) ..... [8637-35]

Lunch Break ..... Thu 12:00 pm to 1:30 pm

## SESSION 9

Room: 238 (Mezzanine) ..... Thu 1:30 pm to 3:00 pm

## Optical Energy and Momentum

Session Chair: **Jesper Glückstad**,  
Technical Univ. of Denmark (Denmark)1:30 pm: **Optofluidics for energy applications** (*Invited Paper*), Demetri Psaltis, Ecole Polytechnique Fédérale de Lausanne (Switzerland) ..... [8637-36]2:00 pm: **Azimuthal polarization for Raman enhancement in capillary waveguides**, Jessica C. Mullen, Michael P. Buric, Steven D. Woodruff, National Energy Technology Lab. (USA) ..... [8637-37]2:20 pm: **Optimized systems for energy efficient optical tweezing**, Ronald Kampmann, Roman Kleindienst, Andreas Oeder, Adrian Grewe, Stefan Sinzinger, Technische Univ. Ilmenau (Germany) ..... [8637-38]2:40 pm: **Single laser beam based passive optical sorter**, Oto Brzobohary, Martin Šiler, Vitezslav Karasek, Lukáš Chvátal, Institute of Scientific Instruments of the ASCR, v.v.i. (Czech Republic); Tomáš Čižmár, Univ. of St. Andrews (United Kingdom); Pavel Zemánek, Institute of Scientific Instruments of the ASCR, v.v.i. (Czech Republic) ..... [8637-39]

Coffee Break ..... Thu 3:00 pm to 3:30 pm

## SESSION 10

Room: 238 (Mezzanine) ..... Thu 3:30 pm to 5:20 pm

## Complex Light Decomposition and Analysis

Session Chair: **Darwin Palima**, Technical Univ. of Denmark (Denmark)3:30 pm: **Analytical techniques for the study of focused beams** (*Invited Paper*), Miguel A. Alonso, Univ. of Rochester (USA) ..... [8637-40]4:00 pm: **Mode analysis using the correlation filter method**, Daniel Flamm, Christian Schulze, Friedrich-Schiller-Univ. Jena (Germany); Darryl Naidoo, Council for Scientific and Industrial Research (South Africa); Andrew Forbes, Council for Scientific and Industrial Research (South Africa) and Univ. of KwaZulu-Natal (South Africa); Michael Duparré, Friedrich-Schiller-Univ. Jena (Germany) ..... [8637-41]4:20 pm: **Optical tweezers at gigaPascal pressures**, Richard W. Bowman, Univ. of Glasgow (United Kingdom); Filippo Saglimbeni, Univ. degli Studi di Roma La Sapienza (Italy); Graham M. Gibson, Univ. of Glasgow (United Kingdom); Roberto Di Leonardo, Univ. degli Studi di Roma La Sapienza (Italy); Miles J. Padgett, Univ. of Glasgow (United Kingdom) ..... [8637-49]4:40 pm: **Modal decomposition for measuring the orbital angular momentum density of light**, Christian Schulze, Daniel Flamm, Friedrich-Schiller-Univ. Jena (Germany); Andrew Forbes, Council for Scientific and Industrial Research (South Africa); Michael Duparré, Friedrich-Schiller-Univ. Jena (Germany) ..... [8637-43]5:00 pm: **Polarization singularities and fiber modal decomposition**, Nirmal K. Viswanathan, Vijay Kumar, Univ. of Hyderabad (India) ..... [8637-44]

## CLOSING REMARKS

Room: 238 (Mezzanine) ..... 5:20 pm to 5:25 pm

Session Chair: **David L. Andrews**,  
Univ. of East Anglia Norwich (United Kingdom)



# Laser Refrigeration of Solids VI

**Conference Chairs:** **Richard I. Epstein**, The Univ. of New Mexico (USA); **Denis V. Seletskiy**, Univ. Konstanz (Germany); **Mansoor Sheik-Bahae**, The Univ. of New Mexico (USA)

**Program Committee:** **Daniel Bender**, Sandia National Labs. (USA); **Rudolf Binder**, College of Optical Sciences, The Univ. of Arizona (USA); **Steven R. Bowman**, U.S. Naval Research Lab. (USA); **Tal Eliezer Carmon**, Univ. of Michigan (USA); **Joaquín Fernández**, Univ. del País Vasco (Spain); **Zameer Ul Hasan**, Temple Univ. (USA); **Raman Kashyap**, Ecole Polytechnique de Montréal (Canada); **Mauro Tonelli**, Univ. di Pisa (Italy)

## Wednesday 6 February

### POSTERS-WEDNESDAY

**Room: 103 (Exhibit Level) . . . . . Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Radiative cooling of power LED by silicon photonic cooler**, Volodymyr K. Malyutenko, V Lashkaryov Institute of Semiconductor Physics (Ukraine); Viacheslav V. Bogatyrenko, Oleg Y. Malyutenko, V. Lashkaryov Institute of Semiconductor Physics (Ukraine) . . . . . [8638-18]

11:20 am: **Laser cooling of a thermal load using CdS nanobelts**, Qihua Xiong, Dehui Li, Jun Zhang, Renjie Chen, Nanyang Technological Univ. (Singapore) . . . . . [8638-8]

11:40 am: **Multi-phonon and Raman assisted cooling in semiconductors (Invited Paper)**, Jacob B. Khurgin, Johns Hopkins Univ. (USA) . . . . . [8638-9]

12:05 pm: **Laser cooling attempts in high-quantum efficiency GaInP/GaAs double heterostructures**, Daniel Bender, Jeffrey G. Cederberg, Sandia National Labs. (USA); Chengao Wang, Mansoor Sheik-Bahae, The Univ. of New Mexico (USA) . . . . . [8638-10]

Lunch Break . . . . . Thu 12:25 pm to 1:25 pm

### SESSION 3

**Room: 272 (Mezzanine) . . . . . Thu 1:25 pm to 3:05 pm**

#### Novel Approaches in Laser Cooling

Session Chair: **Steven R. Bowman**, U.S. Naval Research Lab. (USA)

1:25 pm: **Laser cooling by collisional redistribution of radiation in dense gases (Invited Paper)**, Martin Weitz, Anne Sass, Rheinische Friedrich-Wilhelms- Univ. Bonn (Germany); Ulrich Vogl, Univ. of Maryland, College Park (USA); Peter Moroshkin, Rheinische Friedrich-Wilhelms- Univ. Bonn (Germany) . . . . [8638-11]

1:50 pm: **Electrocaloric refrigerator using electrohydrodynamic flows in dielectric fluids (Invited Paper)**, Markus P. Hehlen, Alexander H. Mueller, Nina R. Weisse-Bernstein, Los Alamos National Lab. (USA); Miad Yazdani, United Technologies Research Ctr. (USA); Richard I. Epstein, ThermoDynamic Films LLC (USA) . . . . . [8638-12]

2:15 pm: **Brillouin cooling (Invited Paper)**, Tal Carmon, Univ. of Michigan (USA) . . . . . [8638-13]

2:40 pm: **Optomechanical interactions in piezoelectric thin films (Invited Paper)**, Matt Eichenfield, Sandia National Labs. (USA) . . . . . [8638-14]

Coffee Break . . . . . Thu 3:05 pm to 3:35 pm

### SESSION 4

**Room: 272 (Mezzanine) . . . . . Thu 3:35 pm to 4:45 pm**

#### Advances in Solid-State Laser Refrigeration

Session Chair: **Galina A. Nemova**, Ecole Polytechnique de Montréal (Canada)

3:35 pm: **Towards all-fiber optical coolers using Tm-doped glass fibers (Invited Paper)**, Dan T. Nguyen, Jie Zong, Dan L. Rhonehouse, Andy Miller, NP Photonics, Inc. (USA); Garrett Hardesty, Nai Kwong, College of Optical Sciences, The Univ. of Arizona (USA); Rolf Binder, College of Optical Sciences, The Univ. of Arizona (USA) and The Univ. of Arizona (USA) . . . . . [8638-15]

4:00 pm: **Accurate measurement of external quantum efficiency in semiconductors (Invited Paper)**, Chengao Wang, The Univ. of New Mexico (USA); Jeffrey G. Cederberg, Daniel Bender, Sandia National Labs. (USA); Mansoor Sheik-Bahae, The Univ. of New Mexico (USA) . . . . . [8638-16]

4:25 pm: **Spectroscopic and life-time measurements of quantum-doped glass for optical refrigeration: a feasibility study**, Sébastien Loranger, Antoine Lesage-Landry, Elton Soares de Lima Filho, Galina Nemova, École Polytechnique de Montréal (Canada); Paulo C. Morais, Noelio O. Dantas, Univ. Federal de Uberlândia (Brazil); Raman Kashyap, École Polytechnique de Montréal (Canada) . . . . . [8638-17]

## Thursday 7 February

### SESSION 1

**Room: 272 (Mezzanine) . . . . . Thu 8:00 am to 10:00 am**

#### Laser Refrigeration in Rare-Earth Doped Systems

Session Chair: **Markus P. Hehlen**, Los Alamos National Lab. (USA)

8:00 am: **Optical refrigeration study of Er-doped oxysulfide crystal powders (Invited Paper)**, Angel J. Garcia-Adeva, Daniel Sola, Mohammed Al Saleh, Univ. del País Vasco (Spain); Odile Merdrignac-Conanec, Univ. de Rennes 1 (France); Rolindes Balda, Joaquin Fernandez, Univ. del País Vasco (Spain) and Ctr. de Fisica de Materiales (Spain) . . . . . [8638-1]

8:25 am: **Non-radiative decay of holmium-doped laser materials (Invited Paper)**, Steven R. Bowman, Shawn P. O'Connor, Nicholas J. Condon, E. Joseph Friebele, Richard S. Quimby, U.S. Naval Research Lab. (USA) . . . . . [8638-2]

8:50 am: **Optical refrigeration progress: cooling below NIST cryogenic temperature of 123K (Invited Paper)**, Seth D. Melgaard, The Univ. of New Mexico (USA); Denis V. Seletskiy, The Univ. of New Mexico (USA) and Air Force Research Lab. (USA); Alberto di Lieto, Mauro Tonelli, Univ. di Pisa (Italy); Mansoor Sheik-Bahae, The Univ. of New Mexico (USA) . . . . . [8638-3]

9:15 am: **Progress towards cryogenic temperatures in intracavity optical refrigeration using a VECSEL**, Alexander R. Albrecht, Mohammadreza Ghasemkhani, The Univ. of New Mexico (USA); Jeffrey G. Cederberg, Sandia National Labs. (USA); Denis V. Seletskiy, The Univ. of New Mexico (USA) and Air Force Research Lab. (USA); Seth D. Melgaard, Mansoor Sheik-Bahae, The Univ. of New Mexico (USA) . . . . . [8638-4]

9:35 am: **Laser cooling with rare-earth doped direct band gap semiconductors (Invited Paper)**, Galina A. Nemova, Raman Kashyap, Ecole Polytechnique de Montréal (Canada) . . . . . [8638-5]

Coffee Break . . . . . Thu 10:00 am to 10:30 am

### SESSION 2

**Room: 272 (Mezzanine) . . . . . Thu 10:30 am to 12:25 pm**

#### Laser Refrigeration in Semiconductor Systems

Session Chair: **Martin Weitz**,

Rheinische Friedrich-Wilhelms- Univ. Bonn (Germany)

10:30 am: **Electro-luminescent cooling: light-emitting diodes above unity efficiency (Invited Paper)**, Rajeev J. Ram, Parthiban Santhanam, Duanni Huang, Dodd Grey, Massachusetts Institute of Technology (USA) . . . . . [8638-6]

10:55 am: **Laser cooling of a semiconductor by 40 kelvin (Invited Paper)**, Qihua Xiong, Jun Zhang, Dehui Li, Renjie Chen, Nanyang Technological Univ. (Singapore) . . . . . [8638-7]



# Vertical-Cavity Surface-Emitting Lasers XVII

Conference Chairs: **Kent D. Choquette**, Univ. of Illinois at Urbana-Champaign (USA); **James K. Guenter**, Finisar Corp. (USA)

Program Committee: **Kent M. Geib**, Sandia National Labs. (USA); **Martin Grabherr**, Philips Technologie GmbH U-L-M Photonics (Germany); **Jeong-Ki Hwang**, Avago Technologies Singapore (Singapore); **Fumio Koyama**, Tokyo Institute of Technology (Japan); **Anders Larsson**, Chalmers Univ. of Technology (Sweden); **Kevin L. Lear**, Colorado State Univ. (USA); **Chun Lei**, EMCORE Corp. (USA); **James A. Lott**, Technische Univ. Berlin (Germany); **Krassimir Panajotov**, Vrije Univ. Brussel (Belgium); **Jean-Francois Seurin**, Princeton Optronics, Inc. (USA); **Noriyuki Yokouchi**, Furukawa Electric Co., Ltd. (Japan)

## Wednesday 6 February

### SESSION 1

Room: 308 (Esplanade) ..... Wed 8:30 am to 10:00 am

#### Commercial Developments

Session Chair: **Kent D. Choquette**, Univ. of Illinois at Urbana-Champaign (USA)

8:30 am: **VCSELS for high-speed data networks** (*Invited Paper*), M. V. Ramana Murty, Avago Technologies Ltd. (USA); Sumon K. Ray, K.-L. Chew, Max V. Crom, Aadi Sridhara, C. Zhao, Chu Chen, Tom R. Fanning, Avago Technologies Singapore (Singapore) ..... [8639-1]

9:00 am: **The next-generation high-data rate VCSEL development at SEDU** (*Invited Paper*), Chuan Xie, Neinyi Li, Shenghong Huang, Li Wang, Chiyu Liu, Sumitomo Electric Device Innovations, U.S.A., Inc. (USA) ..... [8639-2]

9:30 am: **Progress and challenges in industrial fabrication of wafer-fused VCSELS emitting in the 1310-nm band for high-speed WDM applications** (*Invited Paper*), Vladimir Iakovlev, Alexei Sirbu, Zlatko Mickovic, Dalila Elafi, Eli Kapon, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Grigore Suruceanu, Alexandru Mereuta, Andrei Caliman, Beam Express S.A. (Switzerland) ..... [8639-3]

Coffee Break ..... Wed 10:00 am to 10:30 am

### SESSION 2

Room: 308 (Esplanade) ..... Wed 10:30 am to 11:50 am

#### Novel Wavelengths

Session Chair: **James K. Guenter**, Finisar Corp. (USA)

10:30 am: **Progress in extended wavelength VCSEL technology** (*Invited Paper*), Klein Johnson, Matthew Dummer, William Hogan, Mary Hibbs-Brenner, Charles Steidl, Vixar Inc. (USA) ..... [8639-4]

11:00 am: **Nonpolar gallium nitride VCSELS** (*Invited Paper*), Casey Holder, Univ. of California, Santa Barbara (USA); Daniel Feezell, The Univ. of New Mexico (USA); James S. Speck, Steven P. DenBaars, Shuji Nakamura, Univ. of California, Santa Barbara (USA) ..... [8639-5]

11:30 am: **Comprehensive Electro-Opto-Thermal simulation of GaSb-based VCSELS**, Zhiqiang L. Li, Simon Li, Crosslight Software Inc. (Canada) ... [8639-6]

Lunch/Exhibition Break ..... Wed 11:50 am to 1:30 pm

### SESSION 3

Room: 308 (Esplanade) ..... Wed 1:30 pm to 3:00 pm

#### New Structures

Session Chair: **Kent D. Choquette**, Univ. of Illinois at Urbana-Champaign (USA)

1:30 pm: **Ultra-compact vertical-cavity surface-emitting lasers using a double set of photonic crystal mirrors** (*Invited Paper*), Corrado Sciancalepore, Institut des Nanotechnologies de Lyon (France) and CEA-LETI-Minatec (France); Pierre Viktorovitch, Institut des Nanotechnologies de Lyon (France); Badhisse Ben Bakir, CEA-LETI-Minatec (France); Xavier Letartre, Christian Seassal, Institut des Nanotechnologies de Lyon (France) ..... [8639-7]

2:00 pm: **Heat assisted magnetic recording (HAMR) with nano-aperture VCSELS for 10 Tb/in<sub>2</sub> magnetic storage density**, Sajid Hussain, Shreya Kundu, National Univ. of Singapore (Singapore); Charanjit S. Bhatia, National Univ. of Singapore (Singapore); Hyunsoo Yang, Aaron Danner, National Univ. of Singapore (Singapore) ..... [8639-8]

2:20 pm: **VCSELS with nematic and cholesteric liquid crystal overlays**, Krassimir Panajotov, Vrije Univ. Brussel (Belgium); Maciej Dems, Technical Univ. of Lodz (Poland); Carlos Belmonte, Hugo Thienpont, Vrije Univ. Brussel (Belgium); Yi Xie, Jeroen Beeckman, Kristiaan Neyts, Univ. Gent (Belgium) ..... [8639-9]

2:40 pm: **An ultra-stable VCSEL light source**, John Downing, GreatSpace, LLC (USA); Dubravko Babic, Univ. of Zagreb (Croatia); Mary Hibbs-Brenner, Vixar Inc. (USA) ..... [8639-10]

Coffee Break ..... Wed 3:00 pm to 3:30 pm

### SESSION 4

Room: 308 (Esplanade) ..... Wed 3:30 pm to 5:30 pm

#### Tunable VCSELS

Session Chair: **Krassimir Panajotov**, Vrije Univ. Brussel (Belgium)

3:30 pm: **Widely tunable singlemode surface micro-machined MEMS-VCSELS operating at 1.95- $\mu$ m**, Karolina Zogal, Technische Univ. Darmstadt (Germany); Tobias Gruendl, Technische Univ. München (Germany); Christian Gierl, Sujoy Paul, Technische Univ. Darmstadt (Germany); Christian Grasse, Technische Univ. München (Germany); Peter Meissner, Technische Univ. Darmstadt (Germany); Marcus C. Amann, Technische Univ. München (Germany); Franko Kueppers, Technische Univ. Darmstadt (Germany) . [8639-11]

3:50 pm: **1060 nm tunable monolithic high index contrast subwavelength grating vertical-cavity surface-emitting laser**, Thor Ansbæk, Il-Sug Chung, Elizaveta S. Semenova, Ole Hansen, Kresten Wynd, Technical Univ. of Denmark (Denmark) ..... [8639-12]

4:10 pm: **Vertical Cavity Surface Emitting Laser with tunable polarization and wavelength**, Yi Xie, Jeroen Beeckman, Lieven Penninck, Wouter Woestenborghs, Univ. Gent (Belgium); Krassimir Panajotov, Vrije Univ. Brussel (Belgium); Kristiaan Neyts, Univ. Gent (Belgium) ..... [8639-13]

4:30 pm: **Giant wavelength-temperature dependence of 850nm VCSELS with a metal/semiconductor thermally actuated mirror**, Masanori Nakahama, Hayato Sano, Takahiro Sakaguchi, Akihiro Matsutani, Fumio Koyama, Tokyo Institute of Technology (Japan) ..... [8639-14]

4:50 pm: **Widely tunable MEMS-VCSELS operating at >70°C**, Christian Gierl, Technische Univ. Darmstadt (Germany); Tobias Gründl, Walter Schottky Institut (Germany); Karolina Zogal, Sujoy Paul, Technische Univ. Darmstadt (Germany); Christian Grasse, Gerhard Böhm, Walter Schottky Institut (Germany); Peter Meissner, Technische Univ. Darmstadt (Germany); Markus C. Amann, Walter Schottky Institut (Germany); Franko Küppers, Technische Univ. Darmstadt (Germany) ..... [8639-15]

5:10 pm: **Far-field emission characteristics and linewidth measurements of surface micro-machined MEMS tunable VCSELS**, Sujoy Paul, Christian Gierl, Technische Univ. Darmstadt (Germany); Tobias Gründl, Walter Schottky Institut (Germany); Karolina Zogal, Peter Meissner, Technische Univ. Darmstadt (Germany); Markus C. Amann, Walter Schottky Institut (Germany); Franko Küppers, Technische Univ. Darmstadt (Germany) ..... [8639-16]

OPTO

**POSTERS-WEDNESDAY**

**Room: 103 (Exhibit Level) . . . . . Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**High-frequency signal generation using 1550 nm VCSEL subject to two-frequency optical injection**, Antonio Consoli, Univ. Politécnica de Madrid (Spain); Ana Quirce, Angel Valle, Luis Pesquera, Univ. de Cantabria (Spain); Jose Manuel Garcia Tijero, Ignacio Esquivias, Univ. Politécnica de Madrid (Spain) . . . . . [8639-33]

**Thursday 7 February**

**SESSION 5**

**Room: 308 (Esplanade) . . . . . Thu 8:30 am to 9:50 am**

**Reliability and Performance**

Session Chair: **Jean-Francois Seurin**, Princeton Optronics, Inc. (USA)

8:30 am: **The range of VCSEL wearout reliability acceleration behavior and its effects on applications**, James K. Guenter, Luke A. Graham, Robert A. Hawthorne, Bobby M. Hawkins, Ralph Johnson, Gary Landry, Jim Tatum, Finisar Corp. (USA) . . . . . [8639-17]

8:50 am: **25 Gbps and beyond: VCSEL development at Philips**, Roger King, Steffan Intemann, Stefan Wabra, Philipp Gerlach, Michael Riedl, Philips Technologie GmbH U-L-M Photonics (Germany) . . . . . [8639-18]

9:10 am: **28 Gb/s 850 nm oxide VCSEL development at Avago**, Jingyi Wang, Laura Giovane, Avago Technologies Ltd. (USA); Zheng-wen Feng, Tom Fanning, Chen Chu, Aadi Sridhara, Friedhelm Hopfer, Terry Sale, An-Nien Cheng, Avago Technologies Singapore (Singapore); Bing Shao, Li Ding, Pengyue Wen, Avago Technologies Ltd. (USA) . . . . . [8639-19]

9:30 am: **Reliability and degradation of oxide VCSELs due to reaction to atmospheric water vapor**, Alexandru Dafinca, Anthony R. Weidberg, Univ. of Oxford (United Kingdom); Steven J. McMahan, Rutherford Appleton Lab. (United Kingdom); Robert W. Herrick, C8 MediSensors, Inc. (USA) . . . . . [8639-20]

Coffee Break . . . . . Thu 9:50 am to 10:20 am

**SESSION 6**

**Room: 308 (Esplanade) . . . . . Thu 10:20 am to 12:00 pm**

**High Power**

Session Chair: **Daniel M. Grasso**, Coherent, Inc. (USA)

10:20 am: **VCSEL arrays with integrated optics (Invited Paper)**, Holger Moench, Stephan Gronenborn, Johanna Kolb, Pavel Pekarski, Ulrich Weichmann, Philips Research (Germany); Michael Miller, Philips Technologie GmbH U-L-M Photonics (Germany) . . . . . [8639-21]

10:50 am: **Development of a high-power vertical-cavity surface-emitting laser array with ion-implanted current apertures (Invited Paper)**, Hideyuki Naito, Masahiro Miyamoto, Yuta Aoki, Akira Higuchi, Kousuke Torii, Takehito Nagakura, Takenori Morita, Junya Maeda, Hirofumi Miyajima, Harumasa Yoshida, Hamamatsu Photonics K.K. (Japan) . . . . . [8639-22]

11:20 am: **High-power red VCSEL arrays**, Jean-Francois Seurin, Viktor Khalfin, Guoyang Xu, Alexander Miglo, Daizong Li, Delai Zhou, Mukta Sundaresh, Wei-Xiong Zou, Chien-Yao Lu, James D. Wynn, Chuni Ghosh, Princeton Optronics, Inc. (USA) . . . . . [8639-23]

11:40 am: **High-power format-flexible 885-nm vertical-cavity surface-emitting laser arrays**, Chad Wang, Fedor Talantov, Henry Garrett, Glen Berdin, David Millenheft, Terri Cardellino, Jonathan Geske, FLIR Electro-Optical Components (USA) . . . . . [8639-24]

Lunch Break . . . . . Thu 12:00 pm to 1:30 pm

**SESSION 7**

**Room: 308 (Esplanade) . . . . . Thu 1:30 pm to 3:00 pm**

**Single Mode Lasers**

Session Chair: **Fumio Koyama**, Tokyo Institute of Technology (Japan)

1:30 pm: **Numerical analysis of photonic-crystal VCSELs (Invited Paper)**, Tomasz Czystanowski, Maciej Dems, Robert P. Sarzala, Technical Univ. of Lodz (Poland); Krassimir Panajotov, Vrije Univ. Brussel (Belgium) . . . . . [8639-25]

2:00 pm: **Single-mode photonic crystal VCSELs with high modulation bandwidth at record low current density**, Kent D. Choquette, Meng Peun Tan, Stewart Frysliie, Univ. of Illinois at Urbana-Champaign (USA); James A. Lott, Technische Univ. Berlin (Germany); Nikolay N. Ledentsov, VI Systems GmbH (Germany) . . . . . [8639-26]

2:20 pm: **Spatial mode discrimination using intra-cavity patterns in long-wavelength wafer-fused vertical-cavity surface-emitting lasers**, Nicolas Volet, Lukas Mutter, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Tomasz Czystanowski, Jarosław Walczak, Technical Univ. of Lodz (Poland); Benjamin Dwir, Vladimir Iakovlev, Alexei Sirbu, Alexandru Mereuta, Andrei Caliman, Elyahou Kapon, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8639-27]

2:40 pm: **22 Gb/s error-free data transmission beyond 1 km of multi-mode fiber using 850-nm VCSELs**, Rashid Safaisini, Krzysztof Szczerba, Erik Haglund, Petter Westbergh, Johan S. Gustavsson, Anders Larsson, Peter Andrekson, Chalmers Univ. of Technology (Sweden) . . . . . [8639-28]

Coffee Break . . . . . Thu 3:00 pm to 3:30 pm

**SESSION 8**

**Room: 308 (Esplanade) . . . . . Thu 3:30 pm to 4:50 pm**

**High Speed VCSELs**

Session Chair: **Tomasz Czystanowski**, Technical Univ. of Lodz (Poland)

3:30 pm: **Traveling wave electro-optically modulated coupled-cavity surface emitting lasers**, Mateusz Zujewski, Hugo Thienpont, Vrije Univ. Brussel (Belgium); Krassimir Panajotov, Vrije Univ. Brussel (Belgium) and Institute of Solid State Physics (Bulgaria) . . . . . [8639-29]

3:50 pm: **Impact of the aperture diameter on the energy-efficiency of oxide-confined 850-nm high-speed VCSELs**, Philip Moser, James A. Lott, Philip Wolf, Gunter Larisch, Hui Li, Technische Univ. Berlin (Germany); Nikolay N. Ledentsov, VI Systems GmbH (Germany); Dieter Bimberg, Technische Univ. Berlin (Germany) . . . . . [8639-30]

4:10 pm: **Push-pull modulation of lateral coupling of dual VCSEL cavities using a bow-tie shape**, Hamed Dalir, Akihiro Matsutani, Fumio Koyama, Tokyo Institute of Technology (Japan) . . . . . [8639-31]

4:30 pm: **High-speed 850-nm VCSELs with 28 GHz modulation bandwidth for short reach communication**, Petter Westbergh, Rashid Safaisini, Erik Haglund, Johan S. Gustavsson, Chalmers Univ. of Technology (Sweden); Anders Larsson, Chalmers Univ. of Technology (Sweden); Andrew Joel, IQE plc (United Kingdom) . . . . . [8639-32]

# Novel In-Plane Semiconductor Lasers XII

Conference Chairs: **Alexey A. Belyanin**, Texas A&M Univ. (USA); **Peter M. Smowton**, Cardiff Univ. (United Kingdom)

Program Committee: **Yasuhiko Arakawa**, The Univ. of Tokyo (Japan); **Dan Botez**, Univ. of Wisconsin-Madison (USA); **Federico Capasso**, Harvard School of Engineering and Applied Sciences (USA); **Gary A. Evans**, Southern Methodist Univ. (USA); **Claire F. Gmachl**, Princeton Univ. (USA); **Michael Kneissl**, Technische Univ. Berlin (Germany); **Hui Chun Liu**, Shanghai Jiao Tong Univ. (China); **Luke J. Mawst**, Univ. of Wisconsin-Madison (USA); **Jerry R. Meyer**, U.S. Naval Research Lab. (USA); **Richard V. Penty**, Univ. of Cambridge (United Kingdom); **Johann Peter Reithmaier**, Univ. Kassel (Germany); **Haisheng Rong**, Intel Corp. (USA); **Nelson Tansu**, Lehigh Univ. (USA); **Shinji Tsuji**, Hitachi, Ltd. (Japan); **Kresten Yvind**, Technical Univ. of Denmark (Denmark)

## Monday 4 February

### SESSION 1

Room: 250 (Mezzanine) ..... Mon 8:00 am to 10:20 am

#### Comms: Materials to Integration

Session Chair: **Nelson Tansu**, Lehigh Univ. (USA)

8:00 am: **Progress towards GaAs- and InP-based Bismuth-containing efficient semiconductor lasers**, Stephen J. Sweeney, Univ. of Surrey (United Kingdom) ..... [8640-1]

8:20 am: **High Modal Gain 1.5 μm InP Based Quantum Dot Lasers: Dependence of Static Properties on the Active Layer Design**, Vitalii Sichkovskiy, Vitalii Ivanov, Johann P. Reithmaier, Univ. Kassel (Germany) ..... [8640-2]

8:40 am: **Ultrafast phenomena in QD/QDash lasers (Invited Paper)**, Amir Capua, Ouri Karni, Gadi Eisenstein, Technion-Israel Institute of Technology (Israel); Johann P. Reithmaier, Univ. Kassel (Germany) ..... [8640-3]

9:10 am: **Effect of optical waveguiding mechanism on the lasing action of chirped InAs/AlGaInAs/InP quantum dash lasers**, Mohammed Zahed A. M. Khan, Tien Khee Ng, King Abdullah Univ. of Science and Technology (Saudi Arabia); Chi-Sen Lee, Pallab K. Bhattacharya, Univ. of Michigan (USA); Boon S. Ooi, King Abdullah Univ. of Science and Technology (Saudi Arabia) ..... [8640-4]

9:30 am: **Novel photonic devices formed through etched facets (Invited Paper)**, Alex Behfar, Norman Kwong, BinOptics Corp. (USA) ..... [8640-5]

10:00 am: **High power pulses at tunable repetition rates from a monolithically integrated mode-locked laser device**, Xuhan Guo, Adrian H. Quarterman, Adrian Wonfor, Vojtech Olle, Richard V. Penty, Ian H. White, Univ. of Cambridge (United Kingdom) ..... [8640-6]

Coffee Break ..... Mon 10:20 am to 10:50 am

### SESSION 2

Room: 250 (Mezzanine) ..... Mon 10:50 am to 12:30 pm

#### DFBs and DBRs

Session Chair: **Johann Peter Reithmaier**, Univ. Kassel (Germany)

10:50 am: **Monolithic wide tuning laser diodes for gas sensing at 2100 nm**, Lars Hildebrandt, Andreas Heger, Johannes Koeth, Marc O. Fischer, nanoplus GmbH (Germany) ..... [8640-7]

11:10 am: **Narrow-linewidth three-electrode regrowth-free semiconductor DFB lasers with uniform surface grating**, Kais Dridi, Abdessamad Benhsaien, Akram Akrouf, Univ. of Ottawa (Canada); Jessica Zhang, Canadian Microelectronics Corp. (Canada); Trevor J. Hall, Univ. of Ottawa (Canada) ..... [8640-8]

11:30 am: **Sub-MHz linewidth of 633-nm diode lasers with internal surface DBR gratings**, David Feise, Gunnar Blume, Johannes Pohl, Bernd Sumpf, Katrin Paschke, Ferdinand-Braun-Institut (Germany); Hendrick Thiem, Matthias Reggentin, Thomas Laurent, eagleyard Photonics GmbH (Germany) ... [8640-9]

11:50 am: **Mass production design for a high-speed continuously-tunable and monolithically formed DFB laser**, Bob van Someren, Mach8 Lasers (Netherlands); Christian Zimmermann, nanoplus GmbH (Germany) ... [8640-10]

12:10 pm: **InP quantum dot lasers with temperature-insensitive wavelength**, Sam Shutts, Peter M. Smowton, Stella N. Elliott, Cardiff Univ. (United Kingdom); Andrey B. Krysa, The Univ. of Sheffield (United Kingdom) ..... [8640-11]

Lunch Break ..... Mon 12:30 pm to 1:50 pm

### SESSION 3

Room: 250 (Mezzanine) ..... Mon 1:50 pm to 3:30 pm

#### Red, Green, Blue

Session Chair: **Peter M. Smowton**, Cardiff Univ. (United Kingdom)

1:50 pm: **654-nm broad-area lasers for QCW operation with a maximal facet load of 76 mW/μm**, Bernd Sumpf, Martina Pohl, Wolfgang Pittroff, Ralf Staske, Götz Ebert, Günther Tränkle, Ferdinand-Braun-Institut (Germany) ... [8640-12]

2:10 pm: **Highly-reliable operation of 638-nm broad stripe laser diode with high wall-plug efficiency for display applications**, Tetsuya Yagi, Naoyuki Shimada, Takehiro Nishida, Hiroshi Mitsuyama, Motoharu Miyashita, Mitsubishi Electric Corp. (Japan) ..... [8640-13]

2:30 pm: **Continuous-wave operation of green/yellow laser diodes based on BeZnCdSe quantum wells (Invited Paper)**, Ryoichi Akimoto, Toshifumi Hasama, Hiroshi Ishikawa, National Institute of Advanced Industrial Science and Technology (Japan); Jun-ichi Kasai, Sumiko Fujisaki, Shigehisa Tanaka, Shinji Tsuji, Hitachi, Ltd. (Japan) ..... [8640-14]

3:00 pm: **High-power blue and green laser diodes and their applications (Invited Paper)**, Uwe Strauss, Thomas Hager, Jens Müller, Fabian Kopp, Georg Brüderl, Teresa Lerner, Adrian Avramescu, OSRAM Opto Semiconductors GmbH (Germany) ..... [8640-15]

Coffee Break ..... Mon 3:30 pm to 4:00 pm

### SESSION 4

Room: 250 (Mezzanine) ..... Mon 4:00 pm to 5:40 pm

#### Nitrides

Session Chair: **Michael Kneissl**, Technische Univ. Berlin (Germany)

4:00 pm: **Passive mode-locking in the cavity of monolithic GaN-based multi-section laser diodes**, Thomas Weig, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany); Ulrich T. Schwarz, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany) and Albert-Ludwigs-Univ. Freiburg (Germany); Luca Sulmoni, Jean-Michel J. Lamy, Nicolas Grandjean, Jean-François Carlin, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Dmitri L. Boiko, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland) ..... [8640-16]

4:20 pm: **Superradiant pulse generation from InGaN heterostructures (Invited Paper)**, Peter P. Vasil'ev, Univ. of Cambridge (United Kingdom) and P.N. Lebedev Physical Institute (Russian Federation); Vojtech Olle, Richard V. Penty, Ian H. White, Univ. of Cambridge (United Kingdom) ..... [8640-17]

4:50 pm: **InGaN/GaN quantum dot blue and green lasers (Invited Paper)**, Pallab K. Bhattacharya, Animesh Banerjee, Thomas Frost, Ethan Stark, Univ. of Michigan (USA) ..... [8640-18]

5:20 pm: **Optical and polarization properties with staggered AlGaIn quantum wells for mid- and deep-ultraviolet lasers and light-emitting diodes**, Jing Zhang, Nelson Tansu, Lehigh Univ. (USA) ..... [8640-19]





**Tuesday 5 February**

**OPTO PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am**

*Session Chairs* : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
- 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
- 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]
- 8:50 am: **Group IV photonics for the mid infrared.**  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
- 9:30 am: **Light in a twist: optical angular momentum.**  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]  
See page 26 for details.

Coffee Break . . . . . Tue 10:10 am to 10:30 am

**SESSION 5**

**Room: 250 (Mezzanine) . . . . . Tue 10:30 am to 12:20 pm**

**Mid-IR QCLs**

Session Chair: **Alexey A. Belyanin**, Texas A&M Univ. (USA)

- 10:30 am: **Mid-infrared quantum cascade frequency combs** (*Invited Paper*), Jérôme Faist, Andreas Hugi, ETH Zurich (Switzerland) . . . . . [8640-20]
- 11:00 am: **Frequency-modulated quantum cascade lasers for free-space data links** (*Invited Paper*), Sergey Suchalkin, Seungyong Jung, Stony Brook Univ. (USA); Min Jang, The Univ. of Texas at Austin (USA); Richard L. Tober, U.S. Army Research Lab. (USA); Mikhail A. Belkin, The Univ. of Texas at Austin (USA); Gregory Belenky, Stony Brook Univ. (USA) . . . . . [8640-21]
- 11:30 am: **Discrete tuning between the modes of a multiple-wavelength quantum cascade laser using a micro-scale external cavity**, Meinrad Sidler, ETH Zurich (Switzerland); Romain Blanchard, Harvard School of Engineering and Applied Sciences (USA); Tobias S. Mansuripur, Harvard Univ. (USA); Patrick Rauter, Stefan Menzel, Harvard School of Engineering and Applied Sciences (USA); Yong Huang, Jae-Hyun Ryou, Russell D. Dupuis, Georgia Institute of Technology (USA); Jérôme Faist, ETH Zurich (Switzerland); Federico Capasso, Harvard School of Engineering and Applied Sciences (USA) . . . . . [8640-22]
- 11:50 am: **External ring-cavity quantum cascade lasers** (*Invited Paper*), Pietro Malara, Istituto Nazionale di Ottica (Italy) and Harvard Univ. (USA); Romain Blanchard, Tobias S. Mansuripur, Harvard Univ. (USA); Paolo de Natale, Istituto Nazionale di Ottica (Italy); Federico Capasso, Harvard Univ. (USA) . . . . [8640-23]
- Lunch/Exhibition Break . . . . . Tue 12:20 pm to 1:30 pm

**SESSION 6**

**Room: 250 (Mezzanine) . . . . . Tue 1:30 pm to 3:20 pm**

**Mid-IR Lasers and Optics**

Session Chair: **Jerry R. Meyer**, U.S. Naval Research Lab. (USA)

- 1:30 pm: **Broadband mid-infrared wavefront engineering with optical antenna metasurfaces** (*Keynote Presentation*), Federico Capasso, Nanfang Yu, Patrice Genevet, Mikhail A. Kats, Harvard School of Engineering and Applied Sciences (USA); Francesco Aieta, Harvard School of Engineering and Applied Sciences (USA) and Univ. Politecnica delle Marche (Italy); Zeno Gaburro, Harvard School of Engineering and Applied Sciences (USA) and Univ. degli Studi di Trento (Italy) . . . . . [8640-24]
- 2:10 pm: **Recent progress in development of InAs-based interband cascade lasers** (*Invited Paper*), Rui Q. Yang, Lu Li, Yuchao Jiang, Lihua Zhao, Robert T. Hinkey, Hao Ye, Tetsuya D. Mishima, Michael B. Santos, Matthew B. Johnson, The Univ. of Oklahoma (USA) . . . . . [8640-25]
- 2:40 pm: **Extremely temperature-insensitive continuous-wave broadband quantum cascade lasers**, Kazuue Fujita, Masamichi Yamanishi, Shinichi Furuta, Tatsuo Dougakiuchi, Atsushi Sugiyama, Tadataka Edamura, Hamamatsu Photonics K.K. (Japan) . . . . . [8640-26]

3:00 pm: **Mid-infrared electroluminescence from ridge-waveguide devices using hole funneling into the valence band of GaAs/Al(Ga)As quantum cascade structures**, Mohammed I. Hossain, Purdue Univ. (USA); Zoran Ikonik, Univ. of Leeds (United Kingdom); John L. Reno, Sandia National Labs. (USA); Oana Malis, Purdue Univ. (USA) . . . . . [8640-27]

Coffee Break . . . . . Tue 3:20 pm to 3:50 pm

**SESSION 7**

**Room: 250 (Mezzanine) . . . . . Tue 3:50 pm to 5:40 pm**

**Silicon Based Lasers**

Session Chair: **Haisheng Rong**, Intel Corp. (USA)

- 3:50 pm: **Advances in electrically pumped Ge-on-Si lasers** (*Invited Paper*), Jurgen Michel, Rodolfo E. Camacho-Aguilera, Yan Cai, Lin Zhang, Zhaohong Han, Lionel C. Kimerling, Massachusetts Institute of Technology (USA) [8640-28]
- 4:20 pm: **Optimization of the hybrid silicon photonic integrated circuit platform** (*Invited Paper*), Martijn J. R. Heck, Michael L. Davenport, Sudharsanan Srinivasan, Jared Hulme, John E. Bowers, Univ. of California, Santa Barbara (USA) . . . . . [8640-29]
- 4:50 pm: **InAs/GaAs quantum dot lasers on Si substrates by wafer bonding** (*Invited Paper*), Katsuaki Tanabe, Yasuhiko Arakawa, The Univ. of Tokyo (Japan) . . . . . [8640-31]
- 5:20 pm: **The role of silicon surface orientation on the performance of Ga(NAsP)/(BGa)(AsP) QW lasers on (001) Si**, Nadir Hossain, Graham Read, Stephen J. Sweeney, Univ. of Surrey (United Kingdom); Sven Liebich, Martin Zimprich, Kerstin Volz, Bernardette Kunert, Wolfgang Stolz, Philipps-Universität Marburg (Germany) . . . . . [8640-32]

**Wednesday 6 February**

**SESSION 8**

**Room: 250 (Mezzanine) . . . . . Wed 8:20 am to 10:00 am**

**Microcavity and Photonic Crystal**

Session Chair: **Weng W. Chow**, Sandia National Labs. (USA)

- 8:20 am: **Subwavelength plasmonic lasers** (*Invited Paper*), Hong-Gyu Park, Soon-Hong Kwon, Ju-Hyung Kang, Yoon-Ho Kim, Korea Univ. (Korea, Republic of) . . . . . [8640-33]
- 8:50 am: **Electrical injection schemes for nanolasers**, Alexandra Lupi, Il-Sug Chung, Kresten Yvind, Technical Univ. of Denmark (Denmark) . . . . . [8640-34]
- 9:10 am: **Towards a monolithic photonic crystal waveguide mode-locked laser**, Kenneth J. Leedle, Altamash Janjua, Seonghyun Paik, Mark J. Schnitzer, James S. Harris, Stanford Univ. (USA) . . . . . [8640-35]
- 9:30 am: **Photonics beyond diffraction limit: Plasmon waveguide, cavities, and integrated laser circuits** (*Invited Paper*), Xiang Zhang, Univ. of California, Berkeley (USA) . . . . . [8640-36]
- Coffee Break . . . . . Wed 10:00 am to 10:30 am

**SESSION 9**

**Room: 250 (Mezzanine) . . . . . Wed 10:30 am to 12:20 pm**

**THz QCLs**

Session Chair: **Jérôme Faist**, ETH Zurich (Switzerland)

- 10:30 am: **Application implications of the impressive advances in quantum cascade lasers and needed characteristics of corresponding detectors** (*Invited Paper*), Hui Chun Liu, Shanghai Jiao Tong Univ. (China) . . . . . [8640-37]
- 11:00 am: **Optical wavelength conversion in terahertz quantum cascade lasers** (*Invited Paper*), Pierrick Cavalié, Julien Madéo, Joshua R. Freeman, Jean Maysonnave, Kenneth Maussang, Juliette Mangeney, Jérôme Tignon, Sukhdeep S. Dhillon, Ecole Normale Supérieure (France) . . . . . [8640-38]
- 11:30 am: **Direct optical sampling of a mode-locked terahertz quantum cascade laser**, Joshua R. Freeman, Jean Maysonnave, Kenneth Maussang, Pierrick Cavalié, Ecole Normale Supérieure (France); Nathan Jukam, Ruhr-Universität Bochum (Germany); Harvey E. Beere, David A. Ritchie, Univ. of Cambridge (United Kingdom); Juliette Mangeney, Sukhdeep S. Dhillon, Jérôme Tignon, Ecole Normale Supérieure (France) . . . . . [8640-39]



11:50 am: **THz quantum cascade lasers for operation above cryogenic temperatures** (*Invited Paper*), Mikhail A. Belkin, Karun Vijayraghavan, The Univ. of Texas at Austin (USA); Augustinas Vizbaras, Walter Schottky Institut (Germany); Aiting Jiang, The Univ. of Texas at Austin (USA); Frederic Demmerle, Gerhard Boehm, Ralf Meyer, Markus C. Amann, Walter Schottky Institut (Germany); Alpar Matyas, Reza Chashmahcharagh, Paolo Lugli, Christian Jirauschek, Technische Univ. München (Germany); Zbigniew R. Wasilewski, Univ. of Waterloo (Canada) . . . . . [8640-40]  
Lunch/Exhibition Break . . . . . Wed 12:20 pm to 1:50 pm

**SESSION 10**

**Room: 250 (Mezzanine) . . . . . Wed 1:50 pm to 3:20 pm**

**Long-Wavelength Mid-IR and THz QCLs**

Session Chair: **Mikhail A. Belkin**, The Univ. of Texas at Austin (USA)

1:50 pm: **Long-wavelength ( $\lambda \approx 12\text{-}16 \mu\text{m}$ ) and cascaded transition quantum cascade lasers** (*Invited Paper*), Xue Huang, Yenting Chiu, Jingyuan L. Zhang, Princeton Univ. (USA); William O. Charles, Phononic Devices (USA); Vadim E. Tokranov, Serge Oktyabrsky, Univ. at Albany (USA); Claire F. Gmachl, Princeton Univ. (USA) . . . . . [8640-41]

2:20 pm: **Room temperature continuous wave operation of long wavelength (9-11  $\mu\text{m}$ ) distributed feedback quantum cascade lasers for glucose detection**, Feng Xie, Catherine G. Caneau, Herve P. LeBlanc, Sean Coleman, Ming-Tsung Ho, Lawrence C. Hughes, Chung-en Zah, Corning Incorporated (USA) . . . . . [8640-42]

2:40 pm: **Stacked active region THz quantum cascade lasers with improved performance**, Martin Brandstetter, Christoph Deutsch, Alexander Benz, Karl Unterrainer, Hermann Detz, Aaron M. Andrews, Werner Schrenk, Gottfried Strasser, Technische Univ. Wien (Austria) . . . . . [8640-43]

3:00 pm: **Towards nanowire-based terahertz quantum cascade lasers: prospects and technological challenges**, Michael Krall, Martin Brandstetter, Christoph Deutsch, Hermann Detz, Tobias Zederbauer, Aaron M. Andrews, Werner Schrenk, Gottfried Strasser, Karl Unterrainer, Technische Univ. Wien (Austria) . . . . . [8640-44]  
Coffee Break . . . . . Wed 3:20 pm to 3:50 pm

**SESSION 11**

**Room: 250 (Mezzanine) . . . . . Wed 3:50 pm to 5:50 pm**

**High-Power and Tunable QCLs**

Session Chair: **Pietro Malara**, Istituto Nazionale di Ottica (Italy)

3:50 pm: **Multiwatt long wavelength quantum cascade lasers based on high strain composition with 70% injection efficiency**, Arkadiy A. Lyakh, Richard Maulini, Alexei Tsekoun, Rowel Go, C. Kumar N. Patel, Pranalytica, Inc. (USA) . . . . . [8640-45]

4:10 pm: **High-power multi-wavelength quantum cascade laser arrays**, Patrick Rauter, Stefan Menzel, Burc Gokden, Federico Capasso, Harvard Univ. (USA) . . . . . [8640-46]

4:30 pm: **High power quantum cascade lasers with tapered oscillators**, Romain Blanchard, Burc Gokden, Harvard School of Engineering and Applied Sciences (USA); Tobias S. Mansuripur, Harvard Univ. (USA); Nanfang Yu, Mikhail A. Kats, Harvard School of Engineering and Applied Sciences (USA); Tadataka Edamura, Masamichi Yamanishi, Hamamatsu Photonics K.K. (Japan); Federico Capasso, Harvard School of Engineering and Applied Sciences (USA) . . . . . [8640-47]

4:50 pm: **Widely-tunable quantum cascade lasers using sampled grating reflectors**, Tobias S. Mansuripur, Stefan Menzel, Romain Blanchard, Harvard Univ. (USA); Laurent Diehl, Christian J. Pfügl, EOS Photonics (USA); Yong Huang, Jae-Hyun Ryou, Russell D. Dupuis, Georgia Institute of Technology (USA); Marko Loncar, Federico Capasso, Harvard Univ. (USA) . . . . . [8640-48]

5:10 pm: **Optimization of QCL facet coatings for low-power consumption sensing applications**, Ralf Ostendorf, Christian Schilling, Quankui K. Yang, Stefan Hugger, Rolf Aidam, Rachid Driad, Wolfgang Bronner, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany); Frank Fuchs, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); Joachim H. Wagner, Fraunhofer-Institut für Angewandte Festkörperphysik (Germany) . . . . . [8640-49]

5:30 pm: **Single-mode quantum cascade lasers with asymmetric Mach-Zehnder interferometer type Fabry-Perot cavity**, Peter Q. Liu, Princeton Univ. (USA); Xiaojun Wang, AdTech Optics, Inc. (USA); Claire F. Gmachl, Princeton Univ. (USA) . . . . . [8640-50]

**POSTERS-WEDNESDAY**

**Room: 103 (Exhibit Level) . . . . . Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPosterGuidelines>.

**980-nm external-cavity passively mode-locked laser with extremely narrow RF linewidth**, Ying Ding, Univ. of Dundee (United Kingdom) and Institute of Semiconductors (China); Wei Ji, Jingxiang Chen, Song Zhang, Xiaoling Wang, Beijing Univ. of Technology (China); Huolei Wang, Haiqiao Ni, Jiaqing Pan, Institute of Semiconductors (China); Bifeng Cui, Beijing Univ. of Technology (China); Maria Ana Cataluna, Univ. of Dundee (United Kingdom) . . . . . [8640-67]

**Suppression of pointing instability in quantum cascade lasers via transverse mode control**, Pierre M. Bouzi, Peter Q. Liu, Nyan L. Aung, Princeton Univ. (USA); Xiaojun Wang, AdTech Optics, Inc. (USA); Claire F. Gmachl, Princeton Univ. (USA) . . . . . [8640-68]

**Thursday 7 February**

**SESSION 12**

**Room: 250 (Mezzanine) . . . . . Thu 8:00 am to 10:00 am**

**High Power I**

Session Chair: **Gary A. Evans**, Southern Methodist Univ. (USA)

8:00 am: **Analysis of bulk and facet failures in high-power diode lasers** (*Invited Paper*), Jens W. Tomm, Forschungsverbund Berlin e.V. (Germany) . . . . . [8640-51]

8:30 am: **Catastrophic degradation in high-power InGaAs-AlGaAs strained quantum well lasers and InAs-GaAs quantum dot lasers**, Yongkun Sin, Stephen LaLumondiere, Brendan Foran, Neil Ives, Nathan Presser, William Lotshaw, Steven C. Moss, The Aerospace Corp. (USA) . . . . . [8640-52]

8:50 am: **Comparison of catastrophic optical damage in InP/(Al)GaInP quantum dot and quantum well diode lasers**, Stella N. Elliott, Cardiff Univ. (United Kingdom); Martin Hempel, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany); Ute Zeimer, Ferdinand-Braun-Institut (Germany); Peter M. Smowton, Cardiff Univ. (United Kingdom); Jens W. Tomm, Max-Born-Institut für Nichtlineare Optik und Kurzzeitspektroskopie (Germany) . . . . . [8640-53]

9:10 am: **Multi-spectral investigation of bulk and facet failures in high-power single emitters at 980 nm** (*Invited Paper*), Dan A. Yanson, Moshe Levy, Moshe Shamay, Shalom Cohen, Sarah Geva, Yuri Berk, Renana Tessler, Genady Klumel, Noam Rappaport, Yoram Karni, SCD Semiconductor Devices (Israel) . . . . . [8640-54]

9:40 am: **1120nm high-brilliant laser sources for SHG-modules in bio-analytics and spectroscopy**, Katrin Paschke, Christian Fiebig, Gunnar Blume, Frank Bugge, Jörg Fricke, Götz Erbert, Ferdinand-Braun-Institut s(Germany) . . . . . [8640-55]

Coffee Break . . . . . Thu 10:00 am to 10:30 am

**SESSION 13**

**Room: 250 (Mezzanine) . . . . . Thu 10:30 am to 12:10 pm**

**High Power II**

Session Chair: **Paul Crump**, Ferdinand-Braun-Institut (Germany)

10:30 am: **Novel broad area diode lasers with transverse Bragg grating in external resonators**, Christof Zink, Mario Niebuhr, Danilo Skoczowsky, Axel Heuer, Ralf Menzel, Univ. Potsdam (Germany) . . . . . [8640-56]

10:50 am: **Cryogenically-cooled eyesafe diode laser for resonant pumping of Er-doped gain media**, Zhigang Chen, Weimin Dong, Xingguo Guan, Sandrio Elim, Shiguo Zhang, Mike Grimshaw, Mark Devito, Paul O. Leisher, Manoj Kankar, nLIGHT Corp. (USA) . . . . . [8640-57]

11:10 am: **Dynamic response of a monolithic master-oscillator power amplifier at 1.5  $\mu\text{m}$** , Pawel Adamiec, Borja Bonilla, Antonio Consoli, Jose Manuel Tijero, Ignacio Esquivias, Mariafernanda Vilera, Univ. Politécnic de Madrid (Spain); Julien Javaloyes, Univ. de les Illes Balears (Spain); Salvador Balle, Institut Mediterrani d'Estudis Avançats (Spain) . . . . . [8640-59]



# Conference 8640 · Room: 250 (Mezzanine)

11:30 am: **Dynamics of high power gain switched DFB RW laser under high-current pulse excitation on a nanosecond time scale**, Andreas Klehr, Sven Schwertfeger, Hans Wenzel, Thomas Hoffmann, Armin Liero, Ralf Staske, Olaf Brox, Götz Erbert, Günther Tränkle, Ferdinand-Braun-Institut (Germany) ..... [8640-60]

11:50 am: **Tapered multi-section quantum-dot amplifiers and mode locked laser for high-peak power and picosecond pulse generation**, Michel Krakowski, Myke Ruiz, Alcatel-Thales III-V Lab. (France); Ying Ding, Daniil Nikitichev, Maria Ana Cataluna, Edik U. Rafailov, Univ. of Dundee (United Kingdom); Lukas Drzewietzki, Stefan Breuer, Wolfgang E. Elsaesser, Technische Univ. Darmstadt (Germany); Charis Mesaritakis, Dimitris Syvridis, Univ. of Athens (Greece); Igor Krestnikov, Innolume GmbH (Germany); Ivo Montrosset, Politecnico di Torino (Italy); Yannick Robert, Eric Vinet, Michel Garcia, Alcatel-Thales III-V Lab. (France)..... [8640-61]

Lunch Break ..... Thu 12:10 pm to 1:40 pm

## SESSION 14

Room: 250 (Mezzanine) ..... Thu 1:40 pm to 3:20 pm

### Short-Wavelength Mid-IR QCLs and Diode Lasers

Session Chair: **Feng Xie**, Corning Incorporated (USA)

1:40 pm: **High-power diode lasers between 1.8 $\mu$ m and 3.0 $\mu$ m**, Sascha A. Hilzensauer, Catharina Giesin, Jeanette Schleife, m2k-laser GmbH (Germany); Steve Patterson, DILAS Diode Laser, Inc. (USA); Marc Kelemen, m2k-laser GmbH (Germany)..... [8640-62]

2:00 pm: **High-power GaSb laser diodes with reduced beam divergence and enhanced temperature performance**, Soile Suomalainen, Jukka Viheriälä, Antti I. Laakso, Riku Koskinen, Jonna Paajaste, Mervi Koskinen, Tapio Niemi, Mircea Guina, Tampere Univ. of Technology (Finland) ..... [8640-63]

2:20 pm: **Influence of band offset and auger recombination on the temperature sensitivity of GaInAsSb/GaSb mid-infrared lasers**, Barnabas A. Ikyo, Stephen J. Sweeney, Alf R. Adams, Igor P. Marko, Konstanze Hild, Univ. of Surrey (United Kingdom); Markus C. Amann, Shamsul Arafin, Walter Schottky Institut (Germany) ..... [8640-64]

2:40 pm: **Analysis of thermally activated leakage current in a low-threshold-current quantum-cascade laser emitting at 3.9  $\mu$ m**, Yuri V. Flores, Grygorii Monastyrskiy, Mikaela Elagin, Mykhaylo P. Semtsiv, W. Ted Masselink, Humboldt-Univ. zu Berlin (Germany)..... [8640-65]

3:00 pm: **The influence of inter-valley scattering on 3.5  $\mu$ m InGaAs/AlAs(Sb) quantum cascade lasers**, Shirong Jin, Abdullah Aldukhayel, Igor P. Marko, Univ. of Surrey (United Kingdom); Shiyong Zhang, Engineering and Physical Sciences Research Council (United Kingdom) and The Univ. of Sheffield (United Kingdom); Dmitry G. Revin, John W. Cockburn, The Univ. of Sheffield (United Kingdom); Stephen J. Sweeney, Univ. of Surrey (United Kingdom) . . . [8640-66]



Download the  
SPIE Conference App



# Light-Emitting Diodes: Materials, Devices, and Applications for Solid State Lighting XVII

Conference Chairs: **Klaus P. Streubel**, OSRAM AG (Germany); **Heonsu Jeon**, Seoul National Univ. (Korea, Republic of); **Li-Wei Tu**, National Sun Yat-Sen Univ. (Taiwan)

Conference Co-Chair: **Martin Strassburg**, OSRAM Opto Semiconductors GmbH (Germany)

Program Committee: **Gerd Bacher**, Univ. Duisburg-Essen (Germany); **Shoou-Jinn Chang**, National Cheng Kung Univ. (Taiwan); **Mitch M. C. Chou**, National Sun Yat-Sen Univ. (Taiwan); **Michael Heuken**, AIXTRON SE (Germany); **Satoshi Kamiyama**, Meijo Univ. (Japan); **Jong Kyu Kim**, Pohang Univ. of Science and Technology (Korea, Republic of); **Markus Klein**, OSRAM Opto Semiconductors GmbH (Germany); **Michael R. Krames**, Soraa, Inc. (USA); **Hao-Chung Kuo**, National Chiao Tung Univ. (Taiwan); **Kei May Lau**, Hong Kong Univ. of Science and Technology (Hong Kong, China); **Kurt J. Linden**, Spire Corp. (USA); **Hans Nikol**, Philips Lighting B.V. (Netherlands); **Joongseo Park**, LG Electronics Inc. (Korea, Republic of); **E. Fred Schubert**, Rensselaer Polytechnic Institute (USA); **Ross P. Stanley**, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland)

## Monday 4 February

### SESSION 1

Room: 125 (Exhibit Level) . . . . . Mon 8:30 am to 10:00 am

#### High Current Performance and Droop Effect in LEDs I

Session Chair: **Klaus P. Streubel**, OSRAM AG (Germany)

8:30 am: **Analytic model for the efficiency droop in light-emitting diodes made of semiconductors with asymmetric carrier-transport properties based on drift-induced reduction of injection efficiency** (*Invited Paper*), E. Fred Schubert, Jaehee Cho, Rensselaer Polytechnic Institute (USA) . . . [8641-1]

9:00 am: **Optimizing the multiple quantum well thickness of an InGaN blue light emitting diode**, Bing Xu, Junliang Zhao, Shuguo Wang, Haitao Dai, Tianjin Univ. (China); ShengFu Yu, National Cheng Kung Univ. (Taiwan); Ray-Ming Lin, FuChuan Chu, Chang Gung Univ. (Taiwan); Chou-Hsiung Huang, Chang Gung Univ. (Taiwan); Xiao Wei Sun, Tianjin Univ. (China) . . . . . [8641-2]

9:15 am: **Direct green LED development in nano-patterned epitaxy** (*Invited Paper*), Christian Wetzel, Theeradetch Detchprohm, Rensselaer Polytechnic Institute (USA) . . . . . [8641-3]

9:45 am: **Probing the efficiency droop with GaInN light-emitting triode: effect of hole-injection efficiency on droop behavior**, Sunyong Hwang, Jun Hyuk Park, Dong-yeong Kim, Jong Kyu Kim, Pohang Univ. of Science and Technology (Korea, Republic of) . . . . . [8641-4]

Coffee Break . . . . . Mon 10:00 am to 10:30 am

### SESSION 2

Room: 125 (Exhibit Level) . . . . . Mon 10:30 am to 12:00 pm

#### LED Fabrication and SSL I

Session Chair: **Satoshi Kamiyama**, Meijo Univ. (Japan)

10:30 am: **Native-substrate GaN-based LEDs for solid state lighting** (*Invited Paper*), Michael R. Krames, Soraa, Inc. (USA) . . . . . [8641-5]

11:00 am: **LED color mixing with diffractive structures**, Theresa Bonenberger, Univ. of Applied Sciences Hochschule Ravensburg-Weingarten (Germany) and Karlsruhe Institute of Technology (Germany); Joerg Baumgart, Univ. of Applied Sciences Hochschule Ravensburg-Weingarten (Germany); Simon Wendel, Cornelius Neumann, Karlsruhe Institute of Technology (Germany) . . . . . [8641-6]

11:15 am: **Highly-reliable vertical InGaN/GaN blue LED on 8-inch Si (111) substrate** (*Invited Paper*), Jun-Youn Kim, Youngjo Tak, Joosung Kim, Jaekyun Kim, Hyun-Gi Hong, Su-Hee Chae, Moonseung Yang, Jung Hoon Park, Yongsoo Park, U-In Chung, InKyeong Yoo, Kinam Kim, SAMSUNG Advanced Institute of Technology (Korea, Republic of) . . . . . [8641-7]

11:45 am: **Satellite to satellite temperature control using a novel 400-nm UV pyrometer**, Michael Heuken, Markus Luennenbuenger, Frank Schulte, Ruediger Schreiner, Bernd Schineller, AIXTRON SE (Germany) . . . . . [8641-9]

Lunch Break . . . . . Mon 12:00 pm to 1:15 pm

### SESSION 3

Room: 125 (Exhibit Level) . . . . . Mon 1:15 pm to 3:00 pm

#### OLEDs and OLED Lighting

Session Chair: **Michael R. Krames**, Soraa, Inc. (USA)

1:15 pm: **Near-field photometry for organic light-emitting diodes** (*Invited Paper*), Venkat Venkataramanan, Univ. of Toronto (Canada) and Lumentra Inc. (Canada); Rui Li, Univ. of Toronto (Canada) . . . . . [8641-10]

1:45 pm: **Numerical analysis of nanostructures for enhanced light extraction from OLEDs**, Lin Zschiedrich, JCMwave GmbH (Germany); Horst J. Greiner, Philips Research (Germany); Jan Pomplun, JCMwave GmbH (Germany); Sven Burger, Frank Schmidt, Konrad-Zuse-Zentrum für Informationstechnik Berlin (Germany) and JCMwave (Germany) . . . . . [8641-11]

2:00 pm: **Extremely efficient flexible organic light-emitting diodes using graphene electrodes for solid state lighting** (*Invited Paper*), Tae-Hee Han, Pohang Univ. of Science and Technology (Korea, Republic of); Youngbin Lee, Sungkyunkwan Univ. (Korea, Republic of); Mi-Ri Choi, Pohang Univ. of Science and Technology (Korea, Republic of); Sang-Hoon Bae, Sungkyunkwan Univ. (Korea, Republic of); Byung Hee Hong, Seoul National Univ. (Korea, Republic of); Jong-Hyun Ahn, Sungkyunkwan Univ. (Korea, Republic of); Tae-Woo Lee, Pohang Univ. of Science and Technology (Korea, Republic of) . . . . . [8641-12]

2:30 pm: **Light-emitting electrochemical cells: a low-cost alternative for large-area light-emission** (*Invited Paper*), Ludvig Edman, Umeå Univ. (Sweden) . . . . . [8641-14]

Coffee Break . . . . . Mon 3:00 pm to 3:25 pm

### SESSION 4

Room: 125 (Exhibit Level) . . . . . Mon 3:25 pm to 6:10 pm

#### Nanomaterials and Nanostructures for LEDs I

Session Chair: **Hans Nikol**, Philips Lighting B.V. (Netherlands)

3:25 pm: **Polychromatic white LED using GaN nano pyramid structure** (*Invited Paper*), Taek Kim, Joosung Kim, Moonseung Yang, Yongsoo Park, U-In Chung, SAMSUNG Advanced Institute of Technology (Korea, Republic of); Yongho Ko, Yong-Hoon Cho, Korea Advanced Institute of Science and Technology (Korea, Republic of) . . . . . [8641-15]

3:55 pm: **Variations of the dimension and emission wavelength of regularly patterned InGaN/GaN quantum-well nanorod light-emitting diode arrays**, Che-Hao Liao, Wen-Ming Chang, Yu-Feng Yao, Hao-Tsung Chen, Chia-Ying Su, Chih-Yen Chen, Chieh Hsieh, Horng-Shyang Chen, Chang-Gan Tu, Yean-Woei Kiang, Chih-Chung Yang, National Taiwan Univ. (Taiwan) . . . . . [8641-16]

4:10 pm: **Introduction of the Moth-eye patterned sapphire substrate technology for cost-effective high-performance LED** (*Invited Paper*), Koichi Naniwa, Midori Mori, Toshiyuki Kondo, Atsushi Suzuki, Tsukasa Kitano, EL-SEED Corp. (Japan); Satoshi Kamiyama, EL-SEED Corp. (Japan) and Meijo Univ. (Japan); Motoaki Iwaya, Tetsuya Takeuchi, Isamu Akasaki, Meijo Univ. (Japan) . . . . . [8641-17]

4:40 pm: **NiO as hole transport layers for all-inorganic quantum dot LEDs**, Liyuan Tang, Xiao Li Zhang, Haitao Dai, Shuguo Wang, Xiao Wei Sun, Tianjin Univ. (China) . . . . . [8641-18]

OPTO

4:55 pm: **Light extraction efficiency enhancement by growing ZnO nanorods on n-GaN emitting surface of vertical GaN-based LEDs**, Yen-Ju Wu, Yu Shan Wei, Chih-I Hsieh, Cheng-Yi Liu, National Central Univ. (Taiwan) . . . . . [8641-19]

5:10 pm: **Fabrication of moth-eye patterned sapphire substrate (MPSS) and influence of height of corns on the performance of blue LEDs on MPSS**, Takayoshi Tsuchiya, Shinya Umeda, Motoaki Iwaya, Tetsuya Takeuchi, Meijo Univ. (Japan); Satoshi Kamiyama, Meijo Univ. (Japan) and EL-SEED Corp. (Japan); Isamu Akasaki, Meijo Univ. (Japan); Toshiyuki Kondo, Tsukasa Kitano, Midori Mori, Atsushi Suzuki, Fumiharu Teramae, EL-SEED Corp. (Japan); Hitoshi Sekine, DIC Corp. (Japan) . . . . . [8641-20]

5:25 pm: **Plasmon-enhanced upconversion for Yb<sup>3+</sup>/Er<sup>3+</sup>-doped inY<sub>2</sub>O<sub>3</sub> and NaYF<sub>4</sub> nanocrystalline hosts**, Madhab Pokhrel, Brian G. Yust, Ajith K. Gangadharan, Dhiraj K. Sardar, The Univ. of Texas at San Antonio (USA) . . . . . [8641-21]

5:40 pm: **ZnO nanowire-based light-emitting diodes with tunable emission from near-UV to blue**, Thierry Pauporté, Oleg Lupan, Bruno Viana, Tangui Le Bahers, Ecole Nationale Supérieure de Chimie de Paris (France) . . . . . [8641-61]

5:55 pm: **Broadband emission from an ensemble of nano-pillars with multiple diameters**, Kwai Hei Li, Hoi Wai Choi, The Univ. of Hong Kong (Hong Kong, China) . . . . . [8641-63]

## Tuesday 5 February

### OPTO PLENARY SESSION

**Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am**

*Session Chairs* : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
- 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
- 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]
- 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
- 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]  
See page 26 for details.

Coffee Break . . . . . Tue 10:10 am to 10:30 am

### SESSION 5

**Room: 125 (Exhibit Level) . . . . . Tue 10:30 am to 12:00 pm**

#### Novel Substrates for LEDs

Session Chair: **Kurt J. Linden**, Spire Corp. (USA)

10:30 am: **MOVPE-grown n-In<sub>x</sub>Ga<sub>1-x</sub>N (x~0.5)/p-Si(111) template as a novel substrate** (*Invited Paper*), Akio Yamamoto, Univ. of Fukui (Japan) and JST-CREST (Japan); Naoteru Shigekawa, Osaka City Univ. (Japan) . . . . . [8641-22]

11:00 am: **Epitaxial growth of nonpolar ZnO and Zn<sub>x</sub>Mg<sub>1-x</sub>O on LiAlO<sub>2</sub> and MgO substrates** (*Invited Paper*), Teng-Hsing Huang, Cheng-Ying Lu, Tao Yan, Liuwen Chang, National Sun Yat-Sen Univ. (Taiwan); Jih-Jen Wu, National Cheng Kung Univ. (Taiwan); Mitch M. C. Chou, Klaus H. Ploog, National Sun Yat-Sen Univ. (Taiwan) . . . . . [8641-23]

11:30 am: **Properties of bulk nitride substrates and epitaxial films for device fabrication** (*Invited Paper*), Jaime A. Freitas Jr., U.S. Naval Research Lab. (USA) . . . . . [8641-24]

Lunch/Exhibition Break . . . . . Tue 12:00 pm to 1:15 pm

### SESSION 6

**Room: 125 (Exhibit Level) . . . . . Tue 1:15 pm to 3:45 pm**

#### Novel Technologies for LED Design and Fabrication I

Session Chair: **Gerd Bacher**, Univ. Duisburg-Essen (Germany)

1:15 pm: **Proposal of coherent-structure InN/GaN QW-based photonic devices: SMART technology for achieving wavelength tunings up to infrared by novel 1-ML InN / GaN matrix MQWs** (*Invited Paper*), Akihiko Yoshikawa, Song-Bek Che, Kazuhide Kusakabe, Chiba Univ. (Japan); Xinqiang Wang, Peking Univ. (China) . . . . . [8641-25]

1:45 pm: **Thermal management and light extraction in multi-chip and high-voltage LEDs by cup-shaped copper heat spreader technology** (*Invited Paper*), Ray-Hua Horng, Hung-Lieh Hu, Li-Shen Tang, Sin-Liang Ou, National Chung Hsing Univ. (Taiwan) . . . . . [8641-26]

2:15 pm: **Improvement of InGaN LED performance with graphene related materials** (*Invited Paper*), Chang-Hee Hong, Chonbuk National Univ. (Korea, Republic of) . . . . . [8641-27]

2:45 pm: **Economic fabrication of optoelectronic devices with novel nanostructures** (*Invited Paper*), Pei-Wen Lin, Sih-Chen Lu, National Cheng Kung Univ. (Taiwan); Yu-Min Liao, Chin-Yi Chen, Yuh-Renn Wu, National Taiwan Univ. (Taiwan); Yun-Chorng Chang, National Cheng Kung Univ. (Taiwan) . . . . . [8641-28]

3:15 pm: **CdZnO/ZnO quantum-well light-emitting diodes based on p-GaN**, Horng-Shyang Chen, Shao-Ying Ting, Yu-Feng Yao, Che-Hao Liao, Chih-Yen Chen, Chieh Hsieh, Hao-Tsung Chen, Chih-Chung Yang, National Taiwan Univ. (Taiwan) . . . . . [8641-29]

3:30 pm: **Fabrication and device characteristics of GaN-based light emitting diodes with periodic subwavelength structures**, Jae Su Yu, Hee Kwan Lee, Kyung Hee Univ. (Korea, Republic of) . . . . . [8641-30]

Coffee Break . . . . . Tue 3:45 pm to 4:10 pm

### SESSION 7

**Room: 125 (Exhibit Level) . . . . . Tue 4:10 pm to 5:25 pm**

#### LED Materials and Characterizations

Session Chair: **Joongseo Park**, LG Electronics Inc. (Korea, Republic of)

4:10 pm: **Understanding and overcoming doping limits in GaN** (*Invited Paper*), Joerg Neugebauer, Bjoern I. Lange, Christoph Freysoldt, Max-Planck-Institut für Eisenforschung GmbH (Germany) . . . . . [8641-31]

4:40 pm: **p-type transparent conductive oxide as ohmic contact for p-GaN**, Chih-I Hsieh, Cheng-Yi Liu, National Central Univ. (Taiwan) . . . . . [8641-32]

4:55 pm: **Selective electrochemical etching of GaN-based superlattice layer**, Dong-uk Kim, Heonsu Jeon, Hyungrae Cha, Seoul National Univ. (Korea, Republic of) . . . . . [8641-33]

5:10 pm: **Conduction mechanism of composite multi-layer V: ZnO transparent conduction thin films**, Yu Shan Wei, National Central Univ. (Taiwan) . . . . . [8641-34]



**Wednesday 6 February****SESSION 8****Room: 125 (Exhibit Level) . . . . . Wed 8:30 am to 10:00 am****DUV LEDs**Session Chair: **E. Fred Schubert**,  
Rensselaer Polytechnic Institute (USA)8:30 am: **AllInGaN-based deep ultraviolet light-emitting diodes and lamps**  
(*Invited Paper*), Asif M. Khan, Univ. of South Carolina (USA) . . . . . [8641-35]9:00 am: **Deep ultraviolet light-emitting diodes fabricated on AlN substrates prepared by hydride vapor phase epitaxy**, Toru Kinoshita, Tokuyama Corp. (Japan) and Kobe Univ. (Japan); Keiichi Hironaka, Toshiyuki Obata, Toru Nagashima, Tokuyama Corp. (Japan); Rafael F. Dalmau, Raoul Schlessler, Baxter Moody, Jinqiao Xie, HexaTech, Inc. (USA); Shin-ichiro Inoue, Kobe Univ. (Japan); Yoshinao Kumagai, Akinori Koukita, Tokyo Univ. of Agriculture and Technology (Japan); Zlatko Sitar, HexaTech, Inc. (USA) and North Carolina State Univ. (USA) . . . . . [8641-36]9:15 am: **Improved-efficiency high-power 260-nm pseudomorphic ultraviolet light-emitting diodes** (*Invited Paper*), Leo J. Schowalter, James R. Grandusky, Jianfeng Chen, Mark C. Mendrick, Shawn R. Gibb, Muhammad Jamil, Crystal IS, Inc. (USA) . . . . . [8641-37]9:45 am: **Transparent electrodes for AlGaN-based deep-ultraviolet light-emitting diodes**, Hee-Dong Kim, Min Ju Yun, Kyeong Heon Kim, Ho-Myoung An, Tae Geun Kim, Korea Univ. (Korea, Republic of) . . . . . [8641-38]

Coffee Break . . . . . Wed 10:00 am to 10:25 am

**SESSION 9****Room: 125 (Exhibit Level) . . . . . Wed 10:25 am to 12:10 pm****Novel Technologies for LED Design and Fabrication II**Session Chair: **Kei May Lau**, Hong Kong Univ. of Science and  
Technology (Hong Kong, China)10:25 am: **Vertical light-emitting diodes fabricated with photoelectrochemical liftoff** (*Invited Paper*), Chieh Hsieh, Chih-Yen Chen, Che-Hao Liao, Horng-Shyang Chen, Chun-Han Lin, Chih-Chun Lin, Yean-Woei Kiang, Chih-Chung Yang, National Taiwan Univ. (Taiwan) . . . . . [8641-39]10:55 am: **Low temperature growth of InGaN by pulsed sputtering and its applications to long wavelength LEDs** (*Invited Paper*), Hiroshi Fujioka, Univ. of Tokyo (Japan) and CREST-JST (Japan) . . . . . [8641-40]11:25 am: **Key issues of vertical thin-GaN LED technology** (*Invited Paper*), Cheng-Yi Liu, Yen-Shuo Liu, National Central Univ. (Taiwan) . . . . . [8641-41]11:55 am: **Analysis of light extraction efficiency enhancement for thin-film-flip-chip InGaN quantum wells light-emitting diodes with GaN micro-domes**, Peng Zhao, Hongping Zhao, Case Western Reserve Univ. (USA) . . . . . [8641-42]

Lunch/Exhibition Break . . . . . Wed 12:10 pm to 1:30 pm

**SESSION 10****Room: 125 (Exhibit Level) . . . . . Wed 1:30 pm to 3:15 pm****LED Fabrication and SSL II**Session Chair: **Shoou-Jinn Chang**, National Cheng Kung Univ. (Taiwan)1:30 pm: **Growth of high-indium InGaN films using a combined deposition technique and its application for long-wavelength light-emitting diodes** (*Invited Paper*), Kun-Ching Shen, Dong-Sing Wu, Tzu-Yu Wang, Ray-Hua Horng, National Chung Hsing Univ. (Taiwan) . . . . . [8641-43]2:00 pm: **Light quality and efficiency of consumer grade solid state lighting products**, Carsten Dam-Hansen, Dennis D. Corell, Anders Thorseth, Peter B. Poulsen, Technical Univ. of Denmark (Denmark) . . . . . [8641-44]2:15 pm: **GaN-based nanorod technology for solid state lighting** (*Invited Paper*), Andreas Waag, Xue Wang, Johannes Ledig, Milena Erenburg, Jian Dong Wei, Matin Mohajerani, Hergo-Heinrich Wehmann, Technische Univ. Braunschweig (Germany); Uwe Jahn, Henning Riechert, Paul-Drude-Institut für Festkörperelektronik (Germany); Martin Strassburg, Martin Mandl, Hans-Jürgen Lugauer, Ulrich Steegmüller, Osram Opto Semiconductors GmbH (Germany) . . . . . [8641-45]2:45 pm: **Multispectral CMOS sensors with on-chip nanostructures for wavelength monitoring of LED devices**, Stephan Junger, Nanko Verwaal, Wladimir Tschekalinskij, Norbert Weber, Fraunhofer-Institut für Integrierte Schaltungen (Germany) . . . . . [8641-46]3:00 pm: **Three zone Topside Temperature Control (TTC) in a Close Coupled Showerhead (CCS) reactor**, Frank Schulte, A. Boyd, O. Feron, P. Lauffer, X. Chen, Markus Luenenbuerger, R. Leiers, AIXTRON SE (Germany); Simon Thomas, AIXTRON Ltd. (United Kingdom); Bernd Schineller, Michael Heuken, AIXTRON SE (Germany) . . . . . [8641-47]

Coffee Break . . . . . Wed 3:15 pm to 3:40 pm

**SESSION 11****Room: 125 (Exhibit Level) . . . . . Wed 3:40 pm to 5:25 pm****High Performance Phosphors for LEDs**Session Chair: **Michael Heuken**, AIXTRON SE (Germany)3:40 pm: **Quantum dot LED phosphors: performance and reliability improvements** (*Invited Paper*), Juanita Kurtin, Pacific Light Technologies (USA) . . . . . [8641-48]4:10 pm: **Color tunable green-yellow-orange-red erbium/europium doped fluorolead germanate glass phosphor for application in LED illumination technology**, Artur S. Gouveia-Neto, Wellington S. Souza, Renata O. Domingues, Ernande B. Costa, Luciano A. Bueno, Univ. Federal Rural de Pernambuco (Brazil) . . . . . [8641-49]4:25 pm: **The latest phosphor solutions for LED backlighting and general lighting** (*Invited Paper*), Yi-Qun Li, Intematix Corp. (USA) . . . . . [8641-51]4:55 pm: **Theoretical and experimental analyses of energy transfer mechanisms between Er<sup>3+</sup> and Yb<sup>3+</sup>-doped in La<sub>2</sub>O<sub>2</sub>S**, Madhab Pokhrel, Ajith K. Gangadharan, Dhiraj K. Sardar, The Univ. of Texas at San Antonio (USA) . . . . . [8641-52]5:10 pm: **Characterization and endurance study of aluminate/silicate/garnet/nitride phosphors for high-performance SSL**, Nicola Trivellini, LightCube SRL (Italy); Matteo Meneghini, Matteo Dal Lago, Diego Barban, Marco Ferretti, Gaudenzio Meneghesso, Enrico Zanoni, Univ. of Padova (Italy) . . . . . [8641-53]**POSTERS-WEDNESDAY****Room: 103 (Exhibit Level) . . . . . Wed 6:00 pm to 8:00 pm**

<p>Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <a href="http://spie.org/PWPPosterGuidelines">http://spie.org/PWPPosterGuidelines</a>.</p>
--

**Visual susceptibility analysis for solid-state lighting of commercial PC-WLEDs**, Cheng-Feng Yue, Chun-Chin Tsai, Far East Univ. (Taiwan); Wood-Hi Cheng, National Sun Yat-Sen Univ. (Taiwan) . . . . . [8641-8]**Fabrication of OLED with a new yellow fluorescent dopant and measurements of photoluminescence and electroluminescence properties**, SungNam Lee, Gweon Young Ryu, Dong Myung Shin, Hongik Univ. (Korea, Republic of) . . . . . [8641-13]**Performance enhancement of high-temperature glass-based phosphor-converted white light-emitting diodes employing SiO<sub>2</sub>**, Chun-Chin Tsai, Cheng-Feng Yue, Far East Univ. (Taiwan); Wood-Hi Cheng, National Sun Yat-Sen Univ. (Taiwan); Min-Ching Lin, Walsin Lihwa (Taiwan); Ching-Jen Pan, HELIO Optoelectronics Corp. (Taiwan) . . . . . [8641-50]**Application of Gabor Hologram for designing a new Optical Imaging System**, Mohamed Darwiesh, Military Technical College (Egypt); Ashraf F. El Sherif, Arab Academy for Science, Technology & Maritime Transport (Egypt) . . . . . [8641-66]**Use CCT and lighting distribution control algorithm for optimized energy saving with human factor lighting**, Chih-Wei Lin, Jung-Min Hwang, Chin-Ming Shih, Ke-Fang Hsu, Industrial Technology Research Institute (Taiwan) . . . . . [8641-67]**Miniaturization of remote phosphor LED packages**, Tsung-Xian Lee, Heng-Yu Song, National Taiwan Univ. (Taiwan) . . . . . [8641-68]**Characteristics of III-nitride nonpolar LEDs grown by plasma-assisted molecular beam epitaxy**, Chen-Yu Lin, Tsung-Yi Chou, Ching-Wen Chang, Yuan-Ting Lin, Li-Wei Tu, National Sun Yat-Sen Univ. (Taiwan) . . . . . [8641-69]

**Performance of nitride-based light-emitting diodes using an Indium-zinc-oxide transparent electrode with moth-eye structure**, Shugo Mizutani, Satoshi Nakashima, Motoaki Iwaya, Tetsuya Takeuchi, Satoshi Kamiyama, Isamu Akasaki, Meijo Univ. (Japan); Toshiyuki Kondo, Fumiharu Teramae, Atsushi Suzuki, Tsukasa Kitano, Midori Mori, EL-SEED Corp. (Japan); Masahito Matsubara, Idemitsu Kosan Co., Ltd. (Japan). . . . . [8641-70]

**Electrical and thermal properties of laser-assisted doped Ti/Al ohmic contacts to N-face n-type GaN**, Su Jin Kim, Kyeong Heon Kim, Ho-Myoung An, Korea Univ. (Korea, Republic of); Tak Jeong, Korea Photonics Technology Institute (Korea, Republic of); Tae Geun Kim, Korea Univ. (Korea, Republic of). . . . . [8641-71]

**Enhancement in external quantum efficiency of UVLED with embedded oxide structure**, Kun-Ching Shen, Dong-Sing Wu, Min-Hao Yang, Wen-Yu Lin, Ray-Hua Horng, National Chung Hsing Univ. (Taiwan). . . . . [8641-72]

**High-quality quantum-dot-based full-color display technology by pulsed spray method**, Kuo-Ju Chen, Hsin-Chu Chen, Kai-An Tsai, National Chiao Tung Univ. (Taiwan); Chien-Chung Lin, National Cheng Kung Univ. (Taiwan); Yung-Jung Hsu, National Chiao Tung Univ. (Taiwan); Min-Hsiung Shih, Academia Sinica (Taiwan); Hao-Chung Kuo, National Chiao Tung Univ. (Taiwan). . . . . [8641-73]

**Food quality monitoring using LED-induced fluorescence based on multi-wavelength**, Chao Feng, Xuan Liu, Zhejiang Univ. (China) and Joint Research Ctr. of Photonics (China); Liang Mei, Zhejiang Univ. (China) and Joint Research Ctr. of Photonics (China) and Lund Univ. (Sweden); Chunsheng Yan, Sailing He, Zhejiang Univ. (China) and Joint Research Ctr. of Photonics (China). . . . . [8641-74]

**Experimental observation of enhanced phosphorescence from one-dimensional photonic crystal phosphor structure**, Kyungtaek Min, Yun-Kyoung Choi, Heonsu Jeon, Seoul National Univ. (Korea, Republic of). . . . . [8641-75]

## Thursday 7 February

### SESSION 12

**Room: 125 (Exhibit Level) . . . . . Thu 8:30 am to 10:00 am**

#### **High Current Performance and Droop Effect in LEDs II**

Session Chair: **Jong Kyu Kim**, Pohang Univ. of Science and Technology (Korea, Republic of)

8:30 am: **First-principles studies of loss mechanisms in LEDs** (*Invited Paper*), Chris G. Van de Walle, Daniel Steiauf, Qimin Yan, Univ. of California, Santa Barbara (USA); Emmanouil Kioupakis, Univ. of Michigan (USA). . . . . [8641-54]

9:00 am: **InGaN-Delta-InN quantum-well light-emitting diodes with carrier transport effect**, Guangyu Liu, Jing Zhang, Chee-Keong Tan, Nelson Tansu, Lehigh Univ. (USA). . . . . [8641-55]

9:15 am: **Temperature-dependent efficiency droop in GalnN light-emitting diodes** (*Invited Paper*), Jaehee Cho, David S. Meyaard, Rensselaer Polytechnic Institute (USA); Jong Kyu Kim, Pohang Univ. of Science and Technology (Korea, Republic of); Cheolsoo Sone, Samsung Electro-Mechanics (Korea, Republic of); E. Fred Schubert, Rensselaer Polytechnic Institute (USA). . . . . [8641-57]

9:45 am: **Reduced efficiency droop of GalnN-based light-emitting diodes by using graded AlGaIn/GaN superlattice electron blocking layers**, Jun Hyuk Park, Jong Kyu Kim, Pohang Univ. of Science and Technology (Korea, Republic of). . . . . [8641-58]

Coffee Break . . . . . Thu 10:00 am to 10:20 am

### SESSION 13

**Room: 125 (Exhibit Level) . . . . . Thu 10:20 am to 12:05 pm**

#### **Nanomaterials and Nanostructures for LEDs II**

Session Chair: **Ross P. Stanley**, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland)

10:20 am: **Nanowire-based light-emitting diodes** (*Invited Paper*), Lars Samuelson, Lund Univ. (Sweden) and Glo AB (Sweden). . . . . [8641-59]

10:50 am: **Effects of Ag doping on the ZnO nanometer column array inorganic/organic heterostructure LED**, Xiao Li Zhang, Tianjin Univ. (China). . . . . [8641-60]

11:05 am: **Selective area growth of InGaIn/GaN nanostructures for green and white light emission** (*Invited Paper*), Enrique Calleja, Univ. Politécnica de Madrid (Spain). . . . . [8641-62]

11:35 am: **Top-down fabricated III-nitride nanowire LEDs and solar cells**, George T. Wang, Qiming Li, Jonathan J. Wierer Jr., Daniel D. Koleske, Jeffrey J. Figiel, Sandia National Labs. (USA). . . . . [8641-64]

11:50 am: **Plasmonic-based light-emitting diode: improved emission of solid-state lighting sources**, Gabriel Lozano, Said R. K. Rodriguez, FOM Institute for Atomic and Molecular Physics (Netherlands); Marc A. Verschuuren, Philips Research Nederland B.V. (Netherlands); Jaime Gómez-Rivas, FOM Institute for Atomic and Molecular Physics (Netherlands) and Eindhoven Univ of Technology (Netherlands). . . . . [8641-65]

# Emerging Liquid Crystal Technologies VIII

Conference Chair: **Liang-Chy Chien**, Kent State Univ. (USA)

Conference Co-Chairs: **Dick J. Broer**, Technische Univ. Eindhoven (Netherlands); **Vladimir Chigrinov**, Hong Kong Univ. of Science and Technology (Hong Kong, China); **Tae-Hoon Yoon**, Pusan National Univ. (Korea, Republic of)

Program Committee: **Harry J. Coles**, Univ. of Cambridge (United Kingdom); **Gregory Philip Crawford**, Univ. of Notre Dame (USA); **Andy Y. Fuh**, National Cheng Kung Univ. (Taiwan); **Wolfgang Haase**, Technische Univ. Darmstadt (Germany); **Jun-ichi Hanna**, Tokyo Institute of Technology (Japan); **Hirotsugu Kikuchi**, Kyushu Univ. (Japan); **Heinz S. Kitzerow**, Univ. Paderborn (Germany); **Shunsuke Kobayashi**, Tokyo Univ. of Science (Japan); **Seung Hee Lee**, Chonbuk National Univ. (Korea, Republic of); **Antonio Martins Figueiredo Neto**, Univ. de São Paulo (Brazil); **Kristiaan Neyts**, Univ. Gent (Belgium); **Masanori Ozaki**, Osaka Univ. (Japan); **Ci-Ling Pan**, National Tsing Hua Univ. (Taiwan); **Ryo Sakurai**, Bridgestone Corp. (Japan); **Ivan Smalyukh**, Univ. of Colorado at Boulder (USA); **Richard L. Sutherland**, Mount Vernon Nazarene Univ. (USA); **Ming Hsien Wu**, Hamamatsu Corp. (USA); **Shin-Tson Wu**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); **Hiroshi Yokoyama**, Kent State Univ. (USA)

## Tuesday 5 February

### OPTO PLENARY SESSION

Room: 134 (Exhibit Level) ..... 8:00 am to 10:10 am

Session Chairs : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
  - 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
  - 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) ..... [8637-1]
  - 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
  - 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]
- See page 26 for details.

Coffee Break ..... Tue 10:10 am to 10:30 am

### KEYNOTE SESSION

Room: 228 (Mezzanine) ..... 10:30 am to 11:10 am

10:30 am: **Is blue-phase LCD ready for prime time?**  
(Keynote Presentation), **Shin-Tson Wu**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) ..... [8642-25]

### SESSION 1

Room: 228 (Mezzanine) ..... Tue 11:10 am to 12:10 pm

#### New Materials and Effects

Session Chair: **Liang-Chy Chien**, Kent State Univ. (USA)

- 11:10 am: **New lyotropic mixtures presenting the biaxial nematic liquid crystalline phase** (Invited Paper), **Antonio Figueiredo Neto**, Univ. de São Paulo (Brazil); **Erol Akpınar**, Abant İzzet Baysal Univ. (Turkey); **Dennys Reis**, Univ. de São Paulo (Brazil) ..... [8642-1]
  - 11:40 am: **Engineered complex molecular order in liquid crystals towards unusual optics and responsive mechanics** (Invited Paper), **Carlos Sanchez-Somolinos**, Univ. de Zaragoza (Spain); **Laurens T. de Haan**, Albert P. H. J. Schenning, Technische Univ. Eindhoven (Netherlands); **Cees W. M. Bastiaansen**, Technische Univ. Eindhoven (Netherlands) and **Queen Mary Univ. of London** (United Kingdom); **Dirk J. Broer**, Technische Univ. Eindhoven (Netherlands) ..... [8642-3]
- Lunch/Exhibition Break ..... Tue 12:10 pm to 1:40 pm

### SESSION 2

Room: 228 (Mezzanine) ..... Tue 1:40 pm to 3:20 pm

#### Tunable Filters

Session Chair: **Timothy J. Bunning**, Air Force Research Lab. (USA)

- 1:40 pm: **Advanced finite-element methods for design and analysis of nano-optical structures** (Invited Paper), **Sven Burger**, Konrad-Zuse-Zentrum für Informationstechnik Berlin (Germany) and **JCMwave** (Germany); **Lin Zschiedrich**, Jan Pomplun, JCMwave GmbH (Germany); **Mark Blome**, Konrad-Zuse-Zentrum für Informationstechnik Berlin (Germany); **Frank Schmidt**, Konrad-Zuse-Zentrum für Informationstechnik Berlin (Germany) and **JCMwave** (Germany) . . . . [8642-4]
  - 2:10 pm: **High frequency performance extending to millimeter-waves in inverted-microstrip-line-type LC phase shifter** (Invited Paper), **Toshiaki Nose**, Yusuke Ito, Akita Prefectural Univ. (Japan); **Liang-Chy Chien**, Otilia C. Catanescu, Andrii Golvin, Kent State Univ. (USA); **Yoji Isota**, Takayuki Sasamori, Ryouta Ito, Michinori Honma, Akita Prefectural Univ. (Japan) . . . . . [8642-5]
  - 2:40 pm: **Submillisecond-response IR spatial light modulators with polymer network liquid crystal**, **Jie Sun**, **Yuan Chen**, Univ. of Central Florida (USA); **Shin-Tson Wu**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) . . . . . [8642-6]
  - 3:00 pm: **Enhanced phase manipulation for adaptive optics applications with a 6-Pi Liquid Crystal on Silicon (LCoS) device**, **Enrique-Josua Fernández**, Lab. de Óptica Univ. de Murcia (Spain); **Emmanuel Chirra**, **Pedro M. Prieto**, **Pablo Artal**, Univ. de Murcia (Spain) . . . . . [8642-7]
- Coffee Break ..... Tue 3:20 pm to 3:40 pm

### SESSION 3

Room: 228 (Mezzanine) ..... Tue 3:40 pm to 6:10 pm

#### Lasers, Lasing, and Lens

- Session Chairs: **Antonio Martins Figueiredo Neto**, Univ. de São Paulo (Brazil); **Andy Y. Fuh**, National Cheng Kung Univ. (Taiwan)
- 3:40 pm: **Liquid crystal lasers: recent advances** (Invited Paper), **Juergen Schmidtke**, **Lu Lu**, **Heinz S. Kitzerow**, Univ. Paderborn (Germany); **Eugene M. Terentjev**, Univ. of Cambridge (United Kingdom) . . . . . [8642-8]
  - 4:10 pm: **Liquid crystals under high-power nanosecond laser irradiation** (Invited Paper), **Svetlana G. Lukishova**, Univ. of Rochester (USA) . . . . . [8642-9]
  - 4:40 pm: **Micro-second modulation of refractive index and reflection band of cholesteric liquid crystal with nano-pore filled with liquid crystal** (Invited Paper), **Masanori Ozaki**, **Yo Inoue**, Osaka Univ. (Japan); **Hiroyuki Yoshida**, Osaka Univ. (Japan) and **JST-PRESTO** (Japan) . . . . . [8642-10]
  - 5:10 pm: **Electrically-tunable liquid crystal lenses and applications** (Invited Paper), **Yi-Hsin Lin**, **Hung-Shan Chen**, **Ming-Syuan Chen**, National Chiao Tung Univ. (Taiwan) . . . . . [8642-11]
  - 5:40 pm: **Multi-domain vertical alignment of nematic liquid crystals for reduced off-axis gamma shift** (Invited Paper), **Tae-Hoon Yoon**, **Byung Wok Park**, **Ki-Han Kim**, Pusan National Univ. (Korea, Republic of); **Hoon Kim**, **Ki-Chul Shin**, **Hee Seop Kim**, Samsung Display Co., Ltd. (Korea, Republic of) . . [8642-12]

OPTO

## Wednesday 6 February

### SESSION 5

Room: 228 (Mezzanine) . . . . .Wed 8:00 am to 10:10 am

#### Waveguides, Gratings, and Beam Steering Devices

Session Chair: **Shin-Tson Wu**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA)

8:00 am: **Resonant transfer of light from a planar waveguide into a tunable nematic liquid crystal microcavity** (*Invited Paper*), Igor Muševic, V.S.R. Jampani, Matjaz Humar, Jožef Stefan Institute (Slovenia) . . . . . [8642-13]

8:30 am: **Bichromatic optical switch of refractive light from a photonic crystal based on HPDLC doped with azo component** (*Invited Paper*), Andy Y. Fuh, Ming-Shian Li, Shing-Trong Wu, National Cheng Kung Univ. (Taiwan) . . . . . [8642-14]

9:00 am: **Fabrication of liquid crystal gratings based on photoalignment technology** (*Invited Paper*), Yan-Qing Lu, Wei Hu, Nanjing Univ. (China); Abhishek Srivastava, Vladimir G. Chigrinov, Hong Kong Univ. of Science and Technology (Hong Kong, China) . . . . . [8642-15]

9:30 am: **Theta-2theta diffractometry of anisotropic holographic gratings composed of liquid crystal and polymer phases**, Hiroshi Kakiuchida, Kazuki Yoshimura, Masato Tazawa, National Institute of Advanced Industrial Science and Technology (Japan); Akifumi Ogiwara, Kobe-C.C.T. (Japan) . . . . . [8642-16]

9:50 am: **Beam shaping to improve holography techniques based on spatial light modulators**, Alexander V. Laskin, Vadim Laskin, AdlOptica Optical Systems GmbH (Germany) . . . . . [8642-17]

Coffee Break . . . . .Wed 10:10 am to 10:40 am

### SESSION 6

Room: 228 (Mezzanine) . . . . .Wed 10:40 am to 12:00 pm

#### Nanophotonics, Plasmonics and Metamaterials

Session Chair: **Masanori Ozaki**, Osaka Univ. (Japan)

10:40 am: **Liquid crystal plasmonic metamaterials** (*Invited Paper*), Toralf Scharf, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8642-18]

11:10 am: **Terahertz waves and liquid crystals: prospects and challenges** (*Invited Paper*), Nico Vieweg, TOPTICA Photonics AG (Germany) . . . . . [8642-19]

11:40 am: **Optically switchable second harmonic generation in a liquid crystal thin film within femtoliter volume**, Kuan-chieh Chen, Guan-Yu Zhuo, National Taiwan Univ. (Taiwan); Shi-Wei Chu, National Taiwan Univ. (Taiwan) and National Taiwan Univ. (Taiwan) . . . . . [8642-20]

Lunch/Exhibition Break . . . . .Wed 12:00 pm to 1:30 pm

### SESSION 7

Room: 228 (Mezzanine) . . . . .Wed 1:30 pm to 3:10 pm

#### Photoalignment and Emerging Applications

Session Chair: **Liang-Chy Chien**, Kent State Univ. (USA)

1:30 pm: **Optical properties of field sequential color NTN-LCDS doped with nanoparticles** (*Invited Paper*), Shunsuke Kobayashi, Tokyo Univ. of Science (Japan) . . . . . [8642-27]

2:00 pm: **Functional organic materials based on polymerized liquid crystal monomers** (*Invited Paper*), Dick J. Broer, Cees W. M. Bastiaansen, Michael G. Debije, Albert P. H. J. Schenning, Technische Univ. Eindhoven (Netherlands) . . . . . [8642-22]

2:30 pm: **Photoalignment studies on azo containing thiophene based acrylates**, Gurumurthy Hegde, Univ. Malaysia Pahang (Malaysia); Rasha Atalla, Univ. of Gothenburg (Sweden); David Chambers-Asman, Nottingham Trent Univ. (United Kingdom); Avtar Matharu, The Univ. of York (United Kingdom); Mashitah Yusoff, Univ. Malaysia Pahang (Malaysia); Lachezar Komitov, Univ. of Gothenburg (Sweden) . . . . . [8642-23]

2:50 pm: **Liquid crystal biosensor for detecting cholic acid**, Sihui He, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Wenlang Liang, Jiyu Fang, Univ. of Central Florida (USA); Shin-Tson Wu, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) . . . . . [8642-24]

Coffee Break . . . . .Wed 3:10 pm to 3:40 pm

### SESSION 8

Room: 228 (Mezzanine) . . . . .Wed 3:40 pm to 4:40 pm

#### Emerging Electro-Optical Materials and Devices

Session Chair: **Dick J. Broer**, Technische Univ. Eindhoven (Netherlands)

3:40 pm: **Liquid crystals for microwave applications** (*Invited Paper*), Atsutaka Manabe, Merck KGaA (Germany) . . . . . [8642-36]

4:10 pm: **Dynamic optical architectures using cholesteric liquid crystals** (*Invited Paper*), Timothy J. Bunning, Air Force Research Lab. (USA); Nelson V. Tabiryan, Svetlana V. Serak, Uladzimir Hrozhyk, BEAM Engineering for Advanced Measurements Co. (USA); Jonathan P. Vernon, Vincent Tondiglia, Lalgudi V. Natarajan, Timothy J. White, Air Force Research Lab. (USA) [8642-26]

### POSTERS-WEDNESDAY

Room: 103 (Exhibit Level) . . . . .Wed 6:00 pm to 8:00 pm

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Photo-controlled electrical conductivity in CNT-doped liquid crystal composites**, Vijay Kumar Muthu, Ctr. for Soft Matter Research (India); Lakshmi Madhuri, Krishna Prasad, Ctr. for Liquid Crystal Research (India) . . . . . [8642-30]

**Reverse-mode polymer stabilized cholesteric texture by dual frequency liquid crystal with multi-stable states**, Cheng-Che Wu, Che-Syuan Wang, National Taiwan Univ. (Taiwan); Tien-Lung Chiu, Yuan Ze Univ. (Taiwan); Jiunn-Yih Lee, Jiun-Haw Lee, National Taiwan Univ. (Taiwan) . . . . . [8642-31]

**Colloids mediated liquid crystal blue phases**, Everett Rhinehalt, Emine Kemiklioglu, Jeoung-Yeon Hwang, Liang-Chy Chien, Kent State Univ. (USA) . . . . . [8642-32]

**Capacitive-based shear stress sensor using liquid crystal**, Alaeddin S. Abu-Abad, Evan C. Lemley, Mohamed Bingabr, Univ. of Central Oklahoma (USA) . . . . . [8642-33]

**Radial polarizer with continuous optic axis using selective wetting inscription based on a liquid crystalline polymer**, Jun-Hee Na, Jiyeon Kim, Se-Um Kim, Sin-Doo Lee, Seoul National Univ. (Korea, Republic of) . . . . . [8642-34]

**Fast switching of a nematic liquid crystal cell without alignment layer and alignment process**, Tae-Hoon Yoon, Jung-Wook Kim, Dong Han Song, Ki-Han Kim, Pusan National Univ. (Korea, Republic of) . . . . . [8642-35]



# Advances in Display Technologies III

Conference Chairs: **Liang-Chy Chien**, Kent State Univ. (USA); **Sin-Doo Lee**, Seoul National Univ. (Korea, Republic of); **Ming Hsien Wu**, Hamamatsu Corp. (USA)

Program Committee: **Karlheinz Blankenbach**, Pforzheim Univ. (Germany); **Pierre M. Boher**, ELDIM (France); **Cheng-Huan Chen**, National Tsing Hua Univ. (Taiwan); **Chin Hsin Chen**, National Chiao Tung Univ. (Taiwan); **Janglin Chen**, Industrial Technology Research Institute (Taiwan); **Jurgen H. Daniel**, Palo Alto Research Center, Inc. (USA); **Paul S. Drzaic**, Apple Inc. (USA); **Mark Fihn**, Veritas et Visus (USA); **Norbert Fruehauf**, Univ. Stuttgart (Germany); **Nobuyuki Hashimoto**, Citizen Holdings Co. Ltd. (Japan); **Klaus Hecker**, Verband Deutscher Maschinen-und Anlagenbau e. V. (Germany); **Jason C. Heikenfeld**, Univ. of Cincinnati (USA); **Alex Henzen**, IRX-Innovations B.V. (Netherlands); **Yi-Pai Huang**, National Chiao Tung Univ. (Taiwan); **Koichi Kanzaki**, Consultant (Japan); **Takashi Kitamura**, Chiba Univ. (Japan); **Lachezar Komitov**, Göteborg Univ. (Sweden); **ByoungHo Lee**, Seoul National Univ. (Korea, Republic of); **Kars-Michiel H. Lenssen**, Philips Research Nederland B.V. (Netherlands); **Akihiro Mochizuki**, i-CORE Technology, LLC (USA); **Keith Rollins**, DuPont Teijin Films U.K. Ltd. (United Kingdom); **Ryo Sakurai**, Bridgestone Corp. (Japan); **Robert A. Sprague**, SiPix Imaging Inc. (USA); **Andrew J. Steckl**, Univ. of Cincinnati (USA); **Christopher Williams**, Logystyx UK Ltd. (United Kingdom); **Michael Wittek**, Merck KGaA (Germany); **Pochi Yeh**, Univ. of California, Santa Barbara (USA); **Tae-Hoon Yoon**, Pusan National Univ. (Korea, Republic of)

## Wednesday 6 February

### POSTERS-WEDNESDAY

Room: 103 (Exhibit Level) . . . . . Wed 6:00 pm to 8:00 pm

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Plastic optical touch panel based on vertically directional coupling**, Beom-Jun Cheon, Jun-Whee Kim, Min-Cheol Oh, Pusan National Univ. (Korea, Republic of) . . . . . [8643-15]

**Estimation of true radiance and sub-pixel position of saturated point targets**, Erez Avrahamov, Bar-Ilan Univ. (Israel); Shavit Nadav, Elisra Electronic Systems Ltd. (Israel); Zeev Zalevsky, Bar-Ilan Univ. (Israel) . . . . . [8643-18]

**Scene-based nonuniformity correction algorithm based on optical flow**, Chen Peng, Nanjing Univ. of Science and Technology (China) . . . . . [8643-19]

**The Influence of pH of the precursor solution on TiO<sub>2</sub> films under hydrothermal synthesis**, Lei Xia, Zhihui Feng, Haitao Dai, Shu Guo Wang, Xiao Wei Sun, Tianjin Univ. (China) . . . . . [8643-20]

**Lateral ink mobility and fringe field effects across the porous matrix of an electrophoretic display**, Kelly Li Tsui, Manuel Ahumada, San José State Univ. (USA); Mateusz Bryning, Zikon, Inc. (USA); Michelle Hartono, Sang-Joon Lee, San José State Univ. (USA) . . . . . [8643-21]

## Thursday 7 February

### SESSION 1

Room: 228 (Mezzanine) . . . . . Thu 8:00 am to 10:20 am

#### 3D Displays

Session Chair: **Ming Hsien Wu**, Hamamatsu Corp. (USA)

8:00 am: **Aerial LED signage by use of crossed-mirror array** (*Invited Paper*), Hirotsugu Yamamoto, Ryouyusuke Kujime, Hiroki Bando, Shiro Suyama, Univ. of Tokushima (Japan) . . . . . [8643-1]

8:30 am: **Real-time pickup and display integral imaging system without pseudoscopic problem**, Jonghyun Kim, Jae-Hyun Jung, ByoungHo Lee, Seoul National Univ. (Korea, Republic of) . . . . . [8643-2]

8:50 am: **Characterization of different types of 3D displays using viewing angle and imaging polarization measurements** (*Invited Paper*), Pierre M. Boher, Thierry Leroux, Thibault Bignon, ELDIM (France) . . . . . [8643-3]

9:20 am: **Measurement of the optical characteristics of electro-wetting prism array for three-dimensional display**, Yunhee Kim, Yoon-Sun Choi, Samsung Advanced Institute of Technology (Korea, Republic of); Alexander Morozov, Samsung Electronics Co., Ltd. (Korea, Republic of); Kyuwhan Choi, Samsung Advanced Institute of Technology (Korea, Republic of); Yongjoo Kwon, Samsung Electronics Co., Ltd. (Korea, Republic of); Jungmok Bae, Hong-Seok Lee, Sangyoon Lee, Samsung Advanced Institute of Technology (Korea, Republic of) . . . . . [8643-4]

9:40 am: **Curved transfective holographic screens for head-mounted display**, Mickaël Guillaumée, Ctr. Suisse d'Electronique et de Microtechnique SA (Switzerland); Seyed Payam Vahdati, Eric Tremblay, Victor J. Cadarso, Jonas Grossenbacher, Jürgen Brugger, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Randall Sprague, Innovega Inc. (USA); Christophe Moser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8643-5]

10:00 am: **High-power red-emitting DBR-TPL for possible 3D holographic or volumetric displays**, David Feise, Christian Fiebig, Gunnar Blume, Johannes Pohl, Katrin Paschke, Ferdinand-Braun-Institut (Germany) . . . . . [8643-6]

Coffee Break . . . . . Thu 10:20 am to 10:50 am

### SESSION 2

Room: 228 (Mezzanine) . . . . . Thu 10:50 am to 12:10 pm

#### Micro, Projection, and Other Displays

Session Chair: **Ming Hsien Wu**, Hamamatsu Corp. (USA)

10:50 am: **Direct integration of a 4-pixel emissive display into a knit fabric matrix**, Jared P. Coyle, Genevieve Dion, Adam K. Fontecchio, Drexel Univ. (USA) . . . . . [8643-7]

11:10 am: **A CMOS microdisplay with integrated controller utilizing improved silicon hot carrier luminescent light sources**, Petrus J. Venter, Univ. of Pretoria (South Africa) and INSIAVA (Pty) Ltd. (South Africa); Trudi-Helen Joubert, Monuko du Plessis, Univ. of Pretoria (South Africa); Antonie C. Alberts, Marius E. Goosen, Pieter Rademeyer, INSIAVA (Pty) Ltd. (South Africa) . . . . . [8643-8]

11:30 am: **Effect of nanodroplet ink concentration on switching response of reverse-emulsion electrophoretic displays**, Winston K. Wang, San José State Univ. (USA); Remy Cromer, Zikon, Inc. (USA); Michel G. Goedert, Maryam Mobed-Miremadi, Sang-Joon Lee, San José State Univ. (USA) . . . . . [8643-9]

11:50 am: **Microlens array based LCD projection display with software-only focal distance control**, Marcel Sieler, Peter Schreiber, Andreas Bräuer, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany) . . . . . [8643-10]

Lunch/Exhibition Break . . . . . Thu 12:10 pm to 1:40 pm

OPTO

**SESSION 3**

**Room: 228 (Mezzanine) . . . . . Thu 1:40 pm to 3:00 pm**

**Display Components**

Session Chair: **Ming Hsien Wu**, Hamamatsu Corp. (USA)

1:40 pm: **Compact laser module with a high-speed liquid crystal attenuator for see-through display applications**, Takaaki Takeishi, Masafumi Ide, Shinpei Fukaya, Seiko Kato, Takaaki Nozaki, Citizen Holdings Co. Ltd. (Japan) [8643-11]

2:00 pm: **Gas permeable nanowire grid polarizer integrated into contact lenses through nanoimprint lithography**, Andrew E. Hollowell, Univ. of Michigan (USA) and Sandia National Labs. (USA); Young Jae Shin, L. Jay Guo, Univ. of Michigan (USA) . . . . . [8643-12]

2:20 pm: **Design concept of an FLC-NLC combined circular polarization switch for 3D laser pico-projectors**, Seiko Kato, Takaaki Takeishi, Masafumi Ide, Takaaki Nozaki, Citizen Holdings Co. Ltd. (Japan) . . . . . [8643-13]

2:40 pm: **A passive cooling system proposal for multifunction and high-power displays**, Ilker Tari, Middle East Technical Univ. (Turkey). . . . . [8643-14]

Coffee Break . . . . . Thu 3:00 pm to 3:30 pm

**SESSION 4**

**Room: 228 (Mezzanine) . . . . . Thu 3:30 pm to 4:20 pm**

**Organic Light-Emitting Diodes**

Session Chair: **Liang-Chy Chien**, Kent State Univ. (USA)

3:30 pm: **Molecularly controlled interfacial layer strategy toward highly-efficient simple-structured organic light-emitting diodes** (*Invited Paper*), Tae-Hee Han, Mi-Ri Choi, Pohang Univ. of Science and Technology (Korea, Republic of); Chang-Lyool Lee, Advanced Photonics Research Institute (Korea, Republic of); Tae-Woo Lee, Pohang Univ. of Science and Technology (Korea, Republic of) . . . . . [8643-16]

4:00 pm: **Blue phosphorescent organic light-emitting diode with oxadiazole host**, Yu-Hao Liu, National Taiwan Univ. (Taiwan); Yi-Hsin Lan, National United Univ. (Taiwan); Yi-Chi Bai, National Dong Hwa Univ. (Taiwan); Wan-Hsi Yang, National Taiwan Univ. (Taiwan); Pei-Yu Lee, Yuan Ze Univ. (Taiwan); Mao-Kuo Wei, National Dong Hwa Univ. (Taiwan); Chi-Feng Lin, National United Univ. (Taiwan); Tien-Lung Chiu, Yuan Ze Univ. (Taiwan); Man-Kit Leung, Jiun-Haw Lee, National Taiwan Univ. (Taiwan) . . . . . [8643-17]

**Don't miss the Exhibition**

See new products, top companies, potential collaborators, and the best suppliers face-to-face

**5–7 February 2013**  
**South Hall ABC and North Hall D**  
Tuesday · 10:00 am to 5:00 pm  
Wednesday · 10:00 am to 5:00 pm  
Thursday · 10:00 am to 4:00 pm

# Practical Holography XXVII: Materials and Applications

Conference Chairs: **Hans I. Bjelkhagen**, Glyndŵr Univ. (United Kingdom), Hansholo Consulting Ltd. (United Kingdom); **V. Michael Bove Jr.**, MIT Media Lab. (USA)

Program Committee: **Frank C. Fan**, Shenzhen AFC Technology Co., Ltd. (China); **Gerald L. Heidt**, Wasatch Photonics, Inc. (USA); **Toshio Honda**, Toppan Printing Co., Ltd. (Japan); **Fujio Iwata**, Toppan Printing Co., Ltd. (Japan); **Tung H. Jeong**, Lake Forest College (USA); **Michael A. Klug**, Zebra Imaging, Inc. (USA); **Martina L. Mrongovius**, RMIT Univ. (Australia), Ctr. for the Holographic Arts (United States), Academy of Media Arts, Cologne KHM (Germany); **Martin J. Richardson**, De Montfort Univ. (United Kingdom); **Hiroshi Yoshikawa**, Nihon Univ. (Japan)

## Sunday 3 February

### SESSION 1

Room: 228 (Mezzanine) . . . . . Sun 9:00 am to 10:20 am

#### Materials and Processes I

Session Chair: **Hans I. Bjelkhagen**, Hansholo Consulting Ltd. (United Kingdom)

9:00 am: **Non-Bragg diffraction orders in lithium niobate and its application to one-shot phase-shifting holographic interferometry**, Partha P. Banerjee, George T. Nehmetallah, Ujitha A. Abeywickrema, Univ. of Dayton (USA); Sergei F. Lyuksyutov, The Univ. of Akron (USA); Nikolai V. Kukhtarev, Alabama A&M Univ. (USA) . . . . . [8644-1]

9:20 am: **Photopolymer composition with high sensitivity**, Nariman Achourbekov, Rouslan Birabassov, Svetlana Peredereeva, LumiStor Inc. (Canada); Ozra Pouraghajani, Univ. Laval (Canada); Arbinder S. Pabla, LumiStor Inc. (Canada) . . . . . [8644-2]

9:40 am: **Three dimensional (3D) parallel processing holographic lithography using femtosecond laser pulse**, Anas Fauzi, Sung-Jin Kim, Chungbuk National Univ. (Korea, Republic of); Jong Rae Jung, Suwon Science College (Korea, Republic of); Seock-Hee Jun, Univ. of Incheon (Korea, Republic of); Nam Kim, Chungbuk National Univ. (Korea, Republic of) . . . . . [8644-3]

10:00 am: **Versatile phase stabilization technique for holographic recording of large aperture volume Bragg gratings**, Daniel Ott, Ivan B. Divliansky, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); Marc SeGall, Univ. of Central Florida (USA); Leonid B. Glebov, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) . . . . . [8644-4]

Coffee Break . . . . . Sun 10:20 am to 10:50 am

### SESSION 2

Room: Room 228 (Mezzanine) . . Sun 10:50 am to 11:50 am

#### Materials and Processes II

Session Chair: **Hans I. Bjelkhagen**, Hansholo Consulting Ltd. (United Kingdom)

10:50 am: **Collimating beam shaper for holography and interferometry**, Alexander V. Laskin, Vadim Laskin, AdlOptica Optical Systems GmbH (Germany) . . . . . [8644-5]

11:10 am: **1-step 3D achromatic transmission holograms digitally printed using a 440nm pulsed laser for embossed applications**, Stanislovas J. Zacharovas, Geola Digital uab (Lithuania); David C. Brotherton-Ratcliffe, Geola Technologies Ltd. (United Kingdom); Ramunas J. Bakanas, Andrej Nikolskij, Geola Digital uab (Lithuania) . . . . . [8644-7]

11:30 am: **The effect of aberrated recording beams on reflecting Bragg gratings**, Marc SeGall, Univ. of Central Florida (USA); Daniel Ott, Ivan B. Divliansky, Leonid B. Glebov, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA) . . . . . [8644-8]

Lunch Break . . . . . Sun 11:50 am to 1:30 pm

### SESSION 3

Room: Room 228 (Mezzanine) . . . . Sun 1:30 pm to 3:00 pm

#### Digital Holography I

Session Chair: **V. Michael Bove Jr.**, MIT Media Lab. (USA)

1:30 pm: **Development of full-color full-parallax digital 3D holographic display system and its prospects** (*Invited Paper*), Xuewu Xu, Xinan Liang, Yuechao Pan, Ruitao Zheng, Abel Z. Lum, Phyu Phyu Mar Yi Lwin, Sanjeev Solanki, A\*STAR - Data Storage Institute (Singapore) . . . . . [8644-9]

2:00 pm: **Study on holographic TV system based on multi-view image and depth map**, Takanori Senoh, Kenji Yamamoto, Ryutarō Oi, Yasuyuki Ichihashi, National Institute of Information and Communications Technology (Japan) . . . . . [8644-10]

2:20 pm: **Real-time reconstruction of digital holograms with GPU**, Mert Dogar, Hazar A. Ilhan, Meric Ozcan, Sabanci Univ. (Turkey) . . . . [8644-11]

2:40 pm: **Autofocusing in digital holography**, Hazar A. Ilhan, Mert Dogar, Meric Ozcan, Sabanci Univ. (Turkey) . . . . . [8644-12]

Coffee Break . . . . . Sun 3:00 pm to 3:30 pm

### SESSION 4

Room: Room 228 (Mezzanine) . . . Sun 3:30 pm to 5:10 pm

#### Digital Holography II

Session Chair: **V. Michael Bove Jr.**, MIT Media Lab. (USA)

3:30 pm: **Realistic 3D image reconstruction in CGH with Fourier transform optical system**, Tsubasa Ichikawa, Kazuhiro Yamaguchi, Yuji Sakamoto, Hokkaido Univ. (Japan) . . . . . [8644-13]

3:50 pm: **Using electronic holography to generate speckle-free and shaded reconstructed images**, Takayuki Kurihara, Yasuhiro Takaki, Tokyo Univ. of Agriculture and Technology (Japan) . . . . . [8644-14]

4:10 pm: **Large-pixel-count hologram data processing for holographic 3D display**, Yuechao Pan, Xuewu Xu, Xinan Liang, Abel Z. Lum, Ruitao Zheng, Phyu Phyu Mar Yi Lwin, A\*STAR - Data Storage Institute (Singapore) . . [8644-15]

4:30 pm: **Calculation technique for a holographic stereogram from multi-view images**, Kyohei Ikeda, Yasuhiro Takaki, Tokyo Univ. of Agriculture and Technology (Japan) . . . . . [8644-16]

4:50 pm: **Progress in updatable photorefractive polymer-based holographic displays via direct optical writing of computer-generated fringe patterns**, Sundeep Jolly, James Barabas, Daniel E. Smalley, V. Michael Bove Jr., MIT Media Lab. (USA) . . . . . [8644-17]



**Monday 4 February**

**SESSION 5**

**Room: Room 228 (Mezzanine) . . . Mon 8:30 am to 10:00 am**

**Applications I**

Session Chair: **Hiroshi Yoshikawa**, Nihon Univ. (Japan)

8:30 am: **Color holography: recent improvements and applications** (*Invited Paper*), Hans I. Bjelkhagen, Hansholo Consulting Ltd. (United Kingdom) . . . . . [8644-18]

9:00 am: **Holofos: an optimized LED illumination system for color reflection holograms display**, Andreas Sarakinos, Nikos Zervos, Alkis Lembessis, The Hellenic Institute of Holography (Greece) . . . . . [8644-19]

9:20 am: **Quantitative phase noise in a two-color low-coherence digital holographic microscope**, Zahra Monemhaghdoost, Ecole Polytechnique Fédérale de Lausanne (Switzerland); Frédéric Montfort, Yves Emery, Lycée Tec SA (Switzerland); Christian D. Depeursinge, Lycée Tec SA (Switzerland) and Ecole Polytechnique Fédérale de Lausanne (Switzerland); Christophe Moser, Ecole Polytechnique Fédérale de Lausanne (Switzerland) . . . . . [8644-20]

9:40 am: **Holographic elements and holographic techniques used in photonics**, Gerald L. Heidt, Dominic Speer, Wasatch Photonics, Inc. (USA) . . . . . [8644-21]

Coffee Break . . . . . Mon 10:00 am to 10:30 am

**SESSION 6**

**Room: Room 228 (Mezzanine) . . Mon 10:30 am to 11:50 am**

**Applications II**

Session Chair: **Gerald L. Heidt**, Wasatch Photonics, Inc. (USA)

10:30 am: **Stacked binary diffractive optical element for generating high-resolution pattern**, Ting-Xuan Hua, Cheng-Huan Chen, National Tsing Hua Univ. (Taiwan) . . . . . [8644-22]

10:50 am: **Modeling and design of grating-assisted semiconductor lasers for biomedical imaging by digital holographic microscopy**, Meng-Mu Shih, Univ. of Florida (USA) . . . . . [8644-23]

11:10 am: **Interaction and collaboration in an HOE-based autostereoscopic display**, Jonny Gustafsson, Kungliga Tekniska Högskolan (Sweden) . . [8644-25]

Lunch Break . . . . . Mon 11:30 am to 1:30 pm

**SESSION 7**

**Room: Room 228 (Mezzanine) . . . . Mon 1:30 pm to 3:10 pm**

**Holography, Perception and Art**

Session Chair: **Martina L. Mrongovius**, RMIT Univ. (Australia), Ctr. for the Holographic Arts {United States}, Academy of Media Arts, Cologne KHM {Germany}

1:30 pm: **Hidden images of holography: wavefront reconstruction of abnormalities within holographic recording**, Martin J. Richardson, De Montfort Univ. (United Kingdom) . . . . . [8644-24]

1:50 pm: **The hologram as a space of illusion**, Rosa M. Oliveira, Univ. de Aveiro (Portugal) . . . . . [8644-27]

2:10 pm: **Time cognition: inside and outside the holographic space**, Maria I. Azevedo, Martin J. Richardson, De Montfort Univ. (United Kingdom); Luís Miguel Bernardo, Univ. de Porto (Portugal) . . . . . [8644-28]

2:30 pm: **Time and space through light**, Sandra Oliveira, Martin J. Richardson, De Montfort Univ. (United Kingdom) . . . . . [8644-29]

2:50 pm: **Time stands still**, Yin-Ren Chang, Martin J. Richardson, Chien-Chung Chen, De Montfort Univ. (United Kingdom) . . . . . [8644-30]

**Tuesday 5 February**

**OPTO PLENARY SESSION**

**Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am**

Session Chairs : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)

8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)

8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]

8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]

9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]

See page 26 for details.

**TECHNICAL GROUP**

**Room: Intercontinental Hotel, Ballroom B . . . . . 7:30 pm to 9:00 pm**

**Holography**

Session Chair: **Hans I. Bjelkhagen**, Glyndwr Univ. (United Kingdom) and Hansholo Consulting Ltd. (United Kingdom)

The Holography Technical Group is involved with the whole record of research, engineering, recording materials, and applications of holography. The main fields of interest are display holograms, commercial and artistic, holographic optical elements (HOEs), holographic interferometry and holographic non-destructive testing (HNDT), computer-generated holography (CGH), electro and digital holography, holographic microscopy, and holographic data storage (HDS).

This meeting will focus on recent developments and directions, in particular, in regard to new materials, color display holography, digital holography, CGHs and HOEs.

**Wednesday 6 February**

**POSTERS-WEDNESDAY**

**Room: 103 (Exhibit Level) . . . . . Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Short-wave boundary of applicability of relief-phase reflecting holograms on a thin film of a chalcogenide glassy semiconductor**, Sergey N. Koreshev, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation); Vladislav P. Ratushny, HoloGrate, JSC (Russian Federation) . . . . . [8644-31]

**Direct fringe printer for computer-generated holograms: improvement of printing speed**, Hiroshi Yoshikawa, Nihon Univ. (Japan); Takeshi Yamaguchi, Nihon Univ (Japan); Satoshi Kajiro, Nihon Univ. (Japan) . . . . . [8644-32]

**A hologram recording method for 1 Tbit/in<sup>2</sup>**, Shohei Ozawa, Kaito Okubo, Hiroyuki Kurata, Takefumi Yamada, Manabu Yamamoto, Tokyo Univ. of Science (Japan) . . . . . [8644-33]

**The design of ROM-type holographic memory with iterative Fourier transform algorithm**, Hideki Akamatsu, Shuhei Yoshida, Unno Noriyuki, Kai Yamada, Manabu Yamamoto, Tokyo Univ. of Science (Japan) . . . . . [8644-34]



**Spatial frequency study of holograms with albumins material**, Manuel Jorge Ordóñez-Padilla, Arturo Olivares-Pérez, Luis R. Berriel-Valdos, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico) . . . . . [8644-35]

**Spatial frequency behavior of holograms made with pectin and oxidizing agents**, Manuel Jorge Ordóñez-Padilla, Arturo Olivares-Pérez D.D.S., Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); Nicolás Grijalva-Ortiz, Benemérita Univ. Autónoma de Puebla (Mexico); Israel Fuentes-Tapia, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico). . . . . [8644-36]

**Measurement method for objective evaluation of reconstructed image quality in CGH**, Kazuhiro Suzuki, Yuji Sakamoto, Hokkaido Univ. (Japan). . . . . [8644-37]

**Eyepiece-type full-color electro-holographic display for binocular vision**, Takuo Yoneyama, Chanyoung Yang, Yuji Sakamoto, Hokkaido Univ. (Japan); Fumio Okuyama, Suzuka Univ. of Medical Science (Japan). . . . . [8644-38]

**Compound common-path digital holographic microscope**, Weijuan Qu, NgeeAnn Polytechnic (Singapore); Zhaomin Wang, Chee Yuen Cheng, Ngee Ann Polytechnic (Singapore); Anand K. Asundi, Nanyang Technological Univ. (Singapore) . . . . . [8644-39]

**Holographic diffraction gratings to measure micromovements**, Arturo Olivares-Pérez D.D.S., Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico); Mayra A. Lara-Peña, Janeth A. García-Monge, Pavel A. Valencia-Acuña, Joan M. Villa-Hernández, Univ. de Sonora (Mexico). . . . . [8644-40]

**Acrylamide-adhesive as holographic recording medium**, Santa Toxqui-López, Benemérita Univ. Autónoma de Puebla (Mexico); Arturo Olivares-Pérez D.D.S., Israel Fuentes-Tapia, Instituto Nacional de Astrofísica, Óptica y Electrónica (Mexico) . . . . . [8644-41]

**An optical symmetric cryptographic system with simultaneous encryption and transmission of binary data and secret key by using dual phase-shifting digital holography**, Sang Keun Gil, Univ. of Suwon (Korea, Republic of); Seok Hee Jeon, Univ. of Incheon (Korea, Republic of); Jong Rae Jung, Suwon Science College (Korea, Republic of) . . . . . [8644-42]

**Fast generation of video hologram patterns by use of motion vectors of three-dimensional objects**, Seung-Cheol Kim, Xiao-Bin Dong, Min Woo Kwon, Eun-Soo Kim, Kwangwoon Univ. (Korea, Republic of) . . . . . [8644-43]

**Holographic optical element for head-mounted display application using photopolymer**, Jing-Ai Piao, Mei-Lan Piao, Chungbuk National Univ. (Korea, Republic of); Eun-Seok Kim, EunSung Display Co., Ltd. (Korea, Republic of); Nam Kim, Chungbuk National Univ. (Korea, Republic of). . . . . [8644-44]

# Broadband Access Communication Technologies VII

*Conference Chairs:* **Benjamin B. Dingel**, Nasfine Photonics, Inc. (USA); **Raj Jain**, Washington Univ. in St. Louis (USA); **Katsutoshi Tsukamoto**, Osaka Institute of Technology (Japan)

*Program Committee:* **Abdel-Karim Al-Tamimi**, Yarmouk Univ. (Jordan); **Arjan Durrezi**, Indiana Univ.-Purdue Univ. Indianapolis (USA); **David W. Faulkner**, British Telecom Research Labs. (United Kingdom); **Mahbub Hassan**, The Univ. of New South Wales (Australia); **Mohsen Kavehrad**, The Pennsylvania State Univ. (USA); **Rangaraj Madabhushi**, Madabhushi Consultants, LLC (USA); **Nicholas Madamopoulos**, The City College of New York (USA); **Spiros Mikroulis**, Technological Educational Institute of Athens (Greece); **Ken-ichi Sato**, Nagoya Univ. (Japan); **Chakchai So-In**, Khon Kaen Univ. (Thailand); **Atul K. Srivastava**, NEL America, Inc. (USA); **Peter Van Daele**, Univ. Gent (Belgium)

## Tuesday 5 February

### OPTO PLENARY SESSION

Room: 134 (Exhibit Level) ..... 8:00 am to 10:10 am

*Session Chairs :* **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
  - 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
  - 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) ..... [8637-1]
  - 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
  - 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]
- See page 26 for details.

Coffee Break ..... Tue 10:10 am to 10:30 am

### SESSION 1

Room: 200 (Mezzanine) ..... Tue 10:30 am to 11:45 am

#### Optical Communication Plenary Session

Joint Session with Conferences 8645, 8646, and 8647

*Session Chairs:* **Benjamin B. Dingel**, Nasfine Photonics, Inc. (USA); **Atul K. Srivastava**, NEL America, Inc. (USA)

- 10:30 am: **Progress and prospects for space-division multiplexing** (*Invited Paper*), **Guifang Li**, Univ. of Central Florida (USA) ..... [8647-1]
  - 10:55 am: **MIMO - free space optics** (*Invited Paper*), **Z. Ghassemlooy**, Northumbria Univ. (United Kingdom) ..... [8645-1]
  - 11:20 am: **Techniques to realize flexible optical terabit-per-second transmission systems** (*Invited Paper*), **M. Nölle**, Colja Schubert, Ronald Freund, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany) ..... [8646-1]
- Lunch/Exhibition Break ..... Tue 11:45 am to 12:45 pm

### SESSION 2

Room: 202 (Mezzanine) ..... Tue 12:45 pm to 3:05 pm

#### Terabit Capacity, Flexible-Grid Optical Transmission Systems and Advanced Access Network

Joint Session with Conferences 8645, 8646, and 8647

*Session Chairs:* **Guifang Li**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); **Werner Weiershausen**, Deutsche Telekom AG (Germany)

- 12:45 pm: **Field trial for the mixed bit rate at 100G and beyond** (*Invited Paper*), **Jianjun Yu**, **Zhensheng Jia**, **Ze Dong**, **Hung-Chang Chien**, ZTE USA (USA) ..... [8647-2]
  - 1:10 pm: **Cognition-enabling techniques in heterogeneous and flexgrid optical communication networks** (*Invited Paper*), **Idelfonso Tafur Monroy**, **Antonio Cabellero Jambrina**, **Silvia Saldana Cercos**, **Robert Borkowski**, Technical Univ. of Denmark (Denmark) ..... [8646-2]
  - 1:35 pm: **Towards terabit optical transmission: from coherent 100Gb/s to WDM superchannels** (*Invited Paper*), **Julio C. Oliveira**, **Edson P. da Silva**, **Luis H. de Carvalho**, **Vitor B. Ribeiro**, **Daniel M. Pataca**, **Fabio D. Simoes**, CPqD (Brazil) ..... [8646-3]
  - 2:00 pm: **100-GHz and 300-GHz coherent radio-over-fiber transmission using optical frequency comb source**, **Atsushi Kanno**, **Toshiaki Kuri**, **Iwao Hosako**, **Tetsuya Kawanishi**, National Institute of Information and Communications Technology (Japan); **Yoshihiro Yasumura**, **Yuki Yoshida**, **Ken-ichi Kitayama**, Osaka Univ. (Japan) ..... [8645-2]
  - 2:20 pm: **Multicast traffic grooming in flexible optical WDM networks** (*Invited Paper*), **Ankitkumar N. Patel**, **Philip N. Ji**, NEC Labs. America, Inc. (USA); **Jason P. Jue**, The Univ. of Texas at Dallas (USA); **Ting Wang**, NEC Labs. America, Inc. (USA) ..... [8646-4]
  - 2:45 pm: **FDMA-PON architecture according to the FABULOUS European project**, **Silvio Abrate**, Istituto Superiore Mario Boella (Italy); **Roberto Gaudino**, Politecnico di Torino (Italy); **Benoit Charbonnier**, France Telecom R&D (France) ..... [8645-3]
- Coffee Break ..... Tue 3:05 pm to 3:30 pm

**SESSION 3**

Room: 202 (Mezzanine) ..... Tue 3:30 pm to 6:00 pm

**Integrated Network Photonics Devices for Next-Generation Network**

Joint Session with Conferences 8645, 8646, and 8647

Session Chairs: **Martin Bouda**, Fujitsu Network Communications Inc. (USA); **Benjamin B. Dingel**, Nasfine Photonics, Inc. (USA)

- 3:30 pm: **Integrated devices for 100G and higher data rates for the next-generation optical communication systems** (*Invited Paper*), Yoshinori Hibino, NTT Electronics Corp. (Japan); Atul K. Srivastava, NEL America, Inc. (USA) ..... [8646-5]
- 3:55 pm: **Ultrafast optical signal processing and characterization based on fiber/integrated-waveguide technologies** (*Invited Paper*), Jose Azana, Institut National de la Recherche Scientifique (Canada) ..... [8647-3]
- 4:20 pm: **Integrated optical receivers using planar lightwave circuit technology** (*Invited Paper*), Toshikazu Hashimoto, Nippon Telegraph and Telephone Corp. (Japan) ..... [8646-6]
- 4:45 pm: **Devices for variation-tolerant low-loss high-index contrast photonic integrated circuits** (*Invited Paper*), Wesley D. Sacher, Joyce K. S. Poon, Univ. of Toronto (Canada) ..... [8645-4]
- 5:10 pm: **A global standardization trend for high-speed client and line side transceivers** (*Invited Paper*), Hideki Isono, Fujitsu Optical Components (Japan) ..... [8646-7]
- 5:35 pm: **Optical techniques for generating and demultiplexing higher-order modulation formats** (*Invited Paper*), Alan E. Willner, The Univ. of Southern California (USA) ..... [8646-21]

**Wednesday 6 February**

**SESSION 4**

Room: 200 (Mezzanine) ..... Wed 8:00 am to 10:00 am

**Next Generation Access Network**

Session Chairs: **Bishnu P. Pal**, Indian Institute of Technology Delhi (India); **Spiros Mikroulis**, Technological Educational Institute of Athens (Greece)

- 8:00 am: **Active devices in next-generation access networks** (*Invited Paper*), Leo Spiekman, Alphion Corp. (USA) ..... [8645-5]
- 8:30 am: **Constellation design for next-generation hierarchically-modulated PON systems**, Naotaka Shibata, Noriko Iiyama, Jun-Ichi Kani, Sang-Yuep Kim, Jun Terada, Naoto Yoshimoto, Nippon Telegraph and Telephone Corp. (Japan) ..... [8645-6]
- 8:50 am: **WDM-PON power budget extension techniques for Nx10 Gbit/s DPSK signals**, Ali Emsia, Technische Univ. Darmstadt (Germany); Quang Trung Le, Dieter Briggmann, Franko Küppers, Technical University of Darmstadt (Germany) ..... [8645-7]
- 9:10 am: **Next generation PON evolution** (*Invited Paper*), Anand Srivastava, Indian Institute of Technology Mandi (India) ..... [8645-8]
- 9:40 am: **Chirp-managed lasers as cost-efficient transmitters for 10-Gbit/s WDM-PONs**, Quang Trung Le, Ali Emsia, Dieter Briggmann, Franko Küppers, Technische Univ. Darmstadt (Germany) ..... [8645-9]
- Coffee Break .....Wed 10:00 am to 10:20 am

**SESSION 5**

Room: 200 (Mezzanine) ..... Wed 10:20 am to 12:20 pm

**MM-Wave-, Radio-Over-Fiber Systems, and Coherent Wireless Links**

Session Chair: **Katsutoshi Tsukamoto**, Osaka Institute of Technology (Japan)

- 10:20 am: **Developments in photonic and mm-wave component technology for fiber radio** (*Invited Paper*), Stavros Iezekiel, Univ. of Cyprus (Cyprus) ..... [8645-10]
- 10:50 am: **Millimeter-wave band 20-Gbps wireless data transmission using optical carrier suppression and DSP algorithm based on discrete multi-tone**, Yong-Yuk Won, Jaeheung Kim, Sang-Kook Han, Yonsei Univ. (Korea, Republic of) ..... [8645-11]
- 11:10 am: **Seamless integration of 100-G wire line and 100-GHz wireless link system** (*Invited Paper*), Ze Dong, Georgia Institute of Technology (USA) and ZTE USA (USA); Jianjun Yu, ZTE USA (USA); Xinying Li, Nan Chi, Fudan Univ. (China) ..... [8645-12]
- 11:40 am: **Effect of the degree of phase-correlation of laser sources on the transmission and optical coherent detection in radio-over-fiber systems**, Ramon Maldonado-Basilio, Ran Li, Sawzan Abdul-Majid, Hamdam Nikkhal, Univ. of Ottawa (Canada); Kin-Wai Leong, Viscore Technologies Inc. (Canada); Trevor J. Hall, Univ. of Ottawa (Canada) ..... [8645-13]
- 12:00 pm: **Power consumption of communication systems employing radio-over-fiber distributed antenna systems for railway**, Tien Dat Pham, Atsushi Kanno, Tetsuya Kawanishi, National Institute of Information and Communications Technology (Japan) ..... [8645-14]
- Lunch/Exhibition Break .....Wed 12:20 pm to 1:20 pm

**SESSION 6**

Room: 200 (Mezzanine) ..... Wed 1:20 pm to 3:20 pm

**Emerging Optical Wireless and Radio Access Networks**

Session Chairs: **Achyut K. Dutta**, Banpil Photonics, Inc. (USA); **Katsutoshi Tsukamoto**, Osaka Institute of Technology (Japan)

- 1:20 pm: **Optical wireless applications: a solution to ease the wireless airwaves spectrum crunch** (*Invited Paper*), Mohsen Kavehrad, The Pennsylvania State Univ. (USA) ..... [8645-15]
- 1:50 pm: **Novel 60 GHz CPW array antennas with beam-forming features for indoor wireless over fiber networks**, Ioannis Petropoulos, Spiros Mikroulis, Adonis Bogris, Technological Educational Institute of Athens (Greece); Hercules Simos, Technological Educational Institute of Pireus (Greece); Kostantinos Voudouris, Technological Educational Institute of Athens (Greece) .... [8645-16]
- 2:10 pm: **Impact of new RAN architectures on fronthauling** (*Invited Paper*), Matthias Fricke, Deutsche Telekom AG (Germany) ..... [8645-17]
- 2:40 pm: **Investigation on a low-cost single wavelength converged wired-60 GHz wireless OFDM-based system employing a photonic patch antenna**, Spiros Mikroulis, Technological Educational Institute of Athens (Greece); Ivan Aldaya, Telecom Paris-Tech, Optical Communications Group (France); Ioannis Petropoulos, Technological Educational Institute of Athens (Greece); Elias Giakoumidis, Athens Information Technology (Greece); Kostantinos Voudouris, Technological Educational Institute of Athens (Greece); Ioannis Tomkos, Athens Information Technology (Greece) ..... [8645-18]
- 3:00 pm: **Proposal of adaptive wireless cell configuration for RoF-DAS over WDM-PON system**, Tatsuhiko Iwakuni, Osaka Univ. (Japan); Kenji Miyamoto, NTT Access Network Service Systems Labs. (Japan); Takeshi Higashino, Nara Institute of Science and Technology (Japan); Katsutoshi Tsukamoto, Osaka Institute of Technology (Japan); Shozo Komaki, Univ. Teknologi Malaysia (Malaysia); Takayoshi Tashiro, Youichi Fukada, Jun-Ichi Kani, Naoto Yoshimoto, NTT Access Network Service Systems Labs. (Japan); Katsumi Iwatsuki, Tohoku Univ. (Japan) ..... [8645-19]
- Coffee Break .....Wed 3:20 pm to 3:30 pm

**SPECIAL SESSION**

**Room: 202 (Mezzanine) . . . . . Wed. 3:30 pm to 6:00 pm**

**Optical Interconnects for Short Haul Networks**

Session Chair: **Atul K. Srivastava**, NEL America, Inc. (USA)

In recent years, we have seen excellent progress in highly-integrated optical components for optical interconnects such as low loss waveguides, grating couplers, filters, AWGs, modulators, and photodiodes. Standards activity for the optical interconnects is also gaining momentum. However, significant hurdles remain to be crossed before these technologies can be successfully commercialized. This special session will focus on the challenges of optical interconnects for short haul application and will include discussion on questions, such as:

- **What are the killer applications for optical interconnects?**
- **Are single mode fiber based interconnects feasible?**
- **What are the requirements of a fully integrated transceiver for optical interconnect?**
- **What is the role of Silicon Photonics?**

**POSTERS-WEDNESDAY**

**Room: 103 (Exhibit Level) . . . . . Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Sensing RF signals with the optical wideband converter**, George C. Valley, George A. Sefler, Thomas J. Shaw, The Aerospace Corp. (USA) . . . . . [8645-24]

**Overview of the performances of PMMA-SI-POF communication systems**, Stefano Straullu, Silvio Abrate, Istituto Superiore Mario Boella (Italy) . . . [8645-26]

**Precoding techniques for PAPR reduction in asymmetrically clipped OFDM based optical wireless system**, Bilal A. Ranjha, Mohsen Kavehrad, The Pennsylvania State Univ. (USA) . . . . . [8645-28]

**Performance comparison of beacon-enabled and non-beacon-enabled IEEE 802.15.4 MAC in WSN over fiber systems**, Aldo E. Perez-Ramos, Salvador Villarreal-Reyes, Arturo Arvizu-Mondragon, Edwin Martinez-Aragon, Ctr. de Investigación Científica y de Educación Superior de Ensenada (Mexico) . . . . . [8645-29]

**Minimalist-design, high-functionality, micro-ring resonator-based optical filter with narrow linewidth and low group delay using Looped Back Over- and Under-coupled Resonator (LOBOUR)**, Bo Ye, Binghamton Univ. (USA); Benjamin B. Dingel, Nasfne Photonics, Inc. (USA); Weili Cui, Binghamton Univ. (USA) . . . . . [8645-30]

**Thursday 7 February**

**SESSION 7**

**Room: 200 (Mezzanine) . . . . . Thu 8:00 am to 10:00 am**

**Advanced Visible Light Communication Systems**

Joint Session with Conferences 8645 and 8646

Session Chair: **Mohsen Kavehrad**, The Pennsylvania State Univ. (USA)

8:00 am: **Application of digital signal processing in high-speed visible-light communication system** (*Invited Paper*), Nan Chi, Yiguang Wang, Yuanquan Wang, Rongling Li, Huiliang Shang, Fudan Univ. (China) . . . . . [8646-18]

8:30 am: **QPSK modulation for AC-power-signal-biased visible light communication system**, Yu-Feng Liu, National Chiao Tung Univ. (Taiwan); Chien-Hung Yeh, Information and Communications Research Lab. (Taiwan); Chi-Wai Chow, National Chiao Tung Univ. (Taiwan); Yang Liu, Hong Kong Productivity Council (Hong Kong, China) . . . . . [8645-20]

8:50 am: **Comparison of VLC-based indoor positioning techniques**, Weizhi Zhang, Mohsen Kavehrad, Ctr. for Information & Communications Technology Research (USA) . . . . . [8645-21]

9:10 am: **Demonstration of using digital FIR filter and matched filter to increase data rate in visible light communication**, Yu-Feng Liu, National Chiao Tung Univ. (Taiwan); Chien-Hung Yeh, Industrial Technology Research Institute (Taiwan); Chi-Wai Chow, Po-Yen Huang, National Chiao Tung Univ. (Taiwan); Yang Liu, Hong Kong Productivity Council (Hong Kong, China) . . . . . [8645-22]

9:30 am: **Recent developments in high-speed optical wireless indoor communications** (*Invited Paper*), Klaus-Dieter Langer, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany) . . . . . [8645-23]



# Optical Metro Networks and Short-Haul Systems V

Conference Chairs: **Werner Weiershausen**, Deutsche Telekom AG (Germany); **Benjamin B. Dingel**, Nasfine Photonics, Inc. (USA); **Achyut K. Dutta**, Banpil Photonics, Inc. (USA); **Atul K. Srivastava**, NEL America, Inc. (USA)

Program Committee: **Martin Bouda**, Fujitsu Network Communications Inc. (USA); **Ronald Freund**, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany); **Franko Kueppers**, College of Optical Sciences, The Univ. of Arizona (USA), Technische Univ. Darmstadt (Germany); **Shu Namiki**, National Institute of Advanced Industrial Science and Technology (Japan); **Júlio César R. F. de Oliveira**, Fundacao CpqD (Brazil); **Hiromi Oohashi**, NTT Photonics Labs. (Japan); **Bishnu P. Pal**, Indian Institute of Technology Delhi (India); **Hans-Juergen Schmidtke**, Juniper Networks, Inc. (USA); **Sascha Vorbeck**, Deutsche Telekom AG (Germany); **Jianjun Yu**, ZTE USA (USA)

## Tuesday 5 February

### OPTO PLENARY SESSION

Room: 134 (Exhibit Level) . . . . . 8:00 am to 10:10 am

Session Chairs : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
- 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
- 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) . . . . . [8637-1]
- 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
- 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]

See page 26 for details.

Coffee Break . . . . . Tue 10:10 am to 10:30 am

### SESSION 1

Room: 200 (Mezzanine) . . . . . Tue 10:30 am to 11:45 am

#### Optical Communication Plenary Session

Joint Session with Conferences 8645, 8646, and 8647

Session Chairs: **Benjamin B. Dingel**, Nasfine Photonics, Inc. (USA); **Atul K. Srivastava**, NEL America, Inc. (USA)

- 10:30 am: **Progress and prospects for space-division multiplexing** (*Invited Paper*), **Guifang Li**, Univ. of Central Florida (USA) . . . . . [8647-1]
  - 10:55 am: **MIMO - free space optics** (*Invited Paper*), **Z. Ghassemlouy**, Northumbria Univ. (United Kingdom) . . . . . [8645-1]
  - 11:20 am: **Techniques to realize flexible optical terabit-per-second transmission systems** (*Invited Paper*), **M. Nölle**, Colja Schubert, Ronald Freund, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany) . . . . . [8646-1]
- Lunch/Exhibition Break . . . . . Tue 11:45 am to 12:45 pm

### SESSION 2

Room: 202 (Mezzanine) . . . . . Tue 12:45 pm to 3:05 pm

#### Terabit Capacity, Flexible-Grid Optical Transmission Systems and Advanced Access Network

Joint Session with Conferences 8645, 8646, and 8647

Session Chairs: **Guifang Li**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); **Werner Weiershausen**, Deutsche Telekom AG (Germany)

- 12:45 pm: **Field trial for the mixed bit rate at 100G and beyond** (*Invited Paper*), **Jianjun Yu**, **Zhensheng Jia**, **Ze Dong**, **Hung-Chang Chien**, ZTE USA (USA) . . . . . [8647-2]

- 1:10 pm: **Cognition-enabling techniques in heterogeneous and flexgrid optical communication networks** (*Invited Paper*), **Idelfonso Tafur Monroy**, **Antonio Cabellero Jambrina**, **Silvia Saldana Cercos**, **Robert Borkowski**, Technical Univ. of Denmark (Denmark) . . . . . [8646-2]

- 1:35 pm: **Towards terabit optical transmission: from coherent 100Gb/s to WDM superchannels** (*Invited Paper*), **Julio C. Oliveira**, **Edson P. da Silva**, **Luis H. de Carvalho**, **Vitor B. Ribeiro**, **Daniel M. Pataca**, **Fabio D. Simoes**, CPqD (Brazil) . . . . . [8646-3]

- 2:00 pm: **100-GHz and 300-GHz coherent radio-over-fiber transmission using optical frequency comb source**, **Atsushi Kanno**, **Toshiaki Kuri**, **Iwao Hosako**, **Tetsuya Kawanishi**, National Institute of Information and Communications Technology (Japan); **Yoshihiro Yasumura**, **Yuki Yoshida**, **Ken-ichi Kitayama**, Osaka Univ. (Japan) . . . . . [8645-2]

- 2:20 pm: **Multicast traffic grooming in flexible optical WDM networks** (*Invited Paper*), **Ankitkumar N. Patel**, **Philip N. Ji**, NEC Labs. America, Inc. (USA); **Jason P. Jue**, The Univ. of Texas at Dallas (USA); **Ting Wang**, NEC Labs. America, Inc. (USA) . . . . . [8646-4]

- 2:45 pm: **FDMA-PON architecture according to the FABULOUS European project**, **Silvio Abrate**, Istituto Superiore Mario Boella (Italy); **Roberto Gaudino**, Politecnico di Torino (Italy); **Benoit Charbonnier**, France Telecom R&D (France) . . . . . [8645-3]

Coffee Break . . . . . Tue 3:05 pm to 3:30 pm

### SESSION 3

Room: 202 (Mezzanine) . . . . . Tue 3:30 pm to 6:00 pm

#### Integrated Network Photonics Devices for Next-Generation Network

Joint Session with Conferences 8645, 8646, and 8647

Session Chairs: **Martin Bouda**, Fujitsu Network Communications Inc. (USA); **Benjamin B. Dingel**, Nasfine Photonics, Inc. (USA)

- 3:30 pm: **Integrated devices for 100G and higher data rates for the next-generation optical communication systems** (*Invited Paper*), **Yoshinori Hibino**, NTT Electronics Corp. (Japan); **Atul K. Srivastava**, NEL America, Inc. (USA) . . . . . [8646-5]
- 3:55 pm: **Ultrafast optical signal processing and characterization based on fiber/integrated-waveguide technologies** (*Invited Paper*), **Jose Azana**, Institut National de la Recherche Scientifique (Canada) . . . . . [8647-3]
- 4:20 pm: **Integrated optical receivers using planar lightwave circuit technology** (*Invited Paper*), **Toshikazu Hashimoto**, Nippon Telegraph and Telephone Corp. (Japan) . . . . . [8646-6]
- 4:45 pm: **Devices for variation-tolerant low-loss high-index contrast photonic integrated circuits** (*Invited Paper*), **Wesley D. Sacher**, **Joyce K. S. Poon**, Univ. of Toronto (Canada) . . . . . [8645-4]
- 5:10 pm: **A global standardization trend for high-speed client and line side transceivers** (*Invited Paper*), **Hideki Isono**, Fujitsu Optical Components (Japan) . . . . . [8646-7]
- 5:35 pm: **Optical techniques for generating and demultiplexing higher-order modulation formats** (*Invited Paper*), **Alan E. Willner**, The Univ. of Southern California (USA) . . . . . [8646-21]

OPTO

### Wednesday 6 February

#### SESSION 4

Room: 202 (Mezzanine) . . . . . Wed 8:40 am to 10:00 am

##### Flexible and Efficient Networks

Session Chairs: **Jianjun Yu**, NEC Labs. America, Inc. (USA);  
**Shu Namiki**, National Institute of Advanced Industrial Science and  
Technology (Japan)

8:40 am: **Energy consumption and traffic scaling of dynamic optical path networks** (*Invited Paper*), Kiyoo Ishii, Junya Kurumida, Shu Namiki, Toshifumi Hasama, Hiroshi Ishikawa, National Institute of Advanced Industrial Science and Technology (Japan) . . . . . [8646-8]

9:10 am: **The projects of Disaster-Resistant Information Communication Network at the Research Organization of Electrical Communication, Tohoku University** (*Invited Paper*), Katsumi Iwatsuki, Tohoku Univ. (Japan) . . . . . [8646-9]

9:40 am: **Impact of wave propagation delay on latency in optical communication systems**, Tetsuya Kawanishi, Atsushi Kanno, National Institute of Information and Communications Technology (Japan); Yuki Yoshida, Ken-ichi Kitayama, Osaka Univ. (Japan) . . . . . [8646-10]

Coffee Break . . . . . Wed 10:00 am to 10:30 am

#### SESSION 5

Room: 202 (Mezzanine) . . . . . Wed 10:30 am to 12:10 pm

##### Intelligent and Converged Network

Session Chair: **Werner Weiershausen**,  
Deutsche Telekom AG (Germany)

10:30 am: **Applications of bio-inspired computational intelligence in optical networks** (*Invited Paper*), Joaquim F. Martins Filho, Carmelo J. A. Bastos Filho, Daniel A. R. Chaves, Univ. Federal de Pernambuco (Brazil) . . . . . [8646-12]

11:00 am: **The benefits of converged packet/TDM/DWDM switching in metro aggregation networks** (*Invited Paper*), Dror Bar On, Nokia Siemens Networks US, LLC (USA); Stefan Voll, Nokia Siemens Networks (Germany); Robert Au Yang, Nokia Siemens Networks US, LLC (USA) . . . . . [8646-13]

11:30 am: **An infrastructure with a unified control plane to integrate IP into optical metro networks to provide flexible and intelligent bandwidth on demand for cloud computing**, Wei Yang, Trevor J. Hall, Univ. of Ottawa (Canada) . . . . . [8646-29]

11:50 am: **FMCW-based monitoring and signaling for reconfigurable optical networks**, Sebastian Gaede, Marcel Jastram, Helmut-Schmidt-Univ. (Germany); Christian G. Schäffer, Helmut-Schmidt Univ. (Germany) . . . . . [8646-15]

Lunch/Exhibition Break . . . . . Wed 12:10 pm to 1:10 pm

#### SESSION 6

Room: 202 (Mezzanine) . . . . . Wed 1:10 pm to 3:15 pm

##### Next Generation Optical Fibers

Joint Session with Conferences 8646 and 8647

Session Chair: **Ronald Freund**, Fraunhofer-Institut für  
Nachrichtentechnik Heinrich-Hertz-Institut (Germany)

1:10 pm: **Novel optical fibers for high-capacity transmission systems** (*Invited Paper*), Ming-Jun Li, Corning Incorporated (USA) . . . . . [8647-12]

1:35 pm: **Modeling linear and nonlinear transmission in multi-mode fibers** (*Invited Paper*), Cristian Antonelli, Antonio Mecozzi, Univ. degli Studi dell'Aquila (Italy); Mark Shtaif, Tel Aviv Univ. (Israel) . . . . . [8647-13]

2:00 pm: **Multicore fiber with one-ring structure** (*Invited Paper*), Shoichiro Matsuo, Yusuke Sasaki, I. Ishida, Katsuhiro Takenaga, Fujikura Ltd. (Japan); Kunimasa Saitoh, Masanori Koshiba, Hokkaido Univ. (Japan) . . . . . [8647-14]

2:25 pm: **Polarization studies of GRIN MMF for short haul/access networks** (*Invited Paper*), Scott S. H. Yam, Queen's Univ. (Canada) . . . . . [8646-16]

2:50 pm: **Application-specific specialty optical fibers: A new platform for challenging fiber designs** (*Invited Paper*), Bishnu P. Pal, Indian Institute of Technology Delhi (India) . . . . . [8646-17]

Coffee Break . . . . . Wed 3:15 pm to 3:30 pm

#### SPECIAL SESSION

Room: 202 (Mezzanine) . . . . . Wed. 3:30 pm to 6:00 pm

##### Optical Interconnects for Short Haul Networks

Session Chair: **Atul K. Srivastava**, NEL America, Inc. (USA)

In recent years, we have seen excellent progress in highly-integrated optical components for optical interconnects such as low loss waveguides, grating couplers, filters, AWGs, modulators, and photodiodes. Standards activity for the optical interconnects is also gaining momentum. However, significant hurdles remain to be crossed before these technologies can be successfully commercialized. This special session will focus on the challenges of optical interconnects for short haul application and will include discussion on questions, such as:

- What are the killer applications for optical interconnects?
- Are single mode fiber based interconnects feasible?
- What are the requirements of a fully integrated transceiver for optical interconnect?
- What is the role of Silicon Photonics?

Thursday 7 February

Session 7A runs concurrently with Session 7B

SESSION 7A

Room: 202 (Mezzanine) Thu 8:30 am to 10:00 am

High-Order Modulation Formats and Coding Formats

Joint Session with Conferences 8646 and 8647

Session Chairs: **Julio C. R. F. Oliveira**, CpqD Foundation (Brazil); **Guifang Li**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA)

8:30 am: **Advanced techniques and concepts for ultra-high-speed optical networking** (*Invited Paper*), Milorad Cvijetic, College of Optical Sciences, The Univ. of Arizona (USA) . . . . . [8646-19]

9:00 am: **Experimental investigation of 100-Gbps transmission over 80-km single mode fiber using discrete multi-tone modulation**, Toshiki Tanaka, Masato Nishihara, Tomoo Takahara, Fujitsu Labs., Ltd. (Japan); Lei Li, Zhenning Tao, Fujitsu Research and Development Center Co., Ltd. (China); Jens C. Rasmussen, Fujitsu Labs., Ltd. (Japan) . . . . . [8646-20]

9:20 am: **Performance comparison of RZ pulse formats in PDM-16QAM high rates transmissions with optical pre-filtering**, Edson P. da Silva, Luis H. de Carvalho, Marcelo L. Lopes, Vitor B. Ribeiro, CpqD Foundation (Brazil); Aldário C. Bordonalli, Univ. Estadual de Campinas (Brazil); Julio C. R. F. Oliveira, CpqD Foundation (Brazil) . . . . . [8647-20]

9:40 am: **All-optical amplitude regeneration for non-return-to-zero differential-phase-shift-keying signal**, Bingrong Zou, Wuhan National Lab. for Optoelectronics (China); Yu Yu, Wuhan National Laboratory for Optoelectronics, Huazhong Univ of Science & Technology (China); Kaisheng Chen, Lei Xiang, Wuhan National Lab. for Optoelectronics (China); Weili Yang, Wuhan National Laboratory for Optoelectronics, Huazhong Univ of Science & Technology (China); Xinliang Zhang, Wuhan National Lab. for Optoelectronics (China) . . . . . [8647-21]

Coffee Break Thu 10:00 am to 10:30 am

SESSION 8

Room: 202 (Mezzanine) Thu 10:30 am to 11:30 am

High-Speed Components and Signal Monitoring

Joint Session with Conferences 8646 and 8647

Session Chair: **Werner Weiershausen**, Deutsche Telekom AG (Germany)

10:30 am: **Impact of modulator chirp in 100 Gbps class optical discrete multi-tone transmission system**, Masato Nishihara, Toshiki Tanaka, Tomoo Takahara, Fujitsu Labs., Ltd. (Japan); Lei Li, Zhenning Tao, Fujitsu Research and Development Center Co., Ltd. (China); Jens C. Rasmussen, Fujitsu Labs., Ltd. (Japan) . . . . . [8646-23]

10:50 am: **Nyquist-WDM transmission of 7 x 192 Gb/s PDM 16-QAM signals using high-speed DACs operating at 42 GS/s**, Shogo Yamanaka, NTT Photonics Labs. (Japan); Takayuki Kobayashi, Akihiko Sano, Akihiko Matsuura, Yutaka Miyamoto, NTT Network Innovation Laboratories (Japan); Munehiko Nagatani, Hideyuki Nosaka, NTT Photonics Laboratories (Japan) . . . . . [8646-24]

11:10 am: **Simulation and experimental validation of OSNR monitoring for different modulation formats using delay-line-interferometer**, Wajih A. Daab, Salman Khaleghi, Mohamed R. Chitgarha, Morteza Ziyadi, Alan E. Willner, The Univ. of Southern California (USA) . . . . . [8646-25]

Lunch/Exhibition Break Thu 11:30 am to 1:00 pm

SESSION 7B

Room: 200 (Mezzanine) Thu 8:00 am to 10:00 am

NOTE ROOM CHANGE

Advanced Visible Light Communication Systems

Joint Session with Conferences 8645 and 8646

Session Chair: **Mohsen Kavehrad**, The Pennsylvania State Univ. (USA)

8:00 am: **Application of digital signal processing in high-speed visible-light communication system** (*Invited Paper*), Nan Chi, Yiguang Wang, Yuanquan Wang, Rongling Li, Huiliang Shang, Fudan Univ. (China) . . . . . [8646-18]

8:30 am: **QPSK modulation for AC-power-signal-biased visible light communication system**, Yu-Feng Liu, National Chiao Tung Univ. (Taiwan); Chien-Hung Yeh, Information and Communications Research Lab. (Taiwan); Chi-Wai Chow, National Chiao Tung Univ. (Taiwan); Yang Liu, Hong Kong Productivity Council (Hong Kong, China) . . . . . [8645-20]

8:50 am: **Comparison of VLC-based indoor positioning techniques**, Weizhi Zhang, Mohsen Kavehrad, Ctr. for Information & Communications Technology Research (USA) . . . . . [8645-21]

9:10 am: **Demonstration of using digital FIR filter and matched filter to increase data rate in visible light communication**, Yu-Feng Liu, National Chiao Tung Univ. (Taiwan); Chien-Hung Yeh, Industrial Technology Research Institute (Taiwan); Chi-Wai Chow, Po-Yen Huang, National Chiao Tung Univ. (Taiwan); Yang Liu, Hong Kong Productivity Council (Hong Kong, China) . . . . . [8645-22]

9:30 am: **Recent developments in high-speed optical wireless indoor communications** (*Invited Paper*), Klaus-Dieter Langer, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany) . . . . . [8645-23]

Coffee Break Thu 10:00 am to 10:30 am

SESSION 9

Room: 202 (Mezzanine) Thu 1:00 pm to 3:20 pm

Novel Light Sources, Amplifiers and Devices

Joint Session with Conferences 8646 and 8647

Session Chair: **Achyut K. Dutta**, Banpil Photonics, Inc. (USA)

1:00 pm: **Optical regeneration on signals beyond 100Gbps with phase-sensitive amplification** (*Invited Paper*), Youichi Akasaka, Fujitsu Network Communications Inc. (USA); Jeng-Yuan Yang, Inwoong Kim, Motoyoshi Sekiya, Fujitsu Laboratories of America (USA) . . . . . [8646-26]

1:30 pm: **Advances in pulse stabilization schemes for high-repetition rate actively mode-locked fiber lasers** (*Invited Paper*), Balaji Srinivasan, Anish Bekal, Indian Institute of Technology Madras (India) . . . . . [8646-27]

2:00 pm: **1.3- $\mu$ m waveband multiple-wavelength InAs/InGaAs quantum dot light source for wide wavelength range of 10 Gb/s transmissions over 8-km long holey fiber**, Yasuaki Kurata, Aoyama Gakuin Univ. (Japan); Naokatsu Yamamoto, Kouichi Akahane, Tetsuya Kawanishi, National Institute of Information and Communications Technology (Japan); Hideyuki Sotobayashi, Aoyama Gakuin Univ. (Japan); Yuki Yoshioka, Hiroshi Takai, Tokyo Denki Univ. (Japan) . . . . . [8646-28]

2:20 pm: **High-speed in-line polarimeter with the built-in polarization reference as a sensor in fiber optic transmission systems**, Vitaly Mikhailov, Bryan Rabin, Paul Westbrook, OFS Labs. (USA) . . . . . [8647-22]

2:40 pm: **Supercontinuum generation in dispersion-tailored lead-silicate fiber taper**, Hongyu Hu, Wenbo Li, Shaozhen Ma, Niloy K. Dutta, Univ. of Connecticut (USA) . . . . . [8647-23]

3:00 pm: **A new scheme for novel all-optical wavelength conversion with ultrabroad conversion tunability and modulation-transparency**, Yongkang Gong, Nigel J. Copner, Kang Li, Jungang Huang, Juan J. Martinez, Daniel Rees-Whippey, Sara Carver, Univ. of Glamorgan (United Kingdom) . . . . . [8647-24]



# Next-Generation Optical Communication: Components, Sub-Systems, and Systems II

Conference Chair: **Guifang Li**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA)

Program Committee: **Yi Cai**, Huawei Technologies Co., Ltd. (USA); **Gabriella Cincotti**, Univ. degli Studi di Roma Tre (Italy); **Benjamin B. Dingel**, Nasfine Photonics, Inc. (USA); **John D. Downie**, Corning Incorporated (USA); **Ronald Freund**, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany); **Masataka Nakazawa**, Tohoku Univ. (Japan); **Ioannis Roudas**, Univ. of Patras (Greece); **Kunimasa Saitoh**, Hokkaido Univ. (Japan); **Akihito Sano**, NTT Network Innovation Labs. (Japan); **Atul K. Srivastava**, NEL America, Inc. (USA); **Fatih Yaman**, NEC Labs. America, Inc. (USA); **Xiang Zhou**, AT&T Labs. Research (USA)

## Tuesday 5 February

### OPTO PLENARY SESSION

Room: 134 (Exhibit Level) ..... 8:00 am to 10:10 am

Session Chairs : **David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom); **Alexei L. Glebov**, OptiGrate Corp. (USA)

- 8:00 am: **Welcome and Opening Remarks**  
**David L. Andrews**, Univ. of East Anglia Norwich (United Kingdom)
- 8:05 am: **Announcement of the Green Photonics Awards**  
**Stephen J. Eglash**, Precourt Institute for Energy, Stanford Univ. (USA)
- 8:10 am: **Quantum optomechanics**  
**Markus Aspelmeyer**, Vienna Ctr. for Quantum Science and Technology, Univ. of Vienna (Austria) ..... [8637-1]
- 8:50 am: **Group IV photonics for the mid infrared**,  
**Richard Soref**, Univ. of Massachusetts Boston (USA) . [8629-1]
- 9:30 am: **Light in a twist: optical angular momentum**,  
**Miles J. Padgett**, Univ. of Glasgow (United Kingdom) . [8637-2]  
See page 26 for details.

Coffee Break ..... Tue 10:10 am to 10:30 am

### SESSION 1

Room: 200 (Mezzanine) ..... Tue 10:30 am to 11:45 am

#### NOTE ROOM CHANGE

#### Optical Communication Plenary Session

Joint Session with Conferences 8645, 8646, and 8647

Session Chairs: **Benjamin B. Dingel**, Nasfine Photonics, Inc. (USA); **Atul K. Srivastava**, NEL America, Inc. (USA)

- 10:30 am: **Progress and prospects for space-division multiplexing** (*Invited Paper*), **Guifang Li**, Univ. of Central Florida (USA) ..... [8647-1]
- 10:55 am: **MIMO - free space optics** (*Invited Paper*), **Z. Ghassemlooy**, Northumbria Univ. (United Kingdom) ..... [8645-1]
- 11:20 am: **Techniques to realize flexible optical terabit-per-second transmission systems** (*Invited Paper*), **M. Nölle**, **Colja Schubert**, **Ronald Freund**, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany) ..... [8646-1]
- Lunch/Exhibition Break ..... Tue 11:45 am to 12:45 pm

### SESSION 2

Room: 202 (Mezzanine) ..... Tue 12:45 pm to 3:05 pm

#### NOTE ROOM CHANGE

#### Terabit Capacity, Flexible-Grid Optical Transmission Systems and Advanced Access Network

Joint Session with Conferences 8645, 8646, and 8647

Session Chairs: **Guifang Li**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA); **Werner Weiershausen**, Deutsche Telekom AG (Germany)

- 12:45 pm: **Field trial for the mixed bit rate at 100G and beyond** (*Invited Paper*), **Jianjun Yu**, **Zhensheng Jia**, **Ze Dong**, **Hung-Chang Chien**, ZTE USA (USA) ..... [8647-2]
- 1:10 pm: **Cognition-enabling techniques in heterogeneous and flexgrid optical communication networks** (*Invited Paper*), **Idelfonso Tafur Monroy**, **Antonio Cabellero Jambriña**, **Silvia Saldana Cercos**, **Robert Borkowski**, Technical Univ. of Denmark (Denmark) ..... [8646-2]
- 1:35 pm: **Towards terabit optical transmission: from coherent 100Gb/s to WDM superchannels** (*Invited Paper*), **Julio C. Oliveira**, **Edson P. da Silva**, **Luis H. de Carvalho**, **Vitor B. Ribeiro**, **Daniel M. Pataca**, **Fabio D. Simoes**, CPqD (Brazil) ..... [8646-3]
- 2:00 pm: **100-GHz and 300-GHz coherent radio-over-fiber transmission using optical frequency comb source**, **Atsushi Kanno**, **Toshiaki Kuri**, **Iwao Hosako**, **Tetsuya Kawanishi**, National Institute of Information and Communications Technology (Japan); **Yoshihiro Yasumura**, **Yuki Yoshida**, **Ken-ichi Kitayama**, Osaka Univ. (Japan) ..... [8645-2]
- 2:20 pm: **Multicast traffic grooming in flexible optical WDM networks** (*Invited Paper*), **Ankitkumar N. Patel**, **Philip N. Ji**, NEC Labs. America, Inc. (USA); **Jason P. Jue**, The Univ. of Texas at Dallas (USA); **Ting Wang**, NEC Labs. America, Inc. (USA) ..... [8646-4]
- 2:45 pm: **FDMA-PON architecture according to the FABULOUS European project**, **Silvio Abrate**, Istituto Superiore Mario Boella (Italy); **Roberto Gaudino**, Politecnico di Torino (Italy); **Benoit Charbonnier**, France Telecom R&D (France) ..... [8645-3]
- Coffee Break ..... Tue 3:05 pm to 3:30 pm



**SESSION 3**

Room: 202 (Mezzanine) ..... Tue 3:30 pm to 6:00 pm

**NOTE ROOM CHANGE**

**Integrated Network Photonics Devices  
for Next-Generation Network**

Joint Session with Conferences 8645, 8646, and 8647

Session Chair: **Martin Bouda**, Fujitsu Network Communications Inc. (USA); **Benjamin B. Dingel**, Nasfne Photonics, Inc. (USA)

3:30 pm: **Integrated devices for 100G and higher data rates for the next-generation optical communication systems** (*Invited Paper*), Yoshinori Hibino, NTT Electronics Corp. (Japan); Atul K. Srivastava, NEL America, Inc. (USA) ..... [8646-5]

3:55 pm: **Ultrafast optical signal processing and characterization based on fiber/integrated-waveguide technologies** (*Invited Paper*), Jose Azana, Institut National de la Recherche Scientifique (Canada) ..... [8647-3]

4:20 pm: **Integrated optical receivers using planar lightwave circuit technology** (*Invited Paper*), Toshikazu Hashimoto, Nippon Telegraph and Telephone Corp. (Japan) ..... [8646-6]

4:45 pm: **Devices for variation-tolerant low-loss high-index contrast photonic integrated circuits** (*Invited Paper*), Wesley D. Sacher, Joyce K. S. Poon, Univ. of Toronto (Canada) ..... [8645-4]

5:10 pm: **A global standardization trend for high-speed client and line side transceivers** (*Invited Paper*), Hideki Isono, Fujitsu Optical Components (Japan) ..... [8646-7]

5:35 pm: **Optical techniques for generating and demultiplexing higher-order modulation formats** (*Invited Paper*), Alan E. Willner, The Univ. of Southern California (USA) ..... [8646-21]

**Wednesday 6 February**

**SESSION 4**

Room: 270 (Mezzanine) ..... Wed 8:00 am to 10:20 am

**Orbital Angular Momentum (OAM)-  
Multiplexing Technologies**

Session Chair: **Taiji Sakamoto**, Nippon Telegraph and Telephone Corp. (Japan)

8:00 am: **Reconfigurable optical networking functions using orbital angular momentum** (*Invited Paper*), Alan E. Willner, The Univ. of Southern California (USA) ..... [8647-4]

8:30 am: **Optical vortices: an innovative approach to increase spectral efficiency by fiber mode-division multiplexing** (*Invited Paper*), Pierpaolo Boffi, Paolo Martelli, Alberto Gatto, Mario Martinelli, Politecnico di Milano (Italy) ..... [8647-5]

9:00 am: **Performance analysis of spectrally efficient free-space data link using spatially multiplexed orbital angular momentum beams**, Hao Huang, Yongxiong Ren, Yan Yan, Yang Yue, Nisar Ahmed, Amanda Bozovich, The Univ. of Southern California (USA); Samuel J. Dolinar Jr., Jet Propulsion Lab. (USA); Alan E. Willner, The Univ. of Southern California (USA) ..... [8647-6]

9:20 am: **Orbital Angular Momentum (OAM) in fibers for scalable optical networks** (*Invited Paper*), Siddharth Ramachandran, The Boston Univ. Photonics Ctr. (USA) ..... [8647-7]

9:50 am: **Few-mode fiber transmission with in-line few-mode erbium-doped fiber amplifier** (*Invited Paper*), Ezra Ip, NEC Labs. America, Inc. (USA); Ming-Jun Li, Kevin Bennett, Scott R. Bickham, Corning Inc. (USA); Yue-Kai Huang, Akihiro Tanaka, Eduardo Mateo, Junqiang Hu, Ting Wang, NEC Labs. America (USA); Andrey Korolev, Konstantin Koreshkov, Corning Inc. (USA); William Wood, Corning Inc (USA); Jesus Linares, Carlos Montero, Vincente Moreno, Xesus Prieto, Univ. of Santiago de Compostela (Spain); Yutaka Yano, Yoshiaki Aono, Tsutomu Tajima, Kiyoshi Fukuchi, NEC Corp. (Japan) ..... [8647-8]

Coffee Break .....Wed 10:20 am to 10:50 am

**SESSION 5**

Room: 270 (Mezzanine) ..... Wed 10:50 am to 12:10 pm

**Mode- and Space-Multiplexing Technologies**

Session Chair: **Fatih Yaman**, NEC Labs. America, Inc. (USA)

10:50 am: **Few-mode fiber for optical MIMO transmission with low-computational complexity** (*Invited Paper*), Taiji Sakamoto, Takayoshi Mori, Takashi Yamamoto, Fumihiko Yamamoto, Nippon Telegraph and Telephone Corp. (Japan) ..... [8647-9]

11:20 am: **Measuring differential group delay and distributed scattering in few mode fibers for mode division multiplexing** (*Invited Paper*), Jeffrey W. Nicholson, OFS Labs. (USA); Lars Grüner-Nielsen, K. Jerspersen, OFS (Denmark); Yi Sun, OFS Fitel LLC (USA); Robert L. Lingle Jr., OFS Fiel LLC (USA); Dan P. Jakobsen, Bera Palsdottir, OFS (Denmark) ..... [8647-10]

11:50 am: **Separation of LP modes using volume holographic demultiplexer with a dual-wavelength method for mode division multiplexing**, Kento Kawabata, Atsushi Okamoto, Hokkaido Univ. (Japan); Satoshi Honma, University of Yamanashi (Japan); Yuta Wakayama, Hokkaido Univ. (Japan); Kunihiro Sato, Hokkai-Gakuen University (Japan); Akihisa Tomita, Hokkaido Univ. (Japan) ..... [8647-11]

Lunch/Exhibition Break .....Wed 12:10 pm to 1:10 pm

**SESSION 6**

Room: 202 (Mezzanine) .....Wed 1:10 pm to 3:15 pm

**NOTE ROOM CHANGE**

**Next Generation Optical Fibers**

Joint Session with Conferences 8646 and 8647

Session Chairs: **Ronald Freund**, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany); **Ronald Freund**, Fraunhofer-Institut für Nachrichtentechnik Heinrich-Hertz-Institut (Germany)

1:10 pm: **Novel optical fibers for high-capacity transmission systems** (*Invited Paper*), Ming-Jun Li, Corning Incorporated (USA) ..... [8647-12]

1:35 pm: **Modeling linear and nonlinear transmission in multi-mode fibers** (*Invited Paper*), Cristian Antonelli, Antonio Mecozzi, Univ. degli Studi dell'Aquila (Italy); Mark Shtaiif, Tel Aviv Univ. (Israel) ..... [8647-13]

2:00 pm: **Multicore fiber with one-ring structure** (*Invited Paper*), Shoichiro Matsuo, Yusuke Sasaki, I. Ishida, Katsuhiko Takenaga, Fujikura Ltd. (Japan); Kunimasa Saitoh, Masanori Koshiba, Hokkaido Univ. (Japan) ..... [8647-14]

2:25 pm: **Polarization studies of GRIN MMF for short haul/access networks** (*Invited Paper*), Scott S. H. Yam, Queen's Univ. (Canada) ..... [8646-16]

2:50 pm: **Application-specific specialty optical fibers: A new platform for challenging fiber designs** (*Invited Paper*), Bishnu P. Pal, Indian Institute of Technology Delhi (India) ..... [8646-17]

Coffee Break .....Wed 3:15 pm to 3:40 pm

**SESSION 7**

Room: 270 (Mezzanine) .....Wed 3:40 pm to 5:40 pm

**Modeling and Signal Processing in Coherent  
Communication System (DSP)**

Session Chair: **Mark Shtaiif**, Tel Aviv Univ. (Israel)

3:40 pm: **Optical transmission modeling by means of Volterra series** (*Invited Paper*), António L. J. Teixeira, Univ. de Aveiro (Portugal) and Nokia Siemens Networks (Portugal) and Instituto de Telecomunicacoes (Portugal); Jacklyn D. Reis, Univ. de Aveiro (Portugal) and Instituto de Telecomunicacoes (Portugal) ..... [8647-15]

4:10 pm: **Quasi-phase-matched electro-optic modulators for high-speed signal processing**, James E. Toney, SRICO Inc. (USA); Vincent Stenger, James Busch, Peter Pontius, Michael Clabough, Andrea Pollick, Sri Sriram, SRICO Inc (USA) ..... [8647-16]

4:30 pm: **Filter-bank based digital sub-banding ASIC architecture for coherent optical receivers** (*Invited Paper*), Moshe Nazarathy, Alex Tolmachev, Technion-Israel Institute of Technology (Israel) ..... [8647-17]

**OPTO**

# Conference 8647 · Room: 270 (Mezzanine)

5:00 pm: **Mathematical and system level HW description DSP algorithms modeling investigation in an experimental 100G optical coherent system**, Vitor B Ribeiro, Flávio A. Silva, Julio C. R. F. Oliveira, Lucas V. Franz, Eduardo O. Schneider, Cleber Moretti, CpqD Foundation (Brazil); Stenio M Ranzini, CPqD (Brazil) ..... [8647-18]

5:20 pm: **Complexity-reduced digital nonlinear compensation for coherent optical system**, Zhenning Tao, Liang Dou, Weizhen Yan, Yangyang Fan, Fujitsu Research and Development Center Co., Ltd. (China); Lei Li, Fujitsu Research and Development Center Co., Ltd. (China); Shoichiro Oda, Yuichi Akiyama, Hisao Nakashima, Takeshi Hoshida, Jens Rasmussen, Fujitsu Labs., Ltd. (Japan)..... [8647-19]

## POSTERS-WEDNESDAY

**Room: 103 (Exhibit Level) ..... Wed 6:00 pm to 8:00 pm**

Conference attendees are invited to attend the OPTO poster session on Wednesday evening. Come view the posters, enjoy light refreshments, ask questions, and network with colleagues in your field. Authors of poster papers will be present to answer questions concerning their papers. Attendees are required to wear their conference registration badges to the poster sessions. Poster authors, view poster presentation guidelines and set-up instructions at <http://spie.org/PWPPosterGuidelines>.

**Optically-actuated MEMS and Bragg grating-based optical switch design**, Anjan K. Ghosh, Dipen Barot, Dhruvhai Ambani Institute of Information and Communication Technology (India); Sagnik Pal, University of Florida (USA) ..... [8647-26]

## Thursday 7 February

### SESSION 8

**Room: 202 (Mezzanine) ..... Thu 8:30 am to 10:00 am**

#### NOTE ROOM CHANGE

#### High-Order Modulation Formats and Coding Formats

Joint Session with Conferences 8646 and 8647

Session Chairs: **Julio C. R. F. Oliveira**, CpqD Foundation (Brazil); **Guifang Li**, CREOL, The College of Optics and Photonics, Univ. of Central Florida (USA)

8:30 am: **Advanced techniques and concepts for ultra-high-speed optical networking (Invited Paper)**, Milorad Cvijetic, College of Optical Sciences, The Univ. of Arizona (USA) ..... [8646-19]

9:00 am: **Experimental investigation of 100-Gbps transmission over 80-km single mode fiber using discrete multi-tone modulation**, Toshiki Tanaka, Masato Nishihara, Tomoo Takahara, Fujitsu Labs., Ltd. (Japan); Lei Li, Zhenning Tao, Fujitsu Research and Development Center Co., Ltd. (China); Jens C. Rasmussen, Fujitsu Labs., Ltd. (Japan) ..... [8646-20]

9:20 am: **Performance comparison of RZ pulse formats in PDM-16QAM high rates transmissions with optical pre-filtering**, Edson P. da Silva, Luis H. de Carvalho, Marcelo L. Lopes, Vitor B. Ribeiro, CpqD Foundation (Brazil); Aldário C. Bordonalli, Univ. Estadual de Campinas (Brazil); Julio C. R. F. Oliveira, CpqD Foundation (Brazil) ..... [8647-20]

9:40 am: **All-optical amplitude regeneration for non-return-to-zero differential-phase-shift-keying signal**, Bingrong Zou, Wuhan National Lab. for Optoelectronics (China); Yu Yu, Wuhan National Laboratory for Optoelectronics, Huazhong Univ of Science & Technology (China); Kaisheng Chen, Lei Xiang, Wuhan National Lab. for Optoelectronics (China); Weili Yang, Wuhan National Laboratory for Optoelectronics, Huazhong Univ of Science & Technology (China); Xinliang Zhang, Wuhan National Lab. for Optoelectronics (China) ..... [8647-21]

Coffee Break ..... Thu 10:00 am to 10:30 am

### SESSION 9

**Room: 202 (Mezzanine) ..... Thu 10:30 am to 11:30 am**

#### NOTE ROOM CHANGE

#### High-Speed Components and Signal Monitoring

Joint Session with Conferences 8646 and 8647

Session Chairs: **Werner Weiershausen**, Deutsche Telekom AG (Germany); **Werner Weiershausen**, Deutsche Telekom AG (Germany)

10:30 am: **Impact of modulator chirp in 100 Gbps class optical discrete multi-tone transmission system**, Masato Nishihara, Toshiki Tanaka, Tomoo Takahara, Fujitsu Labs., Ltd. (Japan); Lei Li, Zhenning Tao, Fujitsu Research and Development Center Co., Ltd. (China); Jens C. Rasmussen, Fujitsu Labs., Ltd. (Japan) ..... [8646-23]

10:50 am: **Nyquist-WDM transmission of 7 x 192 Gb/s PDM 16-QAM signals using high-speed DACs operating at 42 GS/s**, Shogo Yamanaka, NTT Photonics Labs. (Japan); Takayuki Kobayashi, Akihide Sano, Akihiko Matsuura, Yutaka Miyamoto, NTT Network Innovation Laboratories (Japan); Munehiko Nagatani, Hideyuki Nosaka, NTT Photonics Laboratories (Japan) ..... [8646-24]

11:10 am: **Simulation and experimental validation of OSNR monitoring for different modulation formats using delay-line-interferometer**, Wajih A. Daab, Salman Khaleghi, Mohamed R. Chitgarha, Morteza Ziyadi, Alan E. Willner, The Univ. of Southern California (USA) ..... [8646-25]

Lunch/Exhibition Break ..... Thu 11:30 am to 1:00 pm

### SESSION 10

**Room: 202 (Mezzanine) ..... Thu 1:00 pm to 3:20 pm**

#### NOTE ROOM CHANGE

#### Novel Light Sources, Amplifiers and Devices

Joint Session with Conferences 8646 and 8647

Session Chair: **Achyut K. Dutta**, Banpil Photonics, Inc. (USA)

1:00 pm: **Optical regeneration on signals beyond 100Gbps with phase-sensitive amplification (Invited Paper)**, Youichi Akasaka, Fujitsu Network Communications Inc. (USA); Jeng-Yuan Yang, Inwoong Kim, Motoyoshi Sekiya, Fujitsu Laboratories of America (USA) ..... [8646-26]

1:30 pm: **Advances in pulse stabilization schemes for high-repetition rate actively mode-locked fiber lasers (Invited Paper)**, Balaji Srinivasan, Anish Bekal, Indian Institute of Technology Madras (India) ..... [8646-27]

2:00 pm: **1.3- $\mu$ m waveband multiple-wavelength InAs/InGaAs quantum dot light source for wide wavelength range of 10 Gb/s transmissions over 8-km long holey fiber**, Yasuaki Kurata, Aoyama Gakuin Univ. (Japan); Naokatsu Yamamoto, Kouichi Akahane, Tetsuya Kawanishi, National Institute of Information and Communications Technology (Japan); Hideyuki Sotobayashi, Aoyama Gakuin Univ. (Japan); Yuki Yoshioka, Hiroshi Takai, Tokyo Denki Univ. (Japan) ..... [8646-28]

2:20 pm: **High-speed in-line polarimeter with the built-in polarization reference as a sensor in fiber optic transmission systems**, Vitaly Mikhailov, Bryan Rabin, Paul Westbrook, OFS Labs. (USA) ..... [8647-22]

2:40 pm: **Supercontinuum generation in dispersion-tailored lead-silicate fiber taper**, Hongyu Hu, Wenbo Li, Shaozhen Ma, Niloy K. Dutta, Univ. of Connecticut (USA) ..... [8647-23]

3:00 pm: **A new scheme for novel all-optical wavelength conversion with ultrabroad conversion tunability and modulation-transparency**, Yongkang Gong, Nigel J. Copner, Kang Li, Jungang Huang, Juan J. Martinez, Daniel Rees-Whippey, Sara Carver, Univ. of Glamorgan (United Kingdom) ..... [8647-24]

# Index of Authors, Chairs, and Committee Members

- A**
- Aalders, Maurice C. G. [8572-S9]  
Session Chair, [8587-49] S7, [8587-8] S1, [8592-36] S9
- Aallos, Ville [8601-81] SPTue
- Aalto, Timo** [8629-11] S3, [8629-12] S3
- A'Amar, Ousama M. [8565-76] S6, [8565-86] S8
- Aarabi, Ardalan [8565-163] S5, [8574-26] SPSun, [8580-14] S9
- Aaron, Holly L. 8588 SPSun Session Chair
- Aaron, Michelle T. [8579-18] S4
- Abadia, Nicolas [8628-2] S1, [8628-2] S10
- Abakumova, Tatyana [8579-16] S4
- Abaya, Tanya Vanessa F. [8565-210] S4, [8586-27] S5
- Abbasi, Azhar Zahoor [8595-31] S8
- Abbaspour, Reza [8597-37] S8
- Abdelhafez, Mohamed R. [8619-21] S5
- Abdesselem, Mouna** [8595-28] S7
- Abdou Ahmed, Marwan [8621-64] SPWed
- Abdul Muttalib, Muhammad Firdaus [8604-35] S7
- Abdulla, Ghaleb M. 8602 Program Committee
- Abdul-Majid, Sawsan [8645-13] S5
- Abe, Chiaki [8579-27] S6
- Abe, David K. [8624-16] S5, [8624-5] S3
- Abe, Eisuke [8635-10] S3
- Abe, Hiroshi [8594-4] S2
- Abe, Nobuyuki [8609-12] S3
- Abed, Farah A. [8627-44] SPWed
- Abell, Joshua [8620-53] S11, [8620-53] S13, [8631-58] S11
- Abendschein, Dana [8596-8] S3
- Abeygunawardhana, Pradeep K. [8591-24] SPWed
- Abeytunge, Sanjeeva [8572-36] S7, [8577-5] S2
- Abeywickrema, Ujitha A. [8644-1] S1
- Abid, Mohamed [8626-36] S8
- Abi-Salloum, Tony 8636 Program Committee, [8636-48] S10
- Abolghasem, Payam [8635-43] S13
- Abolghasemi, Ladan E. [8607-40] S11
- Abolmaesumi, Purang [8581-156] SPMon
- Abookasis, David 8565 Program Committee, 8565 S5 Session Chair, [8565-168] S1
- Abou El Hossein, Khaled [8567-85] SPSun
- Abraham, Thomas [8588-64] S9
- Abrams, Uri [8572-43] S8
- Abbate, Silvio [8601-76] SPTue, [8645-26] SPWed, [8645-3] S2
- Abreu-Afonso, Javier [8611-16] S4
- Abshire, James [8599-25] S5, [8599-7] S2
- Abstreiter, Gerhard [8623-55] S14, [8631-94] S15
- Abu-Abed, Alaeddin S. [8642-33] SPWed
- Abushkin, Ivan A. [8565-17] SPSun
- Acbas, Gheorghe [8623-4] S2
- Acerbi, Fabio [8631-45] S9
- Acevedo, Xavier O. [8576-24] S5
- Achilefu, Samuel** [8565-50] SP1, [8572-46] S9, [8573-30] S5, [8573-31] SPSun, [8577-7] S2, [8577-8] SPWed, 8578 Program Committee, 8578 S12 Session Chair, [8578-75] S12, [8587-73] SPMon, 8596 Conference Chair, 8596 S1 Session Chair, [8596-11] S3, [8596-40] SPMon, [8596-41] SPMon, [8596-6] S2
- Achourbekov, Nariman [8644-2] S1
- Aciole, Joubert Mateus S. [8569-20] SPSat
- Ackermann, Roland [8611-9] S2
- Ackert, Jason J.** [8629-26] S7
- Acklin, Bruno [8605-9] S2
- Acosta, Roberto [8603-25] S6
- Acosta, Victor [8635-13] S4, [8636-37] S8
- Acquaviva, Joseph R. [8582-12] S3, [8582-16] S4
- Acuna, Guillermo P. 8595 S3 Session Chair, [8595-10] S2
- Adachi, Chihaya** 8622 S9 Session Chair, [8622-31] S8
- Adachi, Masayoshi [8625-7] S2
- Adalsteinsson, Orn [8569-17] S4, [8582-10] S2, [8582-9] S2
- Adam, Jean-Luc 8621 Program Committee
- Adam, Jost [8587-38] S6, [8611-22] S5, [8621-47] SPWed
- Adamiec, Pawel [8640-59] S13
- Adamo, Gabriele [8629-45] SPWed
- Adams, Alfred R. [8640-64] S14
- Adams, Michael J. [8619-83] S9
- Adams, Sarah M. [8632-50] S11
- Adawi, Eid [8585-17] S3
- Adhi, Mehreen [8567-27] S5
- Adhikari, Dipendra [8619-38] S9
- Adhikari, Sanjay [8577-27] S9
- Adhikary, Sourav [8634-28] SPWed
- Adibi, Ali** [8594-9] S3, [8597-37] S8, [8600-53] S13, 8613 Track Chair, 8631 Track Chair, 8632 Conference Chair, 8632 S1 Session Chair, 8632 S3 Session Chair, 8632 S7 Session Chair, 8632 Track Chair, [8632-33] S8, [8632-34] S8, [8632-51] S11, 8633 Track Chair, 8634 Track Chair
- Adie, Steven G. [8571-115] SPMon, [8571-5] S1, [8572-20] S4, [8592-39] S9
- Adinda-Ougba, Adamou [8589-56] SPWED
- Adler, Steffen [8606-10] S3
- Adler-Golden, Steven M.** [8618-12] S4
- Adriaenssens, Tom [8565-6] S5, [8565-7] S3
- Adulfas, Abrutis [8626-37] S9
- Adur, Javier F. [8588-57] S8
- Aeschlimann, Martin [8623-32] S9
- Afanasev, Andrei [8620-20] S5, [8620-64] SPWed
- Afonina, Svetlana [8611-14] S3
- Afshar, Maziar [8611-5] S1
- Afshar, Shahraam V. [8600-72] SPTue
- Afthinos, Alexandros [8587-52] S8
- Agamalyan, Natella R. [8626-63] SPWed, [8626-64] SPWed
- Agar, Nathalie [8588-21] S3
- Agcaer, Semih [8592-41] S9
- Aggalwar, Ishwar [8599-18] S4, [8601-108] SPTue
- Aggarwal, Ish D. [8621-36] S7
- Aglyamov, Salavat R. [8567-52] S9, [8571-64] S10, [8581-69] S9
- Agnihotri, Pratik [8625-68] S14
- Agrawal, Anant [8567-28] S6, [8573-11] S3, [8573-11] S5, 8583 Program Committee, [8583-9] S2
- Agrawal, Krishan M. [8583-9] S2
- Agrawal, Rajat [8615-6] S2
- Agresti, Michele [8605-7] S2
- Agre?, Vid [8601-78] SPTue
- Agro?, Diego [8629-45] SPWed
- Aguilar, Guillermo [8565-175] S2, [8611-55] SPTue
- Aguiló Diaz, Magdalena [8594-6] S2, [8599-3] S1, [8599-4] S1, [8625-26] S6
- Aguirre, Aguirre D. [8571-99] SPMon
- Aguirre, Andres** [8578-72] S12, [8581-173] SPMon, [8581-97] SPSun
- Agut, Montserrat [8596-9] S3
- Ahirwar, Pankaj [8606-12] S4, [8606-13] S4
- Ahluwalia, Balpreet Singh** [8587-12] S2
- Ahmad, Adeel** [8565-13] S2, [8571-115] SPMon, [8571-5] S1, [8571-81] S12
- Ahmed, Farid [8607-57] SPTue, [8611-54] SPTue
- Ahmed, Nisar** [8647-6] S4
- Ahmed, Osman S.** [8619-26] S6, [8630-13] S3
- Ahmed, Shaaz [8581-133] SPSun
- Ahmed, Sohail 8590 Program Committee
- Ahn, Byeong-Hyeon [8634-4] S1
- Ahn, Byungmin [8600-44] S11
- Ahn, Doyeol [8625-34] S8
- Ahn, Ho Young [8625-45] S10
- Ahn, Hyeeyoung [8625-18] S4
- Ahn, Jaehyun [8630-12] S3
- Ahn, Jong-Hyun [8641-12] S3
- Ahn, Jungbin [8587-54] S8
- Aho, Arto [8620-55] S14
- Ahrendt, Thomas [8613-29] S6
- Ahsan, Md. Shamim [8607-57] SPTue, [8611-54] SPTue, [8615-19] S4
- Ahsen, Osman O.** [8571-99] SPMon, [8587-26] S4
- Ahumada, Manuel [8643-21] SPWed
- Aich, Anupam [8615-18] S4
- Aida, Hideo [8625-6] S2
- Aidam, Rolf [8606-19] S6, [8631-15] S17, [8640-49] S11
- Aieta, Francesco [8633-20] S6, [8640-24] S6
- Aikawa, Chikara [8625-6] S2
- Aikio, Mika [8616-9] S2
- Ailuno, Julie [8607-32] S9
- Aimé, Carole [8587-46] S7, [8588-63] S9
- Airiau, Jean-Philippe [8602-15] S4
- Aiso, Sadakazu [8565-33] S8
- Aitchison, James Stewart [8611-30] S6, [8611-35] S7
- Aizenberg, Joanna [8598-4] S2, [8632-1] S1
- Aizpurua, Javier 8623 S5 Session Chair, [8623-26] S8
- Akagi, Jin [8615-34] S7, [8615-49] SPTue
- Akahane, Kouichi [8619-1] S1, [8646-28] S10, [8646-28] S9
- Akamatsu, Hideki [8644-34] SPWed
- Asakawa, Youichi [8646-26] S10, [8646-26] S9
- Asakasi, Isamu [8625-31] S7, [8625-73] SPWed, [8641-17] S4, [8641-20] S4, [8641-70] SPWed
- Akbulut, Duygu [8637-30] S7
- Akens, Margarete K. [8565-238] S5, [8588-62] S9
- Akers, Walter J.** [8573-30] S5, [8573-31] SPSun, [8578-75] S12, [8587-30] S4, 8596 S6 Session Chair, [8596-11] S3, [8596-8] S3
- Akhlagh Moayed, Alireza [8567-81] SPSun
- Akiba, Akira [8614-2] S1
- Akikusa, Naota [8565-16] S8
- Akimoto, Ryoichi [8640-14] S3
- Akimov, Yuriy [8619-43] S11, [8619-43] S13
- Akins, Brian A. [8595-46] S10, [8595-64] S14
- Akins, Meredith [8575-17] S4
- Akiyama, Masayuki [8617-3] S1
- Akiyama, Terunobu [8614-15] S3
- Akiyama, Tomoyuki [8630-26] S7
- Akiyama, Yuichi [8647-19] S7
- Akkipreddi, Ramam [8616-24] S5
- Akl, Tony J. [8591-7] S2
- Aknoun, Sherazade [8587-48] S7, [8589-45] S10
- Akouala, Christer-Rajiv [8631-65] S12
- Akpinar, Erol [8642-1] S1
- Akrout, Akram [8619-36] S9, [8640-8] S2
- Aksyuk, Vladimir A. [8600-67] S16, [8616-31] S7
- Akula, James D. [8567-37] S7
- Al Saleh, Mohammad [8638-1] S1
- Alagic, Nermina [8568-17] S4, [8568-47] S7
- Alali, Sanaz [8592-12] S4
- Alam, Shaif-ul [8606-7] S2
- Al-Arabe, Khaled M. [8615-28] S6
- Alavi, Karim [8624-23] S6
- Albelda, Steven M. [8568-40] SPMon
- Albert, Claire [8587-46] S7
- Albert, Jacques [8623-54] S14
- Albert, Jens [8615-5] S1
- Albert, Michael M.** [8599-24] S5
- Alberts, Antonio C. [8630-19] S5, [8643-8] S2
- Albrecht, Alexander R.** [8606-9] S3, [8638-4] S1
- Aldaya, Ivan A. [8645-18] S6
- Aldeek, Fadi H. [8595-11] S2
- Aldukhayel, Abdullah [8640-66] S14
- Alegria, Kim [8605-2] S1
- Alekperov, Oktay [8620-41] S10
- Aleksandrova, Anastasiia [8593-19] S5
- Aleman, Benjamin J. [8635-11] S4
- Aleman, Andenet [8620-50] S12
- Alencar, Adriano M. [8569-8] S2
- Alencar, Márcio A. R. C. [8622-12] S3
- Alexandrakis, George** [8565-196] S5, [8565-198] S5, [8588-89] SPSun
- Alexandratou, Eleni [8594-14] S4
- Alexandrov, Antigoni 8595 Program Committee, [8595-28] S7
- Alexandrov, Alexander [8600-2] S1
- Alexandrov, Peter [8565-35] S1
- Alexandrov, Sergey A. [8580-32] S7, [8592-11] S4
- Alexoudi, Theonitsa [8621-12] S3
- Aleyasin, Hossein [8588-83] SPSun
- Alfano, Robert R. 8565 Program Committee, [8565-218] S1, [8565-220] S1, [8565-50] SP1, 8577 Conference Chair, 8577 S8 Session Chair, [8577-1] S1, [8577-10] S5, [8577-11] S5, [8577-7] S2, [8577-8] SPWed, 8578 Conference CoChair, [8587-73] SPMon, [8621-65] SPWed, 8637 Program Committee, [8637-3] S1, [8637-50] S2, [8637-51] SPWed
- Alfieri, Domenico [8565-16] S4, [8588-95] SPSun
- Alfieri, Vittorio [8603-17] S5
- Alford, Charles [8628-23] S8
- Algar, W. Russ [8595-43] S10, [8595-53] S12
- Algora, Carlos [8620-35] S9
- Alhenc-Gelas, Claire [8601-56] S13
- Ali, Amir [8600-65] S15
- Ali, Latif M. [8627-44] SPWed
- Ali, Murtaza** [8571-115] SPMon
- Ali, Safina [8565-88] S8
- Alisafae, Hossein [8600-76] SPTue
- Alkeskjold, Thomas T. [8601-19] S5, [8601-21] S6, [8601-29] S7, [8601-73] SPTue, [8601-96] SPTue
- Allard, Sybille [8607-1] S1, [8607-1] S5
- Allegra Mascaro, Anna Letizia [8588-47] S7
- Allen, Charles R.** [8620-13] S3
- Allen, Claudine Ni. [8600-57] S14, [8600-64] S15
- Allen, David W.** 8573 Program Committee, [8573-13] S3, [8573-13] S5, [8573-23] S6, [8583-8] S2
- Allen, Jeffery W. [8570-1] S1, [8624-30] S8, [8626-4] S1
- Allen, Kenneth W. [8567-80] SPSun
- Allen, Mark G. [8631-9] S2
- Allen, Monica S. [8570-1] S1, [8626-4] S1
- Allen, R. Steve [8576-5] S1
- Allen, S. James [8626-14] S4



# Index of Authors, Chairs, and Committee Members

- Allen, Thomas J. [8581-50] S8  
Allier, Cédric P. [8570-22] S6, [8572-39] S8, [8587-7] S1, [8591-23] SPWed  
Allioux, David [8621-29] S6  
Allison, W. [8610-21] S4  
Alloatti, Luca [8629-24] S7  
Alloncle, Anne Patricia B. [8607-32] S9  
Al-Mahrouki, Azza [8581-146] SPMon  
Almeida, Juliana Mara P. [8604-52] SPTue  
Almeida, Paulo 8601 Program Committee, 8601 S7 Session Chair  
Almosni, Samy [8631-78] S15  
Almqvist, Scott [8584-32] S9  
Alonas, Eric [8590-42] SPSUN  
Alonso, Miguel A. [8637-40] S10  
Alonso-Caneiro, David [8567-14] S3  
Alpers, Charles [8567-79] SPSun, [8571-78] S12  
**Alpmann, Christina** [8637-11] S2  
**Alqasemi, Umar S.** [8581-129] SPSun, [8581-173] SPMon, [8581-174] SPMon, [8581-97] SPSun  
**Alsteens, David A.** [8590-14] S4  
Alston, Robert [8626-40] S10  
**Ait, Clemens** [8587-16] S2  
Al-Tamimi, Abdel-Karim 8645 Program Committee  
Altorki, Nasser [8565-116] S5  
**Altschuler, Gregory B.** 8566 Program Committee, [8580-17] S4  
**Alvarez-Chavez, Jose Alfredo** 8608 Program Committee  
Alves, Agnelo N. [8579-36] SPMon  
Alves, Eduardo [8626-22] S5  
Alves, Fabio [8624-35] S9, [8624-36] S9  
Alves, Guilherme A. [8596-44] SPMon, [8619-76] SPWed  
Alves, Leandro P. [8596-42] SPMon  
Alwi, Rudolf [8581-120] SPSun  
Amaechi, Bennett T. 8565 Program Committee  
Amako, Jun [8608-10] S2  
Amann, Markus Christian 8633 Program Committee  
Amann, Markus Christian [8599-60] S12, [8631-67] S12, [8639-11] S4, [8639-15] S4, [8639-16] S4, [8640-40] S9, [8640-64] S14  
Amano, Hiroshi 8619 Program Committee, 8625 Program Committee, [8625-17] S4  
Amaya, Ferny O. [8627-17] S4  
Amb, Chad M. [8622-4] S1  
Ambacher, Oliver [8616-37] S8  
Ameer-Beg, Simon M. [8588-34] S5, [8588-44] S7, [8590-13] S2  
Amelink, Arjen [8565-47] S4, [8578-25] S5  
Amemiya, Tomohiro [8630-7] S2  
**Amin, Fahim** [8612-13] S3  
**Amini, Sina** [8587-42] S7  
Amirhaghi, Sasson [8631-57] S11  
Amirian, James H. [8581-13] S2  
Ammar, David A. [8567-50] S9, [8611-8] S2  
Amoobi Khosroabadi, Akram [8632-18] S4  
Amor, Rumelo C.  
Amos, William B.  
Amrani, Ido [8605-4] S1  
**An, Haiyan** [8605-18] S4, [8605-30] S7  
An, Ho-Myoung [8641-38] S8, [8641-71] SPWed  
An, Jungkwun [8616-25] S6  
An, Lin [8567-3] S1, [8567-5] S1, [8571-122] SPMon, [8571-63] S10, [8580-40] S8  
An, Ran [8592-8] S3, [8593-21] S5  
An, Rari [8565-224] S2  
**An, Yuri** [8572-1] S1  
Anand, Jagmeet Kaur [8619-59] SPWed, [8619-79] SPWed  
Anand, Jyoti [8619-59] SPWed, [8619-79] SPWed  
Anand, Sanjay [8568-31] S7, [8568-6] S2  
Ananda, Shalini [8594-8] S3  
Anastasio, Mark A. 8581 Program Committee, [8581-166] SPMon, [8581-175] SPMon, [8581-179] SPMon, [8581-22] S4, [8581-4] S1, [8581-5] S1  
Anbil, Sriram R. [8568-17] S4, [8568-47] S7  
Ancona, Antonio [8607-23] S7  
Andermann, Mark [8565-200] S5  
Anders, Juanita 8569 Conference Chair  
Andersen, Aaron [8565-192] SPSun  
**Andersen, Dan E.** [8567-7] S2  
**Andersen, Peter E.** 8571 Program Committee, 8571 S6 Session Chair, [8604-3] S1  
Andersen, Thomas V. [8601-21] S6  
**Anderson, Brian** [8601-122] SPTue  
Anderson, Kurt I. [8588-7] S10  
Anderson, Pamela G. [8578-22] S4  
Anderson, R. Rox Symposium Chair, [8565-29] S7, [8588-20] S3, [8592-1] S1  
Anderson, Wayne A. [8594-2] S1  
Andersson-Engels, Stefan 8577 Program Committee, [8583-5] S2  
Anderton, Shane [8593-26] SPSun  
Ando, Jun [8597-7] S2  
Andrade, Acácio A [8595-58] S13, [8621-46] SPWed, [8634-27] SPWed  
Andraud, Chantal 8622 Program Committee, 8622 S3 Session Chair, [8622-15] S4  
André, Raphael [8571-1] S1  
Andreana, Marco [8589-29] S6  
Andreev, Andrey [8603-22] S5  
Andrekson, Peter A. [8639-28] S7  
Andreozzi, Patrizia [8595-5] S1  
Andrés, Miguel V. [8601-86] SPTue  
Andrew, Jennifer [8594-8] S3  
Andrews, Aaron Maxwell [8631-20] S17, [8640-43] S10, [8640-44] S10  
**Andrews, David L.** Symposium Chair, 8635 S8 Session Chair, 8637 Conference Chair, 8637 S5 Session Chair, [8637-7] S1  
Andrews, David W. [8568-26] S7  
Andrews, Jonathan R. [8610-34] S7  
Andrews, Michael K. [8580-6] S1, [8580-7] S1  
Andrews, Peter M. [8565-35] S1  
Andriana, Bibin B. [8587-24] S4, [8591-10] S3  
Andriani, Rudy T. [8576-15] S3  
Andronico, Alessio [8631-81] S16  
Angelo, Joseph [8578-26] S5  
Angeloni, Sylvia [8613-48] SPTue, [8631-91] SPWed  
**Angulo-Vinuesa, Xabier** [8636-20] S4  
Anis, Fatima [8581-175] SPMon, [8581-22] S4  
Anis, Hanan [8576-14] S3  
Annes, Kelly [8579-35] SPMon  
Anoikin, Eugene V. [8603-6] S10, [8603-6] S2  
Anopchenko, Oleksiy [8629-39] S10  
**Ansari, Rafat R.** 8567 Program Committee, 8567 S5 Session Chair, 8567 S8 Session Chair, [8567-6] S1, 8591 Program Committee  
Ansbaek, Thor [8639-12] S4  
Antezza, Roberto [8608-29] S13, [8608-29] S6  
Anthony, Brian W. 8615 Program Committee, 8615 S4 Session Chair, [8615-16] S4, [8615-51] SPTue  
Anthony, Neil R.  
**Anti, Michele** [8631-45] S9  
**Antila, Jarkko E.** [8614-7] S2  
Antipin, Mikhail Yu. [8604-46] SPTue  
Antoine, Martine [8572-21] S4  
Antolin, Elisa [8620-18] S5  
Antolini, Francesco [8607-1] S1, [8607-1] S5  
Antonelli, Cristian [8647-13] S6  
Antoszyk, Andrew N. [8567-80] SPSun  
Anusha, P. T. [8622-53] SPWed, [8623-65] SPWed  
**Anvari, Bahman** [8568-41] SPMon, [8596-2] S1  
Anvari, Mehran [8565-224] S2  
Anwar, Mehdi F. [8626-10] S3  
Anwar, Shahzad [8569-19] S4  
Aoki, Isao [8622-28] S7  
Aoki, Nobuyori [8567-60] SPSun  
Aoki, Shingori [8630-3] S1  
Aoki, Tsuyoshi [8630-3] S1  
Aoki, Yuta [8639-22] S6  
Aono, Yoshiaki [8647-8] S4  
Aota, Natsuko [8625-6] S2  
**Aoyama, Kazuki** [8625-73] SPWed  
Aparicio, Conrado [8566-7] S2  
Apolonskiy, Alexander A. [8599-60] S12, [8601-87] SPTue  
Appanaboyina, Sunil [8584-31] S9  
Appavoo, Kannatassen [8623-11] S4  
Appelt, Daniel [8589-15] S4  
Applegate, Brian E. [8565-28] S7, [8565-56] S1, [8571-65] S10, [8581-126] SPSun, [8581-81] S11  
Applegate, Matthew B. [8565-100] S1, [8565-101] S2, [8565-117] S5, [8565-118] S5, [8571-23] S4  
Arabul, Mustafa Umit [8581-114] SPSun  
**Arafin, Shamsul** [8640-64] S14  
Aragón, Andrew A. [8620-57] S14  
Arai, Shigehisa [8630-7] S2  
Arai, Tsunenori [8565-3] S8, [8565-33] S8, [8579-12] S3  
Arakawa, Yasuhiko 8619 Conference Chair, [8634-29] S2, 8640 Program Committee, [8640-31] S7  
Araki, Tsutomu [8588-106] SPSun, [8588-107] SPSun  
Araki, Tsutomu [8625-1] S1  
Arany, Praveen R. 8569 Program Committee, 8569 S2 Session Chair, [8569-28] S2  
Araque Caballero, Miguel Angel [8581-44] S7  
Arathorn, David W. [8567-30] S6, [8567-70] SPSun  
Arbab, M. Hassan 8585 S3 Session Chair, [8585-20] S3  
Archambault, Andre [8601-116] SPTue  
Archid, Rami [8591-14] S3  
Ardern-Jones, Michael R. [8595-1] S1  
Ardershirpour, Yasaman [8596-32] S9  
Ardershirpour, Yasaman [8577-3] S1, [8578-85] S14  
Arditi, Aries [8615-6] S2  
Arellano, Cristina [8627-37] S9  
Arguirov, Tzanimir [8628-18] S7  
Arimoto, Hidenobu [8587-64] SPMon  
**Arimoto, Yoshinori** [8610-7] S2  
Arissian, Ladan [8600-7] S2, [8604-16] S4  
Arita, Yoshihiko [8611-2] S1  
Arita, Yoshiaki [8636-35] S7  
Arit, Jan J. [8637-26] S5, [8637-26] S8  
**Armani, Andrea M.** [8594-1] S1, [8600-61] S14, [8621-28] S6, [8627-24] S6  
Armes, Steven [8596-28] S8  
**Armijo, Leisha M.** [8595-46] S10, [8595-51] S11, [8595-64] S14  
Armour, Michael [8584-37] S1  
**Armstrong, Darrell J.** 8604 Program Committee, 8604 S4 Session Chair, 8604 S5 Session Chair  
Arnason, Arni T. [8575-6] S2  
Arnaud, Agnès [8624-45] S1  
Arnold, Christophe [8619-5] S1  
**Arnold, Craig B.** 8607 Program Committee, 8608 Program Committee, 8611 Program Committee, 8611 S6 Session Chair  
Arnold, Stephen [8570-14] S4, [8600-63] S15  
Arora, Rohit [8565-188] SPSun  
Arridge, Simon R. [8578-70] S11, [8581-30] S5  
Arrieta-Quintero, Esdras [8567-84] SPSun  
Arrigoni, Marco F. [8588-43] S7  
Arsenault, Andre C. [8613-26] S6  
Arshavsky, Vadim [8571-46] S7  
Arslan, Selin [8615-44] S10  
Artacho, Irene [8620-18] S5  
**Artal, Pablo** [8567-40] S7, [8642-7] S2  
Arteaga, Carlos L. [8588-73] SPSun  
Artundo, Iñigo [8627-7] S2  
Aruna, Prakasarao [8577-6] S2, [8595-18] S4  
Arvizu-Mondragon, Arturo [8645-29] SPWed  
Aryal, Mukti [8613-28] S6  
Asadchikov, Victor E. [8594-21] S6  
Asakawa, Koji [8613-24] S5  
Asano, Koji [8621-49] SPWed  
Asano, Tanemasa [8626-30] S7  
Asano, Tomoya [8619-1] S1  
Ascarí, Alessandro [8603-14] S4, [8603-15] S4  
Aschinger, Gerold [8571-40] S7  
**Aschke, Lutz** 8600 Conference CoChair, 8600 S10 Session Chair, [8600-37] S1, [8600-37] S9, 8603 S2 Session Chair  
Asghari, Mehdi [8630-23] S6  
Ashida, Hiroshi [8565-170] S1, [8581-102] SPSun  
Ashida, Masaaki [8626-50] S11  
Ashitate, Yoshitomo [8574-17] S4  
Ashkenazi, Shai [8581-40] S7, [8581-63] S9, [8596-25] S8  
Aslani, Arash [8565-95] S9  
Aslanyan, Tigran A. [8626-63] SPWed, [8626-64] SPWed  
Asmis, Reto [8595-17] S4  
Asmolova, Olga [8621-10] S3  
Asokan, Sundarajan [8598-25] SPSUN  
Aspelmeyer, Markus  
Asryan, Levon V. [8634-7] S2  
Assayag, Osnath [8572-21] S4  
Assefa, Solomon [8600-19] S5, [8630-10] S3  
Asselberghs, Inge [8622-60] SPWed  
Astolfi, Marco [8612-14] S3  
Astratov, Vasily N. [8567-80] SPSun, [8594-11] S4, [8627-13] S3  
**Asundi, Anand Krishna** [8644-39] SPWed  
**Atalla, Mahmoud R. M.** [8620-47] S11  
Atalla, Rasha [8642-23] S7  
Atanasov, Yuriy [8608-22] S5  
Athos, Brian [8585-15] S3  
Atia, Walid [8571-102] SPMon, [8571-103] SPMon  
Atkinson, Neely [8572-38] S7  
Atsumi, Yuki [8630-7] S2  
Atsumori, Hirokazu [8578-108] SPSun  
Attaluri, Anilchandra [8584-37] S1  
Attias, André-Jean [8622-45] S11  
Atwater, Harry 8620 Program Committee, [8620-12] S3, [8632-12] S3  
Atzori, Marco [8586-22] S3  
Au Yang, Robert [8646-13] S5  
Au, Kin Man [8596-28] S8  
**Aubailly, Mathieu** [8610-36] S7  
**Aubé, Benoit** [8587-28] S4  
Aubert, Isabelle [8588-94] SPSun  
**Audet, Ross M.** [8627-26] S6  
Audi, Said [8580-31] S6  
Auger, Mathieu [8571-56] S9  
Auguste, Jean-Louis [8621-26] S5



# Index of Authors, Chairs, and Committee Members

- Augustine, George J. 8586 Program Committee, 8586 S3 Session Chair, [8586-2] S1
- Augustovs, Peteris [8622-52] SPWed
- Aumann, Andreas [8637-33] S8
- Aung, Htet [8592-33] S8
- Aung, Nyan L. [8640-68] SPWed
- Aungskunsiri, K. [8628-16] S6
- Aus-der-Au, Juerg [8611-37] S8
- Auyeung, Raymond C. Y. [8607-29] S9, [8608-25] S4, [8631-70] S13
- Avdeev, Yury [8607-50] SPTue
- Aveline, David C. [8600-44] S11
- Averna, Tiffany [8578-14] S3
- Avetisyan, Yuri Artashesovich [8580-53] SPMon
- Aveyard, Jenny L. [8587-76] SPMon, [8587-77] SPMon, [8594-28] S7, [8594-29] S7
- Avrahamov, Erez [8643-18] SPWed
- Avramescu, Adrian [8640-15] S3
- Avramov-Zamurovic, Svetlana [8610-31] S7
- Avrutin, Vitaliy [8625-52] S11, [8625-81] SPWed, [8625-83] SPWed, [8625-85] SPWed, [8625-86] SPWed, [8625-87] SPWed
- Awad, Hani A. [8565-219] S1
- Awaji, Satoshi [8621-4] S1
- Awasthi, Kamlesh [8578-84] S14
- Awasthi, Samir [8588-69] S10
- Awatsui, Yasuhiro** [8633-31] S10
- Awazu, Kunio** [8565-16] S8, [8565-24] S9, [8566-11] S3, [8579-27] S6
- Awschalom, David D. [8635-11] S4
- Awzal, Abdul A. S.** 8602 Conference Chair, [8602-2] S1, [8602-9] S3
- Ayad, Nancy [8567-76] SPSun
- Ayanam Parthasarathy, Vijaya Raghavan [8595-29] S7
- Ayata, Cenk [8565-177] S3
- Ayazi, Ali [8587-38] S6, [8611-22] S5
- Aydin, Koray** [8631-103] S14, [8632-72] S16
- Aydt, Alex [8596-19] S6
- Ayesheshim, Ayesheshim [8585-26] S5
- Aygn, Levent E.** [8626-65] SPWed
- Aysan, Nuray [8569-12] S3
- Aytac Kiperçil, Esra [8581-114] SPSun, [8581-136] SPMon
- Aytac, Yigit [8634-28] SPWed
- Azad, Abul K. [8623-19] S5
- Azana, Jose [8647-3] S3
- Azar, Faris [8565-76] S6, [8565-86] S8
- Azar, Fred S. 8574 Conference Chair, 8574 S1 Session Chair, 8574 S3 Session Chair
- Azawi, Dhia Ahmed [8603-35] SPTue
- Azeredo, Carlos L. S. [8571-113] SPMon
- Azevedo, Maria Isabel [8644-28] S7
- Azimipour, Mehdi [8586-30] SPSun, [8621-7] S2
- Aziz, Hany [8624-11] S4
- Azucena, Oscar A. [8617-13] S3
- B**
- B. M., Vadhiraja [8611-50] SPTue
- Baac, Hyoung Won [8581-71] S10, [8581-73] S10, [8627-25] SPWed
- Baba, Toshihiko [8594-16] S5, [8594-4] S2, 8619 Program Committee, [8630-11] S3, [8636-32] S7, [8636-33] S7, [8636-35] S7
- Babaei, Ali [8612-24] SPTue
- Babajanyan, Vahan G. [8621-57] S2
- Babic, Dubravko [8639-10] S3
- Babicheva, Viktoriya E.** [8627-33] S8
- Babin, Sergey A. [8601-87] SPTue
- Bacci, Stefano [8565-16] S4
- Bach, Tobias [8622-10] S3, [8624-46] S11
- Bacher, Gerd 8641 Program Committee, 8641 S6 Session Chair
- Bacher, Michael [8610-6] S2
- Bachert, Charley [8601-15] S4, [8601-15] S9, [8603-9] S3
- Bächle, Andreas [8606-19] S6
- Bachmann, Adrian H. [8571-106] SPMon, [8571-109] SPMon
- Bachmann, Alexander Meeting VIP
- Bachmann, Alexander [8565-53] SP1
- Bachmann, Friedrich G.** 8605 Program Committee, 8605 S4 Session Chair, 8608 Program Committee, 8608 S5 Session Chair
- Backer, Adam S. [8590-20] S6
- Backer, Joseph M. [8578-99] SPSun
- Backer, Marina V. [8578-99] SPSun
- Backlund, Mikael P. [8590-20] S6
- Backman, Vadim [8571-39] S6, [8573-6] S2, 8592 Conference Chair, [8592-32] S8, [8592-35] S8, [8592-38] S9
- Badano, Giacomo [8631-14] S3, [8631-71] S13
- Bader, Markus [8565-36] S1, [8565-46] S3
- Badgley, J. [8610-21] S4
- Badie, Behnam [8595-61] S14
- Badikov, Dmitrii V. [8604-43] SPTue
- Badikov, Valerii V. [8599-75] SPTue, [8604-43] SPTue
- Bae, Jungmok [8616-15] S3, [8616-15] S4, [8643-4] S1
- Bae, Sanghoon [8641-12] S3
- Bae, Sungchul [8565-195] S1
- Bae, Youngwoo [8583-16] S4
- Bae, Yunjin [8583-16] S4
- Baek, Jong Hyeob 8625 Program Committee, 8631 Program Committee, 8631 S9 Session Chair
- Baek, Seung-Kuk [8565-90] S9
- Baek, Youngbin [8622-50] SPWed
- Baer, Cyril R. E. [8601-25] S7
- Baets, Roel G.** [8627-18] S5, [8627-6] S2, [8629-41] S11, [8633-28] S9
- Baggaley, Elizabeth [8588-115] SPSun
- Baggett, Brenda [8577-4] S2
- Baghani, Ali [8581-156] SPMon
- Bagnaninchi, Pierre O. 8580 Program Committee, [8580-13] S2
- Bagnato, Vanderlei S. [8569-9] S2
- Bagot, P. A. J. [8625-92] S4
- Bahatt, Dar [8572-24] S5
- Bahavar, Cody [8582-11] S3
- Bahgat Shehata, Andrea [8631-49] S9
- Bahk, Seung-Whan [8602-14] S4
- Bahl, Gaurav [8600-23] S6
- Bahmani, Baharak** [8588-41] SPMon, [8596-2] S1
- Bahriz, Michael [8631-83] S16
- Bai, Jintao [8565-22] S5
- Bai, John [8605-14] S3, [8605-23] S5, [8605-5] S1
- Bai, Neng [8624-34] S8
- Bai, Yanbo [8631-100] S4, [8631-21] S4, [8631-97] S1
- Bai, Yi-Chi [8643-17] S4
- Bai, Yuqiang [8593-20] S5
- Baig, Sarfaraz [8613-35] S8, [8630-15] S4
- Baik, Chan-Wook [8625-45] S10
- Baik, Seunghyun [8624-26] S7, [8624-27] S7
- Bailey, Christopher G. [8620-30] S8, [8620-53] S11, [8620-53] S13
- Bailey, Sheila G. 8620 Program Committee
- Baili, Ghaya [8606-28] S8
- Bain, Angus J. [8590-27] S8
- Bajcsy, Michal [8635-41] S12
- Bajwa, Neha [8585-32] S6, [8624-2] S2
- Bakanas, Ramunas J. [8644-7] S2
- Bake, Shameena [8593-18] S4
- Baker, Colin [8599-18] S4
- Baker, James E.** [8570-8] S2
- Baker, Sandra M. [8587-17] S2
- Baker, Wesley B. [8578-115] SPSun
- Bakir, Badhise Ben [8633-2] S1, [8639-7] S3
- Bakkers, Erik P. A. M. [8623-56] S14, [8637-30] S7
- Bakma, Amina [8622-45] S11
- Bakr, Mohamed Heaba [8619-21] S5, [8619-26] S6, [8630-13] S3
- Bakthavathsalam, Padmavathy [8572-55] SPSun
- Balachandran, Rajesh [8632-55] S12
- Balagopal, Bavishna B. [8611-2] S1
- Balakireva, Irina** [8600-12] S3, [8600-73] SPTue
- Balakrishnan, Ganesh [8606-12] S4, [8606-13] S4, [8620-57] S14, [8625-27] S6
- Balalaeva, Irina V.** [8578-73] S12
- Bald, Timothy [8620-33] S8
- Balda, Rolindes** 8621 Program Committee, 8621 S5 Session Chair, [8626-46] S12, [8638-1] S1
- Baldacchini, Thommaso [8613-6] S2
- Baldini, Francesco** [8572-49] S9, [8591-17] S4, [8596-31] S9, [8600-62] S15, [8627-51] SPWed
- Baleg, Sana Mohammed [8619-69] SPWed
- Balevicius, Zigmans [8613-43] SPTue
- Balla, Naveen K. [8588-104] SPSun
- Ballato, John** [8599-39] SPTue, 8601 Program Committee, 8601 S6 Session Chair, [8601-17] S5, [8601-18] S5
- Balle, Salvador [8640-59] S13
- Ballestri, Marco [8596-31] S9
- Balli, Enkeleada [8601-112] SPTue
- Balocchi, A. [8631-78] S15
- Balonek, Gregory [8602-13] S4
- Balsley, David R. [8601-102] SPTue
- Balthasar, Gerhard [8613-31] S7
- Balti, Imen [8626-52] SPWed
- Balu David, Munusamy [8577-6] S2
- Balu, Mihaela [8575-18] S4, [8588-39] S6
- Bamberg, Ernst [8586-16] S3, [8586-23] S5
- Bamiedakis, Nikolaos [8630-17] S4
- Bammer, Ferdinand [8601-78] SPTue
- Ban, Dayan [8631-82] S16
- Ban, Han Y.** [8578-14] S3, [8578-35] S6
- Ban, Ibrahim [8629-34] S9
- Banath, Judit [8572-38] S7
- Bancelin, Stéphane** [8587-46] S7, [8588-63] S9
- Bandeira de Souza, Amadeu [8622-12] S3
- Bandi, Tobias [8614-21] S4
- Bandi, Vinzenz [8571-109] SPMon
- Bando, Hiroki [8643-1] S1
- Bandosz, Teresa [8621-65] SPWed
- Bandyopadhyay, Neelanjana [8631-100] S4, [8631-21] S4, [8631-97] S1
- Banerjee, Animesh [8640-18] S4
- Banerjee, Bhaskar** [8577-32] S10, [8577-4] S2
- Banerjee, Partha P.** [8644-1] S1
- Banerjee, Saumyabrata [8602-17] S4
- Banerjee, Sudeep [8599-46] S8
- Bang, Kyu-Hyun [8625-47] S11
- Bang, Man-Seok [8569-27] SPSat
- Bang, Ole [8581-39] S7
- Bangert, M. [8615-21] S5
- Banjara, Bishorup** [8586-32] SPSun
- Banks, Hunter [8623-21] S6
- Bansal, Akshaya [8594-10] S3
- Bansal, Ashu K. [8607-1] S1, [8607-1] S5
- Bante-Guerra, Jose [8584-36] S10
- Bányász, István [8627-4] S1
- Bao, Jiming [8632-43] S10
- Bao, Kui [8632-43] S10
- Bao, Ling [8605-14] S3, [8605-23] S5, [8605-33] S7, [8605-5] S1
- Baptista, Mauricio Silva [8594-24] S6
- Bar On, Dror [8646-13] S5
- Barabas, James [8644-17] S4
- Barale, Pierre-Olivier [8615-6] S2
- Baran, Timothy M. [8578-112] SPSun
- Baranec, Christoph** [8617-8] S2
- Barankov, Roman [8601-19] S5
- Baranov, Alexei N.** [8600-15] S4, [8631-83] S16
- Baranov, Igor Ya. [8611-51] SPTue
- Baranski, Maciej [8616-2] S1, [8616-2] S7
- Baratti, Mariana O. [8588-57] S8
- Baratto, Camilla [8626-21] S5
- Barbano, Emerson Cristiano [8604-50] SPTue
- Barbastathis, George [8589-26] S5
- Barbeau, Jody [8590-13] S2
- Barber, Greg D. [8620-2] S1
- Barbier, Denis [8627-19] S5
- Barbieri, Marco [8636-38] S8
- Barbieri, Stefano 8631 S17 Session Chair, 8631 S3 Session Chair, [8631-2] S1
- Barbiero, Martina [8578-59] S10
- Barbisan, Diego [8641-53] S11
- Barbosa, Artur F. [8569-20] SPSat, [8569-22] SPSat
- Barbosa, Luiz C. [8601-83] SPTue, [8601-85] SPTue
- Barcikowski, Stephan [8593-22] S5, [8595-16] S4
- Barcikowski, Stephan [8608-24] S5, [8609-9] S3, [8611-13] S3
- Barclay, Paul E. [8600-68] S16
- Barczys, Matthew [8602-14] S4
- Bar-David, Yossi [8590-16] S5
- Bardou, Nathalie [8589-21] S5, [8620-11] S3, [8631-74] S14, [8632-53] S12
- Bargiel, Sylwester [8616-2] S1, [8616-2] S7
- Baribeau, François [8583-20] S3, [8583-20] S5, [8583-5] S2
- Barja, Paulo R. [8596-42] SPMon
- Barker, Jeffrey W. [8565-163] S5, [8574-26] SPSun
- Barker, Roger A. [8597-5] S2
- Barland, Stephane [8636-46] S9
- Barlow, Aaron M. [8589-29] S6
- Barman, Ishan [8572-35] S7, [8577-12] S6, [8579-20] S5
- Barnea, Ofer [8585-17] S3
- Barnowski, Tobias [8605-18] S4
- Barolet, Daniel 8569 Program Committee
- Barot, Dipen [8647-26] SPWed
- Barreira, E. William [8594-6] S2
- Barrett, Christopher J. [8632-1] S1
- Barroca, Thomas [8589-37] S8, [8589-43] S9, [8590-43] SPSun, [8597-41] S8
- Barth, Thierry [8602-15] S4
- Bartalini, Saverio [8631-3] S1
- Bartasyte, Ausrine [8626-37] S9
- Bartczak, Dorota [8595-1] S1
- Bartelt, Hartmut [8627-41] S9
- Barth, Johannes V. [8623-37] S10
- Barth, Michael [8635-45] S13
- Barth, Richard J. [8592-31] S7
- Barth, Dominik [8601-91] SPTue
- Barton, Jennifer K.** 8572 S4 Session Chair, 8575 S6 Session Chair, [8575-25] S6, [8575-26] S6, [8577-24] S9, [8596-43] SPMon
- Barty, Christopher P. J.** 8602 Conference CoChair
- Barucci, Andrea [8576-30] S5
- Barwicz, Tymon [8600-19] S5
- Barygina, Victoria [8588-86] SPSun
- Baryshev, Alexander V. [8632-9] S2
- Barzda, Virginijus [8588-62] S9, [8588-66] S10, [8596-27] S8
- Basan, Fabiola [8591-22] SPWed
- Baselt, Tobias [8591-22] SPWed, [8611-19] S4
- Bashkansky, Mark [8635-25] S7
- Bashkatov, Alexey N. [8580-54] SPMon

# Index of Authors, Chairs, and Committee Members

- Basov, Dmitri N. [8632-68] S15  
Bassi, Amarjeet S. [8615-28] S6  
Bassi, Andrea [8578-70] S11, [8593-10] S3, [8596-24] S7, [8631-48] S9  
Bassnett, Steven [8567-84] SPSun  
Basso Moro, Sara [8578-111] SPSun  
Bastard, Lionel [8627-15] S4  
Bastiaansen, Cees W. M. [8642-22] S7, [8642-3] S1  
Bastos de Carvalho, Fabiola B. [8569-23] SPSat  
Bastos-Filho, Carmelo J. A. [8646-12] S5  
Basu, Arindam [8634-6] S2  
Bateschell, Michael [8586-17] S3  
Bättig, Rainer [8605-34] S7  
Battie, Philip R. [8604-5] S2  
Batts, Shelly [8565-67] S3  
Baudot, Charles [8628-2] S1, [8628-2] S10  
Bauer, Adam [8631-59] S11, [8631-95] S18  
Bauer, Adam Q. [8565-164] S1, [8565-204] S5, [8573-31] SPSun, [8580-36] S8  
Bauer, Hannes [8630-16] S4  
**Bauer, Ralf** [8599-29] S6, [8616-14] S3  
Bauer-Marschallinger, Johannes [8581-93] SPSun  
Baughman, William [8585-19] S3, [8585-36] S6  
Baum, Mario [8613-59] SPTue  
Baum, Olga I. [8595-60] S14  
**Baumann, Bernhard** [8567-12] S3, [8567-15] S3, [8567-25] S5, [8567-47] S8, [8571-13] S3, [8571-15] S3, [8571-45] S7, [8571-77] S12  
Baumann, Dirk [8583-3] S1  
Baumann, Heinz [8568-36] SPMon  
Baumberg, Jeremy John [8623-16] S5  
**Baumgart, Joerg** [8641-6] S2  
Baumgartel, Lukas M. [8600-44] S11  
**Baumgartl, Martin** [8565-185] S4, [8611-16] S4  
Baumgartner, Oskar [8631-20] S17  
Bausá, Luisa E. [8594-6] S2  
Baxi, Jigesh [8567-28] S6  
Bay, Erwin [8581-142] SPMon  
Bayabo, Jan Kristine [8571-4] S1  
Bayat, Dara [8616-16] S3, [8616-16] S4  
**Baylam, Isinsu** [8599-41] S8  
Bayrak, Coskun [8581-171] SPMon  
**Bayram, Can** [8626-20] S5, 8631 Program Committee, 8631 S16 Session Chair, [8631-33] S7  
Bayramian, Andy J. 8602 Program Committee  
Bayya, Shyam S. [8601-108] SPTue  
Bazin, Alexandre [8629-41] S11  
Beach, Samuel J. [8628-19] S7  
Beadie, Guy [8637-31] S7  
Beaman, Joseph J. [8607-26] S8  
Beard, Matthew C. [8620-27] S7  
Beard, Paul C. 8581 Program Committee, 8581 S5 Session Chair, [8581-32] S6, [8581-50] S8, [8581-56] S8, [8581-65] S9  
Bearinger, Jane P. [8591-18] S4  
Bearman, Gregory H. [8587-29] S4  
Beater, Susanne [8595-10] S2  
Beau, Vincent [8602-15] S4  
Beaudette, Kathy [8565-229] S3  
Beaulieu-Ouellet, Emilie [8565-229] S3  
Beaumont, Bernard [8624-8] S3  
Beaureaugeres, Patrick [8601-47] S12  
**Beaurepaire, Emmanuel** [8588-67] S10, [8593-25] SPSun, [8617-14] S3, [8622-24] S6  
Beausoleil, Raymond G. [8628-1] S1, [8628-1] S10, [8633-19] S6, [8635-13] S4  
Beavan, Sarah E. [8635-23] S6  
Bec, Julien [8565-29] S4, [8565-36] S4, [8574-27] SPSun  
Bechstedt, Friedhelm [8626-3] S1  
Bechtel, Hans A. [8623-7] S3  
Beck, Mattias [8623-31] S7, [8623-57] S15  
Becker, Christoph [8603-1] S1, [8603-1] S9  
Becker, Frank [8601-110] SPTue  
Becker, Holger 8570 Program Committee, 8615 Conference Chair, 8615 S1 Session Chair, 8615 S10 Session Chair, [8615-12] S3, [8615-15] S4, [8615-21] S5, [8615-27] S6  
**Becker, Martin** [8577-18] S7, [8615-5] S1  
**Becker, Michael F.** 8618 Program Committee, 8618 S4 Session Chair, 8618 S5 Session Chair, [8618-20] S6  
**Becker, Wolfgang** 8588 Program Committee, [8588-28] S4  
Beckert, Erik [8615-15] S4, [8616-27] S6  
Beckford, Garfield [8596-4] S2  
Beck-Schimmer, Beatrice [8595-41] S9  
Bedard, Noah [8565-85] S8  
Bedford, Robert G. [8604-31] S7, [8606-12] S4, [8606-13] S4  
Bednar, Bohumil 8596 Program Committee  
Bedoni, Marzia [8595-8] S2  
Beeckman, Jeroen [8639-13] S4, [8639-9] S3  
Beere, Harvey E. [8606-20] S6, [8631-5] S2, [8640-39] S9  
Beeson, Karl [8568-48] SPMon, [8596-30] S9  
Beez, Johannes [8635-46] S13  
**Begin, Steve** [8588-22] S3  
Begishev, Ildar A. [8599-26] S6, [8602-13] S4  
Bègue, Aurélien [8637-19] S4  
Behergaray, Simone [8567-13] S3  
Behfar, Alex [8640-5] S1  
Behnke, Christopher [8621-47] SPWed  
Behnke, Thomas [8595-55] S13  
Behr, Bradford B. [8572-37] S7  
Beier, Franz [8601-100] SPTue  
Beier, Hope Thomas 8585 Program Committee, [8585-28] S5  
Beier, Imke [8566-15] S4  
Beigang, Rene [8585-3] S1, [8585-6] S1  
Beigel, Rebecca [8565-110] S4  
Bejarano Nosas, Diego [8615-43] S10, [8615-55] SPTue  
Bekal, Anish [8646-27] S10, [8646-27] S9  
Belacel, Cherif [8631-69] S13  
Belahsene, Sofiane [8631-95] S18  
Belancon, Marcos P. [8601-83] SPTue, [8601-85] SPTue  
Belanger, Erik [8588-22] S3  
Beleites, Claudia [8615-5] S1  
Belembouis, Francois [8621-64] SPWed  
Belenky, Gregory [8640-21] S5  
Belicov, Andrei V. [8566-17] S4  
Beliveau-Viel, David [8570-12] S3  
Belke, Steffen [8601-110] SPTue  
Belkin, Michael 8567 Program Committee, 8567 S8 Session Chair  
**Belkin, Mikhail A.** [8585-8] S1, [8631-67] S12, 8640 S10 Session Chair, [8640-21] S5, [8640-40] S9  
**Bell, Jake** [8601-101] SPTue, [8601-102] SPTue  
Bell, L. Douglas [8625-68] S14  
**Bellis, Hal** 8618 Program Committee, 8618 S5 Session Chair  
Bellis, Stephen J. [8621-56] SPWed  
Bellisai, Simone [8631-44] S9, [8631-48] S9  
Bellotti, Enrico 8619 S4 Session Chair, [8619-16] S4, [8619-50] S13  
**Belmonte Palmero, Carlos** [8639-9] S3  
**Belyanin, Alexey A.** [8604-38] S8, 8640 Conference Chair, 8640 S5 Session Chair  
**Belz, Mathias** [8576-24] S5  
Ben Ishai, Paul [8585-36] S6  
Ben Masad, Taha M. [8629-18] S4  
Benabdallah, Nadia [8589-18] S4  
Benabid, Fetah [8601-35] S9, [8636-19] S4  
Benali, Abdelali [8577-29] S10  
Ben-Amotz, Dor [8588-5] S1  
Bénazech-Lavoué, Magali [8583-5] S2  
Benbouija, Fouzi [8565-80] S7  
Bencheikh, Kamel [8636-54] S11  
Bender, Daniel 8638 Program Committee, [8638-10] S2, [8638-16] S4  
Benech, Pierre [8616-20] S5, [8627-19] S5  
Benecke, Wolfgang [8612-18] S4, [8613-44] SPTue, [8616-9] S2  
Benedict-Gill, Ryan [8618-25] S7  
Benhsaien, Abdessamad [8640-8] S2  
**Bennett, Andrew M.** [8603-6] S10, [8603-6] S2  
Bennett, Anthony J. [8634-2] S1  
Bennett, James [8600-26] S6  
Bennett, Kevin W. [8621-16] S4, [8647-8] S4  
Bennett, Mitchell [8620-21] S5  
Bennett, S. E. [8625-92] S4  
Benoît à la Guillaume, Quentin [8621-14] S3  
Benoit, Emilie [8581-95] SPSun, [8581-96] SPSun  
Benredjem, Djamel [8602-10] S3, [8602-4] S2  
Benson, Oliver [8635-15] S4, [8635-45] S13  
Bente, Erwin A. J. M. [8627-14] S4  
Bentini, Gian Giuseppe [8612-14] S3  
Bentley, Dave [8577-24] S9  
**Bentley, Julie** [8573-5] S2  
Bentley, Rex C. [8592-27] S7  
**Ben-Yakar, Adela** [8565-79] S7, [8575-32] SPSun, [8588-78] SPSun  
Benz, Alexander [8632-63] S14, [8632-64] S14, [8640-43] S10  
Bérard, Philippe [8621-48] SPWed, [8621-5] S2  
Berchera, Ivano Ruo [8635-31] S6, [8635-31] S9  
Berclaz, Corinne [8571-48] S8, [8571-79] S12, [8589-51] S11  
Berdin, Glen [8639-24] S6  
Berencén, Yonder [8629-39] S10  
Berendt, Martin Ole [8601-60] S14  
Berens, Michael [8606-16] S5  
Berer, Thomas [8581-112] SPSun, [8581-115] SPSun, [8581-93] SPSun  
Beresna, Martynas [8607-46] S12  
Berezin, Mikhail Y. [8572-46] S9, [8587-30] S4, 8596 Program Committee, 8596 S5 Session Chair, [8596-19] S6, [8596-8] S3  
Berg, Joel H. [8566-3] S1  
Bergamaschi, Anna [8587-10] S1  
Berge, Bruno [8616-38] S8  
**Berger, Andrew J.** [8565-219] S1, 8572 S8 Session Chair, [8592-25] S6  
Berger, Michel [8578-79] S13  
Berger, Vincent 8631 Program Committee  
Berger, Walter [8565-187] S4  
Bergeron, Alain [8624-14] S4  
Bergeron, Hugo [8600-57] S14  
Bergeron, Michel G. [8600-64] S15  
Bergethon, Peter R. [8578-12] S2, [8578-6] S1  
Bergholt, Mads Sylvest [8576-12] S3, [8577-15] S7  
Berginc, Gérard [8619-27] S7, [8619-29] S7  
Bergman, Keren [8628-22] S8  
Bergmann, Gerald [8611-2] S1  
Bergner, Norbert [8565-186] S4  
Bergonzi, Giovanni [8613-48] SPTue  
Bergonzi, Karla M. [8580-36] S8  
**Bergquist, Jonathon** [8613-54] SPTue  
Berini, Pierre 8627 Conference CoChair, 8627 S8 Session Chair  
Berk, Yuri [8605-4] S1, [8640-54] S12  
Berkofer, Timothy A. [8601-62] S15  
Berland, Keith M.  
Berlin, Jacob M [8595-61] S14  
Berlinguer-Palmini, Rolando [8586-23] S5  
Bermudo, Carmen [8615-53] SPTue  
Bernacki, Bruce E. [8631-32] S6  
Bernal, Nicole [8565-28] S7  
Bernardo, Luis Miguel [8644-28] S7  
Berndt, Elizabeth [8581-158] SPMon  
Berndt, Michael [8594-25] S7  
Berneschi, Simone [8576-30] S5, [8600-62] S15, [8621-22] S5, [8627-4] S1, [8627-51] SPWed  
Bernet, Stefan [8589-24] S5  
Bernhardt, Edward H [8599-8] S2  
Bernier, Martin [8601-52] S13  
Bernini, Romeo [8615-1] S1, [8627-10] S3  
Bernstein, Liane [8565-229] S3  
Berriell-Valdos, Luis Raúl [8644-35] SPWed  
Berrospe, Carla J. [8599-3] S1  
Berry, Christopher W. [8624-32] S8  
**Berry, Patrick A.** 8599 Program Committee, 8599 S3 Session Chair, 8599 S4 Session Chair, [8599-11] S3, [8599-12] S3  
Berry, Shaun R. [8616-35] S8  
Bertazzi, Francesco [8619-16] S4, [8619-50] S13  
Berti, Marina [8625-58] S12  
Bertocchi, Matteo [8629-37] S10  
Bertolotti, Jacopo [8637-30] S7  
Bertozzi, Renato [8611-10] S2  
Bertram, Frank [8625-21] S5, [8625-86] SPWed  
Bertru, Nicolas [8631-78] S15  
Bertucci, Alessandro [8576-13] S3  
Bertz, Andreas [8614-2] S1  
**Bérubé-Lauzière, Yves** 8574 S5 Session Chair, [8574-22] S5, [8578-78] S13, [8578-83] S13, [8583-5] S2  
Besselsen, David G. [8577-24] S9  
Besser, Jan [8613-59] SPTue  
Bessière, Aurélie [8621-23] S5, [8626-26] S6  
Best, Sara L. 8587 S10 Session Chair, 8618 Program Committee, 8618 S1 Session Chair  
Betha, Clyde G. [8624-41] S10  
Bethel, Kelly [8587-44] S7  
**Betschon, Felix** [8630-30] S8  
Bett, Thomas H. [8602-6] S2  
**Bettiol, Andrew A.** [8632-17] S4  
Bettotti, Paolo [8629-28] S7  
Betz, Christian S. [8565-94] S9  
Betz, Markus 8623 Conference Chair, 8623 S3 Session Chair, 8623 S9 Session Chair, [8623-47] S12  
Betz, Vaughn [8592-17] S5  
Beunis, Filip [8622-41] S10  
Beuth, Thorsten [8579-17] S4  
Beutner, Frank [8587-22] S4  
Bewersdorf, Joerg [8589-34] S7, [8617-15] S3  
Bewley, William W. [8631-58] S11  
**Beyali, Ersen** [8599-28] S6  
Beyer, Stefan [8630-30] S8  
Beylin, Alexander [8567-82] SPSun, [8579-10] S3  
Bezares, Francisco J. [8632-45] S10



# Index of Authors, Chairs, and Committee Members

- Bezerra, Hiram G. [8565-41] S3, [8571-26] S4, [8571-27] S4  
 Bezerra, Marcel T. [8634-13] S3  
 Bhadra, Shyamal Kumar [8601-106] SPTue  
 Bhaduri, Basanta [8587-13] S2  
 Bhagwat, Amar R. [8588-59] SPSun  
 Bhandari, Rakesh [8604-4] S1  
 Bhandarkar, Naveen [8565-83] S7  
 Bhatia, Charanjit S. [8639-8] S3  
 Bhattacharya, Pallab K. [8640-18] S4, [8640-4] S1  
 Bhattacharya, Shanti [8616-28] S6  
**Bhattacharyya, Kiran D.** [8570-11] S3  
 Bhattar, Vijayashree S. [8565-85] S8  
 Bhayana, Brijesh [8568-3] S1  
 Bhoraskar, Sudha V. [8598-5] S2  
 Bhujwalla, Zaver [8575-17] S4  
 Bhushan, Ravi [8599-82] SPTue  
 Bhuvana, Thiruvellu [8622-48] S7  
 Bi, Renzhe [8580-27] S5, [8580-34] S7, [8592-19] S5  
 Bi, Xiaohong [8565-231] S3  
 Biagiotti, Paolo 8609 Program Committee  
 Bianchi, Mariana [8588-57] S8  
 Bianco, Federica [8604-34] S7  
 Bianconi, Marco [8612-14] S3  
 Biavardi, Elisa [8631-85] S16  
 Bichler, Max [8623-55] S14, [8631-94] S15  
 Bickham, Scott R. [8647-8] S4  
 Bidoul, Aline A. [8594-18] S5  
 Bie, Hongxia [8567-81] SPSun  
 Biedermann, Benjamin R. [8567-15] S3  
**Biel, Merrill A.** 8568 S6 Session Chair, [8568-21] S5  
 Bieler, Mark [8623-46] S12, [8624-28] S7, [8624-43] S10  
**Bienstman, Peter** [8598-20] S6, [8629-4] S1  
 Bierbrauer, Colin [8586-4] S1  
 Bierden, Paul A. 8614 Program Committee, [8617-4] S1  
 Biesenbach, Jens [8601-110] SPTue, [8605-1] S1, [8605-10] S2, [8605-19] S4, [8605-29] S6, [8605-31] S7  
 Bifano, Thomas G. 8617 Conference Chair, 8617 S1 Session Chair, 8617 S2 Session Chair, [8617-12] S3  
**Bigio, Irving J.** [8565-76] S6, [8565-86] S8, [8578-26] S5, 8592 Program Committee, 8592 S7 Session Chair  
 Bignon, Thibault [8643-3] S1  
 Bigot, Laurent [8600-78] SPTue  
 Bigourd, Damien [8601-47] S12  
 Bigourdan, Florian [8631-69] S13  
 Bijlani, Bhavin J. [8630-23] S6  
 Bijlani, Bhavin J. [8635-43] S13  
 Bilenca, Alberto [8591-19] S4  
**Billmers, Richard** [8621-10] S3  
 Bilousov, Oleksandr V. [8625-26] S6  
 Bimberg, Dieter [8630-27] S7, [8634-11] S2, [8639-30] S8  
 Bin Mohd Nasir, Mohd Narizee [8600-74] SPTue  
 Binder, Devin K. [8565-175] S2, [8571-125] SPMon, [8571-126] SPMon  
 Binder, Rudolf 8638 Program Committee, [8638-15] S4  
 Binder, Vera [8587-16] S2  
 Bingabr, Mohamed [8642-33] SPWed  
 Bingart, Evi [8615-22] S5  
 Binz, Marie [8587-78] SPMon  
 Biolot, Jean-Pierre [8595-28] S7  
 Birabassov, Rouslan [8644-2] S1  
 Birch, David [8615-6] S2  
 Birch, David J. [8587-4] S1  
 Biris, Alexandru S. [8581-167] SPMon  
 Birkel, Jörn [8603-13] S4  
 Birks, Tim A. [8635-14] S4  
 Birman, Joseph L. [8637-3] S1  
 Birman, Serge [8593-13] S3  
 Birnbaum, Kevin M. [8610-12] S3, [8610-25] S5, [8610-27] S6  
**Birngruber, Reginald** [8565-107] S3  
 Bisailon, Charles-Etienne [8583-19] S4  
 Bischof, John C. [8581-63] S9  
 Bischoff, Christian [8600-79] SPTue  
 Bisconti, Silvia [8578-111] SPSun  
 Bish, Sheldon F. [8565-25] S6, [8616-6] S2  
 Bisker, Gili [8597-31] S7  
 Bisland, Stuart [8565-238] S5  
 Bisping, Dirk [8635-10] S3  
 Bispo, Jeyse A. M. [8591-29] SPWed  
 Bisson, Scott E. [8601-58] S14  
 Bista, Rajan K. [8580-32] S7, [8592-11] S4  
 Biswas, Abhijit [8610-13] S3, [8610-25] S5, [8610-27] S6  
 Biswas, Susmito [8615-6] S2  
 Biteen, Julie S. [8590-19] S6, [8590-28] S8, [8597-20] S5  
 Bitterli, Roland [8620-72] SPWed  
 Bittle, Wade [8602-13] S4  
 Bixler, Joel N. [8565-112] S4  
 Bizheva, Kostadinka [8565-75] S6, 8567 Program Committee, 8567 S3 Session Chair, [8567-41] S8, [8567-81] SPSun, 8571 Program Committee, 8571 S10 Session Chair, [8571-93] SPMon  
**Bjelkham, Hans I.** 8644 Conference Chair, 8644 S1 Session Chair, 8644 S2 Session Chair, [8644-18] S5  
 Bjork, Bryce J. [8631-6] S2  
 Blab, Gerhard A. [8588-58] S8, [8588-97] SPSun  
**Black, Bryan** [8586-25] S5  
 Black, Kvar C. [8598-13] S4  
**Blackmon, Richard L.** [8565-42] S3, [8565-44] S3  
 Blahuta, Samuel [8621-23] S5  
**Blair, Steve** [8565-210] S4, [8586-27] S5, [8609-6] S2  
 Blaize, Sylvain [8627-34] S8  
 Blake, Thomas A. [8631-7] S2  
 Blanchard, Romain [8632-68] S15, [8640-22] S5, [8640-23] S5, [8640-47] S11, [8640-48] S11  
 Blanche, Pierre-Alexandre J. [8618-21] S6  
 Blankenbach, Karlheinz 8643 Program Committee  
 Blaser, Stéphane [8631-19] S4  
 Blasl, Martin [8613-27] S6  
**Blatter, Cedric** [8571-41] S7, [8571-55] S8  
 Blau, Pinhas 8604 Program Committee  
 Blau, Werner J. 8622 Program Committee  
 Blavier, Marie [8567-75] SPSun  
 Bledt, Carlos M. [8576-33] S5  
 Bléger, David [8622-45] S11  
**Blesener, Thea** [8594-26] S7  
 Bleul, Regina [8595-63] S14  
 Bleuse, Joël [8619-33] S8, [8619-4] S1  
 Bliisset, Caleb [8631-52] S10  
 Bloch, Sharon [8587-73] SPMon  
 Block, Bruce A. [8629-34] S9  
**Block, Erica K.** [8611-8] S2  
 Bloehbaum, Frank [8616-42] S9  
 Blome, Mark [8642-4] S2  
 Blomster, Ola I. [8605-1] S1  
 Bloyer, Martha [8565-171] S5  
 Blu, Thierry [8581-144] SPMon  
 Blubaugh, Bill 8630 Program Committee  
 Bluiett, Althea G. [8599-39] SPTue, [8621-45] SPWed  
 Blumberg, Girsh [8616-31] S7  
 Blume, Gunnar [8640-55] S12, [8640-9] S2, [8643-6] S1  
 Blumenrath, Andreas [8608-12] S3  
 Blumröder, Ulrike [8624-47] S11  
**Boas, David A.** [8565-177] S3, [8567-47] S8, [8574-16] S4, 8578 Program Committee, 8578 S2 Session Chair, [8578-18] S3, [8578-43] S7, [8578-7] S2  
**Boccara, A. Claude** [8565-116] S5, [8565-184] S4, [8565-37] S1, [8571-25] S4, [8571-51] S8, [8572-21] S4, [8574-8] S2, [8575-23] S6, [8580-16] S3, 8581 Program Committee, 8581 S8 Session Chair, [8593-13] S3, 8597 Program Committee, [8617-11] S3  
 Bocchio, Noelia [8571-48] S8  
 Bocheux, Amandine [8622-45] S11  
 Bochove, Erik J. [8601-123] SPTue, [8601-45] S11, [8601-46] S11  
**Bock, Martin** [8611-27] S5, [8637-20] S4  
 Böcklin, Christoph [8583-3] S1  
 Bockowski, Michal [8625-41] S9, [8625-8] S2  
 Bocsi, Jozsef [8587-22] S4  
 Bodanese, Benito [8565-33] SPSun  
 Bodapati, Sandhya [8583-7] S2  
 Bodnar, Olha [8583-5] S2  
 Boehm, Gerhard [8599-60] S12, [8631-67] S12, [8639-15] S4, [8640-40] S9  
 Boehm, Kevin [8565-109] S4  
 Boerner, Christian [8603-21] S5  
 Boersma, Arjen [8630-34] S9  
 Boetti, Nadia Giovanna [8601-76] SPTue  
 Boeuf, Frédéric [8628-2] S1, [8628-2] S10  
 Boffa, Jean-Jacques [8565-37] S1  
 Boffi, Pierpaolo [8647-5] S4  
 Bogalecki, Alfons Willi [8628-9] S4  
 Bogani, Franco [8625-58] S12  
 Bogatscher, Siegwart [8579-17] S4  
 Bogatyrenko, Viacheslav V. [8629-44] SPWed, [8638-18] SPWed  
 Bogdanov, Simeon [8631-99] S10  
 Bogris, Adonis [8645-16] S6  
 Boher, Pierre M. 8643 Program Committee, [8643-3] S1  
**Bohndiek, Sarah E.** [8583-7] S2  
**Boieriu, Paul** [8631-52] S10  
 Boiko, Dmitri L. [8640-16] S4  
 Boisen, Anja [8600-26] S6  
 Boissier, Guilhem [8631-95] S18  
 Boissinot, Karel [8600-64] S15  
 Boissinot, Maurice [8600-64] S15  
 Bolaños, Western [8599-1] S1, [8599-4] S1  
 Bold, Richard [8587-12] S2  
 Bolduc, Martin [8624-14] S4  
 Boller, Klaus J. [8623-48] S12, [8632-37] S9  
 Bollig, Christoph [8601-100] SPTue  
**Boltasseva, Alexandra** [8619-23] S6  
 Bolze, Frederic 8622 S7 Session Chair, [8622-22] S6  
**Bommarreddi, Rami R.** [8621-24] S5  
 Bommenna, Ramana [8631-52] S10  
 Bommisetty, Venkat [8620-75] SPWed  
 Bon, Pierre [8587-48] S7, [8589-37] S8, [8589-43] S9, [8589-45] S10  
 Bon, William [8618-13] S4  
 Bonacina, Luigi [8611-12] S3, [8611-14] S3, [8611-60] SPTue  
 Bonadio, Federica [8631-85] S16  
 Bond, Essex J. [8602-11] S3  
 Bonenberger, Theresa [8641-6] S2  
 Bonesi, Marco [8567-15] S3  
 Bonfim, Flávio [8597-32] S7  
 Bong, Crystal [8565-92] S9  
 Bonilla, Borja [8640-59] S13  
 Boninelli, Simona [8629-43] S11  
 Bonn, Mischa 8623 Program Committee  
**Bonneau, Damien** [8628-16] S6  
 Bonneau, Keith [8610-23] S5  
 Bonneville, Christophe [8616-20] S5  
 Bonora, Stefano [8571-6] S1  
 Bonse, Jörn [8607-6] S2, [8607-6] S6  
 Bonvin, Debora [8568-51] SPMon  
**Booth, Martin** 8589 Program Committee, 8589 S3 Session Chair, [8589-34] S7, [8611-36] S8, [8613-9] S2, [8617-15] S3, [8637-13] S3  
**Boppart, Stephen A.** [8565-13] S2, [8565-54] S1, [8565-55] S1, 8571 Program Committee, [8571-115] SPMon, [8571-5] S1, [8571-71] S11, [8571-81] S12, [8572-20] S4, [8586-18] S3, 8592 Program Committee, 8592 S9 Session Chair, [8592-39] S9, [8596-15] S2, [8596-15] S4  
 Borcherding, Heike [8595-55] S13  
 Borden, Michael R. [8602-2] S1  
 Bordenave, Edouard [8602-15] S4  
 Bordi, Federico [8631-13] S3  
 Bordonalli, Aldário C. [8647-20] S7A, [8647-20] S8  
 Borejdo, Julian [8590-10] S2, [8590-6] S1  
 Borg, Thomas K. [8580-51] SPMon, [8587-68] SPMon  
 Borges, Ben-Hur Viana [8634-13] S3  
 Borile, Giulia [8588-95] SPSun  
 Borisova, Kristina V. [8601-109] SPTue  
 Borissow, Andrei [8623-26] S8  
**Borja, David** 8567 Program Committee, 8567 S6 Session Chair, [8567-29] S6  
 Borkowski, Robert [8646-2] S2  
 Born, Benjamin P. 8585 Program Committee, [8585-13] S2  
 Bornemann, Nicole [8573-26] SPSun, [8588-30] S4, [8588-33] S5, [8588-36] S5, [8588-88] SPSun, [8590-15] S4, [8590-25] S7, [8590-36] SPSun, [8596-17] S5, [8601-93] SPTue, [8604-8] S2  
 Bornhorst, Kirstin [8613-27] S6  
**Borson, Don M.** 8610 Conference Chair, 8610 S1 Session Chair, [8610-11] S3, [8610-2] S1  
 Borri, Simone [8631-32] S6, [8631-4] S1  
 Börsch, Michael [8587-20] S3, 8588 S5 Session Chair, [8588-27] S4, 8590 Program Committee, [8590-11] S2  
 Borsetto, M. [8612-14] S3  
 Bortolozzo, Umberto [8636-8] S2  
 Bose, Ranjoy [8635-38] S11  
 Bosio, Alessio [8608-29] S13, [8608-29] S6  
 Boso, Gianluca [8578-82] S13, [8578-88] S14, [8619-55] S14  
 Boss, Gerry [8565-103] S2  
**Boschaert, Nienke** [8592-36] S9  
 Bossen, Anke [8566-5] S1, [8571-108] SPMon  
 Bossert, David J. [8599-68] SPTue  
 Botchway, Stanley Walter [8588-115] SPSun  
 Botero Gallego, Mariluz [8615-37] S2  
 Botez, Dan [8604-40] S8, 8640 Program Committee  
 Botshschafter, Elisabeth M. [8623-37] S10  
 Bottegoni, Federico [8631-73] S15  
 Böttger, Gunnar [8630-5] S1  
 Botting, Sam [8580-21] S1  
 Bottomley, Adam [8597-10] S3, [8620-3] S1  
**Botwicz, Marcin** [8583-5] S2  
 Boucaud, Philippe [8625-19] S5  
 Bouchal, Petr [8571-117] SPMon  
 Bouchard, Jean-Pierre 8583 Program Committee, 8583 S2 Session Chair, [8583-20] S3, [8583-20] S5, [8583-5] S2  
 Bouchard, Matthew B. [8565-216] S3  
 Boucher, David [8568-35] SPMon  
 Bouchot, André [8587-55] S8

# Index of Authors, Chairs, and Committee Members

- Bouchoule, Sophie 8606 Program Committee
- Bouda, Martin 8645 S3 Session Chair, 8646 Program Committee, 8646 S3 Session Chair, 8647 S3 Session Chair
- Boudet, Nathalie [8631-78] S15
- Boudoux, Caroline [8565-229] S3, [8565-78] S7, [8565-80] S7, [8571-56] S9, 8574 S2 Session Chair, [8574-10] S2, [8574-6] S1, [8575-22] S5
- Boudreau, Denis** [8570-12] S3, [8597-23] S5
- Boudrioua, Azzedine [8622-35] S8
- Bouhleb, Mohamed-Salim [8587-55] S8
- Bouillet, Stéphane [8602-15] S4
- Boulais, Étienne [8611-4] S1
- Boulard, Brigitte [8621-22] S5
- Boulard, François [8631-14] S3, [8631-71] S13
- Boulet, Pascal [8626-37] S9
- Boulet, Johan [8601-37] S9
- Bouma, Brett E. [8565-101] S2, [8565-105] S3, [8565-107] S3, [8565-118] S5, [8565-14] S2, [8565-19] S9, [8565-20] S7, [8571-23] S4, [8571-34] S6, [8571-36] S6, [8571-91] S4, [8575-12] S3, [8575-6] S2, [8575-7] S2, [8601-11] S3
- Bourauel, Christoph [8566-13] S3, [8566-15] S4
- Bourban, Pierre-Etienne [8592-49] SPSun
- Bourdon, Pierre** [8601-56] S13
- Bourgenot, Cyril J. [8589-32] S7
- Bourg-Heckly, Geneviève** [8575-15] S4
- Bourounia, Tarik [8616-13] S3, [8616-23] S5
- Bourquin, Carole [8595-50] S11
- Bousi, Evgenia [8571-30] S5
- Bousseksou, Adel [8631-83] S16
- Boussey-Said, Jumana [8616-20] S5
- Boustany, Nada N.** [8592-26] S6
- Boutami, Salim [8631-14] S3, [8631-71] S13
- Boutet, Jerome [8578-64] S11
- Boutoussou, Dmitri [8579-5] S1
- Boutwell, Ryan Casey** [8626-62] SPWed
- Bouwens, Arno [8571-48] S8, [8571-54] S8, [8571-79] S12, [8589-51] S11, [8590-8] S2
- Bouwman, Géraud [8600-78] SPTue
- Bouza Dominguez, Jorge [8578-83] S13
- Bouzi, Pierre M. [8640-68] SPWed
- Bouziged, Mohamed [8587-55] S8
- Bouzigues, Cédric [8595-28] S7
- Bovatssek, James M. [8608-9] S2
- Bove, P. 8626 S2 Session Chair, [8626-36] S8
- Bove, V. Michael** 8644 Conference Chair, 8644 S3 Session Chair, 8644 S4 Session Chair, [8644-17] S4
- Bovington, Jock T. [8629-36] S10
- Bowden, Stuart [8620-29] S7
- Bowen, Warwick P. [8600-26] S6, [8631-38] S6
- Bowers, John E. [8629-36] S10, [8630-42] S11, [8630-42] S2, [8640-29] S7
- Bowers, Mark S. [8601-36] S9
- Bowler, Meghan A. [8579-8] S2
- Bowman, Richard W. [8637-49] S10
- Bowman, Steven R.** [8599-18] S4, [8601-108] SPTue, [8604-30] S7, 8638 Program Committee, 8638 S3 Session Chair, [8638-2] S1
- Bown, Stephen G. [8568-49] S5
- Box, Geoffrey N. 8565 Program Committee, 8565 S4 Session Chair
- Boyd, A. [8641-47] S10
- Boyd, Robert W.** [8597-35] S8, [8635-28] S6, [8635-28] S9, 8636 S11 Session Chair, [8636-24] S5, [8636-9] S2
- Boydston-White, Susie [8577-11] S5
- Boye, Robert R.** [8613-37] S8, [8613-38] S8, [8633-32] S10
- Bozovic, Ivan** 8626 Program Committee
- Bozovich, Amanda [8647-6] S4
- Braaf, Boy** [8567-30] S6, [8567-70] SPSun, [8571-17] S3
- Brace, Christopher L. 8584 S2 Session Chair, [8584-5] S2
- Brackbill, Nora [8587-38] S6
- Bracken, Colm [8624-39] S10
- Bracker, Allan S. [8635-12] S4
- Bracker, Manuel [8602-3] S1
- Brackstone, Muriel [8579-21] S5, [8587-27] S4
- Bradac, Carlo [8635-14] S4
- Bradburn, Helen [8611-3] S1
- Bradby, Jodie [8607-16] S11, [8607-16] S5
- Bradford, Matthew [8632-4] S1
- Bradford, William D. [8590-9] S2
- Bradley, James A. [8565-66] S3
- Bradley, Jonathan D. B. [8627-47] SPWed
- Bradley, Tanina [8626-40] S10
- Bradshaw, Patrick 8585 Program Committee
- Bradu, Adrian [8571-117] SPMon
- Brady, David J.** [8589-35] S8
- Braeckmans, Kevin** [8595-14] S4
- Braglia, Andrea [8601-112] SPTue, [8601-115] SPTue
- Brahm, Shane G. [8567-61] SPSun
- Brakenhoff, G. J. 8589 Program Committee, 8589 S4 Session Chair
- Bramati, Alberto 8634 S1 Session Chair, [8634-1] S1
- Brambilla, Massimo [8631-4] S1, [8631-88] S18
- Brancaleon, Lorenzo [8579-14] S3
- Brandacher, Gerald [8565-24] S6, [8578-71] S12, [8587-52] S8
- Brands, Peter J. [8581-49] SPSun
- Brandstetter, Martin [8640-43] S10, [8640-44] S10
- Brandt, Matthias [8619-34] S8, [8626-22] S5
- Brandt, Riley [8620-40] S10
- Brandt, Yekaterina I. [8595-51] S11, [8595-64] S1
- Brasselet, Etienne [8611-34] S7, [8613-3] S1
- Brat, Gabriel A. [8565-24] S6, [8578-71] S12, [8587-52] S8
- Braud, Alain [8599-1] S1
- Bräuer, Andreas 8622 Program Committee, [8643-10] S2
- Braun, Alexander [8607-48] S13, [8607-48] S6
- Braun, David M. [8565-211] S4
- Braun, Holger [8603-26] S6
- Braun, Michael I. [8601-61] S15
- Braun, Paul V. [8631-10] S3, 8632 S5 Session Chair, [8632-15] S4
- Bravo Acha, Mikel [8636-20] S4
- Bravo Miranda, Carlos Alberto [8581-149] SPMon
- Brawley, George [8600-26] S6
- Brecher, Christian [8601-75] SPTue, [8603-16] S4, [8605-35] SPTue, [8606-17] S5
- Breed, Sarah K. [8622-4] S1
- Breese, Mark [8629-15] S4
- Breithaupt, Ralph [8571-133] SPMon, [8611-20] S4
- Breitkopf, Sven** [8601-2] S1, [8601-42] S10
- Breittruck, Achim [8615-55] SPTue
- Bremers, Heiko [8625-72] SPWed
- Brenci, Massimo [8572-49] S9
- Brener, Igal** 8594 Program Committee, [8625-23] S5, [8625-27] S6, [8625-84] SPWed, [8632-63] S14, [8632-64] S14
- Brennan, Cameron W. [8581-15] S3
- Brenner, Matthew** 8565 Conference Chair, 8565 S2 Session Chair, 8565 S7 Panel Member, [8565-103] S2, [8565-8] S4
- Bresin, Matthew D. [8613-5] S1
- Breskin, Ilan [8579-31] S7, [8583-6] S2
- Bretenaker, Fabien [8636-22] S5
- Brett, Michael J. [8581-46] S8
- Breuer, Stefan** [8640-61] S13
- Breunig, Hans Georg [8588-24] S3, [8588-46] S7, [8588-52] S8, [8588-87] SPSun, [8611-5] S1
- Breussin, Frédéric [8570-13] S3
- Brewer, Molly [8571-61] S9, [8581-168] SPMon
- Brianceau, Pierre [8624-45] S11
- Briand, Danick [8614-15] S3
- Brida, Giorgio [8635-31] S6, [8635-31] S9
- Brideau, Craig** [8565-178] S3, [8588-14] S2
- Brigande, John [8586-17] S3
- Briggmann, Dieter [8645-7] S4, [8645-9] S4
- Bright, Ben M.** [8584-9] S3
- Brimont, Christelle [8625-19] S5
- Brinkmann, Ralf** 8567 Program Committee, 8567 S2 Session Chair, 8567 S7 Session Chair
- Broas, Mikael [8614-7] S2
- Brocheriou, Isabelle [8565-37] S1
- Brockenbrough, John [8572-20] S4
- Brockherde, Werner [8631-44] S9
- Brodnar, Melanie [8605-16] S4
- Broeng, Jes** 8601 Program Committee, [8601-107] SPTue, [8601-19] S5, [8601-96] SPTue
- Broer, Dick J. 8642 Conference CoChair, 8642 S8 Session Chair, [8642-22] S7, [8642-3] S1
- Broillet, Stéphane [8590-8] S2
- Bromley, Leigh J. [8631-18] S4
- Brongersma, Mark [8619-41] S10, [8620-10] S3
- Bronner, Wolfgang [8640-49] S11
- Brons, Jonathan [8599-60] S12
- Bronzi, Danilo [8631-44] S9
- Brooks, Dana H. [8565-2] S1, [8578-50] S8, [8578-66] S11
- Broquin, Jean Emmanuel 8627 Conference Chair, 8627 S1 Session Chair, [8627-11] S3, [8627-15] S4, [8627-21] S5
- Brosh, Inbar [8565-201] S1
- Brotherton-Ratcliffe, David Charles [8644-7] S2
- Brouard, Danny** [8570-12] S3, [8597-23] S5
- Brousse, Gilles [8599-45] S8
- Broutin, Jérôme [8616-38] S8
- Browell, Edward V. [8601-61] S15
- Brown, Ana M. [8632-12] S3
- Brown, Edward B. [8578-112] SPSun
- Brown, EiEi [8599-39] SPTue, [8621-45] SPWed
- Brown, Elliott R. 8585 Program Committee, [8585-1] S1, [8624-1] S2, [8624-2] S2
- Brown, Gail J. 8631 Conference CoChair, 8631 S18 Session Chair, [8634-26] SPWed
- Brown, Gary [8615-6] S2
- Brown, J. Quincy** [8587-51] S8
- Brown, James G. [8616-14] S3
- Brown, Kevin [8599-46] S8
- Brown, Kirk C. [8604-2] S1
- Brown, Melinda [8578-19] S4
- Brown, P. [8610-21] S4
- Brown, Rebecca [8611-22] S5
- Brown, Thomas G. 8589 Conference Chair, 8589 S8 Session Chair
- Brown, Tyra [8572-28] S5
- Brown, William G. A. [8579-9] S2
- Brox, Olaf [8640-60] S13
- Bruce, Kevin [8605-23] S5
- Brückner, Andreas [8616-43] S9
- Brückner, Jean-Baptiste** [8619-27] S7, [8619-29] S7
- Brückner, Sven [8577-18] S7
- Brüderl, Georg [8640-15] S3
- Brudieu, Barbara** [8620-16] S4
- Brucek, Steven R.** [8632-71] S16
- Brugger, Jürgen [8572-50] S9, [8643-5] S1
- Brun, Mickael [8631-34] S7
- Brunet, Francois [8605-17] S4
- Brunker, Joanna [8581-65] S9
- Brunne, Jens [8637-20] S4
- Brunner, Reinhard [8605-34] S7
- Brunnmeier, J. [8634-29] S2
- Bruno, John D. [8631-30] S6
- Bruns, Michael [8608-5] S1, [8608-6] S1
- Brunstein, Maia [8636-54] S11
- Brunton, Gordon K. [8602-9] S3
- Brusberg, Lars [8630-35] S9
- Bryant, Stewart [8565-31] SPSun
- Bryning, Mateusz [8643-21] SPWed
- Brzobohary, Oto [8637-39] S9
- Bu, Jiachuan [8581-26] S4
- Bucci, Davide [8627-21] S5
- Bücheler, Stephan [8607-47] S13, [8607-47] S6
- Buchheim, Klaus [8610-6] S2
- Buchwald, Walter R. [8624-25] S7, [8627-35] S8
- Bückle, Rainer [8588-24] S3, [8588-52] S8, [8588-87] SPSun
- Buckley, Erin M. [8578-115] SPSun, [8578-14] S3, [8578-2] S1
- Buckley, Sonia [8632-24] S6
- Bückmann, Tiemo K. [8613-14] S4
- Bucko, Marek [8588-32] S5
- Bucková, Michaela [8566-12] S3
- Budakov, Yuri [8565-218] S1
- Budge, Tracy S. [8602-2] S1
- Budker, Dmitry 8635 Program Committee, [8636-12] S3
- Budni, Peter A. [8604-14] S4
- Buehler, Andreas [8581-20] S3
- Buehler, Matthias [8605-37] SPTue
- Bueno, Luciano A. [8641-49] S1
- Büettner, Alexander [8599-22] S5
- Bugge, Frank [8605-29] S6, [8640-55] S12
- Buividas, Ricardas [8613-17] S4
- Bukowska, Danuta [8571-20] S3, [8571-32] S5, [8571-66] S10
- Bulu, Irfan [8631-9] S2
- Bunch, Robert M.** [8619-72] SPWed
- Bundy, Mark L. [8634-25] S5
- Bunetska, Karina [8596-7] S2
- Bunn, Rod [8593-12] S3
- Bunn, Tony [8567-85] SPSun
- Bunning, Timothy J.** 8642 S2 Session Chair, [8642-26] S8
- Buonassisi, Tonio [8620-40] S10
- Bur, James A. [8632-58] S13
- Burand, S. Adam [8567-80] SPSun
- Burch, Shane [8565-238] S5
- Burcher, Adriano [8593-13] S3
- Burckel, D. Bruce** [8612-12] S3
- Burcklen, Catherine [8619-75] SPWed
- Burdell, Thomas [8603-13] S4
- Burdette, E. Clif 8584 S7 Session Chair, [8584-28] S8, [8584-33] S9, [8584-34] S9
- Burette, Kate J. [8565-24] S6, [8578-71] S12, [8587-52] S8
- Burgdörfer, Joachim [8623-38] S10
- Burger, Sven** [8620-54] S11, [8620-54] S13, [8627-37] S9, [8631-76] S14, [8641-1] S3, [8642-4] S2
- Burgess, Alison [8588-94] SPSun
- Burgess, David T. [8576-5] S1



# Index of Authors, Chairs, and Committee Members

- Burgess, Ian B.** [8632-1] S1  
 Chair, [8632-1] S1  
**Burgholzer, Peter** [8581-112] SPSun, [8581-115] SPSun, [8581-93] SPSun  
**Burgoyne, Bryan** [8601-113] SPTue, [8601-116] SPTue, [8604-6] S2, [8611-17] S4  
**Burgucu, Mehmet N.** [8568-33] SPMon  
**Buric, Michael P.** [8637-37] S9  
**Burke, Daniel** [8589-34] S7, [8617-15] S3  
**Burkhart, Scott C.** 8602 Program Committee, 8602 S3 Session Chair, [8602-2] S1  
**Burkholder, Gary** [8601-102] SPTue  
**Burn, Andreas** [8607-47] S13, [8607-47] S6  
**Burnett, Arthur L.** [8565-193] S2, [8565-39] S2, [8565-40] S2  
**Burns, David** [8606-8] S3  
**Burns, James A.** 8565 Program Committee, 8565 S7 Session Chair  
**Burns, Patrick** [8599-23] S5  
**Buron, Jonas Due** [8624-12] S4  
**Burrell, Kelly** [8565-191] SPSun  
**Burruss, Rick** [8610-24] S5  
**Burton, John** [8610-17] S4  
**Bus, Siccio A.** [8572-29] S6  
**Busacca, Alessandro** [8629-45] SPWed  
**Busch, David R.** [8578-14] S3, [8578-21] S4, [8578-35] S6  
**Busch, James** [8621-13] S3, [8624-17] S5, [8647-16] S7  
**Busch, Theresa M.** [8568-20] S5, [8568-40] SPMon, [8568-7] S2  
**Buschmann, Volker** [8588-30] S4, [8588-36] S5, [8620-9] S2  
**Buse, Karsten** [8621-8] S2  
**Buser, Joshua** [8615-29] S6  
**Bush, Mark B.** [8580-29] S6  
**Buss, Jan Heye** [8623-10] S3  
**Bussadori, Sandra K.** [8579-36] SPMon  
**Busse, Lynda E.** [8621-36] S7  
**Butcher, Jonathan** [8611-6] S2  
**Butler, John A.** [8578-15] S3  
**Butler, R.** [8610-21] S4  
**Butsch, Anna** 8632 S6 Session Chair, [8632-19] S5  
**Buttè, Raphaël** 8625 S9 Session Chair, [8625-13] S3, [8625-33] S8  
**Button, Brian** [8571-74] S11  
**Buurma, Chris** [8631-52] S10  
**Buys, Timon P. H.** [8572-38] S7  
**Buzzonetti, Luca** [8567-62] SPSun  
**Byer, Robert L.** [8604-19] S5  
**Bykov, Dmitry** [8619-37] S9  
**Byrd, Jerry L.** [8600-18] S5  
**Byun, Sangwook** [8625-47] S11
- 
- C**
- Cabellero Jambрина, Antonio** [8646-2] S2  
**Cable, Alex E.** [8567-20] S4, [8567-32] S6, [8571-13] S3, [8571-22] S4, [8571-8] S2, [8571-99] SPMon, [8587-26] S4  
**Cabrini, Stefano** 8613 Program Committee  
**Cadarso, Victor Javier** [8572-50] S9, [8643-5] S1  
**Cadier, Benoit** [8601-121] SPTue, [8621-32] S7  
**Cadusch, Peter J.** [8579-9] S2  
**Caffini, Matteo** [8578-111] SPSun  
**Cahill, Laurence W.** 8629 Program Committee  
**Cahoon, James F.** [8600-50] S12  
**Cahoy, Kerri L.** [8617-7] S2  
**Cai, Hong** [8629-3] S1  
**Cai, Kejia** [8578-115] SPSun  
**Cai, Wei** [8574-1] SPSun  
**Cai, Xin** [8581-140] SPMon, [8581-145] SPMon, [8581-4] S1, [8581-47] S8, [8581-79] S11  
**Cai, Yan** [8640-28] S7  
**Cai, Yi** 8647 Program Committee  
**Caiazzo, Fabrizia** [8603-17] S5  
**Cajas, Florante** [8628-23] S8  
**Cajlakovic, Merima** [8570-27] SPSun  
**Calame, Jeffrey P.** [8624-16] S5, [8624-5] S3  
**Calarco, Raffaella** [8624-42] S10  
**Caldwell, Joshua D.** [8632-45] S10, [8634-12] S3  
**Calhoun, William R.** [8567-28] S6, [8567-82] SPSun, [8579-10] S3  
**Califano, Alessio** [8601-112] SPTue, [8601-115] SPTue  
**Caliman, Andrei** [8606-14] S5, [8639-27] S7, [8639-3] S1  
**Calixto-Carrera, Sergio** [8615-48] SPTue  
**Callahan, Dennis M.** [8620-12] S3  
**Callaway, Edward M.** [8586-9] S2  
**Calleja, Enrique** [8641-62] S13  
**Callis, Patrik** [8596-34] SPMon, [8622-23] S6  
**Callsen, Gordon** [8634-29] S2  
**Calmano, Thomas** [8599-5] S2  
**Calnan, Sonya** [8620-54] S11, [8620-54] S13  
**Calvet, Pierre** [8600-78] SPTue  
**Calvo, Vincent** [8621-14] S3  
**Calvo-Perez, Olivier** [8619-27] S7  
**Cam, Richard N.** [8584-34] S9  
**Camacho-Aguilera, Rodolfo E.** [8640-28] S7  
**Camacho-León, Sergio** [8619-30] S7  
**Camargo, Fabiola A.** [8606-28] S8  
**Cameron, Brent D.** 8591 S1 Session Chair, [8591-2] S1, [8597-18] S4, [8619-48] S12  
**Camp, Charles H.** [8588-4] S1  
**Campagnola, Paul J.** [8587-37] S6, 8588 S10 Session Chair, [8588-60] S9  
**Campbell, Geoff** [8605-12] S3  
**Campbell, Gord** [8583-19] S4  
**Campbell, Jeremy** [8598-24] SPSUN  
**Campbell, John A.** [8602-2] S1  
**Campbell, Stuart** [8605-1] S1  
**Campione, Salvatore** [8632-50] S11, [8632-64] S14, [8632-65] S14, [8632-79] SPWed  
**Campos, Carl** [8581-15] S3  
**Campos, Emilio C.** [8567-46] S8  
**Camps, Octavia I.** [8587-70] SPMon  
**Camy, Patrice** [8599-1] S1, [8599-40] S8, [8611-23] S5  
**Canat, Guillaume** [8601-56] S13  
**Candiani, Alessandro** [8576-13] S3, [8601-96] SPTue, [8608-29] S13, [8608-29] S6  
**Candiani, Gabriele** [8596-24] S7  
**Caneau, Catherine G.** [8631-22] S4, [8640-42] S10  
**Canedy, Chadwick L.** [8631-58] S11  
**Cang, Hu** [8590-30] S8, [8597-12] S3  
**Cangussu, Maria Cristina T.** [8569-18] S4  
**Canioni, Lionel S.** [8589-49] S11, [8599-50] S10, [8607-22] S7, [8607-25] S7, [8608-2] S1, [8611-29] S6, [8611-34] S7, [8613-22] S5, [8632-41] S9  
**Cankaya, Huseyin** [8599-41] S8  
**Canonica, Michael** [8616-18] S3, [8616-18] S4  
**Canovetti, Annalisa** [8567-62] SPSun  
**Canti, Gianfranco L.** [8578-70] S11  
**Canto, Fabrice** [8627-21] S5  
**Cantor-Balan, Roni** [8578-22] S4  
**Cantow, Kathleen** [8578-62] S10  
**Canva, Michael T.** 8597 Program Committee  
**Cao, He** [8610-17] S4  
**Cao, Jie** [8596-40] SPMon, [8596-41] SPMon, [8596-6] S2  
**Cao, Liji** [8573-24] S6  
**Cao, Qian** [8587-30] S4, [8596-19] S6  
**Cao, Qing** [8621-15] S3  
**Cao, X. K.** [8631-80] S15  
**Capala, Jacek** [8577-3] S1, [8578-85] S14  
**Capasso, Federico** [8600-17] S5, [8619-24] S6, [8624-3] S2, [8632-35] S7, [8632-42] S10, [8632-43] S10, [8632-68] S15, [8633-18] S6, [8633-20] S6, [8633-25] S7, 8640 Program Committee, [8640-22] S5, [8640-23] S5, [8640-24] S6, [8640-46] S11, [8640-47] S11, [8640-48] S11  
**Capelli, Giulio** [8596-24] S7  
**Caplan, David O.** [8610-16] S4  
**Capmany Francoy, José** [8627-7] S2  
**Capoglu, Ilker R.** [8592-32] S8  
**Capolino, Filippo** [8632-50] S11, [8632-64] S14, [8632-65] S14, [8632-79] SPWed  
**Capozzi, Paolo** [8567-62] SPSun  
**Capua, Amir** [8640-3] S1  
**Capuj, Néstor Eduardo** [8600-13] S4, [8600-70] SPTue  
**Caradec, Frederic** [8599-45] S8  
**Caravaca-Aguirre, Antonio M.** [8617-17] S3  
**Carbajal, Esteban F.** [8565-56] S1  
**Carbary, Jordan L.** [8596-43] SPMon  
**Carbone, Beatrice** [8631-47] S9  
**Carcellera, Ivana** [8636-55] S11  
**Cardaropoli, Francesco** [8603-17] S5  
**Cardellino, Terri** [8639-24] S6  
**Cardenas, Nelson** [8586-32] SPSun  
**Cardile, Paolo** [8629-43] S11  
**Cardimona, David A.** 8631 Program Committee, [8631-28] S5  
**Cardinal, Thierry** [8589-49] S11, [8607-22] S7, [8607-25] S7, [8608-2] S1, [8611-29] S6, [8613-22] S5, [8632-41] S9  
**Cardinali, Giancarlo** [8631-85] S16  
**Cardoso, Silvia** [8622-12] S3  
**Carey, James E.** 8611 Program Committee  
**Carey, Thomas** [8615-20] S5  
**Carhart, Gary W.** [8601-41] S10  
**Carlile, Peter** [8578-14] S3  
**Carlin, Jean-François** [8625-13] S3, [8625-33] S8  
**Carlini, Lina** [8595-30] S7  
**Carmon, Tal** [8600-69] S16, [8638-13] S3  
**Carmon, Tal** 8638 Program Committee  
**Carney, John J.** [8610-16] S4  
**Carney, Paul S.** [8571-115] SPMon, [8571-5] S1, [8572-20] S4  
**Carney, Randy P.** [8595-5] S1  
**Caro, J.** [8570-7] S2, [8592-45] SPSun  
**Carolan, J.** [8628-16] S6  
**Caron, Jan** [8565-226] S2  
**Caron, Jonathan** [8565-37] S1  
**Caron, Nicolas** [8601-52] S13  
**Carothers, Daniel N.** [8618-21] S6  
**Carp, Stefan A.** [8578-18] S3  
**Carpenter, Colin M.** [8581-53] S8  
**Carpenter, Lewis G.** [8614-19] S4, [8621-6] S2, [8627-28] S7  
**Carpentiero, Alessandro** [8621-22] S5  
**Carpi, Sara** [8596-31] S9  
**Carrabba, Angelo** [8565-31] SPSun  
**Carras, Mathieu** [8631-34] S7  
**Carrasco-Zevallos, Oscar** [8571-65] S10  
**Carrasquilla, Jennifer** [8572-13] S3, [8578-24] S4, [8578-92] SPSun  
**Carrera, Corola** [8566-7] S2  
**Carrier, Jean-Raphaël** [8600-57] S14  
**Carrington, Peter J.** [8631-60] S11  
**Carroll, James D.** 8569 Conference Chair, 8569 S3 Session Chair, [8569-2] S1  
**Carroll, Joseph** [8567-26] S5, [8569-14] S4  
**Carruth, Robert R.** [8571-21] S4, [8575-11] S3, [8575-12] S3, [8575-13] S3, [8575-24] S6, [8575-27] S6, [8575-5] S2  
**Carson, Jeffrey J. L.** [8579-21] S5, [8579-30] S7, [8579-38] SPMon, [8581-148] SPMon, [8581-151] SPMon, [8581-152] SPMon, [8581-184] SPMon, [8581-66] S9, [8587-27] S4, [8597-24] S5, [8597-42] S8  
**Carson, Paul L.** [8581-121] SPSun, [8581-124] SPSun, [8581-18] S3  
**Carstens, Cornelia** [8615-12] S3  
**Carter, Adrian L.** 8601 Program Committee, 8601 S5 Session Chair  
**Carter, Sam G.** [8635-12] S4  
**Carter, Shirron L.** [8568-7] S2  
**Carter, Tony R.** [8613-38] S8, [8635-20] S5  
**Cartwright, Alexander N.** 8594 Conference Chair, 8594 S1 Session Chair, 8594 S5 Session Chair  
**Carusotto, Iacopo** [8636-22] S5  
**Carvajal Marti, Joan Josep** [8594-6] S2, [8599-3] S1, [8599-4] S1, [8625-26] S6  
**Carvajal, Denny A.** [8596-5] S2  
**Carvalho da Fonseca, Anna** [8595-61] S14  
**Carvalho, Carolina M.** [8569-18] S4  
**Carvalho, Hernandes F.** [8588-57] S8  
**Carvalho, Luis A. V.** [8567-54] SPSun  
**Carvalho, Mariana T.** [8569-9] S2, [8634-13] S3  
**Carver, Gary E.** [8587-40] S7  
**Carver, Sara** [8647-24] S10, [8647-24] S9  
**Casagrande, Olivier** [8599-45] S8  
**Cascio, Michael** [8596-21] S7  
**Casco, Victor H.** [8588-57] S8  
**Case, Jason R.** [8565-27] S9, [8565-42] S3  
**Casini, Roberto** [8624-42] S10  
**Caspani, Lucia** [8623-24] S6  
**Casperra, Lee W.** [8600-76] SPTue  
**Cassagnettes, Cedric** [8627-19] S5  
**Cassan, Eric** [8628-2] S1, [8628-2] S10, [8629-25] S7  
**Cassella, Vincent A.** 8631 Program Committee  
**Casse, Andy** [8631-31] S6  
**Cassidy, Jeffrey** [8592-17] S5  
**Castelino, Robin F.** [8581-154] SPMon  
**Castellanos, Cherry** [8579-39] S3  
**Castelletto, Stefania A.** [8635-14] S4  
**Castelló-Serrano, Ivan** [8595-25] S7, [8595-49] S11  
**Castiglia, Antonino** [8625-13] S3, [8625-33] S8  
**Castillo, Paula M.** [8595-37] S9  
**Castracane, James** [8615-13] S3  
**Casu, Alberto** [8595-37] S9  
**Casula, Maria F.** 8595 S13 Session Chair, [8595-37] S9  
**Cataido, Stefano** [8631-10] S3  
**Cataluna, Maria Ana** [8640-61] S13, [8640-67] SPWed  
**Catanescu, Otilia Carmen** [8642-5] S2  
**Catchpole, Kylie** [8620-1] S1  
**Catellani, Cristina** [8608-29] S13, [8608-29] S6  
**Cattoni, Andrea** [8620-11] S3  
**Cattoni, Laura** [8629-39] S10  
**Catfoot, Romain** [8599-50] S10  
**Cavalié, Pierrick** [8631-66] S12, [8640-38] S9, [8640-39] S9  
**Cavaliere, Adrian L.** [8623-37] S10  
**Cavigli, Lucia** [8581-34] S6  
**Cayce, Jonathan M.** [8565-208] S3, [8565-216] S3

# Index of Authors, Chairs, and Committee Members

- Cazaux, Matthieu [8575-2] S1  
Cazzanelli, Massimo [8604-34] S7  
Cazzell, Mary [8565-161] S5, [8565-165] S5  
Cebriano, Teresa [8626-28] S7  
Cecchetti, Carlo Alberto [8588-95] SPSun  
Cecchi, Stefano Carlo [8623-15] S4, [8629-40] S11  
Cederberg, Jeffrey G. [8606-9] S3, [8623-23] S6, [8638-10] S2, [8638-16] S4, [8638-4] S1  
Celanovic, Ivan [8632-7] S2  
**Cellek, Oray Orkun** [8631-51] S10  
Celler, George K. [8630-29] S7  
**Celli, Jonathan P.** [8568-17] S4, [8568-46] S7, [8568-47] S7  
Cellini, Mauro [8567-46] S8  
**Cengel, Keith A.** [8568-20] S5, [8568-23] S6, [8568-40] SPMon  
Cenko, Andrew T. [8572-37] S7  
Cense, Barry [8567-17] S3, [8567-31] S6, [8567-67] SPSun  
Centi, Sonia [8581-34] S6, [8596-46] SPMon  
Cerbai, Elisabetta [8588-48] S8  
Cerezo, Alfred [8625-92] S4  
Cerna, Caesar Z. [8585-25] S4, [8585-27] S5  
Ceron, Deanna [8572-38] S7  
Cerullo, Giulio [8593-10] S3, [8611-10] S2  
**Cerussi, Albert E.** [8565-83] S7, [8578-1] S1, [8578-15] S3, [8578-17] S3, [8578-3] S1, [8578-96] SPSun, [8578-97] SPSun, [8591-9] S2  
Cerutti, Laurent [8631-35] S7, [8631-72] S13  
Cervantes-Rincon, Nancy Ayerim [8570-18] S5  
Cesare, Paolo [8588-47] S7  
Cesca, Tiziana [8625-58] S12  
Cetin, Ali H. [8586-9] S2  
Cezo, James D. [8584-21] S6  
Cha, Hyungrae [8641-33] S7  
Cha, Jae Won [8588-54] S8  
Cha, Jaepyeong [8576-3] S1  
Chabassier, Genevieve M. 8602 Program Committee  
Chabrier, Renee [8572-26] S5  
Chabrol, Greg [8607-36] S10  
Chae, Su-Hee [8641-7] S2  
Chahal, Manjit [8630-29] S7  
Chahangirli, Zakir [8620-41] S10  
**Chaisakul, Papichaya** [8628-2] S1, [8628-2] S10  
Chaix-Pluchery, Odette [8626-74] SPWed  
Chakaroun, Mahmoud [8622-35] S8  
**Chakrabarti, Subhananda** [8626-60] SPWed, [8626-9] S2, [8634-28] SPWed, [8634-6] S2  
Chakraborty, Rupak [8620-40] S10  
Chakravarty, Swapnajit [8570-6] S2, [8570-9] S2, [8627-20] S5, 8630 Program Committee, [8630-12] S3  
Chalberg, Thomas W. [8567-9] S2  
Chalmond, Bernard [8587-7] S1  
Chalus, Olivier J. [8599-45] S8  
Chamanzar, Maysamreza [8597-37] S8, 8632 S13 Session Chair, [8632-51] S11  
Chamberland, David L. [8581-16] S3  
Chambers-Asman, David [8642-23] S7  
Chamorroviski, Yuri K. [8601-71] SPTue  
Champion, Tessa F. M. [8636-38] S8  
Chamson-Reig, Astrid [8581-148] SPMon, [8581-151] SPMon, [8581-152] SPMon  
**Chan, Aaron C.** [8571-87] SPMon  
Chan, Chi Chiu [8598-3] S2, [8615-3] S1  
Chan, Ho-Yin [8606-7] S2  
Chan, James W. [8588-69] S10  
Chan, K. H. A. [8634-2] S1  
Chan, Kenneth H. [8566-18] SPSun, [8566-19] SPSun, [8566-4] S1, [8566-6] S1  
**Chan, Kin Foong** 8565 Program Committee, 8565 S2 Session Chair  
Chan, Kinpui [8567-74] SPSun  
Chan, Trevor K. [8633-15] S5, [8633-16] S5  
Chan, Vincent W. S. 8610 Program Committee  
Chan, Wai Kin [8626-32] S8, [8626-67] SPWed, [8626-68] SPWed  
Chan, Wei Ping [8607-41] S11  
Chan, Y. F. [8608-16] S3  
Chanda, Debashis [8613-16] S4  
Chandrabose, Divya [8565-13] S4, [8565-14] S4  
Chandran, Deepak [8622-40] S10  
Chaney, Eric J. [8565-13] S2, [8572-20] S4, [8596-15] S2, [8596-15] S4  
Chang, Cheng-Chung [8581-119] SPSun, [8581-47] S8  
Chang, Chia-Yuan [8619-15] S4  
Chang, Chieh-Feng [8581-98] SPSun  
Chang, Chien-Fu [8593-26] SPSun  
Chang, Ching-Wen [8641-69] SPWed  
Chang, Christopher J. [8588-83] SPSun  
Chang, Chun-Lin L. [8601-67] SPTue, [8601-84] SPTue  
Chang, Feng-Yu [8565-9] S3, [8571-129] SPMon  
Chang, Heng-Jui [8631-90] SPWed  
Chang, Hongrok [8636-15] S3  
Chang, Huan-Cheng [8635-2] S1  
Chang, Jih-Yuan [8619-66] SPWed, [8620-76] SPWed, [8625-76] SPWed  
Chang, Jong-hyeon [8616-1] S1, [8616-1] S7  
Chang, Liuwen [8641-23] S5  
Chang, Peter [8629-34] S9  
Chang, Robert [8573-23] S6  
Chang, Sheng-Yi [8597-15] S4, [8597-36] S8  
**Chang, Shouu-Jinn** 8641 Program Committee, 8641 S10 Session Chair  
Chang, Shu Hao [8620-78] SPWed  
**Chang, Walter H.** [8595-22] S6  
Chang, Wen-Hao [8619-42] S10  
Chang, Wen-Ming [8625-44] S10, [8625-5] S1, [8641-16] S4  
**Chang, Yia-Chung** [8594-20] S5, [8632-40] S9  
Chang, Yi-An [8625-76] SPWed  
Chang, Ying-Feng [8582-22] SPTues, [8597-15] S4  
Chang, Yin-Ren [8644-30] S7  
Chang, Yong [8613-41] S8  
Chang, Younghak [8625-47] S11  
Chang, Yuan-Ming [8625-18] S4  
**Chang, Yun-Chorng** [8597-39] S8, [8641-28] S6  
Chang, Yu-wen [8574-5] S1  
Chang-Hasnain, Connie J. 8633 Conference Chair, [8633-1] S1, [8633-15] S5, [8633-16] S5, [8633-21] S6, [8633-3] S1, [8633-30] S9, [8633-5] S2, [8633-6] S2  
Changizi, Mohammad A. [8612-19] S4  
Changou, Austin [8587-12] S2  
Channick, Colleen L. [8565-117] S5, [8571-23] S4  
Chanteloup, Jean-Christophe Francis 8602 Program Committee  
Chao, Cheng-Han [8582-22] SPTues  
Chao, Jerry [8589-5] S1  
Chao, Jianqiu [8601-69] SPTue  
Chapman, Gala [8596-4] S2  
**Chapman, Glenn H.** [8579-29] S7  
Chapon, Patrick [8626-6] S2  
Chappuis, Christian [8602-15] S4  
Charan, Kriti [8588-11] S2  
**Charanya, Tauseef** [8596-11] S3  
Charbonnier, Benoit [8645-3] S2  
Charipar, Nicholas A. [8607-29] S9, [8608-25] S4, [8631-70] S13  
Charlebois, Maxime [8600-57] S14, [8600-64] S15  
Charles, William O. [8640-41] S10  
Charlton, Martin D. B. [8597-2] S1, [8604-35] S7, [8632-57] S13  
Charmasson, L. [8608-2] S1  
Charra, Fabrice 8622 Program Committee, [8622-45] S11  
Chashmahcharagh, Reza [8640-40] S9  
**Châteauneuf, François** [8614-22] S4  
Chatni, Mohammad Rameez [8581-19] S3  
Chatterjee, Sangam [8623-15] S4, [8623-8] S3, [8625-80] SPWed, [8629-40] S11, [8629-42] S11  
Chatterjee, Suvro [8637-47] SPWed  
Chatzinkolaïdou, Maria [8611-11] S2  
Chau, Fook Siong [8616-24] S5, [8616-3] S1, [8616-3] S7  
**Chaudet, Lionel** [8586-23] S5  
Chaudhari, Abhijit J. [8574-27] SPSun  
Chaudhary, Ujwal [8565-171] S5  
Chaudhuri, Sujet K. [8624-7] S3  
Chauvet, Mathieu [8632-59] S13  
Chavantes, Cristina M. [8569-8] S2  
Chaves, Daniel A. R. [8646-12] S5  
Chavez Boggio, Jose Manuel [8604-26] S6  
Chavez, Joseph R. [8610-33] S7  
Chavez-Pirson, Arturo [8601-33] S8, [8601-88] SPTue  
Chavoor, Gregory J. [8619-17] S4  
Chazelas, Jean [8631-40] S8  
Che, Song-Bek [8641-25] S6  
Che, Yong [8595-52] S12  
Cheben, Pavel 8627 Program Committee, 8627 S2 Session Chair  
Checoury, Xavier [8625-19] S5  
**Chee, Alex C.** [8565-101] S2, [8565-105] S3  
Chee, Chunmin [8565-100] S1  
Cheema, M. Imran [8640-1] S1  
Cheombo, Yanne K. 8590 Program Committee, 8600 S11 Session Chair, [8600-12] S3, [8600-73] SPTue  
Chemnitz, Mario [8611-16] S4  
**Chen, Antao** [8585-20] S3, 8624 Program Committee, 8624 S8 Session Chair  
Chen, Argon [8587-62] SPMon  
Chen, Bouri [8568-37] SPMon  
Chen, Brenda [8565-216] S3  
**Chen, Chao-Wei** [8573-11] S3, [8573-11] S5, [8588-83] SPSun  
**Chen, Cheng-Huan** 8643 Program Committee, [8644-22] S6  
Chen, Chien-Kuo [8588-65] S10  
Chen, Chih-Yen [8625-44] S10, [8625-5] S1, [8641-16] S4, [8641-29] S6, [8641-39] S9  
Chen, Chin Hsin 8643 Program Committee  
Chen, Ching-Ta [8595-22] S6  
Chen, Chin-Ti [8622-44] S10  
Chen, Chin-Yi [8641-28] S6  
Chen, Chu [8639-1] S1  
Chen, Chuangtian [8604-1] S1, [8607-51] SPTue  
Chen, Chun Li [8620-73] SPWed  
Chen, Chung Wei [8619-15] S4  
Chen, Chun-Yen [8612-15] S3  
Chen, Daniel [8568-32] SPMon  
Chen, Danni [8594-23] S6  
Chen, Dixiang [8601-69] SPTue  
Chen, Dongyuan [8581-161] SPMon  
Chen, Eunice Y. [8584-14] S5  
Chen, Evan [8611-22] S5  
Chen, Fang-Ming [8625-76] SPWed  
**Chen, Fangyi** [8565-65] S3, [8571-127] SPMon, [8586-17] S3  
Chen, Gang [8624-41] S10  
**Chen, Gang** [8565-208] S3  
Chen, George L. [8572-52] SPSun  
Chen, Guan-Wei [8620-67] SPWed  
**Chen, Guanxi Andy** [8631-98] S10, [8631-99] S10  
Chen, Guanying [8588-41] S7  
Chen, Haiyan [8582-14] S4  
Chen, Hao-Tsung [8625-44] S10, [8641-16] S4, [8641-29] S6  
Chen, Horng-Shyang [8625-44] S10, [8625-5] S1, [8641-16] S4, [8641-29] S6, [8641-39] S9  
Chen, Hou-Tong [8623-19] S5  
Chen, Hsin Chu [8620-59] S14, [8620-70] SPWed, [8641-73] SPWed  
**Chen, Hung-Shan** [8642-11] S3  
Chen, Hung-Ying [8619-42] S10, [8623-33] S9  
Chen, I-Ching [8622-25] S6, [8622-42] S10  
Chen, I-Chun Anderson [8624-41] S10  
Chen, Janet [8628-1] S1, [8628-1] S10  
Chen, Janglin 8643 Program Committee  
Chen, Jason Chih-Shan [8565-1] S1  
Chen, Jeon-Hor [8578-20] S4  
Chen, Jian [8635-32] S6, [8635-32] S9  
Chen, Jianfeng Jeff [8641-37] S8  
Chen, Jiangxu [8596-10] S3  
Chen, Jianping [8629-21] S6  
Chen, Jin [8578-80] S13  
Chen, Jingbiao [8624-4] S2  
Chen, Jingqin [8582-24] SPTues  
Chen, Jingxiang [8640-67] SPWed  
Chen, Jingyi [8581-127] SPSun  
Chen, Jiong [8601-95] SPTue, [8619-12] S3  
Chen, Jun [8603-31] SPTue  
Chen, Jung-Wei [8566-20] SPSun  
Chen, Kaisheng [8647-21] S7A, [8647-21] S8  
Chen, Kevin [8609-16] S4  
Chen, Kevin Peng [8609-14] S4, [8613-47] SPTue  
Chen, Kuan-chieh [8642-20] S6  
**Chen, Kuo-Jui** [8620-59] S14, [8641-73] SPWed  
Chen, Lawrence R. [8601-63] S15  
Chen, Liang [8571-36] S6  
Chen, Lih Juann [8619-42] S10  
Chen, Lucy [8611-60] SPTue  
Chen, Luis [8628-19] S7  
Chen, Maggie Yihong [8621-35] S7  
Chen, Mei-Yu [8588-75] SPSun  
Chen, Minghui [8571-105] SPMon  
**Chen, Ming-Syuan** [8642-11] S3  
Chen, Moran [8635-17] S5  
Chen, Nai-Chuan [8597-15] S4  
Chen, Po-Cheng [8620-59] S14  
Chen, Po-Fu [8588-75] SPSun  
Chen, Po-Jung [8581-35] S6  
Chen, Qian [8611-52] SPTue  
Chen, Qian [8643-19] SPWed  
**Chen, Ray T.** [8570-6] S2, [8570-9] S2, [8613-53] SPTue, [8624-44] S11, [8627-20] S5, 8628 S1 Session Chair, [8629-49] SPWed, [8629-51] SPWed, 8630 Conference Chair, 8630 S10 Session Chair, [8630-12] S3, [8630-38] S9, [8630-45] SPWed, [8630-48] SPWed, [8630-9] S2  
Chen, Renjie [8638-7] S2, [8638-8] S2  
Chen, Robert Chien-chung [8644-30] S7  
Chen, Rong [8571-105] SPMon  
Chen, Ruimin [8571-80] S12, [8581-140] SPMon, [8581-153] SPMon, [8581-41] S7  
Chen, Ruiqi Y. [8604-35] S7  
Chen, Ruojing [8566-7] S2  
Chen, San-Yuan [8581-35] S6  
**Chen, Sheng En** [8619-47] S12  
Chen, Shih-Hung [8601-67] SPTue, [8601-84] SPTue



# Index of Authors, Chairs, and Committee Members

- Chen, Shouyuan [8599-46] S8  
Chen, Shufen [8588-15] S2  
Chen, Si [8597-13] S3  
**Chen, Sung-Liang** [8581-108]  
SPSun, [8581-124] SPSun, [8581-87] S11, [8600-58] S14  
Chen, Szu-Yu [8588-79] SPSun  
Chen, Tao [8588-23] S3  
Chen, Tianyuan [8571-121] SPMon  
Chen, Tong [8599-55] S11, [8599-56] S11  
Chen, Tong [8594-3] S2  
Chen, Tong-Sheng [8582-23] SPTues, [8582-24] SPTues, [8582-25] SPTues, [8582-27] SPTues  
Chen, To-Yuan [8595-22] S6  
**Chen, Wei R.** [8569-17] S4, 8580 Program Committee, 8580 S2 Session Chair, [8580-19] S4, 8582 Conference Chair, [8582-1] S6, [8582-10] S2, [8582-11] S3, [8582-12] S3, [8582-13] S3, [8582-14] S4, [8582-16] S4, [8582-2] S6, [8582-20] SPTues, [8582-26] SPTues, [8582-28] SPTues, [8582-29] SPTues, [8582-3] S6, [8582-30] SPTues, [8582-9] S2  
Chen, Weidong [8631-31] S6  
Chen, Wei-Fan [8597-19] S4  
Chen, Weiting [8574-23] SPSun, [8578-107] SPSun  
Chen, Wenting [8601-80] SPTue  
Chen, X. [8641-47] S10  
Chen, Xia [8629-18] S4  
Chen, Xianfeng [8600-42] S11  
Chen, Xing [8565-206] S1, [8631-87] S17  
Chen, Xinguang [8574-28] SPSun  
Chen, Xu [8588-15] S2  
Chen, Y. [8610-21] S4  
Chen, Yanping [8565-222] S1  
Chen, Yaohui [8636-11] S2  
Chen, Ye [8565-182] S4, [8575-28] S1, [8575-28] S7, [8583-14] S3  
Chen, Yenhao [8614-3] S1  
Chen, Yijiang [8610-28] S6  
Chen, Yung-Ling [8582-26] SPTues  
Chen, Yi-Yung [8620-39] S9, [8620-67] SPWed, [8620-68] SPWed, [8620-69] SPWed, [8620-78] SPWed  
Chen, Yongping [8571-38] S6, [8575-17] S4, [8578-71] S12  
Chen, Youming [8601-62] S15  
Chen, You-Yin [8581-111] SPSun, [8581-35] S6  
Chen, Yu [8565-181] S4, [8565-35] S1, [8572-10] S2, [8573-11] S3, [8573-11] S5, [8588-83] SPSun  
**Chen, Yuan** [8642-6] S2  
Chen, Yuanxin [8565-199] S1, [8565-202] S1  
Chen, Yu-Chih [8581-73] S10  
Chen, Yuhao [8601-53] S13  
Chen, Yung-Fu [8599-74] SPTue, [8600-29] SPTue, [8606-21] S7, [8606-24] S7  
Chen, Yung-Jui 8628 Program Committee  
Chen, Yung-Tsan [8594-19] S5  
**Chen, Yun-Sheng** [8581-69] S9  
Chen, Yuqi [8582-29] SPTues, [8582-30] SPTues, [8596-6] S2  
Chen, Yu-Shing [8588-65] S10  
Chen, Yu-Yun [8626-55] SPWed  
Chen, Zexiang [8617-1] S1  
Chen, Zhe [8613-50] SPTue  
Chen, Zhigang [8605-14] S3, [8605-33] S7, [8640-57] S13  
Chen, Zhixing [8588-111] SPSun, [8588-49] S8  
**Chen, Zhongping** 8565 S7 Session Chair, [8565-35] S7, [8565-8] S4, [8565-84] S7, 8571 Program Committee, [8571-80] S12, [8575-18] S4, [8576-9] S2, [8581-9] S2  
Chenegros, Guillaume [8567-75] SPSun  
Cheng, Angela [8618-5] S11, [8618-5] S2  
Cheng, Annien [8639-19] S5  
**Cheng, Bowen** [8625-60] S13  
Cheng, Chee Yuen [8599-80] SPTue, [8644-39] SPWed  
Cheng, Cheng-Wei [8631-33] S7  
Cheng, Gangge [8577-10] S5  
Cheng, Gary [8626-34] S8  
Cheng, Hengju [8630-18] S5  
Cheng, James [8599-48] S4, [8599-48] S9  
**Cheng, Janice** [8590-17] S4  
Cheng, Jiangtao [8624-48] SPWed  
Cheng, Jie [8565-115] S5, [8588-15] S2  
Cheng, Ji-Xin [8581-9] S2, 8588 S1 Session Chair, [8588-11] S2, [8588-17] S3, [8588-5] S1, [8590-29] S8  
Cheng, Kao Yu [8620-73] SPWed  
**Cheng, Keith C.** [8593-11] S3  
Cheng, Kezi [8617-7] S2  
Cheng, Kuang-Hung [8570-26] SPSun  
**Cheng, Kyle** [8565-236] S2, [8611-28] S6, [8611-30] S6  
Cheng, Michael K. [8610-27] S6  
Cheng, Po-Wei [8626-57] SPWed  
Cheng, R. Holland [8587-12] S2  
Cheng, Rongen L. K. [8579-29] S7  
Cheng, Shuna [8572-57] SPSun  
Cheng, Tonglei [8621-39] SPWed, [8621-60] SPWed  
Cheng, Wei [8623-52] S14  
**Cheng, Wood-Hi** [8641-50] SPWed, [8641-8] SPWed  
Cheng, Yi-Chang [8626-57] SPWed  
Cheng, Yuanna [8565-31] S8  
Cheng, Yu-Chih [8620-60] S15  
Cheng, Yuen Yap [8620-14] S4  
Cheng, Yu-Hsiang [8577-25] S9  
Cheng, Yung-Chih [8622-44] S10  
Chennubhotla, Chakra [8593-15] S4  
Chenot, S. [8625-65] S14  
Cheon, Beom-Jun [8643-15] SPWed  
Cheon, Sangmo [8613-4] S1  
Cherchi, Matteo [8629-11] S3, [8629-12] S3  
Cherkasova, Elena [8587-63] SPMon  
Cherkezyan, Lusik [8592-32] S8  
Chernikov, Alexey [8623-15] S4  
Chernin, David P. [8624-16] S5  
Chernomordik, Victor [8577-3] S1, [8578-85] S14  
Chernov, Mykyta [8565-216] S3  
Chernyavskiy, Igor A. [8624-16] S5  
Cherry, Simon R. [8568-35] SPMon, [8578-48] S8, [8596-13] S2, [8596-13] S4  
Chetvertukhin, Artem V. [8623-67] SPWed  
Chevalier, Claude [8624-14] S4  
Chew, K.-L. [8639-1] S1  
**Chhetri, Raghav K.** [8571-74] S11, [8580-2] S1, [8592-37] S9  
Chi, Gou-Chung [8619-15] S4, [8625-75] SPWed, [8625-79] SPWed  
Chi, Mingjun [8605-20] S5  
Chi, Nan [8645-12] S5, [8646-18] S7, [8646-18] S7B  
Chi, Ting Ta [8571-86] SPMon  
Chia, Jean-San [8588-65] S10  
**Chia, Ray** [8565-43] S3  
Chia, Yong Poo [8599-80] SPTue  
Chiamvimonvat, Nipavan [8588-69] S10  
Chiang, Yueh-Sheng [8621-40] SPWed, [8626-55] SPWed  
Chiao, Mu 8612 Program Committee  
Chiappini, Andrea [8621-22] S5  
Chiellini, Marco [8612-14] S3  
Chiasera, Alessandro [8621-22] S5  
Chiavaoli, Francesco [8572-49] S9  
Chichenkov, Aleksandr [8594-29] S7  
Chichibu, Shigefusa F. 8625 Program Committee  
Chichkov, Boris N. [8609-13] S3, [8623-52] S14  
Chico, Sandrine [8602-15] S4  
Chiel, Hillel [8565-217] S2  
Chien, Hung-Chang [8647-2] S2  
Chien, Liang-Chy 8642 Conference Chair, 8642 S1 Session Chair, 8642 S7 Session Chair, 8642 Track Chair, [8642-32] SPWed, [8642-5] S2, 8643 Conference Chair, 8643 S4 Session Chair, 8643 Track Chair, 8644 Track Chair  
Chien, Miao-Ping [8594-8] S3  
Chien, Y. H. [8619-15] S4  
Chigrinov, Vladimir G. 8642 Conference CoChair, [8642-15] S5  
Childers, Eric [8630-2] S1  
Childs, David [8596-28] S8  
Childs, James J. [8580-17] S4  
Chill, Nicholas [8584-6] S2  
Chilla, Juan L. 8606 Program Committee, 8606 S6 Session Chair, [8606-2] S1  
Chilloce, Enver F. [8601-83] SPTue  
Chin Loy, Anthony E. [8565-84] S7  
**Chin, Aland** [8605-12] S3, [8605-25] S5  
Chin, Lixin [8579-24] S5  
Chin, Richard H. [8605-25] S5  
Chinn, Stephen R. [8605-38] SPTue  
Chiou, Yu Ren [8607-41] S11  
Chirico, Giuseppe [8580-30] S6  
Chirre, Emmanuel [8642-7] S2  
**Chistiakova, Maria V.** [8621-28] S6  
Chitgarha, Mohamed R. [8646-25] S8, [8646-25] S9  
Chityala, Ravishankar N. [8566-10] S2  
Chiu, Ching-Hsueh [8625-75] SPWed  
Chiu, Chi-Tat [8581-76] S11  
Chiu, Hsien-Chin [8626-57] SPWed  
Chiu, Liang-da [8587-74] SPMon  
Chiu, Shao-Yen [8631-90] SPWed  
**Chiu, Stephanie J.** [8567-26] S5, [8571-19] S3  
Chiu, Tien-Lung [8622-44] S10, [8642-31] SPWed, [8643-17] S4  
Chiu, Yenting [8640-41] S10  
Chiu, Yi-Wen [8622-42] S10  
Chiu, Yu-Jui [8615-26] S6  
Chlebus, Edward 8603 Program Committee  
Chmielowska, M. [8624-8] S3  
Cho, Chu-Young [8626-20] S5, [8631-102] S7  
Cho, Han Saem [8565-23] S2  
Cho, Heng-Ying [8626-55] SPWed  
**Cho, Jaedu** [8578-30] S5  
Cho, Jaehee [8641-1] S1, [8641-57] S12  
Cho, Josalyn L. [8565-100] S1  
Cho, Kyung-Sang [8613-4] S1, [8625-45] S10  
Cho, Nam Hyun [8565-54] S1  
Cho, Seongjae [8619-56] S14  
Cho, Sung Hwan [8622-34] S8  
**Cho, Sung Hwan** [8615-2] S1, [8615-26] S6  
Cho, Yong-Chul [8616-40] S9  
Cho, Yong-Hee 8619 S14 Session Chair, [8619-52] S13  
**Cho, Yong-Hoon** [8592-13] S4, [8592-47] SPSun, [8625-57] S12, [8634-15] S3, [8641-15] S4  
Cho, Yung [8581-119] SPSun  
**Choa, Fow-Sen** [8565-206] S1, [8631-87] S17  
Chodavarapu, Vamsy P. 8594 Program Committee  
Choe, Regine 8578 S4 Session Chair, [8578-112] SPSun, [8578-14] S3, [8578-21] S4  
Choh, Vivian [8567-81] SPSun  
Choi, Ann [8567-69] SPSun  
**Choi, Bernard** 8565 Conference Chair, 8565 S6 Session Chair, 8565 S7 Session Chair, [8565-15] S4, [8565-28] S7, [8578-63] S10, 8592 Program Committee, 8592 S1 Session Chair, 8592 S2 Session Chair, 8592 S3 Session Chair  
Choi, Byeong Kwon [8601-72] SPTue  
Choi, Chilung [8616-25] S6  
Choi, Chulhee [8572-1] S1  
Choi, Da-Hye [8585-9] S1  
Choi, Donghak [8571-11] S2  
Choi, E. Y. [8622-6] S2  
Choi, Eun-Seo [8573-27] SPSun  
**Choi, Heejin** [8587-35] S5  
Choi, Heung-Kook [8589-6] S2  
Choi, Hoi Wai [8641-63] S4  
Choi, Hyun [8571-116] SPMon  
Choi, Hyung [8616-17] S3, [8616-17] S4  
Choi, Hyunhwan [8621-53] SPWed  
Choi, Hyunyoung [8623-51] S13  
Choi, Il-Hyun [8625-56] S12  
Choi, Jeung-Hwan [8581-63] S9  
Choi, Jin Woo [8598-12] S4, [8598-7] S3  
Choi, John M. [8610-12] S3, [8610-5] S2  
Choi, Jong Won [8623-31] S7  
**Choi, Jong-Ryul** [8590-41] SPSUN, [8618-7] S11, [8618-7] S2  
Choi, Jongsoo [8616-8] S2  
Choi, Jun-Hee [8625-45] S10  
**Choi, Junoh** [8612-16] S4  
**Choi, Kyuhwan** [8616-15] S3, [8616-15] S4, [8643-4] S1  
**Choi, Minseog** [8615-7] S2, [8616-1] S1, [8616-1] S7  
Choi, Mi-Ri [8641-12] S3, [8643-16] S4  
Choi, Myunghwan [8598-6] S3  
Choi, Myunghwan [8598-7] S3  
Choi, Philip I. [8617-8] S2  
Choi, Sanghoon [8587-56] SPMon  
Choi, Seon Hyeong [8616-15] S3, [8616-15] S4  
Choi, Seong Soo [8597-9] S3  
Choi, Stacy Y. [8617-18] SPTue  
Choi, Suk [8625-60] S13  
Choi, Sun Young [8599-41] S8  
Choi, Sung-Wook [8581-79] S11  
Choi, Won Kook [8626-24] S5  
Choi, Wonjun [8592-20] S5  
Choi, Wonshik [8565-90] S9, [8592-20] S5, [8598-14] S4  
Choi, Woo June [8589-50] S11  
Choi, WoodJhon [8567-27] S5, [8567-47] S8, [8571-13] S3, [8571-15] S3, [8571-8] S2  
Choi, Yoon-Ho [8625-47] S11  
Choi, Yoon-Sun [8616-15] S3, [8616-15] S4, [8643-4] S1  
Choi, Young-Wan [8619-45] S12, [8619-74] SPWed, [8627-45] SPWed  
Choi, Youngwoon [8592-20] S5  
Choi, YunKyoung [8641-75] SPWed  
**Choma, Michael A.** 8565 S6 Session Chair, [8565-119] S6, 8593 Program Committee, [8593-16] S4, [8593-8] S2  
Chong, Harold M. H. [8629-18] S4  
Chong, Shau Poh [8588-10] SPSun  
Chopinada, Aurélien [8589-18] S4  
**Choquette, Kent D.** 8639 Conference Chair, 8639 S1 Session Chair, 8639 S3 Session Chair, [8639-26] S7  
Chorvat, Dusan 8588 SPSun Session Chair  
Chorvat, Dusan [8588-32] S5, [8588-92] SPSun  
**Chorvatova, Alzbeta** [8588-32] S5, [8588-92] SPSun  
Chou, Chien [8582-22] SPTues, [8597-15] S4, [8597-36] S8  
Chou, Lidek [8571-80] S12

# Index of Authors, Chairs, and Committee Members

- Chou, Mitch M. C. 8641 Program Committee, [8641-23] S5  
 Chou, Tsung-Yi [8641-69] SPWed  
 Choudhary, Amol [8599-4] S1, [8621-3] S1  
**Choudhury, Niloy** [8565-65] S3, [8586-5] S1  
 Chow, Bruce C. [8621-16] S4  
 Chow, Chi-Wai [8645-20] S7, [8645-20] S7B, [8645-22] S7, [8645-22] S7B  
 Chow, Weng W. 8619 Program Committee, 8640 S8 Session Chair  
**Chowdhury, Shwetadwip** [8589-17] S4  
 Christastina, Daniel [8623-15] S4, [8623-8] S3, [8628-2] S1, [8628-2] S10, [8629-40] S11  
 Christakis, Lysander [8608-28] S13, [8608-28] S6  
 Christen, Juergen [8625-21] S5, [8625-86] SPWed, [8625-90] S4  
 Christensen, Douglas A. 8584 S9 Session Chair, [8584-32] S9  
 Christensen, Joani M. [8565-24] S6, [8578-71] S12, [8587-52] S8  
 Christensen, Niels Egede [8625-16] S4  
**Christenson, Cory W.** [8622-49] S11  
 Christie, Jason M. [8588-102] SPSun  
 Christle, David J. [8635-11] S4  
 Christofidou, Agathi [8595-1] S1  
 Christol, Philippe 8631 S5 Session Chair, [8631-53] S19  
 Chrostowski, Lukas [8629-8] S2  
 Chu, Chen [8639-19] S5  
 Chu, Fenghong [8627-22] S5  
 Chu, FuChuan [8641-2] S1  
 Chu, Hong [8599-64] SPTue  
**Chu, Kaiqin** [8589-20] S4, [8592-2] S1  
 Chu, Kengyeh K. [8565-109] S4, [8565-111] S4, [8565-121] S6, [8575-5] S2  
**Chu, Shi-Wei** [8588-70] S10, [8588-75] SPSun, [8597-26] S6, [8642-20] S6  
 Chu, Shu-Chun 8637 Program Committee, [8637-10] S2, [8637-21] S4  
 Chu, Woo-Sung [8627-48] SPWed  
 Chu, Zhongdi [8593-5] S1  
 Chua, Chern Fei [8599-17] S4  
 Chua, Christopher L. [8625-60] S13  
 Chuang, Ching-Cheng [8565-169] S5, [8566-8] S2, [8566-9] S2, [8572-8] S2  
**Chuang, Frank** [8587-12] S2  
 Chuang, Jia-Hao [8626-56] SPWed  
 Chuang, Kendall [8615-2] S1  
 Chuang, Shun Lien 8619 Program Committee  
 Chuang, Ti [8599-23] S5  
 Chuang, Yi-De [8623-7] S3  
 Chun-Fu, Kuo [8637-10] S2  
 Chung, Dae-Young [8613-4] S1  
 Chung, Euiheon [8565-176] S3, [8575-16] S4  
 Chung, Hoon [8582-6] S1  
 Chung, Hsiang-Yu [8573-10] S2  
 Chung, Il-Sug 8633 Program Committee, [8633-34] S10, [8633-8] S3, [8633-9] S3, [8639-12] S4, [8640-34] S8  
 Chung, Ming-Han [8612-15] S3  
 Chung, Pei-Hua [8588-116] SPSun  
 Chung, Siyon [8619-24] S6  
 Chung, So Hyun [8568-40] SPMon, [8578-14] S3, [8578-21] S4  
 Chung, U-In [8641-15] S4, [8641-7] S2  
 Chung, Wei-Lun [8625-5] S1  
 Chung, Wonzoo [8571-119] SPMon  
 Chung, Youngjoo [8621-18] S4  
 Church, Jenniffer A. [8602-11] S3  
 Chvátal, Lukáš [8637-39] S9  
**Chyi, Jen-Inn** 8625 Conference Chair, 8625 S7 Session Chair, [8625-70] SPWed  
 Chyla, Michal [8599-63] S12, [8603-2] S1, [8603-2] S9  
 Cibiel, Gilles [8621-22] S5  
 Cicchi, Riccardo [8565-16] S4, [8588-86] SPSun  
**Cicek, Erdem** [8626-20] S5, [8631-33] S7  
 Cicerone, Marcus T. [8588-4] S1  
 Cideciyan, Artur [8615-6] S2  
 Cilip, Christopher M. [8565-4] S8  
 Cimalla, Peter [8611-19] S4  
 Cimalla, Volker [8613-40] S8  
 Cimen, Furkan [8626-41] S10  
 Cincotti, Gabriella 8647 Program Committee  
 Cirillo, Jeffrey D. [8565-112] S4  
 Cisek, Richard [8588-66] S10, [8596-27] S8  
 Cittadine, Andrew J. [8572-20] S4  
 Ciuti, Cristiano [8623-57] S15  
 ?i?már, Tomáš [8572-34] S7, [8589-38] S8, [8637-14] S3, [8637-16] S3, [8637-39] S9  
 Clabough, Michael [8647-16] S7  
 Claes, Tom [8598-20] S6, [8629-4] S1  
 Claeysens, Frederik [8583-17] S4, [8611-11] S2  
 Clafin, Bruce [8626-1] S1, [8626-5] S2, [8626-7] S2  
 Clark, Alasdair W. [8597-27] S6  
**Clark, Ashley N.** [8615-13] S3  
 Clark, Caspar C. [8599-29] S6  
 Clark, Christopher A. [8567-61] SPSun  
 Clark, Clifton D. [8579-18] S4  
**Clark, Darin P.** [8593-11] S3  
**Clark, Gregory A.** [8565-210] S4, [8586-27] S5  
 Clark, Laura [8567-35] S7  
 Clark, Robert L. [8612-1] S1, [8612-21] SPTue  
**Clark, Stephen P. R.** [8606-13] S4  
**Clarke, Brandon W.** [8591-2] S1, [8619-48] S12  
 Clarke, Matthew [8573-23] S6  
 Clarkin, James P. 8576 Program Committee  
 Clarkson, W. Andrew 8599 Conference Chair, 8599 S9 Session Chair, [8599-51] S10, 8601 S4 Session Chair, [8601-22] S6  
 Claudon, Julien [8619-33] S8, [8619-4] S1, [8623-48] S12, [8631-81] S16  
**Clays, Koen** [8622-60] SPWed  
 Cleary, Justin W. [8624-25] S7  
 Clegg, Casey M. [8634-9] S2  
 Cleland, Andrew N. [8635-11] S4  
 Clemens, Bruce [8620-56] S14  
 Clément, Olivier [8595-28] S7  
 Clements, Isaac P. 8586 Program Committee, [8586-31] SPSun  
 Clerici, Matteo [8623-24] S6  
 Clermont, Allen C. [8567-47] S8  
 Clet, Vincent [8599-40] S8, [8611-23] S5  
 Clift, Martin J. D. [8595-59] S13  
 Clingman, Bryan [8581-2] S1  
 Clouvel, Gregory [8589-33] S7, [8590-31] S9  
 Clubb, Fred [8565-28] S7  
 Cluzel, Benoit [8632-42] S10  
 Coad, James E. [8584-20] S6, [8584-22] S6, [8584-6] S2  
 Coad, James E. 8584 Program Committee, 8584 S10 Session Chair  
 Cochard, Jacques [8570-13] S3  
 Cochran, Nicholas [8599-33] S6  
 Cockburn, John W. [8640-66] S14  
**Codona, Johan L.** [8567-68] SPSun  
 Coe, Ryan L. [8592-16] S5, [8592-23] S6  
 Coelho, Simao [8588-34] S5, [8588-44] S7  
 Coens, Anthony [8622-35] S8  
 Coeur, Cécile [8631-31] S6  
 Cogswell, Carol J. 8589 Conference Chair, 8589 S7 Session Chair, [8589-2] S1  
 Cohen, Beth [8601-10] S3  
 Cohen, Shalom [8605-4] S1, [8640-54] S12  
 Coillet, Aurélien [8600-12] S3, [8600-73] SPTue  
 Colas, Antoine [8622-45] S11  
 Coldren, Larry A. 8628 Program Committee  
 Cole, Adam J. [8581-132] SPSun  
 Cole, Brian J. [8599-58] S11  
**Cole, Robin M.** [8600-26] S6, [8631-38] S6  
 Coleman, Matthew A. [8587-25] S4, 8591 S4 Session Chair, [8591-18] S4  
 Coleman, Sean [8631-22] S4, [8640-42] S10  
**Coles, Harry J.** 8642 Program Committee  
**Coles, Matt M.** [8637-7] S1  
 Colin, Clément [8620-11] S3  
 Collazo, Ramon [8625-91] S14, [8631-65] S12  
 Collier, Bradley B. [8591-4] S1  
 Collier, John L. 8602 Conference CoChair  
 Collin, Stéphane [8589-21] S5, [8620-11] S3, [8620-36] S9, [8631-74] S14, [8632-53] S12  
 Collini, Maddalena [8580-30] S6  
 Collins, George J. [8584-10] S3  
 Collins, Josh E. [8588-45] S7, [8596-20] S6  
 Collins, Michael J. [8567-14] S3  
 Collis, Ward [8626-40] S10  
 Colombelli, Raffaele 8631 Program Committee, [8631-5] S2, [8631-83] S16, 8633 S7 Session Chair, [8633-12] S4  
 Colombo, Miriam [8595-2] S1, [8595-3] S1  
 Colón, Tomeka S. [8621-24] S5  
 Columbo, Lorenzo [8631-4] S1, [8631-88] S18  
 Combarro-Romero, Andrés M. [8587-59] SPMon  
 Comini, Elisabetta [8626-21] S5  
 Commin, Paul [8605-34] S7  
 Compagnini, Giuseppe [8609-9] S3  
 Compton, Montana [8578-17] S3  
 Compton, Ryan E. [8634-12] S3  
 Conchello, José-Angel 8589 Conference Chair, 8589 S10 Session Chair, 8589 S11 Session Chair  
 Concina, Isabella [8626-21] S5  
**Conde, Olga M.** [8592-14] S4, [8592-34] S8  
 Condeelis, John S. [8615-13] S3  
 Condon, Nicholas J. [8604-30] S7, [8638-2] S1  
 Conibeer, Gavin 8620 Program Committee, 8620 S3 Session Chair, [8620-28] S7, [8620-71] SPWed  
 Conjusteau, André [8581-175] SPMon, [8581-176] SPMon, [8581-177] SPMon, [8581-2] S1, [8581-22] S4  
 Conkey, Donald B. [8617-17] S3  
 Connolly, James L. [8571-99] SPMon, [8587-26] S4  
 Conroy, Leigh [8565-191] SPSun  
 Consentino, Albert [8602-13] S4  
 Consoli, Antonio [8639-33] SPWed, [8640-59] S13  
 Consolano, Luigi [8631-3] S1  
 Consonni, G. [8612-14] S3  
 Contag, Christopher H. 8587 Program Committee  
 Conticello, Silvestro [8596-31] S9  
**Contini, Davide** [8578-111] SPSun, [8578-114] SPSun, [8578-82] S13, [8578-88] S14, [8583-11] S3, [8583-21] S3, [8583-21] S5, [8619-55] S14  
 Contreras Lallana, Pedro [8629-50] SPWed  
 Contreras, Daniel S. [8617-8] S2  
 Contreras, Orestes R. [8587-59] SPMon  
 Cook, Alan M. [8624-16] S5, [8624-5] S3  
 Cook, Daniel C. [8565-176] S3  
**Cook, Jason R.** [8581-33] S6, [8595-42] S9  
 Cook, Nathaniel C. [8595-46] S10, [8595-51] S11, [8595-64] S14  
 Cook, Rebecca S. [8588-73] SPSun  
 Cooke, Michael D. [8608-16] S3  
 Cooke, Simon [8624-16] S5  
 Coolen, Laurent [8631-69] S13  
 Cooney, Damon S. [8578-71] S12, [8587-52] S8  
 Cooper, Christy L. [8615-11] S3  
 Cooper, Jason [8580-2] S1  
 Cooper, Joel [8588-64] S9  
 Cooper, Jonathan M. [8597-27] S6, [8615-31] S7  
 Cooper, Michele T. [8568-36] SPMon  
 Cooper, Robert F. [8567-26] S5  
 Copeland, Drew A. [8599-61] S12, [8599-62] S12, [8599-78] SPTue, [8605-13] S3  
 Copenhaver, Troy [8624-18] S5  
 Copner, Nigel J. [8622-33] S8, [8647-24] S10, [8647-24] S9  
 Coppenbarger, Diana [8602-14] S4  
 Coppini, Raffaele [8588-48] S8  
 Coquillat, Dominique [8624-42] S10, [8631-84] S16  
 Coquoz, Séverine [8571-41] S7  
 Coradin, Thibaud [8587-46] S7, [8588-63] S9  
 Corbett, Brian [8586-23] S5  
 Corda, John C. [8570-23] S6  
 Cordier, Yvon [8624-8] S3  
 Córdoba Ramirez, Jhonattan [8627-17] S4  
 Cordovez, Bernardo [8594-27] S7  
 Corell, Dennis Dan [8641-44] S10  
 Cork, Michael [8565-11] S3  
 Cormack, Robert H. [8589-2] S1  
 Cormier, Eric [8601-37] S9  
 Cormier, Jean-François [8576-21] S4  
 Cormont, Philippe [8602-15] S4  
 Cornejo, Christine [8584-37] S1  
 Cornelissen, Steven [8617-4] S1  
 Cornet, Charles [8631-78] S15  
 Corradini, Roberto [8576-13] S3  
 Corrado, Gaetano [8603-17] S5  
 Correa, Carlos [8603-12] S4  
 Correa, Daniel [8612-23] SPTue  
 Correa, Fernanda Ishida [8579-32] S7  
 Corrielli, Giacomo [8611-41] S8  
 Corsi, Fabio [8595-2] S1, [8595-3] S1  
 Corso, Domenico [8631-47] S9  
 Cortajarena, Aitziber L. [8596-9] S3  
 Cortes, Dennis [8571-123] SPMon  
 Coscellini, Enrico [8576-13] S3, [8601-96] SPTue, [8608-29] S13, [8608-29] S6  
 Cosendey, Gattien [8625-33] S8  
**Coskun, Ahmet Faruk** [8570-22] S6, [8589-9] S2  
 Coslovich, Giacomo [8623-7] S3  
 Costa, Ernande B. [8641-49] S11  
 Costa, Fernanda Madalena [8626-75] S2  
 Costa, Marco A. [8565-41] S3, [8571-26] S4, [8571-27] S4  
 Costache, Florenta A. [8613-27] S6  
 Cotal, Hector L. [8620-13] S3  
 Côté, Daniel [8587-28] S4, [8588-22] S3



# Index of Authors, Chairs, and Committee Members

- Coté, Gerard L.** [8591-1] S1, [8591-3] S1, [8591-7] S2  
 Cotelli, Franco [8593-10] S3  
 Cotter, Joshua [8578-3] S1  
**Couairon, Arnaud** [8611-49] S12, [8611-49] S6  
 Couceiro, Iakrya Borrakuens [8571-113] SPMon  
 Coudreau, Thomas [8635-44] S13  
 Coughlin, Andrew J. [8593-14] S3  
 Coulombier, Quentin [8600-78] SPTue  
 Courjaud, Antoine [8599-40] S8, [8611-23] S5  
 Courrol, Lilia C. [8591-13] S3  
 Courtial, Johannes [8610-20] S4  
 Courtney, Brian K. [8565-236] S2  
 Courvoisier, Francois 8608 Program Committee, [8608-15] S3, [8611-49] S12, [8611-49] S6, [8637-22] S4  
 Courvoisier, Sebastien D. [8611-60] SPTue  
 Couston, Laurent [8627-21] S5  
 Coutard, Jean-Guillaume [8591-23] SPWed  
 Coutaz, Jean-Louis [8624-26] S7, [8624-27] S7  
 Coutinho, Isabel [8568-5] S2, [8587-53] S8  
 Couture, Martin [8621-48] SPWed, [8621-5] S2  
 Couve, Andrés [8590-22] S6  
 Couzi, Michel [8607-22] S7  
**Cova, Sergio D.** [8590-2] S3  
 Cover, Keith S. [8572-47] S9, [8573-19] S5, [8574-25] SPSun  
 Covey, John [8630-38] S9, [8630-48] SPWed  
 Covington, Laura R. [8626-11] S3  
**Cowan, Vincent M.** [8631-54] S19  
**Cowan, William D.** 8617 Program Committee  
 Cox, Benjamin T. [8581-30] S5, [8581-48] S8  
 Cox, Dennis D. [8572-38] S7  
 Cox, Jonathan A. [8604-36] S8  
 Coxson, Harvey O. [8565-98] S1  
**Coyle, Jared P.** [8643-7] S2  
 Cradock, Kimberly [8572-20] S4  
 Craft, S. [8625-91] S14  
 Craig, Alan E. 8635 Program Committee  
 Craig, Douglas M. [8599-79] SPTue  
 Craig, Ian M. [8631-37] S6, [8631-7] S2  
 Craighead, Harold [8598-19] S6  
 Cramer, Giovanni [8565-46] S3  
 Crane, Nicole J. [8574-12] S3, 8577 Program Committee, 8577 S4 Session Chair  
**Craven-Jones, Julia M.** [8613-37] S8  
 Crawford, Gregory Philip 8642 Program Committee  
**Creath, Katherine** [8589-47] S10  
 Creer, Marilyn [8570-23] S6  
 Crespi, Andrea [8611-41] S8  
 Crespo-Monteiro, Nicolas N. [8609-4] S1  
 Creux, Amélie [8627-19] S5  
 Cristina, Armellini [8621-22] S5  
 Cristóbal, Ana B. [8620-18] S5  
 Crocini, Claudia [8588-48] S8  
 Crom, Max V. [8639-1] S1  
 Cromer, Remy [8643-9] S2  
 Cronin, Stephen B. [8632-49] S11  
 Crooker, Scott A. [8635-8] S3  
 Cros, Ana [8625-22] S5  
 Crosier, Kathryn [8615-49] SPTue  
 Crosier, Philip [8615-49] SPTue  
**Crosignani, Viera** [8588-37] S6  
 Cross, Karen C. [8625-27] S6  
 Crouzet, Christian [8565-28] S7  
 Crowley, Mark T. [8619-10] S3, [8619-11] S3  
 Crown, Michael X. [8565-27] S9
- Crozier, Kenneth B.** [8601-53] S13, 8632 S12 Session Chair, [8632-56] S13  
 Crump, Paul [8605-15] S4, [8605-29] S6, 8640 S13 Session Chair  
 Crut, Aurelien [8623-25] S8  
 Cruz Munoz, Jose Luis [8601-86] SPTue  
 Cruz, Flavio C. [8624-13] S4  
**Cruz-Cabrera, Alvaro A.** [8612-16] S4  
 Cryan, Martin J. [8628-16] S6  
 Csaki, Andrea [8595-13] S3  
 Ctistis, Georgios [8623-48] S12  
 Cuadros, Jorge A. [8567-61] SPSun  
 Cubeddu, Rinaldo [8578-114] SPSun, [8578-82] S13, [8583-21] S3, [8583-21] S5, [8583-5] S2, [8593-10] S3, [8619-55] S14  
**Cubukcu, Ertugrul** [8621-1] S1, [8631-11] S3  
**Cuccia, David J.** [8565-189] SPSun, [8565-27] S7, [8573-3] S1, [8578-61] S10, [8578-67] S11, [8592-31] S7  
 Cuccolini, Gabriele [8603-14] S4, [8603-15] S4  
 Cuche, Etienne [8614-8] S2  
 Cucinotta, Annamaria [8576-13] S3, [8601-96] SPTue, [8608-29] S13, [8608-29] S6, [8608-3] S1  
 Cuffney, Robert H. [8599-26] S6, [8602-13] S4  
 Cui, Bifeng [8640-67] SPWed  
 Cui, Kai [8634-8] S2  
 Cui, Kaiyu [8630-44] SPWed  
**Cui, Meng** [8589-31] S7, [8617-10] S3  
 Cui, Min [8616-33] S7  
 Cui, Shanshan [8578-91] SPSun  
 Cui, Sisi [8582-14] S4, [8582-29] SPTues, [8596-41] SPMon  
 Cui, Weili [8645-30] SPWed  
 Cui, Xiaojuan [8631-31] S6  
 Cuisinier, Frédéric J. G. [8594-15] S4  
 Culjat, Martin O. [8624-2] S2  
 Culley, Siân [8590-27] S8  
 Culpepper, Charles [8599-24] S5  
 Culver, Joseph P. [8565-164] S1, [8565-204] S5, [8572-14] S3, [8572-15] S3, [8573-31] SPSun, [8578-42] S7, [8578-75] S12, [8578-8] S2, [8578-95] SPSun, 8580 Program Committee, [8580-36] S8  
 Cummings, Richard [8594-9] S3, [8597-37] S8  
 Cummings, Thomas J. [8567-43] S8  
 Cummins, Brian M. [8591-3] S1  
 Cummins, Zachary [8634-14] S3  
 Cunkelmann, Benjamin P. [8584-3] S10  
 Cunningham, Garry [8626-40] S10  
 Cunningham, John E. [8628-8] S4, 8630 Program Committee, [8630-23] S6, [8630-41] S11, [8630-41] S2  
 Curatolo, Andrea [8571-68] S11, [8583-19] S4  
 Curley, Michael J. [8570-23] S6, [8622-47] S11  
 Curran, Tom [8621-10] S3  
 Currie, Matthew O. [8605-6] S2  
 Curry, Taeyuana [8595-52] S12  
 Curry, William [8565-179] S3  
**Curticapean, Dan** [8576-4] S1  
 Cutini, Simone [8578-111] SPSun  
 Cvijetic, Milorad [8646-19] S7A, [8646-19] S8  
 Czarick, Michael [8622-47] S11  
 Czarnota, Gregory J. [8581-146] SPMon  
 Czernecki, Robert [8625-37] S8, [8625-41] S9  
 Czernuszewicz, Tomek [8581-183] SPMon  
 Czerwiński, Andrzej [8625-37] S8  
 Czirak, Andras [8593-19] S5  
 Czystanowski, Tomasz [8625-36] S8, 8639 S8 Session Chair, [8639-25] S7, [8639-27] S7
- D**
- da Cruz, Lyndon [8615-6] S2  
**da Silva Fonseca, Eduardo Jorge** [8637-18] S3, [8637-5] S1  
 da Silva Martinho, Herculano S. [8577-13] S6, [8577-16] S7, [8579-35] SPMon  
 da Silva, Airon J. [8587-60] SPMon  
 da Silva, Edson P. [8646-3] S2, [8647-20] S7A, [8647-20] S8  
 Da Silva, Sebastiao W. [8595-24] S7  
 Daab, Wajih A. [8646-25] S8, [8646-25] S9  
**Dabbico, Maurizio** [8631-4] S1, [8631-88] S18  
 Dabidian, Nima [8619-42] S10  
 DaCosta, Ralph [8565-191] SPSun  
 DaCosta, Ralph S. [8581-26] S4  
**Dadrasnia, Ehsan** [8624-26] S7, [8624-27] S7  
 Daehne, Mario [8634-11] S2, [8634-21] S5  
 Daemen, Joost [8565-39] S6, [8565-40] S6  
 Dafina, Alexandru [8639-20] S5  
 Dagenais, Mario 8628 Program Committee  
 Dagnelie, Gislin [8615-6] S2  
 Dahan, Maxime [8590-31] S9, 8595 Program Committee  
 Dahan, Nir [8620-46] S11  
 Dahel, Karima [8592-28] S7  
 Dahlgren, Robert P. 8621 Program Committee  
 Dähnert, Ingo [8587-22] S4  
 Dai, Cui Xia [8571-101] SPMon  
 Dai, Daoxin [8628-7] S3, [8629-10] S3  
 Dai, Haitao [8626-53] SPWed, [8626-54] SPWed, [8632-10] S2, [8641-18] S4, [8641-2] S1, [8643-20] SPWed  
 Dai, Ping [8572-56] SPSun  
 Daigle, Olivier [8574-22] S5  
 Daikuhara, Osamu [8630-32] S8  
**Dainty, Chris** 8617 Program Committee  
**Dajani, Iyad** [8601-125] SPTue, [8601-32] S8, [8601-34] S8, [8604-23] S5  
 Dal Lago, Matteo [8641-53] S11  
 Dal Negro, Luca [8594-11] S4, 8632 S10 Session Chair, [8632-48] S11, [8635-29] S6, [8635-29] S9  
 Dalacu, Dan [8613-12] S3  
 Dalal, Roopa [8567-9] S2  
 Dalcanale, Enrico [8631-85] S16  
 Dale, Anders M. [8565-177] S3  
 Dale, Elijah B. [8600-18] S5  
 D'Alessandro, Giampaolo [8627-28] S7  
 D'Alfonso, Laura [8580-30] S6  
 Dalgarno, Heather I. C. [8589-38] S8, [8637-16] S3  
 Dalir, Hamed [8639-31] S8  
 Dalla Mora, Alberto [8578-82] S13, [8578-88] S14, [8619-55] S14  
 Dallas, Gordon [8631-57] S11  
 D'Alleva, Nicholas [8565-95] S9  
 Dallner, Matthias [8631-95] S18  
 Dalmau, Rafael F. [8625-91] S14, [8641-36] S8  
**Dalton, Larry R.** [8622-19] S1, [8622-19] S5  
 Daly, Keith R. [8627-28] S7  
 Daly, Michael J. [8565-189] SPSun  
 Dam, Jeppe S. [8604-27] S6, [8604-28] S6  
 Damania, Dhwanil [8592-32] S8  
**Damestani, Yasaman** [8565-175] S2  
 Dam-Hansen, Carsten [8641-44] S10  
 Dana, Hod [8588-77] SPSun  
 Dan-Chin-Yu, Alexey V. [8565-23] S2  
 D'Andrea, Cosimo [8578-70] S11, [8593-10] S3, [8596-24] S7  
 Dandy, David S. [8570-10] S3  
 Danet, Jean-Marie [8606-28] S8
- Dang, Gerard [8633-5] S2, [8633-7] S2  
 Dang, Vinh Nhu [8601-113] SPTue, [8601-116] SPTue, [8604-6] S2, [8611-17] S4  
 Dangel, Roger F. [8622-4] S1  
 Danault, Louis [8601-49] S12  
 Daniel, Jae M. [8599-51] S10, [8601-22] S6  
 Daniel, Jurgen H. 8643 Program Committee  
 Danielius, Romualdas [8567-63] SPSun  
 Danielli, Amos [8581-28] S5, [8581-82] S11  
 Daniels, Hans [8576-16] S3  
**Danilevicius, Paulius** [8611-11] S2, [8613-34] S7  
 Dann, Eldad J. [8597-33] S7  
 Dannberg, Peter [8616-42] S9  
 Danner, Aaron James [8632-17] S4, [8639-8] S3  
 Danson, Colin N. [8602-6] S2  
 Dantas, Noelio O. [8595-58] S13, [8621-46] SPWed, [8638-17] S4  
 Dantham, Venkata R. [8600-63] S15  
 Danto, Sylvain [8600-20] S5  
 Daoudi, Khalid [8581-29] S5, [8581-49] SPSun  
 Dapkus, Paul D. 8628 Program Committee  
 D'Apuzzo, Fausto [8631-13] S3  
 Dar, Irfaan [8581-92] SPSun  
 Dar, Tuffail [8597-40] S8  
**Darafsheh, Arash** [8567-80] SPSun, [8594-11] S4, [8627-13] S3  
 Darga, Donald [8572-20] S4  
 Darias Gonzalez, Juan Gualberto [8587-59] SPMon  
 Darling, Cynthia L. [8566-18] SPSun, [8566-19] SPSun, [8566-4] S1, [8566-6] S1  
 Dartmann, Sebastian [8589-22] S5  
 Darwin, Maxim E. [8580-18] S4, [8588-24] S3  
 Darvish, Shaban Ramezani [8631-99] S10  
 Darwich, Zeinab [8588-29] S4  
 Darwiesh, Mohamed [8641-66] SPWed  
 Darzacq, Xavier [8590-31] S9  
 Darzynkiewicz, Zbigniew [8615-34] S7  
 Das, Aparna [8625-21] S5  
 Das, Bidyut [8577-7] S2  
 Das, Bijoy K. [8629-16] S4, [8629-33] S9, [8629-35] S9  
 Das, Gautom K [8596-13] S2, [8596-13] S4  
 Das, Saikat [8597-30] S7  
 Das, Susanta K. [8611-27] S5, [8626-27] S6, [8637-20] S4  
 Dasari, Ramachandra R. [8572-35] S7, [8572-12] S6, [8579-20] S5, [8587-14] S2, [8587-32] S5, [8589-46] S10  
 Dasen, Stephan [8614-6] S2  
 Dasgeb, Bahar [8596-32] S9  
 Dasgupta, Nandita [8616-28] S6, [8629-33] S9  
 Dasgupta, Sonali [8601-99] SPTue  
 Dashinimaev, Erdem [8587-63] SPMon  
 Daskalakis, Nick [8615-53] SPTue  
 Dassonville, Hunter [8636-36] S6  
 Dastmalchi, Pouya [8627-38] S9  
 Datta, Prasanta Kumar [8604-47] SPTue  
 Daudin, Bruno [8625-22] S5  
 Daures, Anthony [8578-64] S11  
 Daurios, Jérôme [8602-15] S4  
 Dautet, Henri [8621-48] SPWed, [8621-5] S2  
 Davenport, Michael L. [8629-36] S10, [8640-29] S7  
 David, Sylvain J. P. [8625-19] S5  
**Davidson, Frederic M.** [8610-3] S1, [8610-31] S7

# Index of Authors, Chairs, and Committee Members

- Davies, Antony [8622-33] S8  
Davies, Giles [8585-8] S1, [8631-5] S2  
Davis, Anjul M. 8593 Program Committee  
Davis, Jennifer [8565-171] S5  
Davis, John [8600-68] S16  
Davis, Scott C. [8568-10] S3, [8568-9] S3, [8578-28] S5  
Davis, Wyatt O. 8616 Program Committee, 8616 S9 Session Chair  
**Davoudi, Bahar** [8565-75] S6  
Davuluri, Sankar [8636-49] S10  
Dawes, Andrew M. [8636-36] S8  
Dawson, David [8605-23] S5, [8605-5] S1  
**Dawson, Jay W.** 8601 Program Committee, [8601-4] S1, [8601-6] S2  
Dawson, L. Ralph [8606-12] S4, [8606-13] S4  
Dawson, Martin David [8606-11] S4  
Day, Robert [8600-50] S12  
**Day, Timothy O.** [8631-18] S4  
Dayal, Rajeev [8578-59] S10  
Dayeh, Shadi A. [8631-41] S8  
de Aguiar, Hilton B. [8588-98] SPSun  
de Angelis, Marella [8581-34] S6  
de Araújo, Cid Bartolomeu [8604-48] SPTue  
de Araujo, Renato E. [8597-32] S7, [8621-58] SPWed  
de Boer, Johannes 8565 Program Committee, 8565 S4 Session Chair, [8565-104] S2, [8567-30] S6, [8567-49] S9, [8567-70] SPSun, 8571 Program Committee, 8571 S8 Session Chair, [8571-17] S3, [8571-24] S4, [8571-49] S8, [8589-40] S9  
De Boni, Leonardo [8604-52] SPTue  
de Boorder, Tjeerd [8576-16] S3  
de Bruin, Daniel M. [8565-47] S4, [8571-35] S6  
De Carlo, Francesco [8593-11] S3  
de Carvalho, Luis H. [8646-3] S2, [8647-20] S7A, [8647-20] S8  
de Ceglia, Domenico [8632-65] S14  
de Crecy, Francois [8612-11] S3  
De Fornel, Frédérique A. [8632-42] S10  
de Freitas, Anderson Zanardi [8571-113] SPMon  
De Freitas, Carolina [8567-19] S4  
De Greve, Kristiaan [8635-10] S3  
de Groot, Mattijs [8565-104] S2, [8571-24] S4, [8571-49] S8, [8571-52] S8, [8589-40] S9  
de Haan, Laurens T. [8642-3] S1  
de Hon, Bastiaan P. [8619-61] SPWed  
de Jaegere, Peter [8565-39] S6  
**de Jesus Silva, Alcencio Jose** [8637-18] S3, [8637-5] S1  
de Jong, Joost [8572-47] S9, [8573-19] S5  
de Jong, Nico [8581-14] S2  
de Juan, Eugene [8615-6] S2  
de Kinkelder, Roy [8567-31] S6  
de Kleijn, Dominique P. V. [8581-10] S2  
De Koninck, Yannick [8627-6] S2, [8629-41] S11  
De Koninck, Yves [8587-28] S4, [8588-22] S3  
de la Fuente, Jesus M. 8595 Program Committee  
de la Mare, Martin I. [8631-60] S11  
de la Rosette, Jean J. [8565-47] S4  
de la Zerda, Adam [8581-15] S3  
De Leon, Israel [8597-35] S8  
De Liberato, Simone [8623-57] S15  
de Lustrac, André [8627-34] S8  
**de Magalhaes, Ana Carolina** [8569-5] S1, [8569-8] S2  
De Martino, Antonello [8577-29] S10  
de Mauro, Claudio [8588-95] SPSun  
De Melo, Luciana [8597-32] S7  
**De Montigny, Etienne** [8565-78] S7, [8574-10] S2, [8574-6] S1, [8575-22] S5  
**de Natale, Paolo** [8631-3] S1, [8640-23] S5  
De Nicola, Pietro [8612-14] S3  
de Oliveira, Júlio César R. F. 8646 Program Committee, 8646 S7A Session Chair, 8647 S8 Session Chair, [8647-18] S7, [8647-20] S7A, [8647-20] S8  
de Oliveira, Susana C. [8569-26] SPSat  
De Paola, Vincenzo [8588-47] S7  
de Ridder, René M. [8599-8] S2  
de Rocquigny, Hugues [8590-12] S2  
de Rooij, Nico F. [8614-15] S3, [8614-5] S1  
De Rosa, Mario [8588-103] SPSun  
De Siena, Gaetano [8565-16] S4  
**De Silva Indrasekara, A. Swarnapali** [8597-6] S2  
De Silvestri, Sandro [8593-10] S3  
De Smedt, Stefaan C. [8595-14] S4  
de Souza Menezes, Leonardo [8604-48] SPTue  
de Souza, Adriana [8597-32] S7  
de Sterke, C. Martijn [8636-56] S11  
de Thomaz, André A. [8588-57] S8  
de Toledo, Maria Cristina Fischer [8627-52] SPWed  
De Visschere, Patrick [8622-41] S10  
De Vittorio, Massimo 8634 Program Committee  
de Vries, Oliver [8601-100] SPTue, [8601-104] SPTue  
De Wilde, Yannick [8631-36] S13  
De, Arjitt K. [8573-1] S1  
Dean, Paul [8585-8] S1  
Dean, Ziah [8617-13] S3  
Deana, Alessandro M. [8569-15] S4, [8569-16] S4  
Deán-Ben, Xosé Luis [8581-139] SPMon, [8581-20] S3, [8581-60] S8  
DeAngelo, Bianca [8592-33] S8  
Dearden, Geoff [8608-19] S4  
Débarre, Anne [8595-34] S8  
Débarre, Delphine [8588-67] S10, [8593-25] SPSun, [8617-14] S3, [8622-24] S6  
Debernardi, Pierluigi [8633-10] S3  
Debije, Michael George [8642-22] S7  
Debnath, Kapil [8629-32] S9, [8630-24] S6  
Decencièrre, Etienne [8587-46] S7  
Deck, Andrew C. [8601-41] S10  
Decker, Manuel [8613-30] S7  
Deckert, Volker 8597 Program Committee  
Deconinck, Yannick [8633-28] S9  
Decoster, Didier [8631-40] S8  
Decuzzi, Paolo [8598-10] S3  
Deely, Timothy [8599-23] S5  
Deev, Andrei [8631-8] S2  
Deflorian, Gianluca [8595-5] S1  
Degan, Simone [8588-40] S6  
Degenaar, Patrick [8586-23] S5  
Degiovanni, Ivo Pietro [8635-31] S6, [8635-31] S9  
Degoli, Elena [8629-37] S10  
Dehn, Claudia [8566-13] S3  
Deile, Jochen [8600-3] S1, [8603-8] S3  
Deisseroth, Karl [8586-1] S1, [8586-9] S2  
Dejima, Norihiro [8625-43] S9  
Deka, Nishita [8600-61] S14  
Dekhter, Rimma [8590-16] S5, [8594-22] S6, [8619-46] S12  
Dekker, Peter [8611-31] S6  
Del Fatti, Natalia 8623 S15 Session Chair, [8623-25] S8  
del Mercato, Loretta L. 8595 S10 Session Chair, [8595-31] S8  
del Priore, Lucian [8615-6] S2  
Deladurantaye, Marc [8601-103] SPTue  
Deladurantaye, Pascal [8576-21] S4  
Delaigue, Martin [8611-18] S4, [8621-64] SPWed  
Delamarre, Amaury [8620-8] S2  
Delaporte, Philippe [8607-32] S9, [8607-34] S10, [8608-2] S1, [8611-38] S8  
Delaunay, Jean-Jacques 8626 Program Committee  
Delehanty, James B. 8595 S11 Session Chair, [8595-44] S10, [8595-53] S12  
Delemon, Olivier [8631-85] S16  
Delfino, Ines [8588-103] SPSun  
Delga, Adrien [8619-33] S8  
Delgado, Stephanie [8567-29] S6  
Della Frera, Adriano [8631-49] S9  
Della Valle, Giuseppe [8611-41] S8  
**Dellinger, Jean** [8632-42] S10  
Dellith, Jan [8621-26] S5  
Delmas, Marie [8631-53] S19  
Deman, Pierre [8589-54] SPWed  
Demangeot, Francois [8625-22] S5  
Demas, Jeffrey D. [8601-53] S13  
Dembet, Roderick [8567-75] SPSun  
Demchenko, Alexei [8581-155] SPMon  
Demers, Jennifer-Lynn H. [8578-28] S5  
DeMichele, Angela [8578-14] S3  
Demidov, Valentin [8571-98] SPMon  
**Demirbas, Umit** [8599-28] S6  
Demirci, Utkan [8568-17] S4  
Demirjian, Sevag [8596-36] SPMon  
Demmerle, Frederic [8631-67] S12, [8640-40] S9  
Demmler, Stefan [8601-48] S12  
Demos, Stavros G. 8577 Conference Chair, 8577 S1 Session Chair, 8577 S10 Session Chair  
Dempster, John  
Dems, Maciej [8639-25] S7, [8639-9] S3  
Demsar, Jure [8623-6] S3  
den Dekker, M. M. [8587-77] SPMon  
DenBaars, Steven P. [8639-5] S2  
Deng, Cheri X. [8581-72] S10  
Deng, Dinghuan [8621-33] SPWed  
Deng, Guoliang [8607-20] S12, [8607-20] S6  
Deng, Hui [8625-82] SPWed  
Deng, Jie [8616-24] S5  
**Deng, Jun** [8632-17] S4  
Deng, Leimin  
Deng, Sisheng [8636-26] S5  
Deng, Zijian [8581-100] SPSun  
Deng, Zixin [8574-5] S1  
Denis, Thomas [8632-37] S9  
Denis, Vincent [8602-15] S4  
Denisenko, Vladimir G. [8637-29] S7  
**Deniz, Engin** [8565-119] S6, [8593-8] S2  
Dennis, Brian [8616-31] S7  
Dennis, Torry [8586-3] S1  
**Denstedt, Martin** [8565-23] S6, [8578-29] S5  
Dente, Gregory C. [8631-17] S4  
**Denton, Michael L.** [8579-39] S3  
Denz, Cornelia [8637-11] S2  
Depeursinge, Christian D. [8644-20] S5  
Deyppner, Marcus [8619-14] S4, [8619-53] S13  
**Derelle, Sophie** [8632-8] S2  
Dergachev, Alex Y. [8599-10] S3  
Derycke, Christophe [8599-45] S8  
Desai, Jaydev [8565-181] S4  
DeSantolo, Anthony M. [8601-3] S1  
Desbiens, Louis [8601-103] SPTue  
Deschamps, Thierry [8601-68] SPTue, [8620-15] S4  
**Descharmes, Nicolas** [8637-9] S2  
Desfonds, Pascal [8632-53] S12  
Deshaies, Sébastien [8614-14] S3  
**DeShazer, David J.** [8622-4] S1  
Desiatov, Boris [8636-18] S4  
Deslandes, Pierre [8601-38] S9  
Desmet, Walter [8565-6] S5, [8565-7] S3  
DesRoches, Brandon [8572-39] S8  
Desroches, Yan [8614-14] S3  
**Destéfani, Gérard L.** [8631-14] S3, [8631-71] S13  
Destouches, Nathalie N. [8609-4] S1  
Destro, Marcelo Geraldo [8600-75] SPTue  
Detchprohm, Theeradetch [8641-3] S1  
Deterre, Romain [8565-78] S7  
Detz, Hermann [8631-20] S17, [8640-43] S10, [8640-44] S10  
Deuretzbacher, Frank [8637-26] S5, [8637-26] S8  
Deutsch, Christoph [8640-43] S10, [8640-44] S10  
Deutsch, Erik R. [8631-16] S17  
Deutsch, Zviccka [8595-47] S10  
Devauges, Viviane [8590-13] S2  
Devauges, Viviane [8597-22] S5  
Devauux, Bertrand [8565-184] S4  
Devauux, Fabrice [8592-10] S4  
Devi Khainchi, Seema [8580-22] S4  
Devine, William A. [8593-26] SPSun  
DeVito, Mark [8605-14] S3, [8605-23] S5, [8605-33] S7, [8640-57] S13  
Devor, Anna [8565-177] S3  
DeVries, Lawrence K. [8640-10] S2  
Dewanda, Fadia [8611-54] SPTue, [8615-19] S4  
Dewhirst, Mark W. [8578-51] S9, [8584-4] S5  
Dewitt, Douglas S. [8581-6] S1  
Dey, Priyanka [8604-32] S7  
Deymier, Pierre A. [8632-55] S12  
Dhakal, Ashim [8627-18] S5  
**Dhakal, Kamal** [8586-22] S3, [8586-3] S1  
Dhalla, Hafeez [8589-17] S4  
**Dhalla, Hafeez** [8567-34] S6, [8571-7] S2  
Dharanipathy, Ulagalandha Perumal [8637-9] S2  
Dharmaraja, Shivani [8615-35] S8  
Dherbecourt, Jean-Baptiste [8631-64] S12  
Dhillon, Baljean [8567-77] SPSun  
Dhillon, Sukhdeep S. [8631-66] S12, [8640-38] S9, [8640-39] S9  
Dholakia, Kishan [8572-34] S7, [8589-38] S8, [8611-2] S1, [8611-3] S1, 8637 Program Committee, [8637-14] S3, [8637-16] S3  
D'Hooge, Jan [8565-6] S5, [8565-7] S3  
Di Bianca, Laura [8601-56] S13  
Di Carlo, Aldo 8619 Program Committee  
Di Carlo, Dino [8587-38] S6, [8611-22] S5  
Di Corato, Riccardo [8595-40] S9  
Di Gaspare, Alessandra [8624-42] S10, [8631-13] S3  
Di Leonardo, Roberto [8637-49] S10  
Di Lieto, Alberto [8638-3] S1  
Di Marcantonio, Paolo [8618-13] S4  
Di Nicola, Jean-Michel G. 8602 Program Committee, [8602-12] S4, [8602-9] S3  
Di Ninni, Paola [8583-21] S3, [8583-21] S5, [8583-5] S2  
Di Sieno, Laura [8578-82] S13, [8578-88] S14, [8619-55] S14  
Di Teodoro, Fabio 8601 Program Committee, 8601 S9 Session Chair  
Di, Dawei [8620-28] S7, [8620-71] SPWed  
**Diamond, Kevin R.** [8568-26] S7  
Dianov, Evgeniy M. [8601-16] S5  
Diao, Zhaolu [8637-9] S2  
**Dias, Victória** [8579-32] S7



# Index of Authors, Chairs, and Committee Members

- Diaspro, Alberto** 8588 Program Committee
- Díaz Díaz, Jesús** [8573-12] S3, [8573-12] S5
- Díaz, Francisc [8594-6] S2, [8599-3] S1, [8599-4] S1, [8625-26] S6
- Díaz, Marcos [8603-12] S4
- Díaz, Rodolfo E. [8595-9] S2
- Diba, Abdou [8631-22] S4
- Dickensheets, David L. Symposium Chair, 8575 Program Committee, 8575 S7 Session Chair, 8616 Program Committee, 8616 S1 Session Chair, [8617-6] S1
- Dickey, Trevor C. [8585-20] S3
- Dickinson, J. Thomas 8607 Program Committee, 8609 Program Committee
- Dickinson, Mary E. [8567-42] S8, [8580-26] S5, 8593 Program Committee, [8593-14] S3
- Dickson, Alexander [8576-24] S5
- Didier, Pascal [8588-29] S4, [8590-12] S2
- Didierjean, Julien [8621-64] SPWed
- Diebold, Gerald J. 8581 Program Committee
- Diederich, Chris J. 8584 Program Committee, 8584 S8 Session Chair, [8584-22] S8, [8584-29] S8, [8584-30] S9, [8584-33] S9, [8584-34] S9
- Diehl, Laurent [8640-48] S11
- Diels, Jean-Claude M. 8600 Program Committee, 8600 S5 Session Chair, [8600-7] S2, [8604-16] S4
- Diephuis, Bradford J. [8565-109] S4, [8565-120] S6, [8565-121] S6
- Dierker, Christian [8587-9] S1
- Dierksen, Gregory [8565-109] S4, [8565-111] S4, [8565-121] S6, [8575-5] S2
- Dietz, Nikolaus**
- Dietzke, Benjamin [8565-185] S4, [8577-18] S7, [8611-16] S4
- Dieudonné, Belto [8621-22] S5
- Diez, Antonio [8611-16] S4
- Diez, S. [8594-25] S7
- Diez-Blanco, Victor [8609-17] S4
- DiFlorio-Alexander, Roberta M. [8578-32] S6
- DiGiovanni, David J. [8601-3] S1
- Digonnet, Michel J. F. 8621 Conference Chair, 8621 S2 Session Chair, [8632-20] S5, [8636-4] S1
- Dijkstra, Jouke [8565-34] S5
- Dijoux, Matthieu [8608-14] S3
- Dikshit, Amit [8619-78] SPWed
- Dilger, Klaus [8603-21] S5
- Dillon, Daren [8617-9] S2
- Dima, Alexander [8581-110] SPSun
- Dimakis, Emmanouil [8625-16] S4
- DiMarcello, Frank V. [8601-3] S1
- DiMarzio, Charles A. 8581 Program Committee, [8581-131] SPSun, [8581-135] SPMon, [8588-56] S8, [8588-61] S9, 8589 Program Committee, 8589 S5 Session Chair, [8589-14] S3, [8589-36] S8, [8621-30] S6
- Dimitrov, Stoyan [8572-48] S9, [8591-20] S4
- Dimofte, Andreea [8568-23] S6, [8568-28] S7
- Ding, Ding [8620-13] S3
- Ding, Li [8639-19] S5
- Ding, Li [8582-28] SPTues
- Ding, Ming [8600-74] SPTue
- Ding, Shuyu** [8620-3] S1
- Ding, Yichen [8587-58] S9
- Ding, Ying [8640-61] S13, [8640-67] SPWed
- Ding, Yujie J. 8623 Program Committee, [8623-42] S12
- Ding, Zhihua [8571-105] SPMon
- Dingari, Narahara Chari [8572-35] S7, [8577-12] S6, [8579-20] S5
- Dingel, Benjamin B. 8610 Track Chair, 8624 Track Chair, 8629 Track Chair, 8630 Track Chair, 8645 Conference Chair, 8645 S1 Session Chair, 8645 S3 Session Chair, 8645 Track Chair, [8645-30] SPWed, 8646 Conference Chair, 8646 S1 Session Chair, 8646 S3 Session Chair, 8646 Track Chair, 8647 Program Committee, 8647 S1 Session Chair, 8647 S3 Session Chair, 8647 Track Chair
- Diniz, Renata [8622-12] S3
- Dinten, Jean-Marc [8570-22] S6, [8572-27] S5, [8572-39] S8, [8578-26] S5, [8578-64] S11, [8578-79] S13, [8587-7] S1, [8591-23] SPWed, [8592-28] S7
- Dinu, Raluca 8622 Program Committee
- Dion, Genevieve [8643-7] S2
- Diop, Mamadou [8573-29] SPSun, [8578-10] S2, [8578-76] S12, [8578-87] S14, [8579-26] S6
- Dirk, Shawn M. [8613-37] S8
- Dispenza, Massimiliano [8624-42] S10
- Dittli, Adam Steves [8600-76] SPTue, [8601-101] SPTue
- Dittrich, Paul-Gerald [8615-8] S2
- DiVito, Erin [8596-21] S7
- Divliansky, Ivan B. [8644-4] S1, [8644-8] S2
- Divok?, Martin [8602-7] S2
- Diwekar, Mohit [8565-210] S4, [8586-27] S5
- Dixit, Sham N. [8602-2] S1
- Dixit, Vivek [8619-54] S14, [8629-27] S7, [8629-29] S8
- Dixon, Adam J.** [8565-5] S4
- Djavid, Mehrdad [8634-8] S2
- Djiango, Martin [8595-32] S8
- Djuri?ic, Aleksandra B.** 8626 Program Committee, [8626-32] S8, [8626-67] SPWed, [8626-68] SPWed
- Do Morais, Paulo C. [8595-24] S7
- Do, Jaekwon [8595-20] S5
- Dobbs, Jessica [8575-3] S1
- Doberitzsch, Jochen [8603-8] S3
- Doble, Nathan [8567-68] SPSun, [8617-18] SPTue
- Dobler, Jeremy T. [8601-61] S15
- Dobroiu, S. [8594-25] S7
- Dobrucki, Lawrence W. [8596-15] S2, [8596-15] S4
- Dochow, Sebastian [8577-18] S7, [8615-5] S1
- Dodson, Colin R. [8593-20] S5
- Doebler, Robert [8615-20] S5
- Doering, Dirk H. [8616-11] S3
- Dogan, Mehmet [8605-12] S3, [8605-25] S5
- Dogan, Zafer [8581-144] SPMon
- Dogar, Mert [8644-11] S3, [8644-12] S3
- Doherty, Stephen [8624-39] S10
- Dokken, Leslie [8596-34] SPMon
- Dolasinski, Brian D. [8604-17] S4
- Dolff, Daniel [8606-28] S8, [8610-35] S7, [8624-21] S6
- Dolgova, Dinara [8579-16] S4
- Dolgova, Tatyana V. [8623-67] SPWed
- Dolgy, Sergei [8572-43] S8
- Dolinar, Samuel J. [8647-6] S4
- Dolkemeyer, Jan [8599-42] S8
- Domenici, Fabio [8631-13] S3
- Domingues, Renata O [8641-49] S11
- Dominguez, Christian [8621-58] SPWed
- Domke, Matthias [8607-11] S3, [8607-11] S9, [8611-46] S10, [8611-46] S4
- Dommann, Alex [8607-12] S3, [8607-12] S9, [8614-21] S4
- Don, Yaroslav [8605-4] S1
- Done, Susan J. [8581-26] S4
- Donegan, John F. [8600-41] S11
- Donehue, Jessica E. [8590-28] S8, [8597-20] S5
- Dong, Chen-Yuan** 8588 Program Committee
- Dong, Fengzhong [8631-31] S6
- Dong, Hui [8636-7] S2
- Dong, Jing [8580-27] S5, [8580-34] S7, [8592-19] S5
- Dong, Junhang [8626-66] SPWed
- Dong, Lei [8600-66] S15
- Dong, Liang** [8601-18] S5, [8601-31] S8, [8601-64] SPTue
- Dong, Wan Jae [8622-37] S9
- Dong, Weimin [8605-14] S3, [8605-23] S5, [8605-33] S7, [8640-57] S13
- Dong, Xiao-Bin [8644-43] SPWed
- Dong, Ze [8645-12] S5, [8647-2] S2
- Donsanti, Frédérique [8620-36] S9
- Dontabactouny, Madhousoudhana [8634-5] S1
- Donzella, Valentina [8629-8] S2
- Dopsa, Dustin [8581-141] SPMon, [8581-143] SPMon
- Doradla, Pallavi** [8624-23] S6
- Doradzinski, Roman [8625-9] S2
- Dore, Jonathan [8608-27] S13, [8608-27] S6
- Döring, Sven** [8611-33] S7, [8611-47] S11, [8611-47] S5, [8611-48] S12, [8611-48] S6
- Dornbluth, N. Carol [8581-2] S1
- Doronin, Alexander** [8580-21] S1, [8580-42] S2, [8592-15] S4, [8592-43] SPSun
- Doroshenko, Maxim E. [8599-13] S3, [8599-75] SPTue
- Dorrer, Christophe [8602-12] S4, [8602-13] S4
- Dorsch, Friedhelm** Symposium Chair, 8600 S9 Session Chair, 8603 Conference Chair, 8603 S1 Session Chair, 8603 S7 Session Chair, [8603-26] S6
- Dorshow, Richard B.** 8596 Program Committee, 8596 S8 Session Chair, [8596-36] SPMon
- dos Santos Aciole, Gilberth Tadeu [8569-20] SPSat
- dos Santos, Arnaldo R. [8577-13] S6
- Dostálová, Tatjana 8566 Program Committee, [8566-12] S3
- Doster, George Jay** [8599-30] S6, [8599-32] S6
- Doty, Tasha [8572-14] S3
- Dou, Liang [8647-19] S7
- Dou, Xinyuan [8630-9] S2
- Doudy, Julien [8589-54] SPWed
- Doualan, Jean-Louis [8599-1] S1, [8599-40] S8, [8611-23] S5
- Douay, Marc [8600-78] SPTue
- Dougakiuchi, Tatsuo [8640-26] S6
- Doughman, Yongqiu Q. [8565-31] S8
- Douglass, Michael R.** 8618 Conference Chair
- Doukas, Apostolos G. [8565-29] S7
- Douplik, Alexandre** [8572-31] S6, [8581-142] SPMon
- Douss, Eric [8591-18] S4
- Doussoux, François [8575-2] S1
- Dovigo, Livia N. [8569-9] S2
- Dovillaire, Guillaume [8600-34] S8
- Dowling, Jonathan 8635 Program Committee
- Downie, John D. 8647 Program Committee
- Downing, John [8639-10] S3
- Doyle, Jonathan K. [8629-36] S10
- Drabe, Christian [8614-13] S3
- Drachenberg, Derrek R. [8601-4] S1, [8601-6] S2
- Dracopoulos, Vasilios [8632-22] S5
- Dragic, Peter D. [8601-17] S5, [8601-18] S5
- Draguta, Sergiu I. [8604-46] SPTue
- Drake, Tyler K. [8592-27] S7
- Drane, Thomas M.** [8611-15] S3
- Drauschke, Andreas [8567-58] SPSun
- Drechsel, Jan [8603-20] S5, [8603-36] SPTue, [8607-61] S9
- Dreischer, Thomas [8610-6] S2
- Dress, William B.** [8630-21] S5
- Drexler, Michael J. [8623-15] S4
- Drexler, Wolfgang** 8567 Program Committee, 8567 S4 Session Chair, 8571 Program Committee, 8571 S3 Session Chair
- Dreyer, Thiago R. [8579-35] SPMon
- Dreyhaupt, André [8614-13] S3
- Drezek, Rebekah [8573-11] S3, [8573-11] S5
- Driad, Rachid [8631-15] S17, [8640-49] S11
- Dridi, Kais** [8619-36] S9, [8640-8] S2
- Dries, J. Christopher 8621 Conference Chair
- Driscoll, Kristina [8620-21] S5
- Driver, John K. [8626-51] SPWed
- Drobijev, Mikhail [8577-26] S9, [8596-29] S9, [8596-34] SPMon, [8622-18] S4, [8622-23] S6
- Dromaretsky, Alexander [8631-18] S4
- Drouard, Emmanuel [8620-15] S7
- Drouhin, Henri-Jean** 8631 S14 Session Chair, [8631-73] S15
- Druart, Sylvain [8614-18] S4
- Drumheller, William [8599-23] S5
- Druon, Frédéric [8601-49] S12, [8601-56] S13, [8621-64] SPWed
- Drzaic, Paul S. 8643 Program Committee
- Drzewietzki, Lukas [8640-61] S13
- D'Souza, Alisha V.** [8568-24] S6, [8568-42] SPMon, [8568-8] S2
- Dsouza, Roshan I.** [8580-1] S4, [8580-20] S4, [8580-33] S7
- du Plessis, Monuko** [8628-9] S4, [8630-19] S5, [8643-8] S2
- Du, Detao [8599-61] S12
- Du, Henry H.** [8595-12] S3
- Du, Linlin [8593-5] S1
- Du, Shengwang [8636-40] S8
- Du, Yun [8600-56] S13
- Duan, Jun
- Duan, Lian [8567-4] S1, [8571-14] S3
- Duan, Tao [8622-33] S8
- Duan, Xiyu [8575-29] SPSun, [8575-31] S1, [8575-31] S7
- Duan, Xuan-Ming** [8613-25] S5
- Duan, Yuwen** [8611-31] S6
- Duan, Zhongchao [8604-45] SPTue, [8621-39] SPWed, [8621-49] SPWed, [8621-60] SPWed
- Dubb, Jay [8578-43] S7
- Dubbink, T. [8627-12] S3
- Dubertret, Benoit [8631-69] S13
- Dubinina, Galyna G. [8622-18] S4
- Dubinskii, Mark** 8601 Program Committee
- Dubis, Adam M. [8567-26] S5, [8569-14] S4, [8571-42] S7
- Dubois, Arnaud [8590-43] SPSUN
- DuBose, Theodore B.** [8571-19] S3
- Dubowski, Jan J.** 8607 Program Committee, 8609 Conference Chair, 8609 S1 Session Chair
- Duboz, Jean-Yves [8625-65] S14
- Dubra, Alfredo** [8567-26] S5
- Dubrasquet, Romain [8601-37] S9
- Dubrovina, Natalia [8627-34] S8
- Ducci, Sara [8631-81] S16, [8635-44] S13
- Ducharme, Marie-Eve [8574-22] S5
- Duchesne De Lamotte, Etienne [8575-22] S5
- Duchesne, François [8624-14] S4
- Ducournau, Guillaume [8624-22] S6
- Ducourthial, Guillaume [8575-15] S4
- Ducros, Nicolas [8578-70] S11

# Index of Authors, Chairs, and Committee Members

- Dudley, Angela** [8637-42] S2, [8637-46] SPWed
- Dudley, John M.** [8608-15] S3, [8611-49] S12, [8611-49] S6, [8637-22] S4
- Duelk, Marcus [8571-106] SPMon, [8571-108] SPMon, [8571-109] SPMon
- Duffield, Stuart J. [8602-6] S2
- Duggan, Bridgette [8587-44] S7
- Duke, Austin R. [8565-217] S2
- Duker, Jay S. [8567-20] S4, [8567-27] S5, [8567-32] S6, [8571-13] S3
- Dulay, Samuel [8615-54] SPTue
- Duma, Virgil-Florin** [8621-31] S6, [8621-44] SPWed
- Dumeige, Yannick [8600-16] S4, [8636-54] S11
- Dumitrescu, Mihail M.** [8619-9] S2
- Dummer, Matthew M. [8565-211] S4, [8639-4] S2
- Dunaev, Andrey V. [8572-7] S2
- Dunbar, L. Andrea [8613-48] SPTue, [8631-91] SPWed, [8632-38] S9
- Duncan, Donald D.** 8580 Conference Chair, 8580 S5 Session Chair, [8580-37] S7, [8580-4] S1, [8580-5] S1, [8580-8] S1, [8580-9] S1
- Duncan, Jacque [8615-6] S2
- Dunlop, Brett [8565-224] S2
- Dunn, Andrew K. [8579-18] S4, [8592-7] S3
- Dunn, Bruce S. 8597 Program Committee
- Dunn, Malcolm H. [8606-8] S3
- Dunne, Mike** 8602 Conference CoChair, [8602-1] S1
- Duong, Maxime [8601-116] SPTue
- Duparré, Michael [8600-35] S8, [8601-20] S5, [8637-41] S10, [8637-43] S10
- Duperron, Matthieu [8631-14] S3, [8631-71] S13
- Dupont, Emmanuel [8631-82] S16
- Dupont, Erwan [8618-16] S5
- Dupoy, Mathieu G. [8570-24] S6
- Dupuis, Alexandre [8601-116] SPTue
- Dupuis, Christophe [8620-11] S3
- Dupuis, Guillaume [8589-18] S4, [8590-43] SPSUN
- Dupuis, Russell D. [8625-42] S9, [8625-50] S11, [8640-22] S5, [8640-48] S10
- Dupuy, Emmanuel [8623-48] S12
- Duraipandian, Shiyamala [8572-41] S8
- Durand, Matthieu [8633-23] S7
- Durand, Olivier [8626-74] SPWed, [8631-78] S15
- Durán-Sánchez, Manuel [8601-82] SPTue, [8601-86] SPTue, [8604-21] S5
- Durduran, Turgut [8578-115] SPSun, [8578-14] S3, [8580-11] S9, [8583-5] S2
- Durécu, Anne [8601-56] S13
- Durfee, Charles G. [8611-8] S2, [8623-43] S12
- Durini, Daniel [8631-44] S9
- Durkee, Heather A. [8567-84] SPSun
- Durkee, Roger [8605-13] S3
- Durkin, Amanda F. [8578-15] S3, [8578-17] S3, [8578-96] SPSun
- Durkin, Anthony J. 8565 Program Committee, 8565 S5 Session Chair, [8565-20] S5, [8565-27] S7, [8565-28] S7, 8573 Program Committee, [8573-3] S1, [8578-61] S10, [8578-63] S10, [8578-67] S11, [8587-34] S5
- Durkin, John [8593-15] S4
- Durrant, Tim [8621-32] S7
- Durresi, Arjan 8645 Program Committee
- Durstock, Michael F. [8622-38] S9
- Duscher, Gerd [8609-10] S3, [8609-15] S4, [8609-16] S4
- Düser, Monika G. [8587-20] S3
- Dussauze, Marc [8607-22] S7, [8607-25] S7, [8608-2] S1, [8613-22] S5, [8632-41] S9
- Dutt, Gurudev 8635 Program Committee
- Dutta, Achyut K.** 8645 S6 Session Chair, 8646 Conference Chair, 8646 S9 Session Chair, 8647 S10 Session Chair
- Dutta, Niloy K. [8647-23] S10, [8647-23] S9
- Duvall, Craig L. [8571-70] S11, [8571-83] S12
- Duverger-Arfuloso, Claire [8621-22] S5
- Dvornikov, Alexander S. [8588-37] S6
- Dvoyrin, Vladislav [8599-20] S4, [8601-106] SPTue
- Dwilinski, Robert [8625-9] S2
- Dwir, Benjamin [8639-27] S7
- Dy, Jennifer G. [8565-2] S1
- Dy, Mary-Clare C. [8587-65] SPMon
- Dylla-Spears, Rebecca [8602-16] S4
- Dzhagarov, Boris M. [8580-43] S7
- Dziennis, Suzan [8567-79] SPSun, [8571-78] S12, [8571-84] SPMon, [8580-40] S8, [8580-41] S9
- 
- E**
- Earman, Allen M.** 8630 Program Committee
- Easley, Elisabeth [8566-20] SPSun
- Eason, Robert William [8626-43] S11
- Easson, Alexandra M. [8581-26] S4
- Eaton, Shane M. [8611-10] S2
- Ebendorff-Heidepriem, Heike [8599-6] S2
- Eberhardt, Ramona [8601-100] SPTue, [8601-104] SPTue, [8601-28] S7, 8608 Program Committee, [8615-15] S4, [8616-21] S5, [8616-27] S6
- Eberle, Melissa M. [8571-125] SPMon, [8571-126] SPMon
- Ebert, Robby [8603-36] SPTue, [8607-61] S9
- Ebrahim-Zadeh, Majid** 8604 Program Committee
- Echchgadda, Ibtissam 8585 Program Committee, [8585-14] S2, [8585-25] S4
- Echeverría, Maria [8595-24] S7
- Eckert, Jocelyn [8565-19] S9, [8571-91] S4
- Eckert, Markus [8605-35] SPTue
- Eckert, Rolf [8631-91] SPWed, [8632-38] S9
- Eckhardt, Thomas [8588-33] S5, [8590-25] S7, [8601-93] SPTue, [8604-8] S2
- Eckstein, Andreas [8635-44] S13
- Economou, Sophia E. [8635-12] S4
- Edamatsu, Keiichi 8619 Program Committee
- Edamura, Tadataka [8565-16] S8, [8640-26] S6, [8640-47] S11
- Eddy, Charles R. [8604-30] S7
- Edelman, Joel [8599-24] S5
- Edgar, Matthew P. [8618-17] S5
- Edman, Ludvig [8641-14] S3
- Edward, Kert [8572-28] S5, [8573-18] S5, [8588-108] SPSun, [8588-68] S10
- Edwards, Elizabeth H. [8627-26] S6, [8627-8] S2
- Edwards, Perry S.** [8600-59] S14
- Edwards, Ryan E. [8599-24] S5
- Edwards, Vernessa M. [8570-23] S6
- Edwardson, Stuart [8608-19] S4
- Eells, Janis T.** [8569-14] S4, [8591-28] SPWed
- Efros, Alexander L. 8634 S4 Session Chair, [8634-16] S4
- Eftekhari, Ali Asghar [8594-9] S3, 8632 Program Committee, [8632-33] S8, [8632-34] S8
- Efthymiou, Christina [8590-13] S2
- Egan, David A. [8602-6] S2
- Egan, Renate [8608-27] S13, [8608-27] S6
- EGawa, Mariko [8587-64] SPMon
- EGegbrecht, Adam T. [8572-14] S3, [8572-15] S3, [8578-42] S7, [8578-8] S2, [8578-95] SPSun
- Eggeling, Christian 8590 Program Committee
- Eggleston, Bonne [8608-27] S13, [8608-27] S6
- Eglash, Stephen J.** Symposium Chair
- Egle, Danieliene [8567-63] SPSun
- Eguizabal, Alma [8592-14] S4, [8592-34] S8
- Ehlen, Tom [8572-38] S7
- Ehrhardt, John M. [8584-28] S8
- Ehrhardt, Martin [8607-48] S13, [8607-48] S6, [8607-52] SPTue
- Eich, Manfred 8622 Program Committee
- Eichenfeld, Matt [8638-14] S3
- Eichenholz, Jason M.** 8577 Program Committee
- Eichhorn, Marc 8599 Program Committee, [8599-50] S10, [8604-18] S4
- Eichler, Hans Joachim** [8599-15] S3, 8600 Program Committee, [8600-5] S2
- Eickhoff, Martin H. [8613-40] S8, [8625-80] SPWed
- Eidam, Tino [8601-105] S4, [8601-105] S9, [8601-42] S10, [8601-50] S12, [8601-9] S2
- Eigenwillig, Christoph M. [8567-15] S3, [8571-9] S2
- Eikermann-Haerter, Katharina [8565-177] S3
- Eilenberger, Falk [8636-56] S11
- Eing, Andreas [8576-16] S3
- Eisele, Holger [8634-11] S2, [8634-21] S5
- Eisen, David M. [8565-206] S1
- Eisenstein, Gadi [8636-34] S7, [8640-3] S1
- Ejzak, Garrett A. [8624-19] S5
- Ek, Sara [8636-11] S2
- Ekins-Daukes, Nicholas J. 8619 Program Committee, 8620 Program Committee, 8620 S12 Session Chair, [8620-14] S4, [8620-51] S12, [8620-53] S11, [8620-53] S13
- El Sherif, Ashraf F.** [8599-81] SPTue, [8641-66] SPWed
- El Sherif, Mohamed [8630-13] S3
- Elagin, Mikaela [8640-65] S14
- Elahi, Sahar** [8565-34] S5
- El-Amraoui, Mohammed [8632-78] SPWed
- Elbaum, Leonard [8565-171] S5
- Eldada, Louay A.** 8628 Conference Chair, 8628 S2 Session Chair, 8628 S3 Session Chair, 8628 S6 Session Chair, 8628 S7 Session Chair, [8628-10] S4, 8630 S11 Session Chair
- Elezzi, Abdulhakem Y. 8623 Conference Chair, 8623 S1 Session Chair, 8623 S10 Session Chair, 8623 S8 Session Chair, [8623-53] S14, [8623-58] S15, [8627-36] S6
- El-Ghoussein, Fadi [8578-16] S3, [8578-33] S6, [8578-69] S11
- Eliceiri, Kevin W. [8587-37] S6, 8588 Program Committee, 8588 SPSun Session Chair
- Elim, Sandrio [8605-33] S7, [8640-57] S13
- Elliott, Dean [8615-6] S2
- El-Kady, Ihab [8632-30] S7
- Ellafi, Dalila [8639-3] S1
- Ellenbogen, Tal [8601-53] S13
- Ellerbee, Audrey K.** [8571-29] S5, [8572-22] S4, [8583-10] S3
- Elliott, Jonathan T.** [8578-10] S2, [8578-76] S12
- Elliott, Stella N. [8640-11] S2, [8640-53] S12
- Elliott, W. Mark [8588-64] S9
- Ellis, A. Robert [8613-38] S8
- Ellis, Bryan [8619-31] S8
- Elmi, Ivan [8631-85] S16
- Eloy, Jean-Christophe 8616 Program Committee
- Elsässer, Wolfgang E. [8640-61] S13
- El-Sayed, Mostafa [8597-37] S8
- El-Sharkawy, Yasser H. [8579-28] S6
- Elsmann, Frank [8603-4] S10, [8603-4] S2
- Elsmere, Stephen P. [8602-6] S2
- Elsner, Ann E. [8567-33] S6, [8567-61] SPSun
- Elste, Liene [8574-19] S4
- Elster, Clemens [8583-5] S2
- Elster, Eric A. [8574-12] S3
- Emani, Naresh Kumar [8619-23] S6
- Emelianov, Stanislav Y. [8567-52] S9, [8571-64] S10, 8581 Program Committee, 8581 S6 Session Chair, [8581-13] S2, [8581-132] SPSun, [8581-31] S6, [8581-33] S6, [8581-36] S6, [8581-69] S9, [8595-42] S9, [8596-16] S5
- Emelyanov, Andrey [8607-46] S12
- Emery, Yves [8614-8] S2, [8644-20] S5
- Emiliani, Valentina [8637-19] S4
- Emonts, Michael [8601-75] SPTue, [8603-16] S4, [8605-35] SPTue
- Empson, Ruth M. [8580-42] S2
- Emsia, Ali** [8645-7] S4, [8645-9] S4
- Enden, Giora [8579-31] S7
- Enderlein, Jörg [8588-36] S5, 8590 Conference Chair, [8590-15] S4, [8590-22] S6, [8590-26] S7, [8590-5] S1
- Enders, Susan [8599-46] S8
- Endo, Akira [8599-63] S12, [8603-2] S1, [8603-2] S9
- Endo, Tamio 8626 Program Committee
- Enejder, Annika M. 8588 S3 Session Chair, [8588-8] S1
- Enfield, Joey [8571-88] SPMon
- Eng, David L.** [8622-29] S7, [8622-30] S7, [8624-33] S8
- Engel, Guy [8575-20] S5
- Engelsen, Nils [8635-24] S7
- Engholm, Magnus [8601-24] S6
- Engin, Doruk** [8610-17] S4
- Engin, Erman [8628-16] S6
- England, Duncan G. [8636-38] S8
- Englert, Elsa [8565-94] S9
- Englich, Florian V. [8632-21] S5
- Englund, Dirk R. [8635-41] S12
- Eom, Joo Beom [8589-42] S9, [8598-22] SPSUN
- Eom, Tae Joong [8567-51] S9, [8589-50] S11
- Epiciere, Thierry [8609-4] S1
- Epitau, Marc [8571-106] SPMon
- Eppelt, Urs [8608-13] S3
- Eppich, Bernd [8605-15] S4
- Eppich, Henry [8605-12] S3, [8605-25] S5
- Epple, Matthias [8595-59] S13
- Epstein, Richard I. 8638 Conference Chair, [8638-12] S3
- Epstein, Ryan [8606-3] S1
- Erbert, Götz [8604-3] S1, [8605-15] S4, [8605-27] S6, [8605-29] S6, [8640-12] S3, [8640-55] S12, [8640-60] S13
- Ercolani, Daniele [8631-84] S16
- Erdmanis, Mikhail [8629-54] SPWed



# Index of Authors, Chairs, and Committee Members

- Erdmann, Rainer** [8573-26] SPSun, [8588-30] S4, [8588-33] S5, [8588-36] S5, [8588-88] SPSun, 8590 Conference Chair, 8590 S1 Session Chair, 8590 S4 Session Chair, [8590-15] S4, [8590-25] S7, [8590-36] SPSUN, [8596-17] S5, [8601-93] SPTue, [8604-8] S2, [8620-9] S2
- Erdogmus, Deniz [8565-2] S1
- Erenburg, Milena [8641-45] S10
- Eres, Gyula [8609-10] S3, [8609-15] S4
- Erickson, David [8594-27] S7
- Erickson, David** 8598 Program Committee, 8598 S5 Session Chair, [8629-2] S1
- Erickson, Sarah J.** [8572-13] S3, [8578-24] S4, [8578-92] SPSun
- Ericson, Milton Nance [8591-7] S2
- Eriksen, Johan [8629-9] S2
- Erkol, Hakan [8581-114] SPSun
- Ermilov, Sergey A. [8581-175] SPMon, [8581-176] SPMon, [8581-177] SPMon, [8581-2] S1, [8581-22] S4
- Ernst, Dominic [8571-108] SPMon
- Ernst, Mathias [8599-22] S5
- Ernstberger, Markus [8591-22] SPWed
- Ernststoff, Judy [8589-4] S1, [8590-16] S5, [8594-22] S6, [8619-46] S12, [8619-68] SPWed
- Ernstorfer, Ralph [8623-37] S10
- Erofeev, Andrey V.** [8580-17] S4
- Errington, Rachel J. [8615-34] S7
- Ertel, Klaus [8602-17] S4
- Ertmer, Wolfgang A. 8637 Program Committee, 8637 S7 Session Chair, [8637-26] S5, [8637-26] S8
- Erwan, Motillon [8621-49] SPWed
- Escobar, Marc [8598-8] S3
- Escobar-Barrios, Vladimir [8570-18] S5
- Escolano, Lionnel [8600-34] S8
- Escoubas, Ludovic** [8619-27] S7, [8619-29] S7
- Esenaliev, Rinat O. 8581 Program Committee, 8581 S9 Session Chair, [8581-180] SPMon, [8581-181] SPMon, [8581-6] S1, [8581-7] S1
- Esipova, Tatiana V. [8588-45] S7, [8596-20] S6
- Esmonde-White, Francis W.** [8565-232] S4, [8577-17] S7
- Esmonde-White, Karen Ann** [8577-17] S7
- Espiau de Lamaestre, Roch [8631-14] S3, [8631-71] S13
- Esquivias, Ignacio [8639-33] SPWed, [8640-59] S13
- Esseiva, Pierre [8631-85] S16
- Esseling, Michael [8637-11] S2
- Esser, Dominik [8565-226] S2
- Estalck, Larry [8585-27] S5
- Esteban, Ruben [8623-26] S8
- Esterle, Thomas [8615-54] SPTue, [8615-55] SPTue
- Estlack, Larry E. [8569-25] SPSat, [8569-7] S2
- Estrada, Rolando [8571-19] S3
- Estruch, Thomas** [8632-8] S2
- Estupiñán-López, Carlos Eliecer [8621-58] SPWed
- Eterman, Naomi B. [8588-94] SPSun
- Ethell, Iryna [8586-24] S5
- Eupherte, Laure [8602-15] S4
- Euser, Tijmen G. [8632-19] S5
- Eustace, David [8597-2] S1
- Evangelisti, Florestanto [8624-42] S10
- Evans, Christopher C. [8607-35] S10, [8626-49] S12, [8627-47] SPWed
- Evans, Conor L.** [8565-180] S3, 8568 S7 Session Chair, [8568-3] S1, [8587-3] S1, [8588-20] S3, [8611-7] S2
- Evans, Gary A. 8640 Program Committee, 8640 S12 Session Chair
- Evans, Gregory R. D. [8565-27] S7, [8578-61] S10
- Evans, Jonathan W. [8599-11] S3
- Evans, Keith R. [8625-69] S14
- Evans, Rhett [8608-27] S13, [8608-27] S6
- Evans, Stefan D. [8637-3] S1
- Even, Jacky [8619-60] SPWed, [8619-7] S2, [8626-74] SPWed, [8631-78] S15
- Everitt, Henry 8631 Program Committee
- Evert, Alex [8601-18] S5
- Evyukhin, Andrey B. [8623-52] S14
- Ewald, Hartmut [8572-6] S2, [8583-2] S1, [8591-21] SPWed, [8591-6] S2
- Exner, Horst [8603-20] S5, [8603-36] SPTue, [8607-61] S9
- Extermann, Jérôme [8611-14] S3
- Eyal, Avishay [8565-228] S3, [8581-27] S4, [8581-59] S8
- Eychmüller, Alexander [8635-45] S13
- Eyink, Kurt G. 8634 Conference Chair
- Eysert, Andreas [8603-20] S5
- Ezerskaya, Anna A. [8567-65] SPSun

## F

- Faber, Dirk J. [8565-47] S4, [8571-35] S6, [8571-37] S6, 8592 Program Committee, 8592 S4 Session Chair, [8592-36] S9
- Fabris, Laura [8597-6] S2, [8622-38] S9
- Fabritius, Tapio [8613-42] SPTue
- Facao, Margarida [8604-22] S5
- Faccio, Daniele [8623-24] S6, [8623-44] S12
- Faci, Salim [8631-40] S8
- Fafchamps, Lionel** [8589-7] S2
- Faglia, Guido [8626-21] S5
- Fagundes de Souza Martins, Jaciara [8594-17] S5
- Faham, Mohamed M. [8603-38] SPTue
- Fainman, Yeshaiahu** 8628 Program Committee
- Fairchild, Brian D. [8622-47] S11
- Faisst, Birgit [8603-13] S4, [8608-13] S3
- Faist, Jérôme [8623-31] S7, [8623-57] S15, 8640 S9 Session Chair, [8640-20] S5, [8640-22] S5
- Fakhoury, Elias [8599-24] S5
- Falk, Matthias [8600-31] S7
- Falk, Zarah [8630-36] S9
- Fallahi, Mahmoud [8631-68] S12
- Fallica, Pier Giorgio G. [8629-45] SPWed, [8631-47] S9
- Fallnich, Carsten [8622-14] S3
- Falqui, Andrea [8595-37] S9
- Falson, Joseph [8626-15] S4
- Fan, Cheng-Hsing [8565-9] S3
- Fan, Chih-Tai [8581-35] S6
- Fan, Frank C. 8644 Program Committee
- Fan, Larry E. [8569-25] SPSat, [8569-7] S2
- Fan, Hai Ming [8595-29] S7
- Fan, Jenyu [8565-206] S1, [8631-87] S17
- Fan, Jonathan A. [8632-43] S10
- Fan, L. S. [8608-20] S4
- Fan, Shanhui** 8632 Program Committee, [8632-20] S5, [8632-66] S14, 8636 Program Committee
- Fan, Shuwei [8607-49] SPTue
- Fan, Tso Yee [8599-47] S4, [8599-47] S9
- Fan, Xudong 8570 Program Committee, [8615-47] S10, 8627 Program Committee, 8627 S5 Session Chair, [8629-6] S2
- Fan, Yangyang [8647-19] S7
- Fan, Ying [8578-106] SPSun
- Fandiño, Javier S. [8627-7] S2
- Fang, Jiyu [8642-24] S7
- Fang, Kejie [8632-66] S14
- Fang, Leyuan [8567-23] S5
- Fang, Qiang [8604-54] SPTue
- Fang, Qianqian [8574-16] S4, [8578-18] S3, [8578-43] S7
- Fang, Qiyin** [8565-224] S2, [8568-26] S7
- Fang, Rong [8565-119] S6
- Fanning, Geoff** [8601-101] SPTue, [8601-102] SPTue
- Fanning, Tom R. [8639-1] S1, [8639-19] S5
- Fantechi, Elvira [8595-37] S9
- Fantini, Sergio** 8578 Program Committee, 8578 S10 Session Chair, [8578-11] S2, [8578-12] S2, [8578-22] S4, [8578-6] S1
- Fantoni, Frederic [8572-27] S5, [8578-26] S5
- Farah, Nairouz [8565-201] S1, [8567-10] S2
- Farah, Petros [8623-16] S5
- Farahi, Salma [8576-2] S1, [8581-96] SPSun, [8592-49] SPSun, [8637-15] S3
- Faraon, Andrei** [8635-13] S4
- Fard, Ali M.** [8565-10] S9, [8565-20] S7, [8587-38] S6, [8611-22] S5
- Fardad, Amir [8567-80] SPSun
- Fargin, Evelyne [8608-2] S1
- Farina, Andrea [8583-5] S2
- Farkas, Daniel L. 8587 Conference Chair, 8587 S1 Session Chair, 8587 S2 Session Chair, 8587 S3 Session Chair, 8587 Track Chair, [8587-29] S4, [8587-34] S5, [8587-40] S7, 8588 Track Chair, 8589 Track Chair, 8590 Track Chair, 8591 Track Chair, 8592 Track Chair, 8593 Track Chair
- Farkas, Deborah R. [8593-26] SPSun
- Farnesi, Daniele [8600-62] S15
- Farr, William H. [8610-12] S3, [8610-5] S2
- Farrell, Alan [8634-30] SPWed
- Farrell, Daniel J. [8620-51] S12
- Farrell, Richard [8621-52] SPWed
- Farrell, Stuart [8620-13] S3
- Farrer, Ian [8606-20] S6, [8606-23] S7, [8619-3] S1, [8634-2] S1
- Farsari, Maria [8611-11] S2, [8613-34] S7
- Farsiu, Sina** [8567-18] S4, [8567-23] S5, [8567-26] S5, [8567-34] S6, [8567-35] S7, [8571-19] S3
- Faruque, Saleh [8610-19] S4
- Faruque, Shams [8610-19] S4
- Farwell, Gregory D. [8574-27] SPSun
- Faryad, Muhammad** [8620-2] S1, [8620-4] S1, [8620-47] S11
- Fasiku, Adeola [8610-14] S3
- Fassbender, Wilhelm [8605-31] S7
- Fatakdawala, Hussain** [8574-27] SPSun
- Fatemi, Fredrik K. [8637-31] S7
- Fathololoumi, Saeed [8630-23] S6, [8631-82] S16
- Fattah poor, Sartoon [8632-2] S1
- Fattal, David 8633 Program Committee, 8633 S5 Session Chair, [8633-19] S6
- Faucher, Dominic [8601-52] S13
- Faucher, Philippe M.** 8570 Conference Chair, 8570 S2 Session Chair, 8570 S4 Session Chair, 8570 S6 Session Chair, [8570-8] S2, 8594 Program Committee, 8629 Program Committee
- Faugeron, Mickael [8621-29] S6
- Faulkner, David W. 8645 Program Committee
- Faurie, Jean-Pierre [8624-8] S3
- Fauzi, Anas [8644-3] S1
- Favazza, Christopher P. [8581-140] SPMon
- Fave, Alain [8620-15] S4
- Favero, Ivan [8631-81] S16, [8635-44] S13
- Favero, Priscila P. [8565-32] SPSun, [8594-17] S5, [8594-18] S5, [8594-24] S6
- Favreau, Peter F.** [8589-27] S6
- Fawzi, Amari [8615-6] S2
- Fazel Bakhsheshi, Mohammad [8579-26] S6
- Fearon, Eamonn [8608-19] S4
- Featherstone, John D. 8566 Program Committee
- Fechner, Matthias [8599-5] S2
- Fechtig, Daniel [8571-55] S8
- Fédéli, Jean-Marc [8628-2] S1, [8628-2] S10, [8629-25] S7, [8629-28] S7, [8629-39] S10
- Feder, Kenneth S. [8601-3] S1
- Fedorova, Ksenia A. [8604-5] S2
- Fedoseyev, Alexandre I. [8620-33] S8
- Fedyanin, Andrew A. [8623-67] SPWed
- Feehan, James S. [8606-7] S2
- Feeler, Ryan [8599-32] S6, [8605-32] S7
- Feener, Edward P. [8567-47] S8
- Feezell, Daniel F. [8639-5] S2
- Feld, Edward [8627-26] S6, [8627-8] S2
- Fein, Mira [8618-4] S1, [8618-4] S10
- Feinberg, Stephen E. [8579-19] S5
- Feise, David [8640-9] S2, [8643-6] S1
- Fejer, Martin M. [8604-31] S7, [8635-10] S3
- Fekli, Ulrich [8596-27] S8
- Felberer, Franz [8567-39] S7, [8571-40] S7
- Feldman, Marc D. [8565-12] S3, [8565-34] S5, [8595-17] S4
- Feldman, Michael [8578-21] S4
- Feldman, Yuri 8585 Program Committee, [8585-36] S6
- Feldmann, Jochen [8595-20] S5
- Feltin, Eric [8625-33] S8
- Feng, Chao [8641-74] SPWed
- Feng, Dazeng [8630-23] S6
- Feng, I. W. [8621-25] S5
- Feng, Jiansheng [8599-76] SPTue
- Feng, Jiansheng [8602-5] S2
- Feng, Jing [8608-1] S1
- Feng, Shaoqi [8628-13] S5
- Feng, Steve [8591-20] S4
- Feng, Xian [8621-3] S1
- Feng, Xue [8630-44] SPWed
- Feng, Zheng-Wen [8639-19] S5
- Feng, Zhihui [8643-20] SPWed
- Feranchak, Andrew [8586-20] S3
- Fereidouni, Farzad [8588-58] S8, [8588-97] SPSun
- Ferguson, Ian T.**
- Ferguson, Kate [8635-23] S6
- Ferguson, R. Daniel [8567-35] S7, [8567-37] S7, [8567-38] S7, [8567-71] SPSun, [8572-19] S4
- Ferguson, Tanya [8615-20] S5
- Ferguson, Virginia L. [8584-21] S6
- Ferhanoglu, Onur [8565-79] S7, [8575-32] SPSun, [8588-78] SPSun
- Ferhat, Thomas [8612-6] S2
- Fernandes, Donald J. [8611-50] SPTue
- Fernandes, Edward Mark [8565-21] S5
- Fernandes, Kristianne P. S. [8569-15] S4, [8569-16] S4, [8579-36] SPMon
- Fernandes, Luis A. [8611-28] S6, [8611-30] S6
- Fernandes, Luis Andre N. P.** [8611-35] S7
- Fernandes, Rute [8595-1] S1
- Fernandez, Elias G. [8620-32] S8
- Fernández, Enrique-Josua [8567-40] S7, [8642-7] S2
- Fernández, F. Anibal [8619-61] SPWed
- Fernández, Joaquin [8626-46] S12, 8638 Program Committee, [8638-1] S1
- Fernandez-Fernandez, Alicia** [8596-5] S2
- Fernandez-Fernandez, Alicia [8596-7] S2

# Index of Authors, Chairs, and Committee Members

- Fernández-Pradas, Juan Marcos [8607-33] S10  
Feron, O. [8641-47] S10  
Féron, Patrice [8600-16] S4, [8621-22] S5  
Ferradal, Silvina L. [8572-14] S3, [8572-15] S3, [8578-42] S7, [8578-8] S2, [8578-95] SPSun  
Ferrantini, Cecilia [8588-48] S8  
Ferrara, Davon W. [8609-17] S4, [8609-7] S2  
**Ferrarese Lupi, Federico** [8629-39] S10  
Ferrari, Alberto [8631-73] S15  
Ferrari, Marco 8578 Program Committee, [8578-111] SPSun  
**Ferrari, Maurizio** [8621-22] S5  
Ferraro, Marzia M. [8595-31] S8  
Ferraz, Armando C. [8594-24] S6  
Ferreira, Marcia Z. J. [8569-8] S2  
Ferreira, Maria Fatima [8569-23] SPSat  
Ferreira, Mário Fernando [8604-22] S5  
Ferrel, Gabriela L. [8569-17] S4, [8582-10] S2  
Ferretti, Marco [8641-53] S11  
Ferreira, Romualdo A. [8625-81] SPWed, [8625-87] SPWed  
Ferri, Fabio Aparecido [8621-54] SPWed, [8621-55] SPWed, [8632-77] SPWed  
Ferriou-Daurios, Nathalie [8602-15] S4  
Fertein, Eric [8631-31] S6  
Fetzer, Chris [8620-13] S3  
**Fetzer, Gregory J.** [8606-3] S1  
Feulner, Peter [8623-37] S10  
Fey, Dietmar [8630-16] S4  
Fiandra, Luisa [8595-3] S1  
**Fibrich, Martin** [8599-65] SPTue, [8602-7] S2  
Fickler, Robert [8635-30] S6, [8635-30] S9  
Fiebig, Christian [8640-55] S12, [8643-6] S1  
Fieguth, Paul [8567-81] SPSun  
Fields, Renny A. 8610 Program Committee  
Fieramonti, Luca [8593-10] S3  
Figiel, Jeffrey J. [8625-27] S6, [8641-64] S13  
Figueiredo Neto, Antonio M. [8571-96] SPMon, 8642 Program Committee, 8642 S3 Session Chair, [8642-1] S1  
Figueiredo, Matheus [8567-57] SPSun  
Fihn, Mark 8643 Program Committee  
Fiks, Ilya Iosifovich [8578-73] S12  
Filho, Jose [8597-32] S7  
**Filion Côté, Sandrine** [8597-38] S8  
Filippov, Valery [8601-71] SPTue  
Filkowski, Jody [8585-26] S5  
Filley, Eugene [8615-6] S2  
Filloux, Pascal G. [8635-44] S13  
Fingler, Jeff [8567-1] S1  
Fini, John M. [8601-3] S1, [8610-16] S4  
Fink, Mathias [8617-11] S3, [8633-27] S8  
Fink, Pamela K. [8579-39] S3  
Finlay, Jarod C. [8568-11] S3, [8568-23] S6, [8568-25] S6, [8568-39] SPMon, [8568-40] SPMon  
Finlayson, Sarah [8572-38] S7  
Finley, Jonathan J. [8623-55] S14  
Finnegan, Patrick S. [8613-37] S8  
Fiore, Daniel [8589-54] SPWed  
Fiolka, Reto P. [8589-31] S7, [8617-10] S3  
Fiore, Andrea [8632-2] S1, [8632-25] S6, [8632-26] S6, [8635-46] S13  
Fiorentino, Marco [8628-1] S1, [8628-1] S10, [8633-19] S6  
Fiorillo, Claudia [8588-86] SPSun  
Fip, Tassilo [8585-6] S1  
Firebaugh, Samara L. [8600-66] S15  
Fischer, Alec M. [8625-42] S9, [8625-50] S11  
Fischer, Alexis P. [8622-35] S8  
Fischer, Björn [8611-19] S4  
Fischer, Holger [8613-7] S2  
Fischer, Joachim [8635-15] S4  
Fischer, Marc O. [8640-7] S2  
Fischer, Martin C. [8588-40] S6, [8589-8] S2  
Fischer, Peter [8588-52] S8, [8588-87] SPSun  
Fishman, Guy [8631-73] S15  
Fitch, Richard M. [8596-36] SPMon  
**Fitsios, Dimitrios** [8621-12] S3, [8629-11] S3  
Fitzgerald, Anthony [8585-16] S3  
Fitzmaurice, Maryann [8572-35] S7, [8577-12] S6, [8579-20] S5  
Flamm, Daniel [8600-35] S8, [8601-20] S5, [8637-41] S10, [8637-43] S10  
Flanders, Dale [8571-102] SPMon, [8571-103] SPMon  
Flandre, Denis [8614-18] S4  
Fleischman, Boaz [8619-46] S12  
Fleisher, Adam J. [8631-6] S2  
Fleming, Christine P. 8565 S9 Session Chair, [8565-120] S6, [8565-121] S6, [8565-19] S9, [8565-46] S1, [8571-91] S4  
Flemming, Bert [8578-62] S10  
Fletcher, Andrew [8610-23] S5  
Flexman, Molly L. [8578-19] S4, [8578-27] S5  
Flint, Patrick J. [8631-57] S11  
Flitsch, David [8615-50] SPTue  
Florea, Catalin [8599-18] S4, [8601-108] SPTue, [8621-36] S7  
Flores, Angel [8601-32] S8, [8601-34] S8, [8601-45] S11  
Flores, Yuri Victorovich [8640-65] S14  
Flores-Hernandez, Ricardo [8615-48] SPTue  
Flors, Cristina [8596-9] S3  
**Flory, François R.** [8619-27] S7, [8619-29] S7  
Flueckiger, Jonas [8629-8] S2  
Flueraru, Costel [8565-191] SPSun  
Flynn, Brendan P. [8568-24] S6, [8568-42] SPMon, [8568-8] S2  
Flynn, Daniel C. [8588-59] SPSun  
Flyvbjerg, Henrik K. [8629-9] S2  
Fodness, Bryan [8618-10] S4  
Fogel, Dawson [8585-26] S5  
Föger, Daniel [8635-43] S13  
Foglia, Efreim [8593-10] S3  
Foglia, Laura [8623-11] S4  
Fok, Alex [8566-7] S2  
Foley, Justin M. [8633-36] S10  
Folgar, Francisco [8571-42] S7  
Follen, Michele [8572-38] S7  
Fonari, Marina S. [8604-46] SPTue  
Fong, Bernicy S. [8621-48] SPWed  
Fong, Christopher J. [8578-27] S5, [8578-74] S12  
Fong, Jimmy [8587-37] S6  
Fong, Wai H. [8610-3] S1  
Fonseca, Adenilson S. [8569-10] S3  
Fontaine, Servane [8602-15] S4  
Fontecchio, Adam K. [8643-7] S2  
Foquet, Mathieu E. [8590-17] S4  
Foran, Brendan [8605-22] S5, [8625-32] S7, [8640-52] S12  
**Forbes, Andrew** 8600 Program Committee, 8600 S7 Session Chair, [8600-32] S8, [8600-35] S8, [8600-36] S8, [8637-25] S5, [8637-25] S8, [8637-41] S10, [8637-42] S2, [8637-43] S10, [8637-46] SPWed  
Forbes, David V. [8620-21] S5, [8620-32] S8, [8620-34] S8  
Forbrich, Alexander [8581-80] S11  
Forchel, Alfred [8619-32] S8, [8631-59] S11, [8631-95] S18, [8635-10] S3  
Ford, Chris [8580-29] S6  
Fore, Samantha [8588-30] S4, [8588-36] S5, [8588-88] SPSun, [8620-9] S2  
Forghani, Kamran [8620-58] S14  
Forjan, Mathias [8567-58] SPSun  
Fornahl, Udo [8605-16] S4, [8605-3] S1  
Forouhar, Siamak 8631 Program Committee, 8631 S9 Session Chair  
Forrer, Hans [8600-40] S1, [8600-40] S9  
Forrer, Martin [8600-31] S7, [8600-40] S1, [8600-40] S9  
Forsberg, Jonathan [8574-12] S3  
Forsh, Pavel [8607-46] S12  
Förster, Michael [8623-38] S10  
Förstner, Jens [8623-17] S5, [8623-20] S5  
Fort, Alain F. 8622 Program Committee  
Fort, Emmanuel [8589-37] S8, [8589-43] S9, [8590-4] S1, [8590-43] SPSUN, [8597-22] S5, [8597-41] S8  
Fortes, Paula R. [8570-27] SPSun  
Fortin, Benoît [8576-21] S4  
Fortin, Vincent [8601-52] S13  
Fortunato, Alessandro [8603-14] S4, [8603-15] S4  
Forvi, Elena [8595-8] S2  
Foschum, Florian [8578-38] S7, [8583-5] S2  
Foster, Ellen K. [8578-14] S3  
Foster, F. Stuart [8581-154] SPMon, [8587-36] S5  
Foster, Stephen B. [8581-163] SPMon, [8581-164] SPMon, [8581-54] S8  
Foster, Thomas H. [8578-112] SPSun  
Fotakis, Costas [8611-11] S2  
Foth, Hans-Jochen [8565-69] S4  
Fotiadi, Andrei A. [8601-114] SPTue, [8601-55] S13  
Fouad, Anthony [8573-11] S3, [8573-11] S5  
Foubert, Kevin M. [8621-14] S3  
Fouchard, Henning [8634-22] S5  
Fourkeas, John T. [8634-14] S3  
**Fourspring, Kenneth D.** [8618-10] S4  
Fowler, David [8631-14] S3, [8631-71] S13  
Fowlkes, J. Brian [8581-121] SPSun  
Fox, Marsha [8618-12] S4  
Fox, William [8572-19] S4  
Foy, Paul [8601-17] S5, [8601-18] S5  
Fradkin, Leonid [8592-3] S1  
Fradkin, Maxim [8574-16] S4  
**Fragala, Joseph S.** [8615-38] S8, [8615-45] S10  
Fragnito, Hugo L. [8627-17] S4  
Fragoso, Alex [8615-37] S8, [8615-53] SPTue  
Fraine, Andrew [8610-20] S4  
Fraisier, Vincent [8589-33] S7  
Frampton, John [8581-73] S10  
Francha, Cristiane M. [8569-15] S4, [8569-16] S4, [8579-32] S7, [8579-36] SPMon  
Francis, Olivier [8595-34] S8  
Francis, K. J. [8578-23] S4  
Francis, Laurent A. [8614-18] S4  
Francis, Richard J. [8593-12] S3, [8593-15] S4, [8593-26] SPSun, [8593-9] S2  
Franco, Nuno [8626-22] S5  
Franco, Walfré [8565-29] S7, [8592-1] S1  
**Francois, Alexandre** [8570-15] S4, [8570-16] S4, [8600-72] SPTue  
Frangioni, John V. [8572-33] S6, [8573-5] S2, [8574-17] S4  
Frank, Bettina [8631-10] S3, [8631-76] S14  
Frank, Ian W. [8631-9] S2  
**Frank, Gesa L.** [8571-3] S1, [8571-59] S9  
Franke-Arnold, Sonja [8636-9] S2, [8637-23] S5, [8637-23] S8  
Franklin, Samantha K. [8585-28] S5, [8595-57] S13  
Franson, James D. 8635 Program Committee  
**Franta, Benjamin** [8607-44] SPTue  
Franz, Lucas V. [8647-18] S7  
Frantzò, Giorgia [8629-43] S11  
**Fraser, Gerald T.** 8583 Program Committee  
Fraser, James M. [8565-237] S5, [8603-27] S6  
**Fraser, Scott** [8567-1] S1, 8588 Program Committee, 8593 Conference Chair  
Frasiu, Sina [8571-42] S7  
Fratila, Raluca M. [8581-1] S1  
Fratzl, Peter 8565 Program Committee  
Frayssinet, Eric [8625-65] S14  
Frazier, Timothy 8602 Program Committee  
Freddi, Stefano [8580-30] S6  
Frederick, Simon [8613-12] S3  
**Fredriksson, Ingemar** [8578-116] SPSun  
Freeland, John W. [8626-16] S4  
Freeman, Joshua R. [8640-38] S9, [8640-39] S9  
Freeman, Mark R. [8600-68] S16  
Fregoso, Santos Felipe [8610-15] S3  
Frehlick, Zack [8565-7] S2  
**Frei, Bruno** [8607-47] S13, [8607-47] S6  
Freier, Erik [8601-27] S7  
Freitas, Jaime A. [8604-30] S7, [8641-24] S5  
**French, Paul M. W.** 8588 Program Committee, 8590 Program Committee, 8596 Program Committee  
**French, Roger H.** [8620-43] S10  
Frentzen, Matthias [8566-13] S3, [8566-15] S4  
**Frenz, Martin** 8581 Program Committee, 8581 S4 Session Chair  
Freskos, John N. [8596-36] SPMon  
Freude, Wolfgang [8600-9] S3, [8613-31] S7, [8629-24] S7  
**Freudiger, Christian W.** [8588-13] S2, [8588-21] S3, [8588-80] SPSun, [8588-82] SPSun  
Freund, Ronald 8646 Program Committee, 8646 S6 Session Chair, [8646-1] S1, 8647 Program Committee, 8647 S6 Session Chair  
**Freundlich, Alexandre** 8619 Program Committee, 8619 S11 Session Chair, 8620 Conference Chair, 8620 S2 Session Chair, [8620-25] S6, [8620-31] S8, [8620-45] S11, [8620-50] S12, [8620-65] SPWed, [8634-10] S2, [8634-24] S5  
Frey, Wolfgang [8581-33] S6, [8581-69] S9  
Freysoeldt, Christoph [8641-31] S7  
Fricke, Dirk [8591-21] SPWed  
Fricke, Jörg [8640-55] S12  
Fricke, Matthias [8645-17] S6  
Friebele, E. Joseph 8601 S6 Session Chair, [8638-2] S1  
Fried, Daniel 8566 Conference Chair, 8566 S1 Session Chair, 8566 S3 Session Chair, [8566-18] SPSun, [8566-19] SPSun, [8566-4] S1, [8566-6] S1  
Fried, Miklós [8627-4] S1  
**Fried, Nathaniel M.** 8565 Program Committee, 8565 S1 Session Chair, [8565-193] S2, [8565-39] S2, [8565-4] S8, [8565-40] S2, [8565-42] S3, [8565-44] S3, [8567-80] SPSun  
Fried, William A. [8566-18] SPSun  
Friedberg, Joseph S. [8568-20] S5, [8568-23] S6, [8568-40] SPMon  
Frigerio, Jacopo [8628-2] S1, [8628-2] S10



# Index of Authors, Chairs, and Committee Members

- Frish, Michael B.** [8631-9] S2  
Frison, Blaise [8601-63] S15  
Frith, Lance [8584-33] S9  
Fritsche, Carola [8623-9] S3  
Fritsche, Haro [8599-15] S3, [8600-5] S2  
Fritzsche, Wolfgang 8595 S2 Session Chair, [8595-13] S3  
Froehly, Luc [8608-15] S3, [8637-22] S4  
Fröhlich, Jürg [8583-3] S1  
Frölich, Andreas M. [8613-14] S4  
Frömel, Jörg [8616-2] S1, [8616-2] S7  
Frosch, Torsten [8591-27] SPWed  
Frost, Thomas [8640-18] S4  
Frucchi, Giulia [8635-46] S13  
Fruehauf, Norbert 8643 Program Committee  
Fruhstuck, Joerg [8603-30] S7  
Fruhwith, Gilbert O. [8588-116] SPSun  
Fründt, Jana [8605-3] S1  
Fry, D. [8628-16] S6  
Fryer, Jay [8605-12] S3, [8605-25] S5  
Fryslie, Stewart [8639-26] S7  
Ftouni, Hussein [8622-22] S6  
Fu, Kai-Mei C. 8635 Program Committee, 8635 S13 Session Chair, 8635 S4 Session Chair  
Fu, Liwei [8608-19] S4  
Fu, Wangyang [8623-31] S7  
Fu, XingXing [8619-17] S4  
Fuchs, Frank [8631-15] S17, [8640-49] S11  
Füchsel, Kevin [8624-47] S11  
Fückel, Burkhard [8620-14] S4  
Fudala, Rafal [8590-10] S2, [8590-6] S1  
Fuentes-Tapia, Israel [8644-36] SPWed, [8644-41] SPWed  
Fuerbach, Alexander [8599-6] S2  
Fuertes Marrón, David [8620-18] S5  
Fufaro, Luca [8608-15] S3  
**Fuh, Andy Ying-Guey** 8642 Program Committee, 8642 S3 Session Chair, [8642-14] S5  
Führer, Markus [8620-51] S12  
Fujii, Eiichi [8608-10] S2  
Fujii, Hiromasa [8620-48] S12, [8620-52] S12  
Fujii, Hiroyuki [8578-117] SPSun  
Fujimaki, Munehisa [8601-94] SPTue  
Fujimoto, Akira [8613-24] S5  
Fujimoto, James G. Symposium Chair, [8567-20] S4, [8567-27] S5, [8567-32] S6, [8567-47] S8, 8571 Conference Chair, 8571 S1 Session Chair, [8571-13] S3, [8571-15] S3, [8571-22] S4, [8571-8] S2, [8571-99] SPMon, [8587-26] S4  
Fujimoto, Takahiro [8565-221] S1  
Fujimura, Yuu [8615-34] S7  
Fujioka, Hiroshi 8625 Conference CoChair, 8625 S2 Session Chair, [8641-40] S9  
Fujioka, Tomoo [8565-221] S1  
Fujisaki, Sumiko [8640-14] S3  
Fujita, Hisanori [8599-82] SPTue  
Fujita, Junichiro [8628-6] S3  
Fujita, Katsumasa [8587-74] SPMon, [8597-26] S6, [8597-7] S2  
Fujita, Kazuue [8640-26] S6  
Fujita, Masanori [8581-165] SPMon  
Fujita, Masayuki [8599-82] SPTue, [8609-12] S3  
Fujiwara, Akio [8635-26] S7  
Fujiwara, Hideki [8599-38] S7  
Fukada, Youichi [8645-19] S6  
Fukawa, Yuuta [8578-55] S9  
Fukaya, Shinpei [8643-11] S3  
Fukuchi, Kiyoshi [8647-8] S4  
Fukuda, Hiroshi [8628-5] S3  
Fukuda, Keichi [8565-3] S8  
**Fukuda, Keiko** [8578-55] S9  
Fukuda, Naoaki [8604-49] SPTue, [8607-31] S9  
Fukuda, Shinichi [8567-13] S3, [8567-14] S3  
Fukui, Kiichi [8588-6] S1  
Fukumoto, Kotaro [8565-3] S8  
Fukumura, Dai [8565-176] S3  
Fukushima, Shu-ichiro [8588-106] SPSun, [8588-107] SPSun  
Fukuyama, Hiroyuki [8625-7] S2  
Fukuyo, Fumitsugu [8625-63] S14  
Fuldner, Christiane [8572-30] S6  
Fuller, Robert L. [8570-5] S1  
**Funane, Tsukasa** [8578-108] SPSun  
Furchi, Marco [8600-55] S13  
Furher, Markus [8620-53] S11, [8620-53] S13  
Furlong, Mark J. [8631-57] S11  
Furman, Joseph M. [8578-5] S1  
Fürst, Josef U. [8600-25] S6, [8600-49] S12  
Furukawa, Daisuke [8578-84] S14  
Furukawa, Hiroyuki [8599-82] SPTue  
Furukawa, Koichi [8607-39] S11  
Furukawa, Yasunori [8604-7] S2  
Furuta, Shinichi [8640-26] S6  
Furuya, Hiroshi [8625-2] S1  
Fusazaki, Koshi [8626-21] S7  
Füser, Heiko [8624-28] S7, [8624-43] S10  
Fussell, Andrew L. [8588-25] S3
- 
- G**
- Gaborit, Gaël [8602-15] S4  
Gabriel, George [8593-26] SPSun  
Gabryte, Egle [8567-63] SPSun  
Gaborro, Zeno [8633-20] S6, [8640-24] S6  
Gadag, Shiva P. [8607-60] SPTue  
Gaddy, B. [8625-91] S14  
Gaebel, Torsten [8635-14] S4  
Gaede, Sebastian [8646-15] S5  
**Gaeta, Alexander L.** [8635-37] S11  
Gaffigan, Brian [8570-11] S3  
Gaggero, Alessandro [8635-46] S13  
Gaggini, Marcio C. R. [8577-14] S6  
Gagnon, Louis [8565-177] S3  
Gagnon, Lucie [8624-14] S4  
Gahlmann, Andreas [8590-24] S7  
Gaida, Christian [8601-107] SPTue  
Gaidukeviciute, Arune [8623-52] S14  
Gainer, Christian F. [8595-26] S7  
Gaines, Peter [8580-12] S2  
Gaj, Jan A. 8623 Program Committee  
Gajula, Gnana P. [8568-5] S2, [8587-53] S8  
Galanzha, Ekaterina I. [8565-87] S8, 8580 Program Committee, [8581-163] SPMon, [8581-164] SPMon, [8581-167] SPMon, [8581-170] SPMon, [8581-171] SPMon, [8581-172] SPMon, [8581-3] S1, [8581-54] S8, [8581-55] S8, [8581-75] S11, 8582 S5 Session Chair, [8582-17] S5, [8582-19] S5  
**Galarneau, Pierre** 8600 Program Committee  
Galasseti, Pietro R. [8578-3] S1  
Galbiati, Elisabetta [8595-2] S1  
Galbraith, Christopher M [8565-237] S5, [8603-27] S6  
Galdino, Suely Lins [8569-22] SPSat  
Gale, Bruce K. 8615 Program Committee  
Galen, Karen P. [8596-36] SPMon  
Galindo, Luis [8572-35] S7, [8577-12] S6  
Gallagher, Jeffrey E. [8604-2] S1  
Gallagher, Kevin A. [8565-42] S6, [8571-21] S4, [8575-27] S6, [8575-6] S2  
Gallagher-Colombo, Shannon [8568-7] S2  
Gallant, Pascal [8583-5] S2  
Gallego, Daniel C. [8565-38] S4, [8581-39] S7  
Gallerano, Gian Piero 8585 Program Committee  
Galli, Mara [8611-10] S2  
Galli, Matteo [8629-43] S11  
Gallippi, Caterina [8581-183] SPMon  
Galstad, Chris [8605-17] S4  
Galvanauskas, Almantas 8601  
Program Committee, [8601-57] S14, [8601-8] S2  
**Galvez, Enrique J.** 8637 Conference Chair, 8637 S2 Session Chair, [8637-24] S5, [8637-24] S8, [8637-6] S1  
Gamaly, Eugene G. [8607-16] S11, [8607-16] S5  
Gambhir, Sanjiv Sam [8581-132] SPSun, [8581-15] S3, [8583-7] S2, [8590-18] S4  
**Gamm, Ute A.** [8592-29] S7  
Gammon, Daniel G. [8635-12] S4  
Gamrad, Lisa [8593-22] S5, [8595-16] S4, [8611-13] S3  
Ganapathy, Senthil Murugan [8600-74] SPTue  
Ganapati, Vidya [8632-13] S3  
Gandhi, Hemi H. [8632-82] SPWed  
Gandhi, Jateen [8620-22] S5  
**Gandjibakhche, Amir** 8577 Program Committee, 8577 S10 Session Chair, [8577-3] S1, 8578 Program Committee, 8578 S8 Session Chair, [8578-85] S14, [8596-32] S9  
Gandour-Edwards, Regina F. [8574-27] SPSun  
Ganesan, Goutham [8578-3] S1, [8578-97] SPSun  
Ganesan, Singaravelu [8577-6] S2, [8595-18] S4  
Gangadharan, Ajith K. [8594-12] S4, [8641-21] S4, [8641-52] S11  
Gangadharan, Sidharta P. [8572-33] S6  
Gangopadhyay, Palash [8632-18] S4  
Ganikhanov, Feruz S. [8577-27] S9  
Gannot, Israel [8565-228] S3, 8576 Conference Chair, 8576 S1 Session Chair, 8576 S2 Session Chair, 8576 S3 Session Chair, 8576 S4 Session Chair, 8576 S5 Session Chair, 8577 Program Committee, 8577 S7 Session Chair  
**Gao, Bruce Z.** [8580-51] SPMon, [8587-68] SPMon, [8615-30] S7  
Gao, Cuiqin [8601-70] SPTue, [8604-41] SPTue  
Gao, Feng [8572-11] S3, [8573-25] SPSun, [8574-23] SPSun, [8574-24] SPSun, [8578-101] SPSun, [8578-102] SPSun, [8578-104] SPSun, [8578-105] SPSun, [8578-106] SPSun, [8578-107] SPSun, [8578-89] S14, [8578-91] SPSun  
**Gao, Guangjun** [8573-9] S2  
**Gao, Hao** [8574-4] S1  
Gao, Hongwei [8632-17] S4  
Gao, Liang S. [8581-43] S7, [8581-78] S11  
Gao, Simon S. [8565-56] S1  
Gao, Weijie [8582-23] SPTues  
Gao, Weiqing [8621-33] SPWed, [8621-38] SPWed, [8621-39] SPWed, [8621-60] SPWed  
Gao, Xiaohu [8581-178] SPMon  
Gao, Xiaoming [8631-31] S6  
Gao, Yang [8613-6] S2  
Gao, Zhan [8601-119] SPTue, [8601-120] SPTue, [8621-21] S4, [8621-63] SPWed, [8622-56] SPWed, [8626-66] SPWed  
Gaponik, Nikolai [8635-45] S13  
Gapontsev, Valentin P. [8601-13] S4, [8601-13] S9  
Garai, Ellis [8590-18] S4  
Garancis, Valerijs [8574-19] S4  
Garay, Javier E. [8565-175] S2  
Garback, Erik T. [8588-25] S3  
Garbin, Bruno [8636-46] S9  
Garcia Rivera, Victor A. [8621-54] SPWed, [8621-55] SPWed, [8632-77] SPWed, [8632-78] SPWed  
Garcia Tijero, Jose Manuel [8639-33] SPWed, [8640-59] S13  
Garcia, Hans A. [8604-48] SPTue  
Garcia, Michel [8640-61] S13  
Garcia-Adeva, Angel J. [8638-1] S1  
**García-Allende, Pilar Beatriz** [8572-32] S6, [8592-14] S4  
García-Blanco, Sonia M. [8599-2] S1, 8614 Program Committee, 8616 Program Committee, 8627 Program Committee, 8627 S4 Session Chair, [8627-12] S3  
García-Linares, Pablo [8620-18] S5  
García-Monge, Janeth Alexandra [8644-40] SPWed  
García-Urbe, Alejandro [8581-4] S1, [8581-64] S9, [8581-82] S11  
Gardecki, Joseph A. [8656-18] S7, [8656-19] S9, [8656-20] S7, [8656-22] S2, [8656-25] S6, [8656-42] S6, [8571-91] S4, [8575-7] S2  
Gardes, Frederic Y. [8629-32] S9, [8630-24] S6  
**Gardner, Eric W.** [8613-54] SPTue  
Gardner, John [8611-3] S1  
Garet, Frédéric [8624-26] S7, [8624-27] S7  
Garnache, Arnaud 8606 Program Committee, 8606 S5 Session Chair  
Garrett, Henry [8639-24] S6  
Garrett, Natalie [8587-23] S4  
Garrido Fernandez, Blas [8629-39] S10  
Garrod, Toby J. [8605-17] S4  
Garry, Guy [8626-74] SPWed  
Gärtner, Claudia [8615-12] S3, [8615-21] S5, [8615-27] S6, [8615-8] S2  
Garvalho, Bruna G. [8565-32] SPSun, [8594-17] S5  
Garwe, Frank [8595-13] S3  
Garza, Javier T. [8591-3] S1  
Garzon, Maria [8578-27] S5  
Gasparotto, Andrea [8625-58] S12  
Gassenq, Alban [8627-6] S2  
Gassenq, Alban [8634-21] S5  
Gassenq, Alban A. [8631-35] S7, [8631-79] S15  
Gates, James C. [8614-19] S4, [8621-6] S2, [8627-28] S7, [8627-29] S7  
Gather, Malte C. 8598 Program Committee, 8598 S4 Session Chair, [8598-18] S6, [8598-2] S2, [8598-6] S3, [8598-9] S3  
Gaton, Hilario [8616-38] S8  
Gatti, Eleonora [8623-15] S4  
Gatto, Alberto [8647-5] S4  
Gatto, Alexandre [8613-29] S6  
Gatz, Micah D. [8601-41] S10  
Gatzogiannis, Evangelos [8588-4] S1  
Gaudino, Roberto [8645-3] S2  
Gaufrès, Etienne [8621-2] S1  
Gault, B. [8625-92] S4  
**Gaur, Girija** [8594-7] S3  
Gautam, Nutan [8631-54] S19  
Gauthier, Daniel Joseph 8636 Program Committee, 8636 S10 Session Chair, [8636-45] S9  
**Gauthier, Robert C.** [8629-17] S4, [8629-22] S6, [8632-39] S9  
Gautier, Simon [8626-20] S5, [8626-36] S8, [8631-102] S7  
Gautron, Eric [8626-52] SPWed  
Gavel, Don 8617 Program Committee, [8617-9] S2  
Gavini, Hemanth [8577-32] S10  
Gay, David [8576-21] S4  
**Gayen, Swapan K.** [8574-1] SPSun  
Gayen, Tapan K. [8621-65] SPWed  
Gayet, Brice [8577-29] S10  
Gayral, Bruno [8625-19] S5  
Gazeau, Florence [8595-40] S9  
Gazzano, Olivier [8619-5] S1

# Index of Authors, Chairs, and Committee Members

- Ge, Chunfeng [8604-41] SPTue, [8624-49] S4  
Ge, Fuwei [8619-63] SPWed  
Ge, Jianhong [8588-114] SPSun  
Ge, Yuncheng 8582 Program Committee  
Gebavi, Hrvoje [8601-121] SPTue, [8621-32] S7  
Gebhardt, Andreas [8613-18] S4  
Geca, Piotr [8583-17] S4  
Gecevicius, Mindaugas [8607-46] S12  
**Gecys, Paulius** [8607-1] S1, [8607-1] S5  
Geddes, Christopher D. 8597 Program Committee  
Geddes, Joseph B. [8613-28] S6  
Gedvilas, Mindaugas [8612-5] S1  
**Geelen, Bert** [8613-39] S8  
Geffroy, Bernard [8622-35] S8  
Gehlbach, Peter [8571-60] S9, [8576-17] S4  
Gehlich, Nils [8565-226] S2  
Gehner, Andreas 8617 Program Committee  
Geib, Kent M. 8639 Program Committee  
Geiger, Kathrin D. [8565-186] S4  
Geissbühler, Stefan [8590-8] S2  
Gelb, A. W. [8578-1] S1  
Gelikonov, Grigory V. [8571-112] SPMon, [8571-120] SPMon  
Gelikonov, Valentin M. [8571-112] SPMon, [8571-120] SPMon  
Geller, Lauren [8578-27] S5  
Geller, Mauro [8569-10] S3  
Gellermann, Werner 8591 Program Committee  
Gelszinnis, Philipp [8601-20] S5  
Gemmill, Kelly B. [8595-44] S10  
Gemmill, Robert M. [8570-6] S2  
Genaro-Mattos, Thiago C. [8571-96] SPMon  
Genest, Jérôme E. [8600-57] S14  
Genevet, Patrice 8632 S11 Session Chair, [8632-42] S10, [8632-68] S15, [8633-20] S6, [8640-24] S6  
**Geng, Jason** 8618 Program Committee, 8618 S7 Session Chair, [8618-1] S1, [8618-1] S10, [8618-2] S1, [8618-2] S10  
Geng, Yu [8628-13] S5  
Geng, Zheng [8618-23] S7, [8618-3] S1, [8618-3] S10  
Genina, Elina A. [8580-54] SPMon  
Gening, Tatyana [8579-16] S4  
Gennisson, Jean-Luc [8581-96] SPSun  
Genovese, Marco [8635-31] S6, [8635-31] S9  
Genty, Goëry [8604-37] S8, [8604-44] SPTue  
Geohagan, David B. 8609 Conference Chair, 8609 S4 Session Chair, [8609-10] S3, [8609-15] S4, [8609-16] S4  
George, David [8613-23] S5, [8613-47] SPTue  
George, Deepu [8623-4] S2  
George, Mathew [8635-22] S6  
George, Matthew C. [8613-54] SPTue  
Georges, Patrick [8601-49] S12, [8606-28] S8, [8611-43] S3, [8611-43] S9, [8621-64] SPWed  
Georgiadi, Leoni [8611-11] S2  
Geppert, Matthias [8618-9] S3, [8618-9] S4  
Gerace, Dario [8629-43] S11  
Geradts, Joseph [8587-51] S8  
Gérard, Isabelle [8620-11] S3  
Gerard, Jean-Michel [8619-4] S1  
Gérard, Jean-Michel [8619-33] S8, [8623-48] S12, [8623-59] S15, [8631-81] S16  
Gerasimenko, Andriy S. [8599-13] S3, [8599-75] SPTue  
Gerber, Merlin [8603-9] S3  
Gerega, Anna [8578-86] S14  
Gergely, Csilla [8594-15] S4  
Gerhardt, Nils C. [8589-56] SPWed, [8592-41] S9, [8623-9] S3  
Gerhardt, Reinald [8628-6] S3  
**Gerhold, Michael D.** 8621 Program Committee, 8626 Program Committee, 8626 S3 Session Chair, 8631 Program Committee, 8631 S7 Session Chair, [8631-65] S12, 8634 Program Committee  
Gerke, Stephen A. [8633-6] S2  
Gerken, Martina [8621-47] SPWed  
Gerlach, Philipp [8630-28] S7, [8639-18] S5  
Gerritsen, Hans C. 8588 Program Committee, [8588-58] S8, [8588-97] SPSun  
Gervinskas, Gediminas [8613-3] S1  
Gerwert, Klaus B. 8586 Program Committee, [8586-19] S3  
**Geske, Jonathan C.** [8639-24] S6  
Geskus, Dimitri [8599-2] S1  
Gessner, Thomas [8613-59] SPTue, [8614-2] S1, [8616-30] S6  
Gesteira, Maria [8569-21] SPSat, [8569-23] SPSat, [8569-24] SPSat, [8569-26] SPSat  
Geurts, Jeroen [8565-178] S3  
Geva, Sarah [8640-54] S12  
Ghadi, Hemant [8634-6] S2  
**Ghadiri, Reza** [8607-30] S9, [8637-33] S8  
Ghandehari, Ehson M. [8591-18] S4  
Ghani, Muhammad U. [8582-1] S6  
Ghanian, Zahra [8591-28] SPWed  
Gharbi, Hédi [8575-2] S1  
**Gharekhan, Anita H.** [8580-22] S4  
Ghasemi, Farshid [8594-9] S3, [8597-37] S8  
Ghasemkhani, Mohammadreza [8606-9] S3, [8638-4] S1  
Ghassemi, Pejman [8565-30] S7, [8576-22] S4  
Ghassemlooy, Z [8645-1] S1  
Ghate, Ekata H. [8598-5] S2  
Ghazaryan, Robert K. [8568-13] S3, [8580-43] S7  
Ghenauche, Petru [8631-74] S14  
Ghibaud, Elise [8627-11] S3  
Ghioni, Massimo [8590-2] S3, [8590-3] S3, [8631-46] S9  
**Ghosh, Anjan K.** [8610-14] S3, [8647-26] SPWed  
Ghosh, Chuni [8599-55] S11, [8599-56] S11, [8639-23] S6  
Ghosh, Kunal [8620-29] S7  
Ghosh, Nirmalya [8586-7] S1  
Ghosh, Rudresh [8609-5] S1  
Ghosh, Rupamanjari [8636-16] S4, [8636-22] S5  
Ghosh, Samir [8627-6] S2  
Ghoshal, Goutam [8584-28] S8  
Ghosn, Mohamad G. [8580-26] S5  
Ghulinyan, Mher [8600-54] S13, [8604-34] S7  
Ghuman, Avniel [8574-18] S4  
Giacomelli, Michael G. [8571-46] S7, [8592-40] S9  
Giacomotti, Alejandro [8636-54] S11  
Giaconia, Costantino [8629-45] SPMon  
Giakoumidis, Elias [8645-18] S6  
Giammarco, Joseph M. [8578-14] S3  
Gianella, Michele [8591-16] S4  
Gianneschi, Nathan [8594-8] S3  
Giannetti, Ambra [8572-49] S9, [8591-17] S4, [8596-31] S9, [8600-62] S15, [8627-51] SPWed  
Giannetti, Sara [8576-13] S3  
Giard, Edouard [8631-53] S19  
Gibb, Shawn R. [8641-37] S8  
**Gibbs, Holly** [8593-20] S5  
Gibert, Fabien [8621-14] S3  
Gibson, Daniel [8601-108] SPTue  
Gibson, Emily [8567-50] S9  
Gibson, Graham M. [8636-9] S2, [8637-49] S10  
Gierl, Christian [8639-11] S4, [8639-15] S4, [8639-16] S4  
Giesen, Adolf [8599-59] S12  
Giesin, Catharina [8640-62] S14  
Giessen, Harald W. [8613-2] S1, [8631-10] S3, [8631-76] S14  
Gigan, Sylvain [8580-16] S3, [8617-11] S3  
**Giglio, Nicholas C.** [8565-4] S8  
Giguere, Mathieu [8623-24] S6  
Gil, Bernard 8625 Program Committee  
Gil, Sang Keun [8644-42] SPWed  
Gilbreath, Charmaine 8610 Program Committee  
Gilbreth, Blaine N. [8617-8] S2  
Gilchrist, James F. [8613-36] S8  
**Giles, Jillian P.** [8580-12] S2  
**Giles, Robert H.** [8577-31] S10, [8580-12] S2, [8580-35] S2, 8624 Program Committee, 8624 S3 Session Chair, 8624 S6 Session Chair, [8624-23] S6  
**Gilroy, Nathan** [8565-200] S5  
Giliberti, Valeria [8624-42] S10, [8631-13] S3  
Gillams, Alice [8568-49] S5  
Gillenwater, Ann M. [8565-85] S8  
Gil-Santos, Andrea [8603-12] S4  
Ginolacs, Arnim [8605-15] S4  
Gioux, Sylvain [8572-27] S5, [8572-33] S6, [8573-5] S2, 8574 S3 Session Chair, [8574-17] S4, [8578-26] S5  
Giovane, Laura [8639-19] S5  
Giovine, Ennio [8624-42] S10  
Girard, N. [8606-28] S8  
Giree, Achut [8604-20] S5  
Girgis, Emad [8633-25] S7  
Giri, Lily [8634-25] S5  
Giribabu, Lingamallu [8622-53] SPWed  
Girish, Gandikota [8581-16] S3, [8581-21] S4  
Girkin, John M. [8589-32] S7, [8593-2] S1  
Girling, Mark [8602-6] S2  
Girshovitz, Pinhas [8589-39] S9  
**Giudice, Andrea** [8631-49] S9  
Giudici, Massimo [8636-46] S9  
Giuliano, Giambastiani [8596-31] S9  
Giustini, Andrew J. [8584-12] S4, [8584-2] S1  
Gizzi, Corrado [8567-46] S8  
Gkotsis, Petros [8614-18] S4  
**Gladish, James C.** [8580-37] S7, [8580-8] S1, [8580-9] S1  
Glanc, Marie [8567-75] SPSun  
Glasser, Ryan [8636-17] S4  
Glatstein, Eli [8568-40] SPMon  
Glatz, Juergen [8572-32] S6  
Glauser, Marlene [8625-33] S8  
Glazerberg, René [8565-166] S1  
**Glazowski, Christopher** [8565-73] S5, [8589-13] S3  
Glebe, Ulrich [8609-2] S1  
Glebov, Alexei Symposium Chair, 8630 Conference Chair, 8630 S1 Session Chair  
Glebov, Leonid [8599-52] S10, [8601-122] SPTue, [8601-123] SPTue, [8601-45] S11, [8601-46] S11, [8603-3] S10, [8603-3] S2, 8621 Program Committee, 8621 S4 Session Chair, [8644-4] S1, [8644-8] S2  
Glebova, Larissa [8599-52] S10  
Gleize, Jerome [8626-37] S9  
Glembocki, Orest [8632-45] S10  
**Glickman, Randolph** 8579 Program Committee, 8579 S3 Session Chair, [8579-13] S3, [8579-34] S3  
Glidden, Michael [8568-46] S7  
Gloor, Stefan [8571-106] SPMon  
**Glückstad, Jesper** 8637 Conference Chair, 8637 S9 Session Chair, [8637-17] S3, [8637-32] S8  
Glukhova, Olga E. [8596-37] SPMon, [8596-38] SPMon, [8596-39] SPMon  
Glunde, Kristine [8575-17] S4  
Glushchenko, Anatoliy V. [8621-10] S3  
**Gmachl, Claire F.** 8640 Program Committee, [8640-41] S10, [8640-50] S11, [8640-68] SPWed  
**Gmitro, Arthur F.** [8573-7] S2, [8574-21] S5, 8575 Program Committee, 8575 S2 Session Chair, [8587-1] S1  
Gnanadesigan, Muthukaruppan [8565-17] S3, [8565-39] S6, [8565-40] S6  
Go, Rowel [8640-45] S11  
Goano, Michele [8619-50] S13  
Göbel, Thorsten [8624-20] S6  
**Goda, Keisuke** [8587-38] S6, [8611-22] S5  
Godard, Antoine [8631-64] S12  
Godavarty, Anuradha [8565-171] S5, 8572 S2 Session Chair, [8572-13] S3, [8578-24] S4, [8578-92] SPSun  
Godbout, Nicolas [8571-56] S9, [8575-22] S5  
Goddard, Jessica D. [8582-10] S2, [8582-11] S3, [8582-12] S3, [8582-16] S4, [8582-20] SPTues  
Godet, Julien [8590-12] S2  
Godin, Michel [8576-14] S3  
**Goebel, Sebastian R.** [8589-56] SPWed, [8592-41] S9  
Goedert, Michel G. [8643-9] S2  
**Goehre, Mario** [8603-1] S1, [8603-1] S9  
Goette, Josef [8571-109] SPMon  
Goettler, D. [8632-30] S7  
Goetz, Georges [8567-8] S2  
Goh, Wei Peng [8619-43] S11, [8619-43] S13  
Goi, Kazuhiro [8629-29] S8  
Gokdel, Daghan Y. [8616-6] S2  
**Gokden, Burc** [8640-46] S11, [8640-47] S11  
Golan, Lior [8565-201] S1, [8575-10] S3, [8597-29] S6, [8597-33] S7  
Golby, Alexandra [8588-21] S3  
Goldberg, Brian D. [8571-102] SPMon  
Goldberg, Lew [8599-58] S11, [8605-38] SPTue  
Golday, Glenn [8565-200] S5  
Goldfarb, Fabienne [8636-22] S5  
Goldhaber-Gordon, David [8626-14] S4  
Goldschmidt, Benjamin S. [8570-11] S3  
Goldschmidt, Elizabeth A. [8635-31] S6, [8635-31] S9, [8635-34] S10  
**Goldstein, Goldie L.** [8589-47] S10  
Goldstein, Jonathan T. [8626-51] SPWed  
Goldstein, Neil [8618-12] S4  
**Goldys, Ewa M.** 8587 Program Committee, 8590 Program Committee  
Golishov, Aleksandr [8603-37] SPTue  
Golling, Matthias C. [8601-25] S7, [8606-5] S2  
Gollnick, Sandra O. 8582 Program Committee  
Goltsov, Alexey [8568-14] S3  
Golubjatnikov, German Ju. [8578-58] S10  
Golubov, Andrey [8585-26] S5  
Golvin, Andrii [8642-5] S2  
Gomer, Charles J. 8568 Program Committee, [8568-15] S4  
Gomes da Costa, Stefan [8588-98] SPSun  
Gomes, Andrew J. [8573-6] S2  
Gomes, João [8614-21] S4  
Gomes, Raquel [8634-3] S1



# Index of Authors, Chairs, and Committee Members

- Gómez-Pavón, Luz del Carmen C. [8619-18] S5  
Gómez-Rivas, Jaime [8641-65] S13  
Goncharenko, Aleksandra [8567-65] SPSun  
Goncharuk, Andrii I. [8637-29] S7  
Gong, Peijun [8565-10] S3  
Gong, Qihuang [8600-52] S13  
Gong, Tim [8605-18] S4  
Gong, Wei [8565-35] S1, [8573-11] S3, [8573-11] S5  
Gong, Wen-Liang [8590-23] S3  
Gong, Yongkang [8622-33] S8, [8647-24] S10, [8647-24] S9  
Gonnet, Cédric [8601-68] SPTue  
**Gonschior, Cornell P.** [8576-19] S4, [8605-24] S5  
Gonthiez, Thierry [8616-20] S5  
Gonzalez Garcia, Andres [8601-82] SPTue, [8601-86] SPTue, [8604-21] S5  
Gonzalez Izquierdo, Bruno [8619-37] S9  
Gonzalez, Angel [8615-40] S9  
González, Francisco Javier [8632-5] S1  
Gonzalez, Gabriel [8632-5] S1  
Gonzalez, Jean [8565-171] S5, [8578-24] S4, [8578-92] SPSun  
Gonzalez, Maria [8620-30] S8, [8620-53] S11, [8620-53] S13  
González, Pablo [8565-38] S4  
Gonzalez, Patricia [8565-171] S5  
González-Herráez, Miguel [8636-20] S4  
González-Vega, Arturo [8581-149] SPMon  
Goo, BonCheol L. [8565-13] S4, [8565-14] S4  
Goodhue, William D. [8604-31] S7  
Goodloe, C. [8610-21] S4  
Goodwin, Paul C. [8589-20] S4  
Goodwin, Richard L. [8580-51] SPMon  
Goosen, Marius E. [8630-19] S5, [8643-8] S2  
Gopalakrishnan, Sandeep [8569-14] S4, [8591-28] SPWed  
Gora, Michalina J. [8571-21] S4, [8575-24] S6, [8575-27] S6, [8575-6] S2, [8601-11] S3  
Gora, Wojciech S. [8567-77] SPSun  
Gorczyca, Izabella [8625-16] S4  
**Gorczyńska, Iwona M.** [8571-20] S3, [8571-32] S5, [8571-66] S10  
**Gordon, Reuven** [8609-8] S2  
Gordon, Roy [8620-40] S10  
**Gorecki, Christophe** [8616-2] S1, [8616-2] S7  
Gorgulu, Adil Tolga [8588-84] SPSun  
Gorgulu, Rabia [8588-84] SPSun  
Gorski, Grzegorz [8565-95] S9  
Goryashenko, Alexander S. [8590-1] S3, [8590-39] SPSUN  
Gossett, Daniel R. [8587-38] S6, [8611-22] S5  
Goßler, Christian [8586-13] S2, [8586-4] S1, [8607-38] S11  
Goswami, Debabrata [8573-1] S1  
Goswami, Nabamita [8604-32] S7  
Goto, Nobuo [8587-15] S2  
Gottdiener, Mark [8605-18] S4  
Gottesman, Rachel E. [8584-1] S1  
Gottfried, David S. [8594-9] S3  
Gottmann, Jens [8608-7] S2  
Gottschall, Thomas [8565-185] S4, [8601-2] S1, [8601-42] S10, [8611-16] S4  
Göttinger, Erich [8567-12] S3, [8567-15] S3, [8567-25] S5, [8571-45] S7, [8571-77] S12  
Gou, Fangwang [8620-77] SPWed  
Goujon, Catherine [8592-28] S7  
Goulamhousen, Nadir [8565-78] S7, [8574-6] S1  
Gould, Travis J. [8589-34] S7, [8617-15] S3  
Goulet-Hanssens, Alexis [8632-1] S1  
Goulliet, Joan [8571-48] S8, [8571-79] S12  
Gourdie, Robert G. 8593 Program Committee  
Gourier, Didier [8626-26] S6  
**Gouveia-Neto, Artur S.** [8587-60] SPMon, [8641-49] S11  
Goy, Alexandre S. [8589-23] S5  
Goyal, Gaurav [8570-19] S5  
Goykhman, Ilya [8636-18] S4  
Grabar, Alexander A. [8581-96] SPSun  
Grabher, Stephanie [8635-43] S13  
Grabherr, Martin [8630-28] S7, 8639 Program Committee, [8639-18] S5  
**Grabka, Michal** [8632-21] S5  
Grabolle, Markus [8596-17] S5  
Grady, Nathaniel K. [8623-19] S5  
Gradziel, Marcin Lukasz [8624-39] S10  
Graf, Albrecht [8577-18] S7  
Graf, Benedikt W. [8592-39] S9  
Graf, Thomas 8600 Program Committee, [8621-64] SPWed  
Graff, David L. [8618-11] S4, [8618-14] S4  
Gragossian, Aram [8623-45] S12  
Graham, David J. [8588-89] SPSun  
Graham, Luke A. [8639-17] S5  
Graham, Roger A. [8578-22] S4  
Graham-Jones, Jasper [8630-35] S9  
Grajciar, Branislav [8571-41] S7, [8571-55] S8  
Gramatica, Furio [8595-8] S2  
Grand, Gilles [8631-34] S7  
Grande, Sophie [8592-28] S7  
Grandjean, Nicolas 8625 Program Committee, [8625-13] S3, [8625-33] S8, [8640-16] S4  
Grandusky, James R. [8641-37] S8  
Graneli, Joseph [8587-79] SPMon  
Gransee, Rainer [8615-55] SPTue  
Granson, Viktor [8600-3] S1  
Grapin-Botton, Anne [8589-51] S11  
Grasse, Christian [8599-60] S12, [8639-11] S4, [8639-15] S4  
Grasselli, Giorgio [8588-47] S7  
Grasshoff, Thomas [8616-5] S2  
Grasso, Daniel M. 8639 S6 Session Chair  
Gratt, Sibylle [8581-169] SPMon, [8581-24] S4  
Grattan, Ken T. V. [8605-24] S5  
Gratton, Enrico 8588 Program Committee, [8588-37] S6  
Gratzke, Alexander [8616-11] S3  
Graves, Logan R. [8577-32] S10, [8577-4] S2  
**Gravrand, Olivier** [8631-14] S3, [8631-50] S10, [8631-71] S13  
Gray, Bonnie L. 8615 Conference CoChair, 8615 S2 Session Chair, 8615 S9 Session Chair  
Gray, David [8613-34] S7  
**Grayson, Matthew** 8631 S13 Session Chair, [8631-94] S15  
Grazulis, Lawrence [8634-26] SPWed  
Grbovic, Dragoslav [8624-35] S9, [8624-36] S9  
Greanya, Viktoria 8598 Program Committee, 8598 S3 Session Chair, [8598-17] S5  
Grebenschikova, Elena A. [8600-15] S4  
Greco, Michael [8611-8] S2, [8623-43] S12  
Green, Jared [8601-101] SPTue, [8601-102] SPTue  
Green, Mark E.  
Green, Martin Andrew [8608-27] S13, [8608-27] S6  
Green, William M. J. [8600-19] S5, [8630-10] S3  
**Greenbaum, Alon** [8570-22] S6, [8589-9] S2  
Greenberg, Joel [8636-45] S9  
Greenberg, Joel H. [8578-115] SPSun  
Greenberg, Robert J. [8615-6] S2  
Greer, Kimberly [8585-25] S4  
Greffet, Jean-Jacques [8620-46] S11, [8631-69] S13  
Gregersen, Niels 8619 S13 Session Chair, [8619-32] S8, [8619-33] S8, [8619-4] S1  
Gregor, Brian [8618-12] S4  
Gregor, Ingo [8588-36] S5, 8590 Conference Chair, 8590 S2 Session Chair, 8590 S6 Session Chair, [8590-15] S4, [8590-5] S1  
Gregory, Kenton W. 8565 Conference Chair, 8565 S8 Session Chair  
Grein, Christoph H. [8613-41] S8, [8631-52] S10  
Greiner, Cherry [8617-18] SPTue  
Greiner, Christoph M. 8627 Conference CoChair, 8627 S7 Session Chair  
Greiner, Horst J. [8641-11] S3  
Grek, Boris [8628-6] S3  
Grenier, Jason R. [8611-28] S6, [8611-30] S6, [8611-35] S7  
Grenier, Nicolas [8578-64] S11  
Gresch, Tobias [8631-19] S4  
Gresillon, Samuel [8590-4] S1  
Grewe, Adrian [8613-40] S8, [8637-38] S9  
Grey, Dodd [8638-6] S2  
Griebner, Uwe [8599-41] S8  
Grier, David G. 8637 Program Committee  
Gries, Wolfgang [8599-15] S3, [8605-26] S6  
Grieve, Katharine [8565-116] S5, [8565-184] S4, [8565-37] S1, [8572-21] S4  
Griffioen, Arjan . W [8568-51] SPMon  
Griffiths, Jonathan P. [8619-3] S1  
Grigoropoulos, Costas P. [8608-18] S4, 8609 Program Committee  
Grijalva-Ortiz, Nicolás [8644-36] SPWed  
**Grillot, Frederic** [8619-11] S3, [8619-6] S2, [8619-60] SPWed, [8619-7] S2, [8634-5] S1  
Grimblatov, Valentin M. [8569-11] S3  
Grimm, Stephan [8601-15] S4, [8601-15] S9, [8621-26] S5, [8621-41] SPWed  
Grimm, Wyacheslaw [8600-37] S1, [8600-37] S9  
Grimmond, Brian [8574-20] S5  
Grimshaw, Mike [8605-14] S3, [8605-23] S5, [8605-33] S7, [8640-57] S13  
Grinberg, Patricia [8636-54] S11  
Griscom, Laurent [8595-34] S8  
Grisez, Brian T. [8584-20] S6, [8584-22] S6, [8584-6] S2  
Grist, Samantha M. [8629-8] S2  
Griswold, John Robert [8565-31] SPSun  
Griswold, Karl E. [8584-15] S5  
Groah, Suzanne [8576-22] S4, [8579-25] S6  
Grodzinski, Piotr A. 8594 Program Committee  
Grogan, Michael D. W. [8601-53] S13, [8635-14] S4  
Grojo, David [8608-2] S1, [8611-38] S8  
Gromov, Dmitry G. [8626-29] S7  
Gronau, Stefan [8603-36] SPTue  
Grondek, Joel [8594-8] S3  
Gronenborn, Stephan [8606-15] S5, [8606-16] S5, [8639-21] S6  
Grootendorst, Diederik J. [8581-1] S1  
Grosa, Gregory [8627-19] S5  
Grosberg, Lauren [8565-216] S3  
Grosek, Jacob [8601-125] SPTue  
Grosenick, Dirk [8578-62] S10  
Gross, Christine [8603-5] S10, [8603-5] S2  
Gross, Michel [8589-21] S5  
Gross, Oren [8578-97] SPSun  
Gross, Simon [8599-6] S2  
Grossenbacher, Jonas [8643-5] S1  
Grosset-Grange, Claire [8602-15] S4  
Grossman, Nir [8586-21] S3  
Grot, Annette C. [8590-17] S4  
**Grote, James G.** 8619 Track Chair, 8620 Track Chair, 8621 Track Chair, 8622 Program Committee, 8622 S5 Session Chair, 8622 Track Chair, [8622-21] S6, 8623 Track Chair, 8624 S1 Session Chair, 8624 Track Chair, 8625 Track Chair, 8626 Track Chair, 8629 S5 Session Chair  
Grounds, Miranda D. [8579-24] S5  
Grover, Ginni [8600-20] S6, [8590-21] S6, [8590-24] S7  
Grover, Rakhi [8622-62] S9  
Grubov, Vadim V. [8580-48] SPMon, [8580-49] SPMon  
Grudin, Ivan S. [8600-25] S6  
**Gruendl, Tobias** [8639-11] S4, [8639-15] S4, [8639-16] S4  
**Grüger, Heinrich** [8616-19] S5  
Gruionu, Gabriel [8565-176] S3  
**Grukowski, Ireneusz** [8567-20] S4, [8567-27] S5, [8567-32] S6, [8571-13] S3, [8571-8] S2  
Grün, Hubert [8581-112] SPSun, [8581-115] SPSun, [8581-93] SPSun  
Grund, David W. [8624-19] S5  
**Grunden, Daniel T.** [8591-1] S1  
**Grundfest, Warren S.** 8572 Conference Chair, 8572 S2 Session Chair, [8624-2] S2  
Grundt, Jessica E. [8585-18] S3, [8585-25] S4  
Grunemann, Timo [8630-8] S2  
Grüner-Nielsen, Lars [8647-10] S5  
Grüning, Jeannette [8591-22] SPWed  
Grunert, Ronny [8591-22] SPWed  
**Grunwald, Ruediger** [8611-27] S5, [8626-27] S6, 8637 Program Committee, 8637 S3 Session Chair, [8637-20] S4  
Grunzweig, Tzahi [8575-5] S2  
**Gryczynski, Ignacy** [8590-10] S2, [8590-6] S1  
**Gryczynski, Zygmunt Karol** 8590 Conference Chair, 8590 S3 Session Chair, 8590 S9 Session Chair, [8590-10] S2, [8590-6] S1, 8597 Program Committee  
Gryko, Daniel T. [8613-34] S7  
Grylko, Yevgen [8623-17] S5, [8623-20] S5  
Grzanka, Szymon [8625-35] S8  
Grzegory, Izabella [8625-35] S8  
Gschwilm, Tobias [8611-45] S10, [8611-45] S4  
**Gu, Bo** Symposium Chair, 8607 Program Committee, 8608 Program Committee  
Gu, Dayong [8588-99] SPSun  
Gu, Frank [8581-120] SPSun  
Gu, Ga-Young [8614-10] S2  
**Gu, Guancheng** [8601-64] SPTue  
Gu, Guiru [8630-33] S4  
Gu, Ling [8586-20] S3, [8586-25] S5, [8586-3] S1, [8586-5] S1, [8586-7] S1  
**Gu, Min** 8588 Program Committee, [8613-30] S7, 8621 Program Committee  
Gu, Ruo Yu [8583-10] S3  
Gu, Shi [8565-205] S2, [8571-67] S10, [8593-1] S1, [8593-3] S1, [8593-6] S2, [8593-7] S2  
Gu, Tingyi [8628-15] S6  
Gu, Xiaodong [8633-14] S5  
Gu, Xiaoyi [8606-27] SPTue  
Gu, Xijia J. [8601-63] S1  
Gu, Xun 8611 Program Committee

# Index of Authors, Chairs, and Committee Members

- Gu, Yueqing [8577-8] SPWed, 8582 Program Committee, 8582 S4 Session Chair, [8582-14] S4, [8582-28] SPTues, [8582-29] SPTues, [8582-30] SPTues, 8596 Program Committee, [8596-40] SPMon, [8596-41] SPMon, [8596-6] S2
- Guan, Baolu [8620-26] S6
- Guan, Xingguo [8605-14] S3, [8605-23] S5, [8605-33] S7, [8640-57] S13
- Guand, Guohua [8611-52] SPTue
- Guardalben, Mark J. [8602-12] S4
- Guardia, Pablo [8595-40] S9, [8595-48] S11
- Guclu, Caner** [8632-79] SPWed
- Gudjonson, Herman [8619-24] S6
- Guëll Vila, Frank [8626-27] S6
- Guenther, James K. 8639 Conference Chair, 8639 S2 Session Chair, [8639-17] S5
- Guérandel, Stéphane [8606-28] S8
- Guerboukha, Hichem [8611-4] S1
- Guérin, Brigitte [8574-22] S5
- Guermoune, Abdeladim [8624-29] S8
- Guerrero, Luis [8565-42] S6
- Guerrero, Yadir A. [8568-41] SPMon, [8596-2] S1
- Guerrero-Cazares, Hugo [8571-69] S11
- Guerrini, Andrea [8596-31] S9
- Gueye, Rokhaya [8614-15] S3
- Guha, Ingrid [8616-35] S8
- Guidry, Dustin [8631-28] S5
- Guilford, William H. [8565-5] S4
- Guillaud, Martial [8572-38] S7
- Guillaumée, Mickaël [8643-5] S1
- Guille, Antoine [8620-15] S4
- Guillemoles, Jean-Francois 8620 Conference Chair, 8620 S1 Session Chair, [8620-11] S3, [8620-36] S9, [8620-41] S10, [8620-46] S11, [8620-8] S2, [8631-78] S15
- Gulilet, Thierry [8625-19] S5
- Guimaraes, Oscar R. [8569-10] S3
- Guina, Mircea 8606 Program Committee, 8606 S4 Session Chair, [8606-3] S1, [8620-55] S14, [8640-63] S14
- Guinn, Keith [8605-9] S2
- Gulinatti, Angelo** [8590-2] S3, [8590-3] S3, [8631-46] S9
- Gullapalli, Rao L. [8565-181] S4
- Gullicksrud, Kyle [8596-11] S3
- Gulsen, Gultekin 8574 S1 Session Chair, [8574-20] S5, [8574-4] S1, [8574-5] S1, [8578-30] S5, [8581-133] SPSun
- Gülsov, Murat [8566-22] SPSun, [8569-12] S3, [8579-15] S4, [8584-7] S2, [8584-8] S2
- Gunapala, Sarath D.** [8631-24] S5, [8631-25] S5
- Gunasekera, Manori [8620-65] SPWed, [8634-10] S2
- Gunasekera, Manori V. [8634-24] S5
- Güney, Melike** [8584-8] S2
- Gunn, Jason [8568-50] SPMon, [8578-68] S11, [8578-69] S11
- Gunn, L. Cary** 8629 Program Committee
- Gunn-Moore, Frank James [8589-38] S8, [8611-2] S1, [8611-3] S1, [8637-16] S3
- Günter, Peter 8604 Program Committee, 8604 S3 Session Chair, 8622 S4 Session Chair, [8622-10] S3, [8624-46] S11
- Gunther, Jacqueline E. [8578-19] S4, [8581-109] SPSun
- Guo, Baoping [8565-31] SPSun
- Guo, Dingkai [8631-87] S17
- Guo, Hengchang** [8588-83] SPSun
- Guo, Hui [8578-107] SPSun
- Guo, Junpeng** [8627-35] S8
- Guo, Kevin [8572-46] S9
- Guo, L. Jay** [8581-108] SPSun, [8581-71] S10, [8581-73] S10, [8581-87] S11, [8600-58] S14, [8613-53] SPTue, [8627-25] SPWed, [8632-44] S10, [8632-47] S10, [8632-60] S13, [8643-12] S3
- Guo, Lian Bo [8607-21] S7
- Guo, Mu Yao [8626-32] S8
- Guo, Rui [8607-27] S8
- Guo, Shaofeng [8601-69] SPTue
- Guo, Shuai [8620-26] S6
- Guo, Siyao [8620-17] S4, [8620-77] SPWed
- Guo, Xia [8620-26] S6
- Guo, Xugang [8622-20] S1, [8622-20] S5
- Guo, Xuhan [8640-6] S1
- Guo, Yili [8607-58] SPTue
- Guo, Yuan [8576-31] SPSun
- Guo, Zhenwu [8619-63] SPWed
- Guo, Zijian [8581-47] S8
- Gupta, Mool Chandra** [8607-59] SPTue
- Gupta, Neelam** [8613-41] S8
- Gupta, Partha S. [8635-47] S13
- Gupta, Shantanu** [8601-62] S15, [8610-17] S4, [8626-51] SPWed
- Gurbani, Saumya [8576-3] S1
- Gurel, Ogan [8585-35] S6
- Gurfinkel, Yuri I. 8591 Program Committee
- Gurkan, Umur A. [8568-17] S4
- Gurvich, Alexander S. [8610-32] S7
- Gussakovsky, Eugene [8587-29] S4, [8587-34] S5
- Gustafson, Tiffany [8596-22] S7
- Gustafson, Tiffany P. [8596-19] S6, [8596-8] S3
- Gustafsson, Jonny [8644-25] S6
- Gustavsson, Johan S. [8639-28] S7, [8639-32] S8
- Gu-Stoppel, Shanshan [8612-18] S4
- Gutierrez-Herrera, Enoch [8565-29] S7, [8592-1] S1
- Gutierrez-Juarez, Gerardo [8581-149] SPMon
- Gutman, Nadav [8636-56] S11
- Gutzwiller, Jean-Louis [8621-29] S6
- Guzzi, Mario [8623-15] S4
- Gweon, DaeGab [8589-53] SPWed
- Gwo, Shangji [8619-42] S10, [8623-33] S9, [8625-18] S4
- Gyongyosi, Laszlo [8635-18] S5
- Gyulkhandanyan, Anna [8580-43] S7
- Gyulkhandanyan, Aram G. [8568-13] S3
- Gyulkhandanyan, Grigor V. [8568-13] S3, [8580-43] S7
- Gyulkhandanyan, Lusine Zh. [8568-13] S3
- 
- H**
- Ha, Jinyong [8571-116] SPMon
- Ha, Jun Seok [8625-47] S11
- Haag, Sebastian [8606-17] S5
- Haakestad, Magnus W. [8604-29] S6
- Haarlammer, Nicoletta [8601-104] SPTue, [8601-28] S7
- Haas, Gilbert J. [8600-27] S7
- Haas, Sven [8614-2] S1
- Haase, Wolfgang 8642 Program Committee
- Haberl, Bianca [8607-16] S11, [8607-16] S5
- Habermehl, Christina [8578-65] S11
- Habermeier, Hanns-Ulrich 8626 Program Committee, 8626 S4 Session Chair, 8626 S9 Session Chair, [8626-13] S4
- Habert, Benjamin [8631-69] S13
- Habte, Frezghi [8581-15] S3
- Hachuda, Shoji [8594-16] S5
- Hackbarth, Steffen [8568-29] S7, [8568-30] S7
- Hackel, Benjamin [8596-25] S8
- Haddadi, Abbas** [8631-98] S10
- Hadden, J. P. [8628-16] S6
- Haden, Jim** [8605-14] S3, [8605-23] S5
- Hader, Jorg [8606-13] S4, [8606-18] S6, [8625-55] S12
- Hadfield, Robert H. [8635-10] S3
- Hadji Georgiou, Katerina [8572-40] S8, [8591-12] S3
- Hädrich, Steffen [8601-48] S12, [8601-50] S12
- Hadway, Jennifer [8579-26] S6
- Haefner, Joseph W.** [8624-18] S5
- Hæggström, Edward [8604-44] SPTue
- Haemmerich, Dieter 8584 S3 Session Chair, [8584-31] S9
- Haertel, Romano [8588-33] S5, [8590-25] S7, [8601-93] SPTue, [8604-8] S2
- Hafezi, Farhad [8615-6] S2
- Hafezi, Mohammad [8636-52] S11
- Hafiz, Shopan A. [8625-52] S11, [8625-85] SPWed
- Hagan, Anjani [8574-20] S5
- Hägele, Daniel [8623-10] S3
- Hagenmüller, David [8623-57] S15
- Hager, Thomas [8640-15] S3
- Haggerty, Bryan P. [8567-61] SPSun
- Haghyan, Nick [8578-36] S6, [8578-96] SPSun, [8578-97] SPSun
- Hagler, Ping [8631-52] S10
- Haglund, Erik** [8639-28] S7, [8639-32] S8
- Haglund, Richard F. [8607-43] S12, 8609 Program Committee, [8609-17] S4, [8609-7] S2, [8623-11] S4
- Hagman, Henning [8588-8] S1
- Hagmeyer, Britta 8615 S5 Session Chair, [8615-10] S3
- Hahn, Choloong [8628-26] SPWed
- Hahn, Paul [8571-42] S7
- Haibach, Frederick G.** [8631-16] S17
- Haidar, Riad [8631-12] S3, [8631-74] S14, [8632-8] S2
- Hailu, Daniel [8624-11] S4
- Hains, Christopher P. [8606-12] S4, [8606-13] S4
- Haj Ibrahim, Bicher [8577-29] S10
- Haji Reza, Parsin** [8581-11] S2, [8581-46] S8, [8581-80] S11
- Hajian, Arsen R. [8572-37] S7
- Hajjarian Kashany, Zeinab** [8579-23] S5, [8592-9] S3
- Hajne, Joanna [8587-76] SPMon
- Hakimi, Farhad [8610-10] S3, [8610-11] S3
- Hakuta, Kohzo 8636 Program Committee, [8636-39] S8
- Halaney, David L. [8565-12] S3, [8595-17] S4
- Halas, Naomi J.** 8597 Program Committee
- Halder, Arindam [8601-106] SPTue
- Halder, Matthaeus [8628-16] S6
- Hale, Evan [8605-2] S1
- Halioua, Yacine [8631-5] S2
- Hall, Anthony Shoji** [8620-2] S1
- Hall, Chris [8615-49] SPTue
- Hall, Simon R.G. [8625-62] S13
- Hall, Trevor James [8619-36] S9, [8627-31] S7, [8640-8] S2, [8645-13] S5, [8646-29] S5
- Hallacoglu, Bertan [8578-11] S2
- Haller, Julia [8615-6] S2
- Hallynck, Elewout [8598-20] S6, [8629-4] S1
- Halm, Simon [8619-34] S8
- Halpern, Allan C. [8596-32] S9
- Halpin, Gabriel M.** [8619-17] S4
- Halstead, Joshua W. [8609-10] S3
- Halter, Markus [8630-30] S8
- Ham, Juyoung [8613-20] S4, [8622-37] S9, [8622-9] SPWed
- Hamachi, Y. [8636-35] S7
- Hamada, Keisaku [8587-74] SPMon
- Hamamoto, Ashley [8565-71] S5
- Hamblin, Michael R.** 8569 Conference Chair, 8569 S1 Session Chair, [8569-13] S3, 8582 Program Committee, 8582 S2 Session Chair, [8582-6] S1
- Hambücker, Stefan [8602-17] S4, [8605-8] S2
- Hamel, Philippe [8636-54] S11
- Hamidi, Ehsan [8565-10] S9, [8565-11] S7, [8565-18] S7, [8565-20] S7
- Hamilos, Daniel [8565-100] S1
- Hamilton, Craig [8606-22] S7
- Hamkins, Jon [8610-37] S7
- Hamlin, Scott J. [8599-31] S6
- Hammer, Daniel X.** 8567 Program Committee, 8567 S1 Session Chair, [8567-28] S6, [8567-35] S7, [8567-37] S7, [8567-38] S7, [8567-71] SPSun
- Hammerschmidt, Martin [8620-54] S11, [8620-54] S13
- Hammond, Kenneth [8608-28] S13, [8608-28] S6
- Hamra, Patricia [8619-46] S12
- Hamza, Ahmed Mohammad [8572-2] S1
- Hamza, Aya Mostafa [8572-2] S1
- Hamza, Mostafa [8572-2] S1
- Hamza, Yahya Mohammad [8572-2] S1
- Hamzavi, Iltefat 8565 Program Committee, 8565 S4 Session Chair
- Han, Bin [8581-53] S8
- Han, Bing [8603-31] SPTue
- Han, Chao [8587-43] S7
- Han, Dong-Pyo [8625-56] S12
- Han, Hau-Vei [8620-59] S14, [8620-70] SPWed
- Han, Hongwei [8622-51] SPWed
- Han, Jihee [8621-18] S4
- Han, Ming-Yong [8595-7] S2
- Han, Myounghee [8565-21] S5
- Han, Qun [8621-21] S4
- Han, Sang-Kook [8645-11] S5
- Han, Sang-Pil [8604-51] SPTue, [8624-6] S3
- Han, SeungHoon [8581-107] SPSun
- Han, Tae-Hee [8641-12] S3, [8643-16] S4
- Han, Xiaoxing [8565-176] S3
- Han, Xue 8586 Program Committee
- Han, Yi-Seul [8622-40] S10
- Han, Yong [8626-53] SPWed, [8626-54] SPWed
- Han, Young-Geun [8576-11] S3, [8576-28] SPSun, [8601-77] SPTue, [8621-17] S4, [8621-19] S4
- Han, Zhaozhong [8640-28] S7
- Hanawa, Takao
- Hance, Bradley G. [8613-37] S8
- Hand, Duncan P. [8567-77] SPSun, [8576-7] S2, 8608 Program Committee
- Handa, James [8615-6] S2
- Hane, Kazuhiro [8617-3] S1
- Haney, Michael William [8629-20] S1, [8629-20] S5, 8630 Program Committee
- Hanf, Stefan [8591-27] SPWed
- Hangleiter, Andreas [8625-72] SPWed
- Hangst, Alexander [8605-37] SPTue
- Hanks, John [8615-2] S1
- Hann, Swook [8621-43] SPWed
- Hanna, Brian D. [8578-2] S1
- Hanna, Jun-ichi 8642 Program Committee
- Hanna, Marc [8601-49] S12, [8611-43] S3, [8611-43] S9
- Hanna, Simon [8637-34] S8
- Hannah, Alexander** [8581-36] S6
- Hannwald, Karsten [8626-3] S1
- Hans, Kerstin M.** [8591-16] S4
- Hanselmann, Walter [8565-166] S1
- Hansen, Anja** [8567-86] SPSun
- Hansen, Anne M. [8571-125] SPMon
- Hansen, Karolyn M. [8570-17] S4



# Index of Authors, Chairs, and Committee Members

- Hansen, Kristian Rymann [8601-73] SPTue  
Hansen, Ole [8639-12] S4  
Hanson, Albert L. [8565-235] SPSun  
Hanson, Eric [8581-91] SPSun  
Haque, Md. Rezuhanul [8565-203] S5  
Haque, Moez [8611-28] S6, [8611-30] S6  
Hara, Naoko [8567-60] SPSun  
Hara, Tetsuya [8565-11] S7  
Hara, Yukihiko [8609-5] S1  
Harada, Yoshihisa [8607-39] S11  
Harada, Yoshinori [8572-53] SPSun, [8572-56] SPSun, [8588-26] S3  
Harada, Yukihiko [8620-7] S2  
Harcloerde, Tyler P. [8584-6] S2  
Hardesty, Garrett [8638-15] S4  
Harding, David J. [8599-25] S5  
Hardt, David E. [8612-4] S1  
Hardy, Carla P. [8602-9] S3  
Hardy, Christopher R. [8565-31] SPSun  
Hariri, Amirhossein [8567-24] S5  
Hariri, Lida P. 8565 S7 Panel Member, [8565-101] S2, [8565-114] S5, [8565-117] S5, [8565-118] S5, [8571-23] S4  
Harjanne, Mikko [8629-11] S3, [8629-12] S3  
Harker, Audrey [8600-61] S14  
Harm, Walter H. [8589-24] S5  
Harmony, Zachary T. [8587-51] S8  
Harmelin, Alon [8582-4] S6  
**Harmon, Eric S.** [8619-13] S3  
Harms, Fabrice [8565-116] S5, [8565-184] S4, [8565-37] S1, [8572-21] S4  
Harmsma, Peter [8630-34] S9  
Harrer, Thomas [8603-22] S5  
**Harrington, James A.** [8576-33] S5  
**Harris, David M.** 8566 Program Committee  
**Harris, Dennis G.** 8599 Program Committee, 8599 S1 Session Chair, 8599 S2 Session Chair  
Harris, James S. [8567-8] S2, [8604-31] S7, [8619-56] S14, [8620-56] S14, [8627-26] S6, [8627-8] S2, [8640-35] S8  
Harris, R. Scott [8565-100] S1  
Harris, Ronald M. [8588-39] S6  
Harrison, Christopher K. 8614 Program Committee  
Harrison, Fenton Wallace [8601-61] S15  
Harrison, J. [8628-16] S6  
Harrison, Paul [8603-11] S3  
Harrison, Tyler [8581-11] S2  
Hart, Mark [8599-23] S5  
Hart, Robert [8594-27] S7  
Härtel, Steffen [8590-22] S6  
Hartinger, Klaus [8600-9] S3  
**Harti, Brad A.** [8568-35] SPMon  
Hartl, Ingmar [8604-25] S6  
Hartman, Katherine [8620-40] S10  
Hartmann, Claudia [8608-13] S3  
Hartmann, Jean-Michel [8628-2] S1, [8628-2] S10  
Hartmann, Peter [8591-22] SPWed, [8611-19] S4  
Hartnick, Christopher J. [8565-78] S7, [8565-80] S7  
Hartono, Michelle [8643-21] SPWed  
Hartsorn, Christopher [8588-4] S1  
Hartsuiker, Alex [8623-59] S15  
Hartwig, Haldor [8613-27] S6  
Hartwig, Lars [8603-20] S5, [8603-36] SPTue  
Hartzell, Allyson 8614 Program Committee  
Harvey, Eleanor M. [8567-77] SPSun  
Harvey, Evan [8628-14] S5  
Harvey, Ewan J. [8602-6] S2  
Harvey, Ian R. [8617-2] S1  
Hasama, Toshifumi [8640-14] S3, [8646-8] S4  
Hasan, Dihan Md. Nuruddin [8632-3] S1  
Hasan, Dihan Md. Nuruddin [8598-24] SPSUN  
Hasan, Tayyaba 8568 Conference Chair, 8568 S2 Session Chair, [8568-10] S3, [8568-17] S4, [8568-2] S1, [8568-45] SPMon, [8568-46] S7, [8568-47] S7, [8568-49] S5, [8568-6] S2, [8568-9] S3, [8578-68] S11  
**Hasan, Zameer Ul** 8631 Track Chair, 8634 Track Chair, 8635 Conference Chair, 8635 S10 Session Chair, 8635 S6 Session Chair, 8635 Track Chair, [8635-4] S1, 8636 Track Chair, 8637 Track Chair, 8638 Program Committee, 8638 Track Chair  
Hase, Eiji [8588-106] SPSun, [8588-107] SPSun  
Hasegawa, Kazuo [8621-51] SPWed  
Hasegawa, Takemi [8565-15] S9, [8572-17] S4, [8575-4] S1  
Hasegawa, Tsukasa [8608-4] S1  
Haseke, Nicolas [8565-46] S3  
**Hasenbergl, Thomas** [8565-43] S3  
Hashemi, Mohammed Reza [8624-32] S8  
Hashim, Aeffendi H. [8630-17] S4  
Hashimoto, Hiroyuki [8588-6] S1  
Hashimoto, Keiji [8625-49] S11  
**Hashimoto, Nobuyuki** 8643 Program Committee  
Hashimoto, Toshikazu [8646-6] S3  
Hashimura, Keisuke [8565-16] S8  
**Haskell, Melissa W.** [8565-19] S9, [8571-91] S4, [8575-24] S6  
Haskew-Layton, Renee E. [8588-83] SPSun  
Haslam, Bryan [8571-49] S8, [8589-40] S9  
Hasler, Karl-Heinz [8604-3] S1  
Hassan, Khaled M. [8565-20] S5  
Hassan, Mahbub 8645 Program Committee  
Hassan, Moinuddin [8576-23] S5  
Hassan, Moinuddin [8577-3] S1, [8578-85] S14  
Hassanpour, Mahlega S. [8578-42] S7, [8578-8] S2, [8578-95] SPSun  
Hassey, Andrew [8603-11] S3  
Hassis, Wala [8631-50] S10  
Hastie, Jennifer E. 8606 Conference Chair, 8606 S3 Session Chair, [8606-11] S4  
Hastings, Arthur R. [8618-22] S7  
Hastings, D. J. [8630-2] S1  
Hastings, J. Todd [8594-5] S2, [8613-5] S1, [8619-49] S12  
Hatami, Soheil [8595-55] S13  
Hatano, Takafumi [8626-17] S4, [8626-38] S9  
Hatori, Masami [8604-7] S2  
Hattasan, Nannicha [8627-6] S2, [8631-35] S7, [8633-28] S9  
Hattel, Jesper Henri [8608-23] S5  
Hatzenbichler, Markus [8618-9] S3, [8618-9] S4  
Hau, Chi M. [8591-11] S3  
Hauck, Stefanie [8595-59] S13  
Haug, Franz-Josef [8620-72] SPWed  
Haugen, Harold K. [8565-224] S2  
Haupa, Karolina [8622-13] S3  
Hauri, Christoph P. [8604-11] S3  
**Haus, Joseph W.** [8570-17] S4  
Hauschild, Dirk [8605-16] S4  
Hausladen, Florian [8565-225] S2  
Häusler, Karl [8605-27] S6  
Havel, Miriam [8565-94] S9  
Havenith, Martina 8585 Program Committee, [8585-10] S2  
Haverkamp, Tobias [8605-25] S5  
Havrilla, David L. [8603-22] S5  
Hawkins, Aaron R. 8613 Program Committee  
Hawkins, Bobby M. [8639-17] S5  
Hawkins, Thomas [8601-17] S5, [8601-18] S5, [8601-64] SPTue  
Hawthorne, Robert A. [8639-17] S5  
Hay, Nick [8607-58] SPTue  
Hayakawa, Ryo [8636-33] S7  
Hayashi, Marika [8588-21] S3  
Hayashi, Shin'ichiro [8585-2] S1  
Hayat, Majeed [8634-30] SPWed  
Haycock, John W. [8579-11] S3, [8588-115] SPSun  
Hayden, L. Michael [8604-59] SPTue  
Hayden, Oliver [8615-22] S5  
Hayes, Christopher [8590-28] S8  
Hayes, John R. [8601-99] SPTue  
Haynes, Nicholas D. [8599-37] S7  
Haynes, Roger [8604-26] S6  
Hays, Alan D. [8599-58] S11  
Hayward, Joseph E [8568-26] S7  
Hazama, Hisanao [8579-27] S6  
He, Bing [8601-44] S11  
**He, Jie** [8578-53] S9, [8578-56] S9  
He, Jingsheng [8577-10] S5  
**He, Ji Hau** [8570-26] SPSun  
He, Lina [8627-23] S6  
He, Qingli [8565-22] S5  
**He, Saiping** [8628-7] S3, [8641-74] SPWed  
**He, Sihui** [8642-24] S7  
He, Xi [8587-33] S5  
He, Xiang Nan [8607-21] S7, [8613-6] S2  
He, Zhao-Yu [8631-51] S10  
**Head, Christopher R.** [8606-20] S6, [8606-23] S7, [8606-7] S2  
Headley, Clifford 8601 Program Committee, 8601 S15 Session Chair, [8601-3] S1, [8601-5] S1  
**Healey, Christopher J.** [8600-68] S16  
Heap, Sara R. [8618-10] S4  
**Hebden, Jeremy C.** 8578 Program Committee, [8583-21] S3, [8583-21] S5  
Heber, Jörg [8586-26] S5  
Heck, Martijn J. R. [8629-36] S10, [8640-29] S7  
Hecker, Dietmar J. [8565-69] S4  
Hecker, Klaus 8643 Program Committee  
Heckl, Oliver H. [8603-10] S3, [8603-13] S4  
Heckl, Oliver H. [8601-25] S7  
Hedayati, Mohammad [8584-37] S1  
Hedges, Morgan P. [8635-23] S6  
Heebner, John E. [8601-4] S1, 8602 Program Committee, [8602-9] S3  
Heeger, Derek S. [8619-72] SPWed  
Heffter, Tamas [8584-28] S8  
Hefter, Ulrich [8601-110] SPTue  
Hegde, Gopalkrishna M. [8570-28] SPSun, [8598-25] SPSUN  
Hegde, Gurumurthy [8642-23] S7  
Heger, Andreas [8640-7] S2  
Hegmann, Frank A. [8585-26] S5  
Hegyli, Alex [8635-5] S2, [8635-5] S4  
Hehlen, Markus P. 8638 S1 Session Chair, [8638-12] S3  
Heidari, Andrew E. [8565-83] S7  
Heidari, Babak 8613 Program Committee  
Heidegger, Simon [8595-50] S11  
Heidrich, Helmut [8570-2] S1, 8627 Program Committee  
**Heidrich, Marko** [8565-110] S4  
Heidt, Gerald L. 8644 Program Committee, 8644 S6 Session Chair, [8644-21] S5  
**Heikenfeld, Jason C.** 8616 Program Committee, 8643 Program Committee  
**Heikkinen, Veli** [8630-14] S4  
Heim, Peter J. S. [8571-22] S4, [8571-8] S2  
Heimann, Jan C. [8576-19] S4  
Heimann, Marcus [8622-8] S2  
Hein, Joachim [8602-7] S2  
**Heinemann, Stefan W.** [8599-15] S3, [8603-28] S7, 8605 Program Committee, 8605 S3 Session Chair, [8605-26] S6  
Heinen, Bernd [8606-18] S6  
Heinmiller, Andrew [8581-130] SPSun, [8581-132] SPSun  
Heinrich, Emilie [8578-64] S11  
Heinrich, Matthias [8611-33] S7  
Heinrich, Sebastian [8599-9] S2, [8626-43] S11  
Heintzmann, Rainer [8589-15] S4  
Heinz, Dominik [8625-53] S12  
Heise, Gerhard [8607-11] S3, [8607-11] S9, [8611-45] S10, [8611-45] S4  
Heisel, Carina [8634-22] S5  
Heiss, Wolfgang [8631-79] S15  
Heissler, Stefan [8608-6] S1  
**Heisterkamp, Alexander** [8565-110] S4, 8611 Conference Chair, 8611 S1 Session Chair, 8611 S3 Session Chair, [8611-2] S1  
Heitkamp, Thomas [8590-11] S2  
Hejazi, Fouad [8620-3] S1  
Heldens, Jeroen [8592-45] SPSun  
Helderman, Frank [8565-104] S2, [8571-24] S4, [8571-49] S8, [8589-40] S9  
Hell, Stefan W. 8588 Program Committee  
Heller, Daniel A. [8587-14] S2  
Hellmann, Christian [8616-26] S6  
Helmy, Amr S. [8627-39] S8, [8635-43] S13  
Helou, Michael [8615-22] S5  
Helvajian, Henry 8607 Program Committee, 8607 S8 Session Chair, 8607 Track Chair, 8608 Track Chair, 8609 Track Chair, 8612 Track Chair, 8613 Track Chair, 8614 Track Chair  
Hemenway, Marty [8605-5] S1  
**Hemmati, Hamid** 8610 Conference Chair, 8610 S2 Session Chair, [8610-28] S6  
**Hemmer, Philip R.** 8596 S4 Session Chair, 8635 Conference Chair, 8635 S1 Session Chair, 8635 S10 Session Chair, 8635 S2 Session Chair, 8635 S6 Session Chair, [8635-21] S6, 8636 S1 Session Chair, [8636-6] S2  
Hempel, Hannes [8620-9] S2  
Hempel, Martin [8605-20] S5, [8640-51] S12, [8640-53] S12  
Hempler, Nils [8606-22] S7  
Henry, Maged [8596-4] S2  
Hendargo, Hansford C. [8571-19] S3  
Henderson, Barbara W. [8568-12] S3, [8568-36] SPMon  
Henderson, Eric [8613-26] S6  
Henderson, Matthew [8600-72] SPTue  
Henderson, Robert K. [8588-34] S5, [8588-44] S7  
Hendow, Sami T. 8601 Conference Chair, 8601 S14 Session Chair  
Hendrickson, Joshua R. [8624-25] S7  
Henesian, Mark A. [8602-2] S1  
Hengesbach, Stefan [8605-29] S6  
Henkel, Sheryl N. [8581-180] SPMon, [8581-181] SPMon  
Henkel, Thomas [8615-5] S1  
Henneberger, Fritz 8619 Conference Chair, [8619-34] S8, [8626-22] S5  
Hennequin, Yves [8570-22] S6, [8591-23] SPWed  
Hennig, Andreas [8595-55] S13  
Hennig, Guido 8607 Conference Chair, 8607 S1 Session Chair, [8607-12] S3, [8607-12] S9, [8607-13] S10, [8607-13] S4, 8609 S5 Session Chair



# Index of Authors, Chairs, and Committee Members

- Hennig, Petra [8605-11] S3  
Henning, Albert K. Symposium Committee, 8614 Program Committee, 8615 Program Committee, [8615-38] S8, [8615-45] S10  
Henning, Ian D. [8619-83] S9  
**Henriet, Rémi** [8600-12] S3, [8600-73] SPTue  
Henry, Charles [8570-10] S3, [8615-36] S8  
Hens, Zeger [8631-79] S15, [8634-3] S1  
**Henze, Rico** [8635-15] S4  
Henzen, Alex 8643 Program Committee  
Heo, Gyu-Seong [8596-22] S7  
Heo, Jaeyeong [8620-40] S10  
Her, Tsinghua [8600-76] SPTue  
Herbert, Deborah [8621-56] SPWed  
Herchak, Steven [8594-3] S2  
Herek, Jennifer L. [8588-25] S3  
Herford, Alan S. [8565-223] S2, [8565-227] S2  
Herman, Brian A. 8588 Program Committee  
**Herman, Peter R.** [8607-17] S11, [8607-17] S5, [8607-40] S11, 8611 Conference Chair, 8611 S7 Session Chair, [8611-28] S6, [8611-30] S6, [8611-35] S7, [8611-39] S8, [8613-16] S4, [8613-49] SPTue  
Hermani, Jan-Patrick [8601-75] SPTue  
Hermann, Gregers G. [8565-41] S2  
Hermann, Vanessa [8608-6] S1  
Hermans, Martin [8608-7] S2  
Hernández, Estela [8620-18] S5  
Hernandez, Travis [8581-175] SPMon, [8581-22] S4  
Hernandez, Victor [8586-13] S2, [8586-4] S1  
Hernandez, Victor M. [8567-29] S6  
Hernández-Adame, Luis [8626-61] SPWed  
Hernandez-Figueroa, Hugo Enrique [8627-17] S4, [8627-43] SPWed  
Hernandez-Palacios, Julio E. [8565-23] S6  
Herr, Tobias [8600-9] S3  
Herrick, Robert W. [8639-20] S5  
Herrmann, Andreas [8588-30] S4  
Herrmann, Hans W. [8602-11] S3  
Herrmann, Inge K. [8595-41] S9  
**Herrmann, Kristen** [8568-18] S4  
Herrmann, Rolf [8571-46] S7  
**Hersam, Mark C.** [8631-39] S8  
Hershberger, Jeff [8606-27] SPTue  
Hershey, Tamara [8572-14] S3  
Hershman, Dawn L. [8578-19] S4  
Hervé, Lionel [8572-27] S5, [8578-26] S5, [8578-64] S11, [8578-79] S13  
Hervey, Nathan [8565-196] S5, [8565-198] S5  
Herzig, Hans Peter [8613-45] SPTue, [8613-46] SPTue  
**Hess, Ortwin** 8619 Program Committee, [8619-39] S10, 8636 Program Committee, 8636 S7 Session Chair, [8636-27] S6  
Hessenius, Chris [8631-68] S12  
Heuck, Mikkel [8636-11] S2  
Heuer, Axel [8605-28] S6, [8640-56] S13  
Heuken, Michael 8641 Program Committee, 8641 S11 Session Chair, [8641-47] S10, [8641-9] S2  
**Heussner, Nico** [8579-17] S4  
Hewak, Dan W. [8621-3] S1  
Heylings, Jon [8580-15] S2  
Heywood, Mark [8572-38] S7  
Hibbs-Brenner, Mary [8565-211] S4, [8639-10] S3, [8639-4] S2  
Hibino, Yoshinori [8646-5] S3  
Hibst, Raimund [8565-225] S2  
Hickerson, Anna [8615-20] S5  
Hickmann, Jandir Miguel [8622-12] S3, [8637-18] S3, [8637-5] S1  
**Hielscher, Andreas H.** 8578 Program Committee, 8578 S7 Session Chair, [8578-19] S4, [8578-27] S5, [8578-41] S7, [8578-54] S9, [8578-59] S10, [8578-60] S10, [8578-74] S12, [8581-109] SPSun  
Hierold, Christofer [8614-15] S3  
Higashi, Takaya [8632-76] SPWed  
Higashihata, Mitsuhiro [8607-2] S1, [8607-2] S5, [8626-30] S7, [8626-31] S7  
Higashino, Takeshi [8645-19] S6  
Higashitani, Asa [8604-9] S2  
Higo, Akio [8616-32] S7  
Higuchi, Akira [8639-22] S6  
Higurashi, Eiji [8616-32] S7  
Hild, Konstanze [8640-64] S14  
Hildebrandt, Lars [8640-7] S2  
Hildebrandt, Niko 8595 Program Committee, 8595 S8 Session Chair, [8595-43] S10  
Hilleto, Denise [8567-41] S8  
Hill, Brian [8578-96] SPSun  
Hill, Cory J. [8631-24] S5, [8631-25] S5  
Hill, David B. [8571-74] S11  
Hill, Elizabeth [8602-12] S4, [8602-13] S4, [8602-14] S4  
Hill, Richard [8606-27] SPTue  
Hillerkuss, David [8600-9] S3, [8613-31] S7  
Hillier, David Ianto [8602-6] S2  
Hillman, Elizabeth M. [8565-216] S3, 8586 Program Committee  
Hillman, Timothy R. [8587-32] S5  
Hillmann, Dierck [8571-3] S1, [8571-59] S9  
Hilz, Laurent 8602 Program Committee  
Hilzensauer, Sascha Alexander [8640-62] S14  
Himeno, Kuniharu [8601-94] SPTue  
Hinkey, Robert T. [8640-25] S6  
**Hinnrichs, Michele** [8616-41] S9  
Hinschaw, James Louis [8584-5] S2  
Hinterman, Thomas [8602-14] S4  
Hirakawa, Kazuhiko 8623 Program Committee  
Hiraki, Tatsuro [8628-5] S3  
Hiramatsu, Kazumasa [8625-14] S3, [8625-63] S14  
Hirano, Mitsuharu [8565-15] S9, [8572-17] S4  
Hirao, Kazuyuki [8607-31] S9  
Hirasawa, Takeshi [8581-113] SPSun, [8581-165] SPMon  
Hirayama, Hideki 8625 Program Committee, [8625-39] S9, [8625-59] S13  
Hirohashi, Junji [8604-7] S2  
Hirohata, Toru [8635-32] S6, [8635-32] S9  
Hironaka, Keiichiro [8641-36] S8  
Hirori, Hideki [8604-10] S3  
Hirose, Futoshi [8567-12] S3  
Hirose, Mika [8571-94] SPMon  
Hirschberg, Henry 8565 Conference Chair, [8565-192] SPSun  
Hirschi, Werner [8565-166] S1  
Hirsehorn, Olaf [8605-11] S3  
Hirson, Desmond [8581-130] SPSun, [8581-132] SPSun  
**Hirst, Evan R.** [8580-6] S1, [8580-7] S1  
Hirst, Louise C. [8620-51] S12  
Hite, Jennifer K. [8604-30] S7  
**Hitzenberger, Christoph K.** [8567-12] S3, [8567-15] S3, [8567-16] S3, [8567-25] S5, [8567-39] S7, 8571 Program Committee, [8571-40] S7, [8571-44] S7, [8571-45] S7, [8571-77] S12  
**Hiwatashi, Fumiko** [8571-11] S2  
Hjeltnestad, David P. [8567-66] SPSun, [8567-69] SPSun  
Hlawatsch, Nadine [8615-21] S5, [8615-27] S6  
Ho, Allen [8615-6] S2  
Ho, Arthur 8567 Conference Chair, 8567 S10 Session Chair, 8567 S11 Session Chair, 8567 S5 Session Chair, 8567 S9 Session Chair, [8567-19] S4, [8567-29] S6  
Ho, Chien-Wa [8597-15] S4, [8597-36] S8  
Ho, Chong-Long [8626-56] SPWed, [8631-90] SPWed  
Ho, D. [8628-16] S6  
Ho, Ho-Pui A. [8588-99] SPSun, 8597 Program Committee  
Ho, Hsin-Chia [8583-5] S2  
Ho, I-Ching [8581-157] SPMon  
Ho, Khek Yu [8576-12] S3, [8577-15] S7  
Ho, Ming-Tsung [8631-22] S4, [8640-42] S10  
Ho, Seng-Tiong [8628-21] S7, [8629-13] S3, [8629-38] S10  
Ho, Thuan [8576-22] S4  
Ho, Yi-Ching [8582-16] S2  
Hoang, Anh Minh [8631-98] S10, [8631-99] S10  
Hoang, Thang B. [8632-2] S1, [8632-25] S6, [8632-26] S6  
Hoch, Gerhard [8586-13] S2, [8586-4] S1  
**Hochberg, Michael** [8630-39] S1, [8630-39] S10  
Hochreiner, Armin [8581-112] SPSun  
**Hode, Lars** [8569-1] S1  
Hode, Tomas 8569 Program Committee, 8569 S4 Session Chair, [8569-1] S1, [8569-17] S4, 8582 Program Committee, 8582 S3 Session Chair, [8582-10] S2, [8582-11] S3, [8582-16] S4, [8582-20] SPTues, [8582-9] S2  
Hodge, Sasson [8584-14] S5  
Hodgson, Norman 8599 Program Committee  
Hodics, Timea [8565-196] S5  
Hoekman, Marcel [8629-5] S1  
Hoeller, Frank [8616-11] S3  
Hoenders, Bernhard J. [8581-134] SPSun  
Hoener, Kylan [8605-5] S1  
Höfer, Marco [8565-226] S2, [8599-49] S4, [8599-49] S9  
Hoffman, Angelika [8595-55] S13  
Hoffman, Evan D. [8610-3] S1  
Hoffman, Jonathan E. [8637-31] S7  
Hoffman, Lisa [8578-76] S12  
**Hoffman, Robert M.** [8588-38] S6  
Hoffmann, Axel 8625 S6 Session Chair, [8625-20] S5, 8626 Program Committee, 8634 Program Committee, [8634-29] S2  
Hoffmann, Hans-Dieter [8599-16] S3, [8599-49] S4, [8599-49] S9, [8605-29] S6  
Hoffmann, Joerg [8613-31] S7  
Hoffmann, Katrin [8595-55] S13, [8596-17] S5  
Hoffmann, Marc [8631-65] S12  
Hoffmann, Martin [8616-12] S3, [8616-37] S8, [8616-7] S2  
Hoffmann, Martin [8601-25] S7, [8606-5] S2  
Hoffmann, Nico [8565-183] S4  
Hoffmann, Thomas [8640-60] S13  
Hoffkens, Johan 8590 Program Committee  
**Höfling, Sven** [8619-32] S8, 8631 S2 Session Chair, [8631-59] S11, [8631-95] S18, [8632-25] S6, [8635-10] S3, [8635-46] S13  
**Höfmann, Dietrich** [8615-8] S2  
Hofmann, Martin R. [8589-56] SPWed, [8592-41] S9, [8623-9] S3  
Hofmann, Ulrich [8612-18] S4, [8613-44] SPTue, [8616-9] S2  
Hofmeister, Paul Gerke [8601-100] SPTue  
Hogan, Alexander L. [8617-2] S1  
Hogan, Josh N. [8580-20] S4  
Hogan, William K. [8639-4] S2  
Hogg, James C. [8588-64] S9  
Hoheisel, Raymond [8620-30] S8, [8620-53] S11, [8620-53] S13  
Höhm, Sandra [8607-6] S2, [8607-6] S6  
Hohmann, Martin [8572-31] S6  
Hokansson, Adam S. [8576-5] S1  
Hokka, Jussi [8614-7] S2  
Holc, Katarzyna A. [8586-4] S1, [8613-40] S8, [8625-38] S8  
Holder, Casey [8639-5] S2  
Holgado Bolaños, Miguel 8608 Program Committee  
Holl, Lukas [8579-17] S4  
Holland, Eric C. [8581-15] S3  
Holleitner, Alexander [8623-47] S12  
Holler, Stephen [8600-63] S15  
Holleville, David [8606-28] S8  
Hollingsworth, Jennifer A. 8595 Program Committee  
Hollmach, Julia [8565-183] S4  
Hollmann, Joseph L. [8581-135] SPMon, [8589-14] S3  
Hollowell, Andrew Eugene [8632-60] S13, [8643-12] S3  
Holmes, Christina [8580-13] S2  
Holmes, Christopher H. [8614-19] S4, [8621-6] S2, [8627-28] S7, [8627-29] S7  
Holmes, Crystal [8577-17] S7  
Holmstrom, Petter [8628-4] S11, [8628-4] S2  
Holt, Robert W. [8574-3] S1, [8578-69] S11, [8578-81] S13  
Holte, Noah [8636-36] S8  
Holtom, Gary R. [8588-13] S2, [8588-80] SPSun, [8588-82] SPSun  
Holzer, Marco [8603-22] S5  
Holzmann, Dominik [8616-45] SPTue  
Holzmeister, Phil [8595-10] S2  
**Holzwarth, Ronald** [8600-9] S3  
**Homan, Kimberly A.** [8581-132] SPSun, [8581-36] S6  
Homburg, Oliver [8602-3] S1, [8605-3] S1  
Homer, Marc J. [8578-22] S4  
Homer, Pavel [8600-6] S2  
Hommelhoff, Peter [8623-38] S10  
Hömmlicher, Uwe H. [8599-39] SPTue, [8621-45] SPWed  
**Homola, Jiri** 8570 Program Committee, 8597 Program Committee  
Homyk, Andrew [8632-11] S3  
**Honda, Norihiro** [8565-24] S9, [8579-27] S6  
Honda, Tohru [8625-1] S1  
Honda, Toshio 8644 Program Committee  
Honda, Toshiyuki [8637-45] SPWed  
Honda, Yoshio [8625-17] S4  
Hondebrink, Erwin [8581-29] S5  
Honea, Eric C. 8599 S9 Session Chair, 8601 Program Committee, 8601 S4 Session Chair, [8601-36] S9  
Hong, Byung Hee [8641-12] S3  
Hong, Chang-Hee [8641-27] S6  
Hong, Hyun-Gi [8641-7] S2  
Hong, Kihyon [8622-9] SPWed  
Hong, Kyung Jin [8622-54] SPWed  
**Hong, Minghui** 8608 Program Committee  
Hong, Tae Y. [8622-6] S2  
Hong, Wei-Kei [8631-90] SPWed  
Hong, Young-Joo [8567-2] S1, [8567-4] S1, [8571-14] S3, [8571-18] S3  
Hönig, Gerald [8634-29] S2  
Honjo, Keiji [8625-6] S2  
**Honkanen, Seppo K.** [8613-11] S3, 8621 Program Committee  
Honma, Michinori [8642-5] S2  
Honma, Satoshi [8647-11] S5  
Hönninger, Clemens [8599-42] S8, [8611-18] S4, [8611-21] S5, [8611-43] S3, [8611-43] S9

# Index of Authors, Chairs, and Committee Members

- Honsberg, Christiana B. 8620  
Program Committee, 8620 S4  
Session Chair
- Hood, R. Lyle** [8576-15] S3
- Hooi, Fong Ming [8581-121] SPSun
- Hoopes, P. Jack [8568-50] SPMon,  
[8578-68] S11, 8584 Program  
Committee, [8584-1] S1, [8584-12]  
S4, [8584-13] S5, [8584-15] S5,  
[8584-16] S5, [8584-17] S5, [8584-  
18] S5, [8584-2] S1, [8584-3] S10,  
[8584-35] S10
- Hoose, Tobias [8613-31] S7
- Hopfer, Friedhelm [8639-19] S5
- Höpfner, Henning** [8623-9] S3
- Hopkins, F. Kenneth** 8622 Program  
Committee
- Hopkins, John-Mark [8606-8] S3
- Hopkins, P. [8632-30] S7
- Hopps, Nicholas W. [8602-6] S2
- Horiguchi, Naoto [8609-12] S3
- Horilova, Julia** [8588-32] S5
- Horn, Rolf Tjalle [8635-43] S13
- Hornegger, Joachim [8567-27] S5,  
[8567-32] S6, [8571-13] S3, [8571-  
22] S4
- Hornig, Ray-Hua** [8620-73] SPWed,  
[8626-12] S3, [8626-47] S12, [8641-  
26] S6, [8641-43] S10, [8641-72]  
SPWed
- Horowitz, Viva R.** [8635-11] S4
- Horrom, Travis [8636-42] S8
- Horsley, David A. [8633-15] S5, [8633-  
16] S5
- Horton, Matthew [8597-35] S8
- Horton, Nicholas G. [8588-91] SPSun
- Horwitz, James S. 8607 Track Chair,  
8608 Track Chair, 8609 Track Chair,  
8612 Track Chair, 8613 Track Chair,  
8614 Track Chair
- Hosaka, Tomoya [8581-62] S9
- Hosako, Iwao [8645-2] S2
- Hoshi, Masayuki [8604-7] S2
- Hoshi, Sujin [8567-13] S3, [8567-14] S3
- Hoshi, Yoko [8578-117] SPSun
- Hoshida, Takeshi [8647-19] S7
- Hoshikawa, Masaharu [8608-4] S1
- Hoshino, Hitoshi [8625-6] S2
- Hoshino, Kazunori [8616-6] S2
- Hosoi, Ryo [8636-33] S7
- Hossack, John A. [8565-5] S4
- Hossain, Mohammed I. [8640-27] S6
- Hossain, Nadir** [8640-32] S7
- Hosseini, Abbas [8608-12] S3
- Hosseini, Amir [8624-44] S11, [8629-  
51] SPWed, [8630-38] S9, [8630-  
45] SPWed, [8630-9] S2
- Hosseini-Zadeh, Mani** [8621-27] S6
- Hoste, Jan-Willem [8629-4] S1
- Hosten, Onur [8635-24] S7
- Hostens, Jeroen [8565-107] S3
- Höth, Julian [8615-55] SPTue
- Hou, Fanzen [8621-15] S3
- Hou, Kai-Chung [8616-21] S5
- Hou, Qiang [8578-106] SPSun
- Hou, YingFan [8618-16] S5
- Houbertz-Krauss, Ruth** 8630  
Program Committee, 8630 S9  
Session Chair, [8630-1] S1, [8630-  
36] S9, [8630-8] S2
- Houdré, Romuald [8637-9] S2
- Houser, Grace [8565-109] S4, [8565-  
121] S6
- Houzelle, Y. [8621-29] S6
- Hoveling, Richelle** [8587-8] S1
- Hovis, Floyd E.** [8599-23] S5, [8599-  
24] S5
- Hovsepyan, Ruben K. [8626-63]  
SPWed, [8626-64] SPWed
- Howard, Eric [8582-11] S3, [8582-20]  
SPTues
- Howard, Scott S. [8588-83] SPSun
- Howe, Jana M. [8565-85] S8
- Howell, John C.** 8635 S9 Session  
Chair, [8635-27] S7, 8636 Program  
Committee, [8636-31] S7, 8637 S6  
Session Chair
- Howland, Greg A. [8635-27] S7
- Hoy, Chris [8578-25] S5
- Hoyer, Patricia B. [8577-24] S9
- Hoyer, Patrick [8624-47] S11
- Hramov, Alexander E. [8580-48]  
SPMon, [8580-49] SPMon
- Hrebicek, Jan [8600-6] S2
- Hrelescu, Calin [8595-32] S8
- Hrozhyk, Uladzimir [8642-26] S8
- Hryciw, Aaron C. [8600-68] S16
- Hsiang, David J. [8578-15] S3
- Hsiao, Yi-Sing** [8581-72] S10
- Hsieh, Chieh [8625-44] S10, [8625-5]  
S1, [8641-16] S4, [8641-29] S6,  
[8641-39] S9
- Hsieh, Chih-Yi** [8626-58] SPWed,  
[8641-19] S4, [8641-32] S7
- Hsieh, Pin-Chun [8628-15] S6
- Hsieh, Shuchen [8570-26] SPSun
- Hsieh, Tong-Sheng [8597-36] S8
- Hsieh, Yao-Sheng [8565-169] S5,  
[8566-8] S2, [8566-9] S2, [8572-8]  
S2
- Hsieh, Yuan Tsung [8588-65] S10,  
[8588-75] SPSun
- Hsiung, Pei-Lin [8590-17] S4
- Hsu, I. C. Joe [8584-29] S8
- Hsu, Jin-Cherng [8621-40] SPWed,  
[8626-55] SPWed
- Hsu, Ke-Fang [8641-67] SPWed
- Hsu, Ken-Yuh** [8600-29] SPTue
- Hsu, Kevin [8571-106] SPMon
- Hsu, Kuo-Jen** [8588-70] S10
- Hsu, Mike S. [8571-125] SPMon,  
[8571-126] SPMon
- Hsu, Shi-Ya [8570-26] SPSun
- Hsu, Ta-Cheng [8625-25] S6
- Hsu, Wen-Ti [8570-26] SPSun
- Hsu, Yih-Chih 8582 Program  
Committee, 8582 S4 Session Chair,  
[8582-8] S4
- Hsu, Yung-Jung [8641-73] SPWed
- Hsu, Yun-Wei [8586-10] S2
- Hsueh, Kuang-Po [8626-57] SPWed
- Hu, Chen** [8631-79] S15
- Hu, Chih-Wei [8588-76] SPSun
- Hu, Fei [8599-57] S11
- Hu, Hongyu [8647-23] S10, [8647-23]  
S9
- Hu, Hung-Lieh [8641-26] S6
- Hu, I-Ning** [8601-57] S14, [8601-8] S2
- Hu, Juejun [8600-20] S5
- Hu, Junqiang [8647-8] S4
- Hu, Lili 8621 Program Committee
- Hu, Min [8622-51] SPWed
- Hu, Qi [8604-28] S6
- Hu, Qing [8585-7] S1
- Hu, Song** [8581-182] SPMon, [8581-  
83] S11, [8581-84] S11
- Hu, Wei [8642-15] S5
- Hu, Weiwei 8633 Program Committee
- Hu, Wenchuang 8622 S10 Session  
Chair, [8622-36] S9
- Hu, Xiaoge [8581-178] SPMon
- Hu, Ying S.** [8590-30] S8
- Hu, Youfang [8629-18] S4
- Hu, Yue [8595-12] S3
- Hu, Yun-Fu Meeting VIP, [8573-14] S4
- Hu, Zhihong [8567-24] S5
- Hua, Hong** [8573-8] S2, [8589-1] S1
- Hua, Lei [8621-63] SPWed
- Hua, Lei [8613-56] SPTue
- Hua, Ting-Xuan [8644-22] S6
- Huaman, Jose C. [8621-55] SPWed
- Huang, Anping [8636-26] S5
- Huang, Brendan** [8565-119] S6,  
[8593-16] S4
- Huang, Chao [8581-4] S1, [8581-5] S1
- Huang, Chih-Hsien [8581-78] S11,  
[8616-4] S1, [8616-4] S7
- Huang, Chou-Hsiung [8641-2] S1
- Huang, Danhong [8632-58] S13
- Huang, David** [8567-20] S4, [8567-27]  
S5, [8571-13] S3, [8571-15] S3
- Huang, Duanni [8638-6] S2
- Huang, Guanghao [8627-50] SPWed
- Huang, Hao [8647-6] S4
- Huang, Heng [8595-39] S9
- Huang, Hsiang-Hung [8632-75]  
SPWed
- Huang, Huan [8607-19] S12, [8607-19]  
S6, [8611-42] S3, [8611-42] S9
- Huang, Jialiang [8608-27] S13, [8608-  
27] S6
- Huang, Jian-Jang** [8594-19] S5
- Huang, Jianmin [8619-82] SPWed
- Huang, Jie** [8601-119] SPTue, [8601-  
120] SPTue, [8613-56] SPTue,  
[8621-21] S4, [8621-63] SPWed,  
[8622-56] SPWed, [8626-66]  
SPWed
- Huang, Joyce Yanqiao [8590-17] S4
- Huang, Jungang [8622-33] S8, [8647-  
24] S10, [8647-24] S9
- Huang, Kai [8635-3] S1
- Huang, Kai-Feng [8606-21] S7, [8606-  
24] S7
- Huang, Ko-Fan [8597-26] S6
- Huang, Kuo-Min [8631-90] SPWed
- Huang, Leaf [8582-8] S4
- Huang, Po-Yen [8645-22] S7, [8645-  
22] S7B
- Huang, Robin K. 8631 Program  
Committee
- Huang, Ruimin [8581-15] S3
- Huang, Shanshan [8596-6] S2
- Huang, Shan-Shan
- Huang, Shenghong [8639-2] S1
- Huang, Sheng-Lung L. [8601-67]  
SPTue, [8601-84] SPTue
- Huang, Teng-Hsing [8641-23] S5
- Huang, Tzu-Hsuan [8626-56] SPWed,  
[8631-90] SPWed
- Huang, Wei-Cheng [8566-9] S2
- Huang, Weijun [8576-8] S2
- Huang, Wei-Ping [8628-12] S5
- Huang, Xi [8607-21] S7
- Huang, Xue [8640-41] S10
- Huang, YanYi [8588-23] S3
- Huang, Yen-Chih [8596-7] S2
- Huang, Yi-An [8581-159] SPMon
- Huang, Yidong 8630 Program  
Committee, [8630-44] SPWed
- Huang, Yi-Kai [8619-47] S12
- Huang, Yimei [8571-105] SPMon,  
[8596-10] S3
- Huang, Ying-Ying [8569-13] S3
- Huang, Yi-Pai** 8643 Program  
Committee
- Huang, Yong [8640-22] S5, [8640-48]  
S11
- Huang, Yong [8565-172] S2, [8567-78]  
SPSun, [8571-57] S9, [8571-60] S9,  
[8571-85] SPMon
- Huang, Yong-Zhen** [8600-56] S13
- Huang, Yue-Kai [8647-8] S4
- Huang, Zheng 8582 Program  
Committee, 8582 S1 Session Chair,  
[8582-7] S1
- Huang, Zhen-Li** [8589-48] S11,  
[8590-32] S9
- Huang, Zhihong [8628-1] S1, [8628-1]  
S10, [8635-13] S4
- Huang, Zhilei [8630-44] SPWed
- Huang, Zhiwei** [8572-41] S8, [8576-  
12] S3, 8577 Program Committee,  
8577 S5 Session Chair, [8577-15]  
S7, [8577-21] S8, [8588-9] S1
- Huante-Ceron, Edgar [8629-26] S7
- Hubbard, Seth M. 8620 Program  
Committee, 8620 S15 Session  
Chair, [8620-21] S5, [8620-32] S8,  
[8620-34] S8
- Hubbs, John E.** 8631 Program  
Committee
- Hubenthal, Frank [8609-11] S3, [8609-  
2] S1
- Huber, Alexandra [8595-55] S13
- Huber, Bernhard [8623-7] S3
- Huber, Günter [8599-5] S2, [8599-9]  
S2, [8626-43] S11
- Huber, Heinz Paul [8607-11] S3, [8607-  
11] S9, [8611-45] S10, [8611-45] S4,  
[8611-46] S10, [8611-46] S4
- Huber, Robert A.** [8567-15] S3, [8567-  
22] S4, 8571 Program Committee,  
8571 S5 Session Chair, [8571-1]  
S1, [8571-128] SPMon, [8571-9] S2,  
[8601-11] S3
- Huber, Rupert 8623 Program  
Committee, 8623 S6 Session Chair,  
[8623-6] S3
- Huber, Tobias [8635-43] S13
- Hubler, Zita [8565-13] S2
- Hübner, Peter [8603-20] S5
- Huda, Gazi M.** [8619-49] S12
- Huda, Quamrul** [8612-13] S3, [8629-  
52] SPWed, [8631-61] S11
- Hudson, Eric [8600-14] S4
- Hue, Jean B. [8570-24] S6
- Huebner, Philipp [8613-31] S7
- Huefner, Anna [8597-5] S2
- Hülensbusch, Thomas [8599-22] S5
- Huelsewede, Ralf [8605-11] S3
- Huet, Vincent [8600-16] S4
- Huffaker, Diana L. 8634 Conference  
Chair, [8634-30] SPWed
- Hugger, Stefan [8631-15] S17, [8640-  
49] S11
- Huggett, Matthew T. [8568-10] S3,  
[8568-49] S5
- Hughes, David H.** 8635 Program  
Committee
- Hughes, Lawrence C. [8631-22] S4,  
[8640-42] S10
- Hughes, Thomas [8596-29] S9, [8596-  
34] SPMon
- Hugi, Andreas [8640-20] S5
- Hugonin, Jean-Paul [8631-69] S13
- Hugonnot, Emmanuel [8600-78]  
SPTue, [8601-47] S12
- Huh, Jae-Hoon [8619-1] S1
- Huh, Yong-Min [8585-31] S6
- Hui, Pui-Chuen [8632-35] S7
- Hui, Wan [8588-98] SPSun
- Huie, Philip [8567-8] S2, [8567-9] S2
- Huignard, Jean-Pierre [8581-58] S8,  
8631 Program Committee, [8636-8]  
S2
- Hulme, Jared [8640-29] S7
- Humar, Matjaz [8642-13] S5
- Humayun, Mark [8615-6] S2
- Humbert, Georges J. [8621-26] S5
- Humphreys, Colin J. [8625-58] S12,  
[8625-92] S4
- Hung, Chih Tsang [8605-39] SPTue
- Hung, Chung-Hong [8634-30] SPWed
- Hung, Sheng Chun [8619-15] S4
- Hung, Wei-Chun [8587-62] SPMon
- Hung, Yu-Chueh [8622-25] S6, [8622-  
42] S10, [8632-75] SPWed
- Hung, Yu-Ting [8592-42] S9
- Hunker, Jeffrey D.** [8613-37] S8,  
[8613-38] S8
- Hunnekuhl, Michael [8599-22] S5
- Hunt, Michael [8599-18] S4
- Hunziker, Urs W. [8607-53] SPTue
- Huo, Tiancheng [8571-121] SPMon
- Huo, Yingdong [8594-23] S6
- Hupel, Christian [8616-21] S5
- Huppert, Theodore J. [8565-163] S5,  
[8574-18] S4, [8574-26] SPSun,  
[8578-5] S1, [8580-14] S9
- Hur, Soojung Claire [8587-38] S6
- Hurd, Edward J. [8604-2] S1
- Hurley, Bryan P. [8565-111] S4
- Hurtado, Antonio [8619-83] S9, [8625-  
27] S6
- Husain, Mushahid [8622-63] SPWed
- Husaini, Saima [8606-12] S4
- Husein, Nor Ain [8636-45] S9
- Huser, Thomas R. [8587-25] S4, 8590  
Program Committee
- Huss, Anja [8590-22] S6
- Hussain, Altaf [8581-29] S5
- Hussain, Sajid [8639-8] S3
- Hussain, Syed F. [8565-82] S7



# Index of Authors, Chairs, and Committee Members

- Hussain, Zahid [8623-7] S3  
Hussey, Dianne [8602-6] S2  
Hussey, Lindsay [8625-9] S14  
Huster, Rolf [8616-34] S7  
Huston, Alan [8595-44] S10  
**Hutchens, Thomas C.** [8565-193] S2, [8565-39] S2, [8565-4] S8, [8565-44] S3, [8567-80] SPSun  
Hutchinson, Joel [8601-101] SPTue  
Hutin, Louis [8614-3] S1  
**Hüttmann, Gereon** [8571-118] SPMon, [8571-3] S1, [8571-59] S9  
Huyberegts, Guido [8626-74] SPWed  
Huynh, Joanne [8585-15] S3  
Hwang, David Jae-Seok 8607 S13  
Session Chair, 8607 S7 Session Chair, [8607-37] S11, [8607-42] S12, [8607-45] S12, 8608 S6 Session Chair  
Hwang, Ho Sik [8567-51] S9, [8574-9] S2  
Hwang, Jeeseong 8573 Program Committee, 8573 S6 Session Chair, [8573-13] S3, [8573-13] S5, [8573-22] S6, [8573-23] S6, [8583-8] S2  
Hwang, Jeong-Ki 8639 Program Committee  
Hwang, Jeoung-Yeon [8642-32] SPWed  
Hwang, Jongil [8625-49] S11  
Hwang, Jung-Min [8641-67] SPWed  
Hwang, Lee [8565-172] S2  
Hwang, Sungwoo [8625-45] S10  
Hwang, Sunyong [8619-73] SPWed, [8641-4] S1  
Hwang, Tae-sang [8607-54] SPTue  
Hwang, Yu Jer [8587-75] SPMon, [8587-79] SPMon  
Hwu, R. Jennifer 8624 Program Committee, 8624 S7 Session Chair  
Hyllus, Philipp [8637-26] S5, [8637-26] S8  
Hynes, Michael [8581-154] SPMon  
Hynynen, Kullervo H. [8588-94] SPSun  
Hysi, Eno [8581-138] SPMon, [8581-141] SPMon  
Hyun, Daryl Chulho [8565-113] S4, [8565-97] S1, [8565-98] S1  
Hyvärinen, Outi [8604-37] S8
- 
- Iakovlev, Vladimir [8639-3] S1  
Iakovlev, Vladimir [8606-14] S5, [8639-27] S7  
Ianoul, Anatoli I. [8597-10] S3, [8597-11] S3, [8620-3] S1, [8623-54] S14  
Ibarra-Escamilla, Baldemar [8601-82] SPTue, [8601-86] SPTue, 8604 Program Committee, 8604 S7 Session Chair, 8604 S8 Session Chair, [8604-21] S5  
**Ibey, Bennett L.** 8585 Conference Chair, 8585 S2 Session Chair, [8585-25] S4, [8585-27] S5, [8585-28] S5, [8585-29] S5, [8585-37] S4  
Ibn-Elhaj, Mohammed [8642-21] S7  
Ichihashi, Yasuyuki [8644-10] S3  
Ichii, Kentaro [8601-94] SPTue  
Ichikawa, Ryo [8576-26] S5  
Ichikawa, Satoshi [8626-50] S11  
Ichikawa, Tsubasa [8644-13] S4  
Ida, Taiichiro [8581-62] S9, [8581-8] S1  
**Ide, Masafumi** [8643-11] S3, [8643-13] S3  
**Idehenre, Ighodalo** [8570-17] S4  
Idir, Mourad [8625-65] S14  
Iefuji, Minako [8635-26] S7  
Iezekiel, Stavros [8645-10] S5  
**Iftimia, Nicusor** [8567-35] S7, [8567-37] S7, [8571-132] SPMon, [8572-19] S4  
Ignatov, Andrey [8619-68] SPWed  
Iguchi, Haruka [8623-5] S2  
Iiyama, Noriko [8645-6] S4
- Ikeda, Kazuya [8625-31] S7  
Ikeda, Koichi [8614-2] S1  
Ikeda, Kyohei [8644-16] S4  
Ikeda, Tatsuhiko [8627-2] S1  
Ikemura, Kenji [8574-5] S1  
Ikenoue, Hiroshi [8626-30] S7  
Ikeuchi, Tadashi [8630-32] S8  
Ikonic, Zoran [8629-32] S9, [8640-27] S6  
Ikuno, Yasushi [8567-60] SPSun  
Ikyo, Barnabas Achakpa [8640-64] S14  
Ilancheran, Arunachalam [8572-41] S8  
**Ilchenko, Vladimir S.** 8600 Conference Chair, 8600 S15 Session Chair, 8600 S3 Session Chair, [8600-11] S3, [8600-17] S5, [8600-18] S5, [8600-51] S6, [8600-53] S13  
Ilday, Fatih Ö. [8581-136] SPMon  
**Ilev, Ilko** [8567-28] S6, [8567-82] SPSun, 8576 Program Committee, [8576-23] S5, [8579-10] S3  
Ilgayev, Ovidia [8575-19] S5  
**Ignier, Justus F.** 8565 Conference Chair, 8565 S1 Session Chair, 8565 S2 Session Chair, [8565-61] S2  
Ilhan, Hazar Aytakin [8644-11] S3, [8644-12] S3  
Illesova, Aniko [8588-32] S5  
Im, Changkyun [8565-190] SPSun  
Imai, Hiroshi [8635-26] S7  
Imai, Koichi [8604-7] S2  
Imai, Yusuke [8565-221] S1  
Imaizumi, Katsuichi [8572-56] SPSun  
Imanishi, Nobuaki [8565-33] S8  
Imgrunt, Waleri [8605-3] S1  
Imhof, Sebastian [8629-40] S11  
**Imperinetti, Pierre** [8624-45] S11  
Imre, Sandor [8635-18] S5  
In, Jungbin [8608-18] S4  
Inam, Faraz A. [8635-14] S4  
Inamdar, Tejas [8615-16] S4  
Inami, Wataru [8622-11] S3  
Inbar, Eran [8601-54] S13  
Inder, Terrie E. [8572-15] S3  
Infusino, Scott [8565-80] S7  
Ingargiola, Antonino [8590-2] S3, [8590-3] S3  
Ingram, Davis R. [8571-82] S12, [8580-28] S5  
Inguscio, Massimo [8631-3] S1  
Inoue, Haruyuki [8632-76] SPWed  
Inoue, Junichi [8633-31] S10  
Inoue, Katsushi [8579-27] S6  
**Inoue, Mitsuteru** [8632-9] S2  
Inoue, Narumi [8607-4] S1, [8607-4] S5  
Inoue, Norihiro [8604-49] SPTue  
Inoue, Shin-ichiro [8622-28] S7, [8627-3] S1, [8641-36] S8  
Inoue, Takashi [8608-4] S1, [8608-8] S2  
Inoue, Tsuyoshi [8571-94] SPMon  
Inoue, Yo [8642-10] S3  
Insinna, Masimiliano [8576-30] S5  
Intemann, Steffan [8630-28] S7, [8639-18] S5  
Intes, Xavier 8574 Conference Chair, 8574 S2 Session Chair, 8574 S5 Session Chair, [8578-80] S13  
Inyang, Aloysius [8605-30] S7  
Inzana, Jason [8565-219] S1  
Ionescu, Diana N. [8565-99] S1  
Ioppolo, Tindaro [8600-65] S15  
Iordachescu, Adrian [8619-75] SPWed  
Ip, Ezra [8647-8] S4  
Ipus, Erick [8583-13] S3  
Irby, Pierce B. [8565-42] S3, [8565-44] S3  
Irie, Masashi [8625-17] S4  
Irving, D. [8625-91] S14  
Irwin, David A. [8605-2] S1  
Isabelle, Martin E. [8568-9] S3  
Isac, Nathalie [8625-67] S14  
Isakoff, Steven J. [8578-18] S3  
Ischer, Reul [8614-6] S2
- Isella, Giovanni [8623-15] S4, [8623-8] S3, [8628-2] S1, [8628-2] S10, [8629-40] S11  
Ishida, I. [8647-14] S6  
**Ishida, Shutaro** [8565-106] S3, [8571-10] S2, [8571-94] SPMon  
Ishigaki, Mika [8587-24] S4  
Ishigaki, Mika [8591-10] S3  
Ishigure, Takaaki [8630-31] S8, [8630-4] S1  
**Ishigure, Mami** [8625-31] S7  
**Ishihara, Miya** 8580 Program Committee, [8581-113] SPSun, [8581-165] SPMon  
Ishihara, Ryu [8591-10] S3  
Ishii, Daisuke [8615-56] SPTue  
**Ishii, Katsunori** [8565-16] S8, [8565-24] S9, [8566-11] S3  
Ishii, Kiyo [8646-8] S4  
Ishii, Takuya [8579-27] S6  
Ishikawa, Hiroshi [8640-14] S3, [8646-8] S4  
Ishikawa, Hiroshi [8567-71] SPSun  
Ishikawa, Masatoshi [8617-5] S1  
Ishikawa, Yasuhiko [8628-5] S3  
Ishikawa, Yoshie [8599-38] S7  
Ishikura, Norihiro [8636-33] S7  
Ishimaru, Ichirou [8591-24] SPWed  
Ishizuka, Masahiro [8579-27] S6  
Isik, Sevim [8568-33] SPMon  
Islam, M. Shahidul [8565-203] S5, [8571-111] SPMon  
Islam, SM Z [8621-65] SPWed  
Isono, Hideki [8646-7] S3  
Isono, Toshinari [8594-16] S5  
Isota, Yoji [8642-5] S2  
Israel, Uriah [8565-27] S9  
Ito, Arisa [8565-3] S8  
Ito, Fuyumi [8603-32] SPTue  
Ito, Hiroshi [8621-51] SPWed  
Ito, Juichi [8565-63] S3  
Ito, Ryouta [8642-5] S2  
Ito, Shinji [8607-51] SPTue  
Ito, Shogo [8625-17] S4  
Ito, Yusuke [8642-5] S2  
Itoh, Haruyasu [8608-4] S1, [8608-8] S2  
**Itoh, Kazuyoshi** [8571-94] SPMon, [8588-35] S5, [8588-6] S1  
Itoh, Mikitaka [8628-20] S7  
Ivanenko, Mikhail M. [8600-37] S1, [8600-37] S9, [8600-39] S1, [8600-39] S9  
Ivanov, Alexey V. [8580-49] SPMon  
Ivanov, Vitalii [8640-2] S1  
Ives, Neil [8640-52] S12  
Ivkov, Robert [8584-37] S1  
Iwai, Hidenao [8571-50] S8  
Iwai, Katsumasa [8576-1] S1  
Iwai, Kazufumi [8607-4] S1, [8607-4] S5  
**Iwai, Toshiaki** [8581-8] S1  
Iwaki, Hiroyuki [8608-4] S1  
Iwakuni, Tatsuhiko [8645-19] S6  
Iwasa, Yoshihiro [8626-17] S4, [8626-38] S9  
Iwase, Eiji [8632-35] S7  
Iwaszczuk, Krzysztof [8624-12] S4  
**Iwata, Fujio** 8644 Program Committee  
Iwata, Hiroyuki [8625-17] S4  
Iwata, Yasuyuki [8621-51] SPWed  
Iwatsumi, Katsumi [8645-19] S6, [8646-9] S4  
Iwaya, Mitsuhiro [8630-3] S1  
Iwaya, Motoaki [8625-31] S7, [8625-73] SPWed, [8641-17] S4, [8641-20] S4, [8641-70] SPWed  
Iwazaki, Adalberto N. [8596-42] SPMon  
Iyama, Koichi [8599-82] SPTue  
Iyer, Shanthy [8626-40] S10  
Izard, Nicolas [8621-2] S1  
Izatt, Joseph A. [8567-18] S4, [8567-23] S5, [8567-26] S5, [8567-34] S6, 8571 Conference Chair, 8571 S2 Session Chair, [8571-19] S3, [8571-42] S7, [8571-7] S2, [8589-17] S4
- Izdebski, Krzysztof 8565 S7 Session Chair  
Izeddin, Ignacio [8590-31] S9  
Izuhara, Tomoyuki [8628-6] S3  
Izyumskaya, Natalia [8625-81] SPWed, [8625-86] SPWed
- 
- Jaberansary, Ehsan [8629-18] S4  
Jacak, Jaroslav [8587-45] S7  
Jacak, Witold Aleksander [8620-5] S1  
Jackson, Aaron [8634-25] S5  
Jackson, Carlton [8621-56] SPWed  
Jackson, Jevin J. [8586-22] S3  
Jackson, Ryan P. [8565-59] S1  
Jackson, T. [8621-45] SPWed  
Jacob, Jonah H. [8605-12] S3, [8605-25] S5  
Jacob-Mitos, Matt [8628-19] S7  
Jacobs, Elizabeth R. [8580-31] S6  
Jacobsohn, Kenneth [8581-91] SPSun  
Jacobson, Samuel [8615-6] S2  
Jacomet, Marcel [8571-109] SPMon  
**Jacques, Steven L.** [8565-58] S1, [8565-65] S3, [8565-81] S7, 8579 Program Committee, 8579 Track Chair, 8580 Track Chair, 8581 Program Committee, 8581 Track Chair, 8582 Track Chair, 8583 Track Chair, 8584 Track Chair, 8585 Track Chair, 8586 Track Chair, 8592 Program Committee, [8592-24] S6, [8592-30] S7  
Jacquet, Joel [8619-75] SPWed, [8621-29] S6  
Jacquet, Maxime [8608-15] S3, [8637-22] S4  
Jadhav, Mayur [8578-4] S1  
Jadhav, Vivek S. [8637-12] S2, [8637-47] SPWed  
Jaeck, Julien [8632-8] S2  
**Jaedicke, Volker** [8589-56] SPWed, [8592-41] S9  
Jaeger, Christian [8595-55] S13  
Jaeggi, Beat [8607-12] S3, [8607-12] S9, [8607-13] S10, [8607-13] S4  
Jaenen, Patrick [8612-17] S4  
Jaffar Ali, Baquir Mohammed [8572-55] SPSun, [8637-12] S2, [8637-47] SPWed  
Jaffer, Farouc A. [8565-11] S7, [8565-42] S6  
Jaffres, Anael [8621-64] SPWed  
**Jagadish, Chennupati** [8613-30] S7, 8628 Program Committee  
Jäger, Erwin [8600-79] SPTue  
Jäger, Matthias L. [8601-15] S4, [8601-15] S9, [8601-23] S6, [8627-41] S9  
Jäger, Wolfgang [8612-13] S3, [8631-61] S11  
**Jagtap, Jaidip M.** [8577-33] S10, [8580-22] S4  
Jagtap, Vishal [8631-2] S1  
Jahan, Nahid Akhter [8619-1] S1  
**Jahanmirinejad, Saeedeh** [8635-46] S13  
Jahjah, Mohammad [8631-29] S6, [8631-86] S17  
Jahn, Uwe [8641-45] S10  
**Jahns, Jürgen** [8630-16] S4  
Jahr, Norbert [8595-13] S3  
**Jaillon, Franck** [8567-59] SPSun, [8571-16] S3  
**Jain, Apurva** [8601-123] SPTue, [8601-46] S11  
Jain, Manu [8565-116] S5, [8565-37] S1  
Jain, Raj 8645 Conference Chair  
Jain, Rakesh K. [8565-176] S3  
Jain, Ravi K. [8621-27] S6  
Jain, Sid [8630-42] S11, [8630-42] S2  
Jakobsen, Dan P. [8601-5] S1, [8647-10] S5  
Jalali, Bahram [8587-38] S6, [8611-22] S5



# Index of Authors, Chairs, and Committee Members

- Jalian, H. Ray [8588-20] S3  
Jaluria, Yogesh [8630-29] S7  
Jambunathan, Venkatesan [8602-7] S2  
Jamil, Muhammad [8641-37] S8  
**Jamais, Cecile** [8620-15] S4  
Jamon, Damien [8627-11] S3  
Jampani, V.S.R. [8642-13] S5  
Jancaitis, Kenneth S. [8602-2] S1  
Jancu, Jean-Marc [8631-78] S15  
Janes, Joachim [8612-18] S4, [8613-44] SPTue, [8616-9] S2  
**Janfeshan, Bit**a [8620-74] SPWed  
Jang, Eunjoo [8634-19] S4  
Jang, Hyosook [8634-19] S4  
Jang, Jaeduck [8571-116] SPMon, [8587-19] S2, [8587-57] S8  
Jang, Jaemyung [8565-195] S1  
Jang, Jeong Hun [8565-54] S1  
Jang, Min [8631-67] S12, [8640-21] S5  
Jang, Sun-Joo [8565-23] S2  
Jang, Won Hyuk [8565-26] S6  
Jang, Wooyoung [8571-116] SPMon  
Jang, Yunhun [8587-19] S2  
Janiak, Filip [8631-95] S18  
**Janisch, Corey** [8600-59] S14  
**Janjic, Jelena M.** [8596-21] S7  
Janjua, Altamash [8640-35] S8  
**Jansen, E. Duco** 8565 Conference Chair, 8565 S3 Session Chair, [8565-208] S3, [8565-216] S3, [8565-217] S2, 8579 Conference Chair, 8579 S2 Session Chair  
Jansen, Florian 8601 Program Committee, [8601-105] S4, [8601-105] S9, [8601-14] SPTue, [8601-9] S2  
**Jansen, Krista** [8581-10] S2  
Janssen, Douglas [8565-206] S1  
Janz, Siegfried 8629 Program Committee  
Jao, Chih Sheng [8607-41] S11  
Jarasiunas, Kestutis [8625-83] SPWed  
Jarczynski, Manfred [8605-3] S1  
**Jardinier, Elsa** [8627-21] S5  
Jarecki, Robert L. [8604-36] S8  
**Jarrah, Mona** [8624-32] S8  
Jarujareet, Ungkarn [8575-30] S1, [8575-30] S7  
Jarvis, Jan P. [8631-15] S17  
Jasaitis, Adrius [8589-33] S7, [8590-31] S9  
Jasapara, Jayesh [8601-65] SPTue, [8601-66] SPTue  
Jastram, Marcel [8646-15] S5  
Jathoul, Amit [8581-32] S6  
Jauregui-Misas, Cesar [8601-105] S4, [8601-105] S9, [8601-14] SPTue, [8601-9] S2, [8604-20] S5, [8611-16] S4  
Javaloyes, Julien [8627-14] S4, [8640-59] S13  
Javaux, Clementine [8631-69] S13  
Jayakumar, Harishankar [8635-43] S13  
Jayakumar, Muthu Kumara Gnanasammandhan [8594-10] S3, [8635-3] S1  
Jayaraman, Vijaysekhar [8567-20] S4, [8567-32] S6, [8571-13] S3, [8571-22] S4, [8571-8] S2, [8571-99] SPMon  
**Jayet, Baptiste** [8581-58] S8, [8581-95] SPSun, [8581-96] SPSun  
Jazbinsek, Mojca [8622-10] S3, [8624-46] S11  
Jean-François, Nicoud [8622-22] S6  
**Jedamzic, Ralf** [8603-4] S10, [8603-4] S2  
Jedlovac, Donald R. [8602-2] S1  
Jeet, Justin [8600-14] S4  
Jehl, Zacharie [8620-46] S11  
Jelezko, Fedor 8635 Program Committee  
**Jelinek, Michal** [8599-13] S3, [8599-75] SPTue  
**Jelinková, Helena** [8566-12] S3, 8599 Program Committee, 8599 S10 Session Chair, 8599 S11 Session Chair, [8599-13] S3, [8599-65] SPTue, [8599-67] SPTue, [8599-69] SPTue, [8599-75] SPTue  
Jelzow, Alexander [8583-21] S3, [8583-21] S5  
**Jen, Alex K.** 8622 Program Committee  
Jenkins, James Travis [8595-17] S4  
Jenkins, Michael W. [8565-205] S2, [8565-31] S8, [8571-67] S10, 8593 Program Committee, [8593-1] S1, [8593-3] S1, [8593-6] S2, [8593-7] S2  
Jenkins, Peter A. [8569-1] S1  
Jenkins, Phillip P. [8620-30] S8  
Jenness, Nathan J. [8612-21] SPTue  
Jensen, Bjoern [8613-44] SPTue  
Jensen, Ole Bjarlin [8604-27] S6, [8604-3] S1  
Jentoft, Karin M. [8580-21] S1  
Jentsch, Ulrich [8605-16] S4  
Jeon, Heonsu 8641 Conference Chair, [8641-33] S7, [8641-75] SPWed  
Jeon, Jina [8625-47] S11  
Jeon, Joon-Woo [8625-51] S11  
Jeon, Mansik [8572-52] SPSun, [8581-107] SPSun, [8581-127] SPSun, [8581-47] S8, [8581-86] S11  
Jeon, Min Yong [8581-107] SPSun, [8601-72] SPTue, [8604-51] SPTue, [8624-6] S3  
Jeon, Nooli [8565-195] S1  
Jeon, Sang Chul [8628-25] SPWed  
Jeon, Seok Hee [8644-3] S1, [8644-42] SPWed  
Jeon, Woong-Ki [8589-6] S2  
Jeong, Ah-Reum [8565-24] S6  
Jeong, Heung Sun [8628-25] SPWed  
Jeong, Hong-Myeong [8612-22] SPTue  
Jeong, Hyeong-Jun [8589-53] SPWed  
**Jeong, Hyun-Woo** [8571-119] SPMon  
Jeong, Ji-Eun [8622-16] S4  
Jeong, Ki-Hun [8613-57] SPTue, [8615-7] S2  
Jeong, Kiyoung [8585-31] S6  
Jeong, Myung-Yung [8578-30] S5, [8589-44] S10  
Jeong, Seok-Hwan [8630-26] S7  
Jeong, Tak [8641-71] SPWed  
**Jeong, Tung H.** 8644 Program Committee  
Jeong, Yoonchan 8601 Program Committee  
Jepsen, Peter Uhd 8585 Program Committee, 8585 S4 Session Chair, [8585-11] S2, [8624-12] S4, [8631-81] S16  
Jerjes, Waseem K. 8565 Program Committee, 8565 S8 Session Chair, [8565-89] S9, [8565-93] S9  
Jermyn, Michael [8568-10] S3, [8568-49] S5  
Jerominek, Hubert [8624-14] S4  
Jesacher, Alexander [8589-24] S5  
Jespersen, Kim G. [8647-10] S5  
**Jessop, Paul E.** [8629-26] S7  
Jetschke, Sylvia [8601-23] S6, [8621-26] S5, [8621-41] SPWed, [8627-41] S9  
Jezowski, Andrzej [8625-9] S2  
**Jhabvala, Christine A.** 8631 Program Committee  
JHANG, YA-HUEI [8620-68] SPWed  
Ji, Chen [8627-16] S4  
Ji, Mi-Hee [8625-50] S11  
Ji, Minbiao [8588-21] S3, [8588-81] SPSun, [8588-82] SPSun  
Ji, Na [8617-16] S3  
Ji, Philip N. [8646-4] S2  
Ji, Wei [8640-67] SPWed  
Ji, Yang [8603-27] S6  
Ji, Yongjie [8615-42] SPTue, [8615-9] SPTue  
Ji, Young-Hoon [8576-11] S3, [8576-28] SPSun  
Jia, Chenping [8616-2] S1, [8616-2] S7  
Jia, Dongfang [8601-70] SPTue, [8601-92] SPTue, [8601-95] SPTue, [8619-12] S3, [8624-31] S8, [8624-34] S8, [8624-49] S4, [8624-9] S3  
Jia, Jingfei [8578-41] S7, [8578-74] S12  
Jia, Quanxi [8623-19] S5  
Jia, Xuanguang [8620-28] S7, [8620-71] SPWed  
**Jia, Yali** [8567-27] S5, [8571-15] S3  
Jia, Zhensheng [8647-2] S2  
Jian, Yifan [8571-33] S5, [8571-62] S10  
Jiang, Aiting [8640-40] S9  
Jiang, Chunlan [8581-63] S9  
Jiang, Guangqiang [8608-26] S5  
Jiang, Guomin [8613-35] S8, [8630-15] S4  
Jiang, Hongrui 8598 Program Committee, 8598 S6 Session Chair, [8598-11] S4  
**Jiang, Hongxing** [8621-25] S5, [8631-80] S15  
**Jiang, Huabei** 8565 Program Committee, [8573-4] S1  
Jiang, James [8571-8] S2, [8571-99] SPMon  
Jiang, Jingying 8580 Program Committee, [8580-44] SPMon, [8580-45] SPMon, [8580-46] SPMon, [8580-47] SPMon  
Jiang, John [8605-30] S7  
Jiang, Kai [8605-36] SPTue  
Jiang, Kaili  
Jiang, Lan [8613-56] SPTue, [8613-6] S2  
Jiang, Lili [8626-49] S12  
Jiang, P. [8628-16] S6  
Jiang, Ping [8635-45] S13  
**Jiang, Shihon** 8621 Conference Chair, 8621 S7 Session Chair  
Jiang, Shihong [8581-122] SPSun  
Jiang, Shudong [8578-16] S3, [8578-32] S6, [8578-33] S6  
Jiang, Tao [8565-70] S5  
Jiang, Wei 8630 Program Committee, 8630 S2 Session Chair, [8630-29] S7, [8630-37] S9, [8630-46] SPWed  
**Jiang, Wenhan** 8617 Program Committee  
Jiang, Xiaoming [8573-24] S6  
Jiang, Xiaoxiao [8593-5] S1  
Jiang, Xue-Feng [8600-52] S13  
Jiang, Yuchao [8640-25] S6  
Jiang, Zhigen [8586-17] S3  
**Jiao, Shuliang** [8571-101] SPMon, [8573-20] S6, [8581-161] SPMon, [8581-41] S7, [8581-76] S11  
Jiao, Yang [8570-5] S1, [8597-1] S1  
Jin, An [8578-113] SPSun  
Jin, Chaoyuan [8632-26] S6  
Jin, Dayong [8587-58] S9, [8590-42] SPSun, [8595-35] S8  
Jin, Jeongwan [8635-22] S6  
Jin, Michael H. C. 8622 Program Committee  
Jin, Shirong [8640-66] S14  
Jin, XianMin [8636-38] S8  
Jin, Xiaomin [8619-17] S4, [8619-44] S11, [8619-44] S13  
Jin, Zongwen [8595-43] S10  
Jing, Joseph [8565-35] S7, [8565-8] S4, [8565-84] S7  
Jirasek, Christian [8640-40] S9  
Jiricek, Petr [8625-88] SPWed  
Jo, Areum [8565-197] S5  
Jo, Javier A. [8565-28] S7, [8572-57] SPSun, [8589-30] S6  
Jo, Yukari [8567-60] SPSun  
Joannopoulos, John D. [8632-7] S2  
Jobst, Gerhard [8629-5] S1  
Joher, Christoph [8601-50] S12  
Joel, Andrew [8639-32] S8  
Joh, Danial [8565-35] S1  
Johnsen, Jeppe [8637-27] S7  
**John, Sajeev** [8632-14] S3  
Johnne, Robert [8632-26] S6  
Johnson, Bart C. [8571-102] SPMon, [8571-103] SPMon  
**Johnson, Eric G.** [8599-53] S10  
Johnson, Justin C. [8620-27] S7  
Johnson, Klein L. [8639-4] S2  
Johnson, Kristine E. [8578-71] S12  
Johnson, Lee [8613-19] S4  
Johnson, Matthew B. [8640-25] S6  
Johnson, Noble M. [8625-60] S13  
Johnson, Ralph H. [8639-17] S5  
Johnson, Steven G. [8632-35] S7  
Johnson, Thomas [8565-17] S3  
Johnson, Thomas [8565-194] S1  
Johnson, William R. [8631-24] S5  
Johnston, Abbey [8565-8] S4  
Johnston, Blair D. [8595-59] S13  
Johnston, Keith P. [8595-17] S4, [8596-16] S5  
Johnstone, Murray [8567-45] S8, [8571-63] S10  
Jokerst, Jesse V. [8581-15] S3  
Jolivot, Romuald [8575-30] S1, [8575-30] S7  
**Jolly, Sundeeep** [8644-17] S4  
**Jonas, Stephan** [8565-119] S6, [8593-16] S4, [8593-8] S2  
Jones, Casey W. [8604-14] S4  
Jones, Geb A. C. [8619-3] S1  
Jones, Peter D. [8584-34] S9  
Jones, R. Jason [8606-26] S8  
**Jones, Robert S.** [8566-10] S2, [8566-7] S2  
Jones, Steven S. [8571-6] S1  
Jonnal, Ravi S. [8567-36] S7, [8567-38] S7  
Jonusauskas, Linas [8613-43] SPTue  
Joo, Choun Ki [8567-51] S9, [8574-9] S2  
Joo, Chulmin [8572-16] S4  
Joo, Yongjoon [8571-53] S8, [8588-112] SPSun, [8588-51] S8  
**Joos, Karen M.** 8567 Program Committee, 8567 S1 Session Chair, 8567 S9 Session Chair  
Jordan, Rafael C. [8630-5] S1  
Jorden, Monserrat [8566-20] SPSun  
Jorge, Kelly C. [8600-75] SPTue, [8604-48] SPTue  
**Jørgensen, Mette M.** [8601-19] S5, [8601-29] S7, [8601-73] SPTue, [8601-96] SPTue  
Josberger, Erik E. [8631-37] S6  
Jose, Iven [8578-23] S4  
Jose, Jessnie [8582-11] S3, [8582-12] S3, [8582-20] SPTues  
Jose, Jithin [8581-23] S4  
**Joseph, Cecil S.** [8577-31] S10, [8580-12] S2, [8580-35] S2, [8624-23] S6  
Joshi, Bipin [8586-20] S3  
Joshi, Bishnu [8575-31] S1, [8575-31] S7  
Joubert, Trudi-Heleen [8643-8] S2  
Jougla, Paul [8599-45] S8  
Jouini, Nouredine [8626-52] SPWed  
Jouonang, Armelle [8590-12] S2  
Journet, Eric [8602-15] S4  
Jovanovic, Ivana [8581-144] SPMon  
Jovin, Thomas M. 8595 Program Committee  
Joye, Colin D. [8624-16] S5, [8624-5] S3  
Ju, Myeong Jin [8567-2] S1, [8567-4] S1, [8571-14] S3  
Jubault, Marie [8620-36] S9  
Jubera, Véronique [8607-22] S7, [8607-25] S7  
Judy, Reid K. [8625-50] S11  
Judd, Amy Judd [8580-15] S2  
**Judd, K. Peter** [8610-34] S7  
Judkewitz, Benjamin [8581-131] SPSun

# Index of Authors, Chairs, and Committee Members

- Jue, Jason P. [8646-4] S2  
Jugessur, Aju S. [8627-30] S7  
Jukam, Nathan [8640-39] S9  
Julich, Sandra [8615-27] S6  
Julien, Francois H. [8625-67] S14  
**Jun, Martin B. G.** [8607-57] SPTue, [8611-54] SPTue  
Jun, Shinae [8634-19] S4  
**Jun, Young Chul** [8632-64] S14  
Jung, Bongsu [8568-41] SPMon  
Jung, Byungjo [8565-26] S6, [8583-16] S4  
Jung, Gwan Ho [8613-20] S4, [8622-37] S9  
Jung, Il-Woong [8575-30] S1, [8575-30] S7, 8616 Program Committee, 8616 S7 Session Chair  
Jung, Jae-Hyun [8643-2] S1  
Jung, Jong Rae [8644-3] S1, [8644-42] SPWed  
Jung, Joonwoo [8587-57] S8  
Jung, Ki Won [8578-112] SPSun, [8578-14] S3  
Jung, Kwang-Yoon [8565-90] S9  
Jung, Kyu-Dong [8616-1] S1, [8616-1] S7  
Jung, Mi Sun [8604-51] SPTue  
Jung, Seungyong [8640-21] S5  
Jung, Soon-Won [8626-42] SPWed  
Jung, Suk Koo [8625-47] S11  
Jung, Woo-Gwang 8631 Program Committee, 8631 S14 Session Chair  
Jung, Woonggyu [8565-12] S3, [8565-195] S1, [8565-54] S1, [8587-54] S8  
Jung, Yeongri [8571-76] S12  
Jung, Yookyung [8565-180] S3, [8568-3] S1, [8587-3] S1, [8588-20] S3  
Jung, Young-Jin [8565-171] S5, [8572-13] S3  
Jungbluth, Bernd [8565-226] S2, [8599-21] S5  
Junger, Stephan [8641-46] S10  
Jungghans, Jeremy [8605-13] S3, [8605-32] S7  
**Juodkazis, Saulius** [8607-16] S11, [8607-16] S5, 8613 Program Committee, [8613-17] S4, [8613-3] S1  
Juratli, Mazen A. [8565-87] S8, [8581-170] SPMon, [8581-172] SPMon, [8581-3] S1  
Jurgis, Andrejs [8622-27] S7  
Juskaitis, Rimas [8589-7] S2  
Just, Florian [8601-15] S4, [8601-15] S9  
Justo, Yolanda [8631-79] S15
- 
- K**
- Kabashin, Andrei V. 8609 S3 Session Chair, [8609-1] S1  
Kabiri, Ali [8633-25] S7  
Kachi, Tetsu [8625-28] S7  
Kacprzak, Michal [8583-21] S3, [8583-21] S5, [8583-5] S2  
Kadalia, Sama Smit [8565-213] S3  
Kaden, D. [8612-18] S4  
Kadic, Muamer [8613-14] S4  
Kadwani, Pankaj [8601-107] SPTue, [8601-97] SPTue  
**Kaenders, Wilhelm G.** [8604-1] S1  
Kafadaryan, Yevgenia A. [8626-64] SPWed  
Kafar, Anna [8625-36] S8, [8625-61] S13, [8625-71] SPWed  
Kagemann, Larry [8567-71] SPSun  
Kahook, Malik Y. [8567-50] S9, [8611-8] S2  
Kailerle, Stefan [8603-18] S5  
Kaim, Sergiy [8601-122] SPTue  
Kaindl, Robert A. 8623 Program Committee, [8623-51] S13, [8623-7] S3  
Kainerstorfer, Jana M. 8578 Program Committee, 8578 S1 Session Chair, [8578-12] S2, [8578-22] S4, [8578-6] S1  
**Kaino, Toshikuni** 8622 Conference Chair, 8622 S8 Session Chair, [8622-2] S1  
Kaiser, Andrea [8565-4] S1, [8588-24] S3, [8588-46] S7, [8611-5] S1  
Kajiro, Satoshi [8644-32] SPWed  
Kajzar, Francois 8622 Conference Chair, [8622-26] S7  
Kakabakos, Sotirios E. [8629-5] S1  
**Kakarantzas, George** [8619-64] SPWed, [8632-22] S5  
Kakiuchida, Hiroshi [8642-16] S5  
Kakizaki, Kouji [8607-51] SPTue  
Kako, Satoshi [8634-29] S2  
Kalagara, HemaShilpa [8619-22] S5, [8619-8] S2  
Kalantar-Zadeh, Kourosh [8615-34] S7, [8615-49] SPTue  
Kalashnikov, Vladimir L. [8599-20] S4, [8599-60] S12  
Kalasuwan, Pruet [8628-16] S6  
Kalchenko, Vyacheslav [8582-4] S6  
Kaldewey, Timo [8623-55] S14  
Kalff, Rolf [8565-186] S4  
Kalinsky, Kevin [8578-19] S4  
Kalisky, Yehoshua Y. 8604 Conference CoChair, 8604 S1 Session Chair, 8604 S2 Session Chair  
Kalkman, Jeroen [8571-35] S6, [8571-37] S6, [8583-4] S1  
Kalkowski, Gerhard [8601-28] S7  
Käll, Mikael [8597-13] S3  
Kallepalli Lakshmi Narayana, Deepak Lakshmi Narayana [8608-2] S1  
Kalliakos, Sokratis 8619 S12 Session Chair, [8619-3] S1  
Kallweit, Nicole [8579-2] S1  
Kalinina, Zane [8622-52] SPWed  
Kalthoff, Oliver [8619-19] S5  
Kalusniak, Sascha [8619-34] S8  
Kamada, Kenji [8622-17] S4  
Kamalasanan, Modeparampil N. [8622-62] S9, [8622-63] SPWed  
Kamalsanan, M.N. [8622-43] S10  
Kamanina, Natalie V. [8622-46] S11  
Kamensky, Vladislav Antonievich [8568-16] S4, [8581-25] S4  
Kamins, Theodore I. [8567-8] S2, [8627-26] S6, [8627-8] S2  
Kaminska, Bozena [8579-21] S5, [8587-27] S4, [8597-24] S5, [8597-42] S8  
Kamiyama, Satoshi [8625-31] S7, [8625-73] SPWed, 8641 Program Committee, 8641 S2 Session Chair, [8641-17] S4, [8641-20] S4, [8641-70] SPWed  
Kamlapurkar, Swetha [8630-10] S3  
Kammel, Robert [8611-9] S2  
Kamp, Martin [8619-32] S8, [8631-59] S11, [8631-81] S16, [8635-10] S3, [8635-46] S13  
Kamp, Ulrich [8613-26] S6  
Kampars, Valdis [8622-52] SPWed  
Kämpfer, Stefan [8626-33] S8  
Kampmann, Ronald [8619-19] S5, [8637-38] S9  
Kanai, Teruto [8607-51] SPTue  
Kanaras, Antonios G. 8595 Program Committee, [8595-1] S1  
Kane, Daniel J. [8611-25] S5  
Kane, Susan [8568-50] SPMon  
Kaneda, Yushi [8606-26] S8  
Kanellos, George T. [8621-12] S3, [8629-11] S3  
Kanematsu, Yasuo [8588-35] S5  
Kanemitsu, Yoshihiko [8623-50] S13  
Kang, Boyoung [8622-6] S2  
Kang, DongKyun 8575 S3 Session Chair, [8575-11] S3, [8575-12] S3, [8575-13] S3, [8575-21] S5  
Kang, Dongpeng [8635-43] S13  
Kang, Eun-Jeong [8625-47] S11  
Kang, Heesung [8583-16] S4  
Kang, Hobin [8566-19] SPSun  
**Kang, Hyun Wook** 8565 Conference Chair, 8565 S2 Session Chair, 8565 S3 Session Chair, [8565-38] S2, [8565-43] S3, [8565-51] SP1, [8565-53] SP1  
Kang, Jeon Woong [8587-14] S2, [8587-32] S5  
**Kang, Jin U.** [8565-172] S2, [8565-64] S3, [8567-78] SPSun, [8571-57] S9, [8571-60] S9, [8571-72] S11, [8571-85] SPMon, 8576 Program Committee, [8576-17] S4, [8576-3] S1, [8576-32] SPSun, [8589-12] S3  
Kang, JoonHyung [8630-7] S2  
Kang, Ju-Hyung [8640-33] S8  
Kang, Lin [8631-92] SPWed, [8635-32] S6, [8635-32] S9  
Kang, M. S. [8632-19] S5  
Kang, Ming [8579-4] S1  
Kang, Min-Hee [8613-57] SPTue  
Kang, Minhua [8582-1] S6  
Kang, Misun [8589-6] S2  
Kang, Seung Beom [8630-43] SPWed  
Kang, SeungYeon [8607-35] S10, [8611-40] S8, [8611-57] SPTue, [8613-52] SPTue  
Kang, Xiang-Ning [8619-17] S4  
Kang, Yangsen [8620-56] S14  
Kani, Jun-Ichi [8645-19] S6, [8645-6] S4  
Kanick, Stephen C. [8568-24] S6, [8568-42] SPMon, [8568-8] S2, [8568-9] S3  
Kannan, Pradeesh [8599-4] S1, [8621-3] S1  
Kannengießer, Marc [8565-69] S4  
Kanno, Atsushi [8645-14] S5, [8645-2] S2, [8646-10] S4  
Kanskar, Manoj [8605-14] S3, [8605-23] S5, [8605-33] S7, [8605-5] S1, [8640-57] S13  
Kantojärvi, Uula [8614-7] S2  
Kanzaki, Koichi 8643 Program Committee  
**Kao, Fu-Jen** 8588 Program Committee, [8588-114] SPSun, [8588-76] SPSun  
Kao, Tsung-Ting [8625-42] S9  
Kao, Tsung-Yu [8585-7] S1  
Kapellner Rabinovitz, Yuval 8618 Program Committee, 8618 S6 Session Chair  
Kaplan, Alex F. [8632-44] S10  
Kapon, Elyahou 8606 Program Committee, 8606 S8 Session Chair, [8606-14] S5, [8639-27] S7, [8639-3] S1  
Kapoor, Amita [8619-70] SPWed  
Kapsokalyvas, Dimitrios [8588-86] SPSun  
Kapulainen, Markku [8629-11] S3, [8629-12] S3  
Kapusta, Peter [8573-26] SPSun, [8588-88] SPSun  
Kar, Ajoy K. [8627-1] S1  
Karam, Nasser H. [8620-13] S3  
Karanasos, Antonios [8565-39] S6, [8565-40] S6  
Karasek, Vitezslav [8637-39] S9  
Karbasi, Salman [8632-80] SPWed  
Karbaum, Christopher [8625-86] SPWed  
Kardynal, Beata [8625-74] SPWed  
Karg, Matthias 8595 S5 Session Chair, [8595-21] S6  
Karim, Helmet T. [8578-5] S1  
Karimelahi, Samira [8607-17] S11, [8607-17] S5, [8607-40] S11  
Karimi, Farhad [8619-84] SPWed, [8631-75] S14  
Kariyama, Yoichiro [8579-27] S6  
Karl, Anthony [8580-42] S2  
Karl, Helmut [8626-39] S9  
Karlsson, Hanna [8578-116] SPSun  
Karnakis, Dimitris [8607-36] S10, [8608-16] S3  
Karni, Ouri [8640-3] S1  
Karni, Yoram [8605-4] S1, [8640-54] S12  
**Karnowski, Karol** [8571-66] S10  
Karpe, Sandrine [8570-24] S6  
Karpf, Sebastian [8571-9] S2  
Karpiouk, Andrei B. [8581-13] S2  
Karpman, Maurice S. 8614 Program Committee  
Karpinen, Mikko [8630-14] S4  
Kartashov, Yaroslav V. [8632-59] S13  
Karunamuni, Ganga H. [8571-67] S10, [8593-1] S1, [8593-3] S1  
Karunasiri, Gamani [8624-35] S9, [8624-36] S9  
Kasai, Jun-ichi [8640-14] S3  
Kasaragod, Deepa K. [8571-92] SPMon, [8596-28] S8  
Kaschke, Johannes [8635-15] S4  
Kase, Zyunpei [8607-39] S11  
Kasebier, Thomas [8633-22] S7, [8633-35] S10  
Kasevich, Mark A. [8635-24] S7  
Kashino, Junichi [8633-33] S10  
Kashiwagi, Manabu [8565-22] S2, [8565-25] S6  
Kashiwagi, Masahiro [8601-94] SPTue  
Kashkarov, Pavel [8607-46] S12  
**Kashyap, Raman** [8623-63] SPWed, 8638 Program Committee, [8638-17] S4, [8638-5] S1  
Kasica, Richard [8632-45] S10  
Kaspar, Sebastian [8606-10] S3, [8606-19] S6  
Kašparová, M. [8566-12] S3  
Kasper, Erich [8628-18] S7  
Kaspi, Ron [8631-17] S4, [8631-62] S18  
Kassab, Rami [8572-51] SPSun  
**Kassamakov, Ivan** [8604-44] SPTue  
Kastanos, Evdokia [8572-40] S8, [8591-12] S3  
Katagiri, Takashi [8576-26] S5  
Katakis, Ioannis [8615-40] S9, [8615-43] S10  
Kataura, Hiromichi [8571-10] S2  
Katayama, Hiroshi [8587-15] S2  
**Katichev, Alexey R.** [8581-25] S4  
Kato, Ilka [8569-4] S1  
Kato, Kiyoshi [8604-43] SPTue, [8604-56] SPTue, [8604-58] SPTue  
Kato, Seiko [8643-11] S3, [8643-13] S3  
Kato, Yoshinori [8599-82] SPTue  
Kato, Yuji [8578-109] SPSun  
Kats, Mikhail A. [8619-24] S6, [8624-3] S2, [8632-42] S10, [8632-68] S15, [8633-20] S6, [8640-24] S6, [8640-47] S11  
Katsuyama, Tsukuru 8631 Program Committee, 8631 S8 Session Chair  
Katzenellenbogen, Benita S. [8587-10] S1  
Kaufman, Peter A. [8578-16] S3, [8578-68] S11  
Kaufmann, Christian [8614-2] S1  
Kaufmann, John E. [8610-11] S3  
**Kauranen, Martti** [8604-37] S8  
Kaushal, Deepak [8629-17] S4  
Kauten, Thomas [8635-43] S13  
Kautio, Kari [8630-14] S4  
Kava, Lauren [8571-21] S4, [8575-6] S2  
Kavehrad, Mohsen 8645 Program Committee, 8645 S7 Session Chair, [8645-15] S6, [8645-21] S7, [8645-21] S7B, [8645-28] SPWed, 8646 S7B Session Chair  
Kavokine, Alexis 8625 S10 Session Chair, [8625-40] S9  
Kavuri, Venkaiah C. [8578-57] S9, [8578-9] S2  
Kawabata, Kento [8647-11] S5



# Index of Authors, Chairs, and Committee Members

- Kawabe, Tsutomu [8565-106] S3  
 Kawagoe, Hiroyuki [8571-10] S2  
 Kawaguchi, Yasushi [8581-62] S9, [8581-8] S1  
 Kawaguchi, Yoshizo [8607-39] S11  
 Kawakami, Hiroshige [8565-3] S8  
 Kawakubo, Masayoshi [8582-6] S1  
 Kawamura, Marcelo [8621-55] SPWed  
 Kawanishi, Tetsuya [8645-14] S5, [8645-2] S2, [8646-10] S4, [8646-28] S10, [8646-28] S9  
 Kawasaki, Masashi [8626-15] S4, [8626-17] S4, [8626-38] S9  
 Kawasaki, Masashi 8626 Program Committee  
 Kawase, Kodo 8585 Program Committee, [8585-2] S1, [8585-36] S6  
 Kawashima, Hiroyasu [8621-38] SPWed, [8621-60] SPWed  
 Kawashima, Toshiyuki [8599-82] SPTue  
 Kawasoe, Jean H. [8565-178] S3  
**Kawata, Satoshi** [8587-74] SPMon, 8588 Program Committee, [8597-26] S6, [8597-7] S2, [8613-15] S4, [8613-25] S5, [8613-33] S7  
 Kawata, Yoshimasa [8622-11] S3  
**Kawauchi, Satoko** [8565-170] S1, [8578-110] SPSun, [8581-102] SPSun, [8581-62] S9, [8581-8] S1  
 Kay, Andrew J. [8622-60] SPWed  
 Kaye, Anthony [8609-17] S4  
 Kayis, Cemil [8625-81] SPWed, [8625-87] SPWed  
 Kayra, Damian [8588-64] S9  
 Kazanskii, Andrei G. [8607-46] S12  
 Kazansky, Peter G. [8607-46] S12  
**Kazmi, Syed M. S.** [8592-7] S3  
 Ke, Haixin [8581-43] S7  
 Kearney, Brian T. [8624-35] S9, [8624-36] S9  
 Keating, Cameron P. [8565-180] S3  
 Kechiantz, Ara M. [8620-20] S5, [8620-64] SPWed  
 Keeler, Ethan [8613-46] SPTue  
 Keely, Patricia J. [8615-13] S3  
**Keenan, Molly** [8575-26] S6  
 Keene, Samuel T. [8578-96] SPSun  
 Kejalakshmy, Namassivaye [8624-40] S10, [8629-19] S4  
 Kelbassa, Ingomar 8603 Program Committee, [8608-7] S2, [8613-32] S7  
**Kelemen, Marc** [8640-62] S14  
 Keller, Arne [8635-44] S13  
 Keller, Bradley B. 8593 Program Committee  
**Keller, Matthew D.** 8565 S2 Session Chair, [8565-193] S2, [8565-211] S4  
 Keller, Stacia K. 8625 Program Committee  
**Keller, Ursula** [8601-25] S7, 8606 Program Committee, 8606 S2 Session Chair, [8606-15] S5, [8606-5] S2  
 Kellnberger, Stephan [8581-44] S7  
 Kellner, Manuela [8565-110] S4  
 Kellner-Höfer, Marcel [8588-24] S3, [8588-52] S8, [8588-87] SPSun  
 Kelly, Holly [8581-91] SPSun  
 Kelly, John H. [8602-12] S4, [8602-13] S4  
 Kelly, Kristen Marie [8565-15] S4, [8565-20] S5, [8578-67] S11, [8588-39] S6  
 Kelsall, Robert W. [8629-32] S9  
 Kem, W. [8610-21] S4  
**Kemiklioglu, Emine** [8642-32] SPWed  
 Kemiktarak, Utku [8633-23] S7  
**Kemme, Shanalyn A.** 8613 Program Committee, 8613 S8 Session Chair, [8613-38] S8, [8633-32] S10, [8635-20] S5  
 Kemp, Alan J. [8606-11] S4  
 Kemp, Izaak V. [8604-40] S8  
 Kempa, Thomas [8600-50] S12  
 Kempen, Paul J. [8581-15] S3  
**Kemper, Björn** [8587-9] S1, [8589-22] S5  
 Kemper, Falk [8615-15] S4  
 Kenda, Andreas [8616-45] SPTue  
 Kenechukwu, Obi [8627-23] S6  
 Kenfack, Cyril [8590-12] S2  
 Kenna, Margaret [8565-95] S9  
 Kennard, J. [8628-16] S6  
**Kennedy, Brendan F.** [8565-108] S3, [8571-68] S11, [8571-73] S11, [8580-29] S6, [8583-19] S4, [8583-9] S2  
**Kennedy, Ian M.** [8596-13] S2, [8596-13] S4  
**Kennedy, Kelsey M.** [8571-68] S11, [8571-73] S11, [8580-29] S6, [8583-19] S4  
 Kent, E. [8568-49] S5  
 Keo, Sam A. [8631-24] S5, [8631-25] S5  
 Keppler, Melanie D. [8590-13] S2  
**Kerestes, Christopher** [8620-32] S8  
 Kerimo, Josef [8588-56] S8, [8589-36] S8  
 Kerins, Fergal [8613-26] S6  
 Kernik, Divya [8579-10] S3  
 Kerr, Caitlin [8617-7] S2  
 Kerr, Duane E. [8565-4] S8  
 Kerttula, Juho [8601-71] SPTue  
 Kessel, David H. 8568 Conference Chair, 8568 S1 Session Chair, [8568-1] S1  
 Kessler, Steffen [8603-26] S6  
 Keswani, Manish [8632-55] S12  
 Ketelhut, Steffi [8587-9] S1, [8589-22] S5  
 Kett, Warren [8584-15] S5  
 Kettenring, Frank [8572-33] S6, [8574-17] S4  
 Keune, Werner [8623-9] S3  
 Keymel, Kenneth [8568-36] SPMon  
 Keymeulen, Didier [8610-15] S3  
 Keyvaninia, Shahram [8627-6] S2  
**Khader, Ghadeer** [8565-224] S2  
**Khanga Oo, Maung Uyar** [8615-47] S10  
 Khaksari, Kosar [8580-3] S1, [8580-4] S1  
 Khaleghi, Salman [8646-25] S8, [8646-25] S9  
 Khalfallah, Ali [8587-55] S8  
 Khalfin, Viktor B. [8639-23] S6, [8640-58] S13  
**Khalil, Diaa** [8616-13] S3, [8616-23] S5  
 Khalil, Michael A. [8578-54] S9, [8578-59] S10, [8581-109] SPSun  
 Khalil, Osama M. [8603-38] SPTue  
 Khamenehfar, Avid [8615-32] S7  
 Khan, Ashraf [8577-30] S3, [8580-23] S4  
 Khan, Asif M. [8641-35] S8  
**Khan, Bilal** [8565-196] S5, [8565-198] S5  
 Khan, Mohammed Zahed Mustafa [8640-4] S1  
 Khan, Mughees [8632-35] S7  
 Khan, Saeed A. [8595-19] S5  
 Khan, Usman Ansar [8594-1] S1  
 Khanaliloo, Behzad [8600-68] S16  
 Khanikaev, Alexander B. [8636-30] S6  
 Khanna, Suraj P. [8585-8] S1, [8631-2] S1, [8631-5] S2  
**Kharenko, Denis** [8601-87] SPTue  
 Khatami, Ramin [8578-100] SPSun  
 Khater, Marwan H. [8630-10] S3  
 Khelif, Abdelkrim 8632 Program Committee  
 Khemthongcharoen, Numfon [8575-30] S1, [8575-30] S7, [8575-8] S2  
 Khenkin, Mark [8607-46] S12  
**Khetani, Altaf** [8576-14] S3  
 Khirallah, Kareem [8616-22] S5  
**Khizhnyak, Anatoliy** [8599-79] SPTue, [8610-33] S7  
**Khmaladze, Alexander T.** [8579-19] S5  
 Khokha, Mustafa K. [8565-119] S6, [8593-16] S4, [8593-8] S2  
 Khondee, Supang [8575-31] S1, [8575-31] S7  
 Khoobehi, Bahram [8573-9] S2  
 Khoptyar, Dmitry [8583-5] S2  
 Khorasani, Sina [8619-84] SPWed, [8631-75] S14  
 Khorasaninejad, Mohammadreza [8623-62] S15  
 Khoshakhlagh, Arezou [8631-25] S5  
 Khoshmanesh, Khashayar [8615-34] S7, [8615-49] SPTue  
 Khoury, Pierre [8573-3] S1  
 Khoushabi, Azadeh [8592-49] SPSun  
 Khrenova, Maria G. [8590-1] S3, [8590-39] SPSun  
**Khurgin, Jacob B.** [8623-18] S5, 8636 Program Committee, 8636 S8 Session Chair, [8636-28] S6, [8638-9] S2  
 Ki, Hyun Chul [8621-50] SPWed, [8622-54] SPWed, [8627-45] SPWed  
 Kiang, Yeon-Woei [8571-86] SPMon, [8597-19] S4, [8625-44] S10, [8641-16] S4, [8641-39] S9  
 Kidd, Ian V. [8620-43] S10  
 Kidder, Richard W. [8602-14] S4  
 Kiefer, Arnold M. [8626-1] S1  
 Kienberger, Reinhard [8623-37] S10  
 Kienel, Marco [8601-43] S11  
**Kienle, Alwin** [8578-38] S7, [8583-5] S2  
 Kiesel, Barbara [8565-187] S4  
 Kiesslich, Ralf 8575 Program Committee  
 Kiessling, Heiko [8615-10] S3  
 Kieu, Khanh Quoc [8588-13] S2, [8601-51] S12  
 Kiewra, Edward [8630-10] S3  
 Kiguchi, Masashi [8578-108] SPSun  
 Kikuchi, Hirotsugu 8642 Program Committee  
 Kilchytska, Valeriya [8614-18] S4  
 Killi, Alexander [8605-37] SPTue  
 Kilmer, Joyce P. [8607-55] SPTue  
 Kilmer, Misha Elena [8578-22] S4  
 Kim, Alex G. [8618-10] S4  
 Kim, Andrew J. [8593-26] SPSun, [8593-9] S2  
 Kim, Anthony [8565-189] SPSun  
 Kim, Areun [8565-12] S3, [8565-54] S1, [8587-54] S8  
**Kim, Beop-Min** [8565-102] S2, [8565-190] SPSun, [8565-197] S5, [8571-119] SPMon  
 Kim, Bok Hyeon [8621-43] SPWed  
 Kim, Bong Kyun [8621-18] S4  
 Kim, Boram [8620-48] S12  
 Kim, Bumju [8571-131] SPMon, [8588-51] S8  
 Kim, Byeongwan [8622-48] S7  
 Kim, Byung-Il [8632-30] S7  
**Kim, Changwan** [8579-4] S1  
**Kim, Chang-Seok** [8578-30] S5, [8589-44] S10  
 Kim, CheolGi [8615-24] S5  
 Kim, Choong-Ki [8565-190] SPSun, [8565-197] S5  
 Kim, Choong-Un [8620-22] S5  
 Kim, Chul S. [8631-58] S11  
 Kim, Chul Soo [8635-12] S4  
 Kim, Chulhong [8565-38] S2, [8572-52] SPSun, [8581-107] SPSun, [8581-127] SPSun, [8581-47] S8, [8581-79] S11, [8581-86] S11  
 Kim, Chur [8630-20] S5  
 Kim, Dae Yu [8567-1] S1  
 Kim, Dai-Sik 8623 Program Committee  
 Kim, Daniel M. [8620-57] S14  
**Kim, Do-Hyun** [8573-22] S6, [8573-23] S6, [8583-8] S2  
 Kim, Dong Wook [8628-25] SPWed  
**Kim, Donghyun** [8590-38] SPSun, [8590-41] SPSun, [8597-28] S6, [8618-7] S11, [8618-7] S2  
 Kim, Dongkwon [8565-21] S5  
 Kim, Dong-Shik [8597-18] S4  
 Kim, Dongsik [8574-9] S2  
 Kim, Dong-Uk [8641-33] S7  
 Kim, Dong-yeong [8619-73] SPWed, [8641-4] S1  
 Kim, Doo Gun [8619-74] SPWed, [8621-50] SPWed, [8622-54] SPWed, [8627-45] SPWed  
 Kim, E. S. [8622-6] S2  
 Kim, Eoksu [8616-15] S3, [8616-15] S4  
**Kim, Eunkyoung** 8622 Program Committee, [8622-48] S7  
 Kim, Eun-Seok [8644-44] SPWed  
 Kim, Eun-Soo [8644-43] SPWed  
 Kim, Gwangseong [8596-26] S8  
 Kim, Ha Sul [8631-51] S10  
 Kim, Hak-Su [8565-27] S7, [8578-61] S10  
 Kim, Hee Seop [8642-12] S3  
 Kim, Hee-Dong [8641-38] S8  
 Kim, Heejiun [8630-20] S5  
 Kim, Helen [8578-21] S4  
 Kim, Heungsoo [8607-29] S9, [8608-25] S4, [8631-70] S13  
 Kim, Hoik [8630-20] S5  
 Kim, Hong-Seung [8619-45] S12, [8619-74] SPWed, [8627-45] SPWed  
 Kim, Hoon [8642-12] S3  
 Kim, Hyojin [8589-44] S10  
 Kim, Hyun Jin [8578-112] SPSun  
 Kim, Hyun Koo [8565-102] S2  
 Kim, Hyung Gu [8625-47] S11  
 Kim, Hyungjin [8619-56] S4  
 Kim, Hyung-Jin [8571-119] SPMon  
 Kim, Hyun-Joo [8576-11] S3, [8576-28] SPSun, [8621-17] S4, [8621-19] S4  
 Kim, Hyun-Keol [8578-19] S4, [8578-27] S5, [8578-41] S7, [8578-54] S9, [8578-59] S10, [8578-60] S10, [8578-74] S12, [8581-109] SPSun  
 Kim, Il Kyoon [8565-181] S4  
 Kim, Ingul [8571-131] SPMon  
 Kim, In-Kyong [8578-59] S10  
 Kim, Jae Hoon [8622-6] S2  
 Kim, Jae-Beom [8613-57] SPTue  
 Kim, Jaeheung [8645-11] S5  
 Kim, Jaejun [8613-57] SPTue  
 Kim, Jaekyun [8619-52] S13, [8641-7] S2  
 Kim, Jaisoon [8592-20] S5  
**Kim, Jang-Joo** 8622 Program Committee  
 Kim, Jeehyun [8565-38] S2, [8565-51] SP1, [8565-54] S1, [8581-107] SPSun, [8581-86] S11, [8587-54] S8  
 Kim, Jeomoh [8625-50] S11  
 Kim, Jihoon [8646-26] S10, [8646-26] S9  
 Kim, Jin Hyeok [8621-50] SPWed  
 Kim, Jineun [8613-4] S1  
 Kim, Jisun [8619-42] S10  
 Kim, Jiyeon [8642-34] SPWed  
 Kim, Jong Kyu [8613-20] S4, [8619-73] SPWed, [8620-63] S15, 8641 Program Committee, 8641 S12 Session Chair, [8641-4] S1, [8641-57] S12, [8641-58] S12  
**Kim, Jonghyun** [8643-2] S1  
 Kim, Jongki [8581-86] S11  
 Kim, Jongsik [8565-13] S2, [8571-81] S12  
 Kim, Joo Ha [8573-27] SPSun  
 Kim, Joonsong [8594-2] S1  
 Kim, Joosung [8641-15] S4, [8641-7] S2  
**Kim, Jung-Dae** [8595-56] S13  
 Kim, Junghee [8622-6] S2  
 Kim, Jungsang [8589-35] S8  
 Kim, Jungwon [8630-20] S5  
 Kim, Jung-Wook [8642-35] SPWed



# Index of Authors, Chairs, and Committee Members

- Kim, Jun-Whee [8627-48] SPWed, [8627-49] SPWed, [8627-50] SPWed, [8643-15] SPWed
- Kim, Jun-Youn [8619-52] S13, [8641-7] S2
- Kim, Kangho [8614-17] S3
- Kim, Ki Hean [8571-131] SPMon, [8571-53] S8, [8574-9] S2, [8575-16] S4, [8588-112] SPSun, [8588-51] S8
- Kim, Ki Nam [8628-25] SPWed
- Kim, Ki-Han [8642-12] S3, [8642-35] SPWed
- Kim, Kihong [8599-41] S8
- Kim, Kinam [8641-7] S2
- Kim, Kisoo [8622-9] SPWed
- Kim, Kyeong Heon [8641-38] S8, [8641-71] SPWed
- Kim, Kyong-Hon [8622-3] S1, [8628-25] SPWed
- Kim, Kyoohyun [8592-4] S2, [8592-5] S2
- Kim, Kyujung [8570-19] S5, [8590-38] SPSun
- Kim, Kyung Hun [8608-27] S13, [8608-27] S6
- Kim, Kyung-Jo [8627-49] SPWed
- Kim, Kyungwan [8623-6] S3
- Kim, Kyu-Sang [8625-56] S12
- Kim, Mahn Won [8587-57] S8, [8592-48] SPSun
- Kim, Meeri N. [8578-14] S3
- Kim, Michele M. [8568-23] S6, [8568-27] S7, [8568-28] S7, [8568-32] SPMon, [8568-34] SPMon, [8568-4] S2
- Kim, Mijin [8631-58] S11, [8635-12] S4
- Kim, Min Ho [8576-32] SPSun
- Kim, Min Jun [8570-19] S5
- Kim, Minkyu [8575-11] S3, [8575-12] S3, [8575-13] S3
- Kim, Moon S. [8573-22] S6
- Kim, Moonseek [8592-20] S5
- Kim, Myoung-Hee [8589-6] S2
- Kim, Myung K.** [8587-6] S1
- Kim, Myun-Sik** [8613-45] SPTue, [8613-46] SPTue
- Kim, Na Young [8635-10] S3
- Kim, Nakjoong 8622 Program Committee
- Kim, Nam** [8644-3] S1, [8644-44] SPWed
- Kim, Nam Seong** 8608 Program Committee
- Kim, Namje [8604-51] SPTue, [8624-6] S3
- Kim, Pilhan [8575-16] S4
- Kim, Sang Gi [8622-54] SPWed
- Kim, Sanghoon [8571-46] S7
- Kim, Sang-Hoon [8585-31] S6
- Kim, Sang-Yuep [8645-6] S4
- Kim, Se-Heon [8632-11] S3
- Kim, Sehui [8581-107] SPSun
- Kim, Seon Hoon [8621-50] SPWed, [8622-54] SPWed, [8627-45] SPWed
- Kim, Seonghoon [8598-12] S4
- Kim, Seongsin M.** [8585-19] S3, [8585-34] S6, [8585-36] S6, [8632-70] S15
- Kim, Seon-Ju [8621-43] SPWed
- Kim, Serguei [8605-9] S2
- Kim, Se-Um [8642-34] SPWed
- Kim, Seung-Cheol [8644-43] SPWed
- Kim, Seunghyun [8623-61] S15
- Kim, Su Jin [8641-71] SPWed
- Kim, Sun Il [8616-25] S6, [8625-45] S10
- Kim, Sunduck [8601-77] SPTue
- Kim, Sung Eun [8587-33] S5
- Kim, Sung Jin** 8594 S4 Session Chair, 8594 S7 Session Chair, [8594-2] S1
- Kim, Sung-Jae [8621-19] S4
- Kim, Sungjee [8571-53] S8
- Kim, Sungjin [8619-52] S13
- Kim, Sung-Jin [8644-3] S1
- Kim, Sungjoon [8630-20] S5
- Kim, Sungjun [8622-37] S9, [8622-9] SPWed
- Kim, SunHee [8571-12] S2
- Kim, Sun-Kyung [8600-50] S12
- Kim, Tae Geun [8641-38] S8, [8641-71] SPWed
- Kim, Tae Hwan [8565-23] S2
- Kim, Tae Wan [8620-58] S14
- Kim, Tae-Dong [8622-40] S10
- Kim, Taeho [8565-12] S3, [8587-54] S8
- Kim, Tae-Ho [8613-4] S1
- Kim, Taek [8641-15] S4
- Kim, Tae-Un [8621-50] SPWed, [8622-54] SPWed, [8627-45] SPWed
- Kim, Un Jeong [8613-4] S1
- Kim, Wihan [8571-65] S10
- Kim, Woohong R. [8599-18] S4, [8601-108] SPTue
- Kim, Woonbae [8615-7] S2, [8616-1] S1, [8616-1] S7, [8616-17] S3, [8616-17] S4
- Kim, Woosung [8627-23] S6
- Kim, Yi Rang [8598-12] S4
- Kim, Yonghwi [8597-28] S6
- Kim, Yong-Su [8635-19] S5
- Kim, Yoon-Ho [8640-33] S8
- Kim, Yoon-Ho [8635-19] S5
- Kim, YoungChan [8587-57] S8, [8592-48] SPSun
- Kim, Young-Duk [8589-53] SPWed
- Kim, Youngjae [8601-113] SPTue, [8604-6] S2, [8611-17] S4
- Kim, Youngsil [8593-26] SPSun
- Kim, Yumi [8588-112] SPSun
- Kim, Yunhee [8616-15] S3, [8616-15] S4, [8643-4] S1
- Kimerling, Lionel C.** [8640-28] S7
- Kimmle, Christina [8634-22] S5
- Kimpel, Frank [8601-62] S15, [8610-17] S4
- Kimura, Takehiro [8565-3] S8
- Kindlmann, Gordon [8593-11] S3
- King, Brandon J. [8570-17] S4
- King, Jason [8611-3] S1
- King, Roger [8630-28] S7, [8639-18] S5
- Kinney, Mackenzie H. [8632-1] S1
- Kino, Saiko [8576-27] S3
- Kinoshita, Toru [8641-36] S8
- Kinross, Alison W. [8603-27] S6
- Kinsella, Joseph [8594-8] S3
- Kinsky, Michael [8581-180] SPMon
- Kintaka, Kenji [8633-31] S10
- Kinzer, Michel [8631-15] S17
- Kioupakis, Emmanouil 8625 S11 Session Chair, [8625-54] S12, [8641-54] S12
- Kippenberg, Tobias J. 8600 Program Committee, [8600-9] S3
- Kircher, Moritz F. [8581-15] S3
- Kirchhof, Johannes [8601-23] S6, [8621-41] SPWed
- Kirilova, Irina V. [8596-37] SPMon
- Kirilov, Todor [8599-50] S10
- Kirk, Andrew G. [8594-1] S1, [8597-38] S8
- Kirk, Rodney W. [8571-56] S9
- Kirk, Wiley P. [8620-22] S5
- Kirkpatrick, Nathaniel D. [8565-176] S3
- Kirkpatrick, Sean J.** 8580 Program Committee, [8580-3] S1, [8580-4] S1, [8580-5] S1, [8580-8] S1
- Kirleis, Matthew A. [8607-29] S9, [8631-70] S13
- Kirner, Raoul [8613-48] SPTue
- Kirner, Simon [8620-54] S11, [8620-54] S13
- Kirov, Stefan [8565-74] S5
- Kirsch, David G. [8587-51] S8
- Kirsch, Matthias [8565-183] S4
- Kirshenbaum, Mark R. [8576-20] S4
- Kirste, Ronny** [8631-65] S12
- Kirsten, Daniel [8571-118] SPMon
- Kir'yanov, Alexander V. [8601-106] SPTue
- Kisara, Katsuto [8610-7] S2
- Kiselev, Denis [8611-14] S3
- Kiseleva, Ekaterina [8587-63] SPMon
- Kishen, Anil [8566-16] S4, [8580-10] S2
- Kishi, Tatsuya [8588-35] S5
- Kiskis, Juris [8588-8] S1
- Kissel, Heiko [8605-10] S2, [8605-29] S6, [8605-31] S7
- Kist, Kenneth [8581-2] S1
- Kita, Shota [8594-16] S5, [8594-4] S2
- Kita, Takashi [8620-7] S2
- Kita, Tetsuya [8566-11] S3
- Kita, Tomohiro [8626-48] S12, [8629-47] SPWed
- Kitabayashi, Tomoharu [8601-94] SPTue
- Kitagawa, Ryota [8613-24] S5
- Kitamura, Hodaka [8587-69] SPMon
- Kitamura, Naoyuki [8621-4] S1
- Kitamura, Takashi 8643 Program Committee
- Kitano, Tsukasa [8625-73] SPWed, [8641-17] S4, [8641-20] S4, [8641-70] SPWed
- Kitasako, Yuichi [8566-2] S1
- Kitatsuji, Masashi [8565-106] S3
- Kitayabu, Akiko [8565-24] S9
- Kitayama, Ken-ichi [8645-2] S2, [8646-10] S4
- Kittel, Sonja M. 8608 Program Committee
- Kittle, David S. [8589-35] S8
- Kittler, Martin [8628-18] S7
- Kitzerow, Heinz S. 8642 Program Committee, [8642-8] S3
- Kitzler, Ondrej [8599-69] SPTue
- Kivisaari, Pyry [8625-78] SPWed
- Kivshar, Yuri S.** [8613-30] S7
- Kjellgren, Bethany [8566-7] S2
- Klaessens, John H.** [8572-9] S2, [8574-15] S3
- KLALIME, Kamil [8634-5] S1
- Klar, Thomas A. [8587-45] S7, 8595 S7 Session Chair, [8595-32] S8
- Klaunberg, Katy [8583-5] S2
- Klaus, Michael [8605-17] S4
- Klaver, Roel [8565-178] S3
- Kleffner, Bernhard [8591-14] S3
- Klehr, Andreas [8640-60] S13
- Klein, Clarissa [8607-44] SPTue
- Klein, Karl-Friedrich** 8576 Program Committee, [8576-19] S4, [8576-24] S5, [8565-24] S5
- Klein, Markus** 8641 Program Committee
- Klein, Marvin E. [8572-29] S6
- Klein, Matthew B. [8585-20] S3
- Klein, Moritz B. [8576-19] S4
- Klein, Nina [8572-35] S7, [8577-12] S6, [8579-20] S5
- Klein, Oliver J. [8568-3] S1, [8587-3] S1, [8611-7] S2
- Klein, Thomas** [8567-22] S4, [8571-1] S1, [8571-9] S2
- Kleindienst, Roman M. [8613-40] S8, [8619-19] S5, [8637-38] S9
- Kleine, Klaus [8605-8] S2
- Kleinschmidt, Lisa [8600-37] S1, [8600-37] S9, [8600-39] S1, [8600-39] S9
- Klem, John F. [8632-64] S14
- Klemm, Richard [8615-27] S6, [8615-8] S2
- Klemme, Dietmar [8590-25] S7, [8601-93] SPTue, [8604-8] S2
- Klempert, Carsten [8637-26] S5, [8637-26] S8
- Klenke, Arno [8601-2] S1, [8601-42] S10, [8601-43] S11
- Klenzner, Thomas [8571-128] SPMon
- Kleshnin, Mikhail S. [8578-73] S12
- Kley, Ernst-Bernhard [8603-5] S10, [8603-5] S2, [8611-33] S7, 8613 Program Committee, 8633 Program Committee, [8633-22] S7, [8633-35] S10
- Klimentov, Dmitriy [8599-20] S4
- Klimentov, Dmitry [8601-106] SPTue
- Klimowich, William R. [8601-79] SPTue
- Klimt, Bernhard H. [8608-12] S3
- Kliner, Andrea [8601-104] SPTue, [8616-21] S5
- Kliner, Dahv A. V. [8601-57] S14
- Kling, Rainer** 8608 Program Committee, [8608-14] S3, [8611-43] S3, [8611-43] S9
- Klinger, David [8583-2] S1
- Klohs, Jan [8583-3] S1
- Klotzbach, Udo 8607 S13 Session Chair, 8608 Conference Chair, 8608 S1 Session Chair, 8608 S6 Session Chair
- Klotzbücher, Thomas 8608 Program Committee
- Klug, Michael A. 8644 Program Committee
- Klumel, Genady [8605-4] S1, [8640-54] S12
- Klyen, Blake R. [8579-24] S5
- Klymchenko, Andrey [8588-29] S4
- Kmetik, Wiljam [8602-7] S2
- Knap, Wojciech** [8624-42] S10, [8631-84] S16
- Knapp, Wolfgang** 8603 Program Committee, 8603 S4 Session Chair
- Knappe, Ralf 8607 Program Committee
- Knauer, S. [8628-16] S6
- Knaus, Helene [8588-58] S8, [8588-97] SPSun
- Knebel, Tommy [8603-36] SPTue
- Kneissl, Michael 8625 Program Committee, [8625-48] S11, 8640 Program Committee, 8640 S4 Session Chair
- Kner, Peter A.** [8589-19] S4, 8617 Program Committee
- Knez, Mato [8613-10] S3
- Knigge, A. [8620-9] S2
- Knigge, Steffen [8605-15] S4, [8605-29] S6
- Knight, Bobby [8592-3] S1
- Knight, Jonathan C. [8576-7] S2
- Knights, Andrew P. 8629 Program Committee, 8629 S8 Session Chair, [8629-26] S7
- Knitter, Sebastian** [8622-14] S3
- Knobbe, Jens [8616-19] S5
- Knobber, Fabian [8616-37] S8
- Knobloch, Aaron J
- Knollenberg, Clifford [8625-60] S13
- Knopf, Gesche [8579-2] S1
- Knopf, George K.** [8612-2] S1, [8615-28] S6
- Knorr, Andreas 8623 S13 Session Chair, [8623-30] S7
- Knosp, Engelbert [8565-187] S4
- Knott, Graham [8588-47] S7
- Knotturi, Ville [8597-2] S1
- Knudsen, Bodo E. 8565 Conference Chair
- Knudsen, Lars [8565-110] S4
- Knutson, Jay R. [8596-32] S9
- Knutti, James W. Symposium Committee
- Knyukshto, Valentin N. [8580-43] S7
- Ko, Hyunsung [8624-6] S3
- Ko, Myoung Ock [8604-51] SPTue
- Ko, Seung Hwan [8608-18] S4
- Ko, Yongho [8641-15] S4
- Kobayashi, Ataru [8604-12] S3, [8604-53] SPTue
- Kobayashi, Hisataka 8596 Program Committee, 8596 S2 Session Chair, [8596-1] S1
- Kobayashi, Natsuko [8619-1] S1
- Kobayashi, Shunsuke** 8642 Program Committee, [8642-27] S8
- Kobayashi, Soichi [8601-90] SPTue
- Kobayashi, Takayuki [8646-24] S8, [8646-24] S9

# Index of Authors, Chairs, and Committee Members

- Kobayashi, Yohei [8607-51] SPTue  
Kobayashi, Yuji [8625-63] S14  
Kobelke, Jens [8577-18] S7, [8615-5] S1, [8621-26] S5  
Koberling, Felix [8573-26] SPSun, [8588-30] S4, [8588-36] S5, [8588-88] SPSun, 8590 Conference Chair, 8590 S7 Session Chair, 8590 S8 Session Chair, [8590-15] S4, [8590-36] SPSUN, [8596-17] S5, [8620-9] S2  
Kobler, James B. [8565-79] S7, [8588-78] SPSun  
Koblmueller, Gregor [8631-94] S15  
**Kobrin, Boris** [8613-28] S6  
Kobrin, Mauro J. [8629-34] S9  
Koburg, Cornelius [8616-42] S9  
Kocaman, Serdar [8628-15] S6  
**Kocaoglu, Omer P.** [8567-17] S3, [8567-36] S7, [8567-38] S7  
Koch, Edmund 8565 Program Committee, 8565 S3 Session Chair, [8565-183] S4, [8571-133] SPMon, [8611-19] S4, [8611-20] S4  
Koch, Gene [8622-33] S8  
Koch, Karl W. [8632-80] SPWed  
Koch, Martin 8585 Program Committee, [8606-18] S6  
Koch, Peter [8571-3] S1, [8571-59] S9  
Koch, Stephan W. [8606-18] S6, [8606-4] S2, 8619 Program Committee, [8625-55] S12  
Köcher, Wolfgang [8580-18] S4  
Kochubey, Vyacheslav [8571-97] SPMon  
Kodali, Maheedhar [8611-50] SPTue  
Koeber, Sebastian [8613-31] S7  
Koehler, Thorsten [8616-42] S9  
Koenig, Anne [8592-28] S7  
Koenig, Stefan [8611-27] S5  
Koenning, Tobias [8605-2] S1  
Koeth, Johannes [8640-7] S2  
Koh, Chin Su [8565-190] SPSun  
Koh, Gou Young [8598-12] S4  
Koh, Wee Shing [8619-43] S11, [8619-43] S13  
Koh, YeonWan [8630-20] S5  
Koh, Yun Hyuk [8622-40] S10  
Kohl, Andreas [8581-49] SPSun  
Köhler, Bernd [8601-110] SPTue, [8605-1] S1, [8605-10] S2, [8605-19] S4, [8605-29] S6  
Köhler, Klaus [8586-4] S1, [8606-10] S3, [8607-38] S11, [8625-38] S8  
Kohler, Robert [8608-5] S1, [8608-6] S1  
Kohno, Satoru [8578-117] SPSun  
Koike, Yasuhiro 8622 Conference Chair  
Koizumi, Noriaki [8572-53] SPSun, [8572-56] SPSun, [8588-26] S3  
Kok, Shawwei [8603-34] SPTue  
Kokars, Valdis [8622-52] SPWed  
Kokki, Teemu [8601-81] SPTue  
Kokotov, Sofia [8619-46] S12  
Koktysh, Dmitry S. [8594-7] S3  
Kolata, Kolja [8623-15] S4, [8629-40] S11  
Kolattkar, Anand [8587-44] S7  
Kolb, Johanna [8606-16] S5, [8639-21] S6  
Kolchenko, Vasily [8600-63] S15  
Kole, Ayeeshik [8615-11] S3  
Koleske, Daniel D. [8625-12] S3, [8641-64] S13  
Kolesnikova, Anna S. [8596-38] SPMon, [8596-39] SPMon  
Kolesov, Roman L. [8635-21] S6  
**Kolios, Michael C.** [8565-173] S2, [8581-138] SPMon, [8581-141] SPMon, [8581-143] SPMon, [8581-146] SPMon, [8581-158] SPMon, [8581-68] S9  
**Kolle, Mathias** [8598-4] S2, [8632-82] SPWed  
Kolleck, Christian [8599-22] S5  
**Kollias, Nikiforos** 8565 Conference Chair, 8565 S3 Session Chair  
Kollmann, Joe [8601-102] SPTue  
Kolmychek, Irina A. [8627-51] SPWed  
Koltchanov, Igor [8627-37] S9  
Kolthammer, William S. [8636-38] S8  
Komadina, Bruce [8584-33] S9  
Komaki, Shozo [8645-19] S6  
**Koman, Volodymyr** [8572-50] S9  
Komar, Katarzyna [8567-72] SPSun, [8571-43] S7  
Komar, Vitaliy K. [8599-13] S3, [8599-75] SPTue  
Komissar, Anatoly [8619-68] SPWed  
Komitov, Lachezar [8642-23] S7, 8643 Program Committee  
Komorowska, Katarzyna [8598-20] S6, [8627-18] S5  
Konda, Ricardo A. [8567-57] SPSun  
Kondiparthi, Mahesh [8618-33] S5  
Kondo, Keisuke [8636-35] S7  
Kondo, Kengo [8581-106] SPSun  
Kondo, Toshiyuki [8641-17] S4, [8641-20] S4, [8641-70] SPWed  
Kondru, Clement [8565-20] S5  
Konecky, Soren D. [8572-24] S5  
Kong, Fanting [8601-31] S8, [8601-64] SPTue  
Kong, Lingjie [8588-82] SPSun  
Kong, Ying [8565-112] S4  
Kongsuwan, Panjawan [8579-3] S1  
König, Karsten [8565-4] S1, [8579-1] S1, 8588 Conference Chair, 8588 S8 Session Chair, [8588-24] S3, [8588-38] S6, [8588-39] S6, [8588-46] S7, [8588-52] S8, [8588-87] SPSun, [8611-5] S1  
König, Marcelle [8588-36] S5, [8588-88] SPSun, [8590-15] S4, [8590-36] SPSUN  
Konjhozic, Aras [8635-33] S10  
**Kono, Junichiro** [8613-33] S7  
Konrad, Thomas [8637-25] S5, [8637-25] S8  
Konstantaki, Maria [8576-13] S3  
Konyukhova, Julia [8571-97] SPMon  
Koo, Bonhyeong [8622-9] SPWed  
Koo, Jae Bon [8626-42] SPWed  
Koo, Jasung [8565-38] S2, [8565-51] S1  
Kooi, Susan A. [8601-61] S15  
Koons, Christian [8600-9] S3, [8613-31] S7, [8629-24] S7  
Kopans, Daniel B. [8574-16] S4  
Kopelman, Raoul [8568-18] S4, [8581-17] S3, [8581-61] S9, [8595-52] S12, [8596-26] S8  
Koponen, Joonas J. [8601-57] S14, [8601-81] SPTue  
Kopp, Fabian [8640-15] S3  
**Kopp, Victor I.** [8601-118] SPTue  
Koptev, Andrey V. [8611-51] SPTue  
Kopylov, Denis A. [8627-51] SPWed  
**Kopylov, Oleksii** [8625-74] SPWed  
Korai, Roza P. [8588-25] S3  
Korbelik, Jagoda [8572-38] S7  
**Korbelik, Mladen** 8582 Program Committee, 8582 S1 Session Chair, [8582-5] S1  
Koreshev, Sergey N. [8644-31] SPWed  
Koreshkov, Konstantin [8647-8] S4  
Korn, Anja [8588-27] S4  
Korn, Dietmar [8629-24] S7  
Kornaszewski, Lukasz W. [8606-22] S7  
Korneev, Nikolai A. [8604-21] S5  
Körner, Jörg [8602-7] S2  
Korobeynikov, Igor V. [8612-20] S4  
Korobko, Dmitrii [8601-109] SPTue  
Korolev, Andrey E. [8647-8] S4  
Koronovskii, Alexey A. [8580-48] SPMon, [8580-49] SPMon  
Korotkova, Olga 8610 Program Committee, 8610 S7 Session Chair, [8610-31] S7  
Korten, Till [8594-25] S7  
Kortker, Jeroen P. [8588-25] S3  
Korz, Vladimir [8598-8] S3  
Koshiba, Masanori [8647-14] S6  
Koshizaki, Naoto [8599-38] S7  
Koshkina, Olga [8595-63] S14  
Kosik, Ivan [8581-148] SPMon, [8581-151] SPMon, [8581-152] SPMon, [8581-184] SPMon, [8581-66] S9  
Kosina, Hans [8631-20] S17  
Koskinen, Mervi [8640-63] S14  
Koskinen, Riku [8640-63] S14  
Kossovich, Elena L. [8596-37] SPMon  
Kostanyan, Radik B. [8621-57] S2  
Köster, Niko Stefan [8623-15] S4, [8623-8] S3, [8629-40] S11  
Köstler, Stefan [8570-27] SPSun  
Kostov, Dan [8565-206] S1  
Kostyk, Piotr [8587-18] S2, [8592-33] S8  
Kotagiri, Nalinikanth [8596-11] S3  
Koteeswaran, Dornadula [8577-6] S2  
Kotelnikov, Evgenii Yu [8640-58] S13  
Kothapalli, Sri-Rajasekhar [8583-7] S2  
Kotlicki, Omer [8636-23] S5  
Kotsar, Yulia [8625-67] S14  
Kou, Rai [8628-5] S3  
Koukitu, Akinori [8641-36] S8  
Koukourakis, Nektarios [8589-56] SPWed  
Koullick, Ed [8565-53] SP1  
Kovalchuk, Anna [8585-26] S5  
Kovalchuk, Olga [8585-26] S5  
Kovalenko, Nazar O. [8599-13] S3  
Kovalev, Alexander A. [8607-50] SPTue  
Kovalik, Joseph M. [8610-25] S5  
Kovanis, Vassilios I. 8619 Program Committee, [8619-11] S3, [8619-6] S2  
Kowalczyk, Andrew [8568-12] S3, [8568-36] SPMon, [8568-37] SPMon  
**Kowalczyk, Andrzej A.** [8601-11] S3  
Koyama, Fumio 8633 Conference Chair, 8633 S2 Session Chair, [8633-14] S5, [8633-33] S10, 8639 Program Committee, 8639 S7 Session Chair, [8639-14] S4, [8639-31] S8  
Kozacic, Stephen T. [8622-29] S7, [8622-30] S7, [8624-33] S8  
Kozak, Marcin [8601-15] S4, [8601-15] S9  
Kozioziemski, Bernard [8602-16] S4  
Kozuka, Yusuke [8626-15] S4  
Kracht, Dietmar [8599-22] S5, [8601-26] S7, [8601-30] S8, [8604-26] S6, [8609-13] S3  
Krafft, Christoph [8565-186] S4, [8577-18] S7, [8615-5] S1  
Kraft, Andrew [8565-204] S5  
Kraft, Christian [8620-9] S2  
Krainak, Michael A. [8599-25] S5, [8599-52] S10, 8610 Program Committee, [8610-21] S4, [8610-3] S1  
Kraitl, Jens [8572-6] S2, [8583-2] S1, [8591-21] SPWed, [8591-6] S2  
Krakowski, Michel [8640-61] S13  
Krall, Michael [8640-44] S10  
Krämer, Benedikt [8588-30] S4, [8588-36] S5, [8588-88] SPSun, [8590-15] S4  
Kramer, Greg M. [8576-20] S4  
**Krämer, Ria G.** [8601-27] S7  
Kramer, Richard 8586 Program Committee, [8586-28] S4  
Krames, Michael 8641 Program Committee, 8641 S3 Session Chair, [8641-5] S2  
Krampert, Gerhard M. [8616-11] S3  
Kränkel, Christian 8599 Program Committee, 8599 S6 Session Chair, [8599-9] S2  
Krasieva, Tatiana B. [8588-39] S6  
Krasnaberski, Aliaksei [8600-37] S1, [8600-37] S9, [8600-39] S1, [8600-39] S9  
Kraus, Dominik [8566-15] S4  
Kraus, Martin F. [8567-27] S5, [8567-32] S6, [8571-13] S3, [8571-22] S4  
Krause, Anne [8603-9] S3  
Krause, Kathleen M. [8581-46] S8  
Krause, Volker [8601-15] S4, [8601-15] S9, [8603-9] S3, 8605 Program Committee, 8605 S1 Session Chair  
Krauss, Thomas F. [8629-32] S9, [8629-43] S11, [8630-24] S6  
Krausz, Ferenc [8599-60] S12, [8623-37] S10  
Krebs, Manuel [8601-48] S12  
Kreher, David [8622-45] S11  
Kreis, Mark [8585-15] S3  
Kreissl, Jochen [8624-20] S6  
**Krejci, Martin** [8605-34] S7  
Kremer, Clemens [8615-31] S7  
Kremsler, Thomas [8565-94] S9  
Krenn, Mario [8635-30] S6, [8635-30] S9  
Krenner, Hubert J. [8626-39] S9  
Krestnikov, Igor [8640-61] S13  
Kreyling, Wolfgang [8595-59] S13  
Kriegshaeuser, Uwe [8603-19] S5  
**Krier, Anthony** 8631 S12 Session Chair, [8631-60] S11  
Kriesel, Jason M. [8631-32] S6  
Krishta, Anil [8570-28] SPSun  
**Krishna, Sanjay** 8612 Program Committee, [8631-28] S5, [8631-54] S19, [8632-71] S16  
Krishnakumar, Rajiv [8635-24] S7  
Krishnamoorthy, Ashok V. [8627-5] S2, [8630-23] S6, [8630-41] S11, [8630-41] S2  
Krishnaswamy, Venkataraman [8578-37] S6, [8592-14] S4, [8592-31] S7, [8592-34] S8  
**Kristensen, Anders** [8629-9] S2  
Krivousudsky, Ondrej [8599-67] SPTue  
Kroehn, Phillip [8590-5] S1  
Kroisamer, Julia-Sophie [8567-39] S7, [8571-40] S7  
Kroker, Stefanie [8633-22] S7, [8633-35] S10  
Krol, Denise M. 8611 Program Committee  
Krol, Silke [8595-5] S1  
Kromkova, Katarina [8588-32] S5  
Kronast, Wolfgang [8616-34] S7  
Kronfeldt, Heinz-Detlef [8609-11] S3  
**Krost, Alois J.** 8625 S4 Session Chair, [8625-4] S1  
Krstajic, Nikola [8588-34] S5, [8588-44] S7  
Krueger, Alexander [8567-86] SPSun  
Krueger, Arnd K. 8588 Program Committee  
Krüger, Alexander [8579-2] S1  
Krüger, Jörg [8607-6] S2, [8607-6] S6  
Krüger, Michael [8623-38] S10  
Kruger, Robert A. 8581 Program Committee  
Kruglik, Sergei G. [8575-15] S4  
Kruglov, Sergey [8588-62] S9  
**Kruizinga, Pieter** [8581-14] S2  
**Krumholz, Arie** [8581-117] SPSun  
Kruschke, Bastian [8599-15] S3  
Kruschwitz, Brian E. 8602 Program Committee, 8602 S4 Session Chair, [8602-12] S4, [8602-13] S4  
Kruse, Jens [8637-26] S5, [8637-26] S8  
Krysa, Andrey B. [8640-11] S2  
Krzempek, Karol [8631-86] S17  
**Ksouri, Sarah Isabelle** [8607-30] S9, [8637-33] S8  
Ku, Pei-Cheng [8625-82] SPWed  
Ku, Zhiliang [8622-51] SPWed  
Kuan, William [8597-5] S2  
Kuang, Cuifang [8588-114] SPSun  
**Kuang, Ping** [8632-6] S2



# Index of Authors, Chairs, and Committee Members

- Kub, Francis J. [8604-30] S7  
**Kuball, Martin** [8625-30] S7  
Kubby, Joel 8617 Conference Chair, 8617 S3 Session Chair, [8617-13] S3, 8629 Conference Chair  
Kubeček, Václav [8599-13] S3  
Kubilius, Virgaudas [8626-37] S9  
Kuboya, Shigeyuki 8631 Program Committee, 8631 S7 Session Chair  
Kucera, Courtney [8599-39] SPTue  
Kucharski, Robert [8625-36] S8, [8625-9] S2  
Kucherak, Olexandr [8588-29] S4  
Kuchibhotla, Krishna [8605-9] S2  
Küchler, Saskia [8565-183] S4  
Kucirek, Jan Philipp [8599-16] S3  
Kucukgok, B.  
Kudlinski, Alexandre [8601-47] S12  
Kudryashov, Alexis V. 8600 Conference Chair, 8600 S2 Session Chair, [8600-2] S1, 8617 Program Committee  
Kudryashov, Igor V. [8640-58] S13  
Kuech, Thomas F. [8620-58] S14  
Kuehnemann, Frank [8621-8] S2  
**Kueppers, Franko** [8639-11] S4, [8645-9] S4, 8646 Program Committee  
Kues, Michael [8622-14] S3  
Kues, Wilfried [8593-22] S5, [8595-16] S4, [8611-13] S3  
Kuhlmeier, Dirk [8615-12] S3  
Kuhn, Michael [8616-26] S6  
Kuhn, Peter [8587-44] S7  
Kühnel, Mark P. [8565-110] S4  
Kuipers, Marjorie [8585-29] S5  
Kujime, Ryouzuke [8643-1] S1  
**Kukhtarev, Nikolai V.** [8570-23] S6, [8644-1] S1  
**Kukhtareva, Tatiana V.** [8570-23] S6, [8622-47] S11  
Kulcke, Axel [8591-6] S2  
Kulikov, Victor A. [8610-32] S7  
Kulikovskiy, Anton [8579-37] SPMon  
Kulikovskiy, Artem [8579-37] SPMon  
Kulkarni, Gauri R. [8598-5] S2, [8637-12] S2  
Kulkova, Irina [8627-33] S8  
Kullberg, Richard C. 8614 Program Committee  
Kumacheva, Eugenia [8619-24] S6  
**Kumagai, Hiroshi** [8604-12] S3, [8604-49] SPTue, [8604-53] SPTue, 8609 Program Committee  
Kumagai, Yoshinao [8641-36] S8  
Kumano, Hidekazu [8619-1] S1  
Kumar, A. Senthil [8616-3] S1, [8616-3] S7  
Kumar, Anand T. N. 8578 Program Committee, 8578 S14 Session Chair, [8578-77] S13  
Kumar, Arunandan [8622-43] S10  
Kumar, Neeru C. [8579-13] S3  
**Kumar, Satish** [8586-7] S1  
Kumar, Vanga Sudheer [8629-15] S4, [8632-17] S4  
Kumar, Vijay [8637-44] S10  
Kumavor, Patrick D. [8578-34] S6, [8581-129] SPSun, [8581-173] SPMon, [8581-174] SPMon, [8581-97] SPSun  
Kunath, Christian [8614-13] S3  
Kundra, Vikas [8568-41] SPMon, [8596-2] S1  
Kundu, Shreya [8639-8] S3  
Kunert, Bernadette [8606-18] S6, [8629-42] S11, [8640-32] S7  
Kung, Frederic H. [8621-36] S7  
Kung, Hsing-Jien [8587-12] S2  
**Kung, Patrick** [8585-19] S3, [8585-34] S6, [8585-36] S6, 8631 Program Committee, 8631 S11 Session Chair, [8632-70] S15  
Kunyansky, Leonid [8581-48] S8  
Kunz, Jeremy [8631-62] S18  
Kunz, Oliver [8608-27] S13, [8608-27] S6  
Kunzer, Michael [8607-38] S11  
Kuo, Anthony N. [8567-18] S4, [8567-23] S5  
Kuo, Haochung [8625-75] SPWed  
**Kuo, Hao-Chung** [8620-59] S14, [8620-70] SPWed, 8625 Program Committee, [8625-79] SPWed, [8633-11] S3, 8641 Program Committee, [8641-73] SPWed  
Kuo, Kung-Kai [8570-26] SPSun  
Kuo, Shihyang [8579-19] S5  
Kuo, Yen-Kuang [8619-66] SPWed, [8620-76] SPWed, [8625-76] SPWed  
Kuo, Yih-Ting [8625-76] SPWed  
Kupiec, Stephen A. [8618-22] S7  
Kupke, Renate [8617-9] S2  
Kuppam, Mohan-Babu [8624-26] S7, [8624-27] S7  
Küppers, Franko [8639-15] S4, [8639-16] S4, [8645-7] S4  
Kura, Dzelal [8600-40] S1, [8600-40] S9  
Kurabayashi, Katsuo [8575-29] SPSun, [8575-31] S1, [8575-31] S7, [8616-8] S2  
Kurahashi, Teruo [8630-26] S7  
Kuramochi, Eiichi [8635-39] S12  
Kuranov, Roman V. [8571-2] S1  
Kurata, Hiroyuki [8644-33] SPWed  
Kurata, Yasuaki [8646-28] S10, [8646-28] S9  
Kurhanewicz, John [8584-29] S8  
Kuri, Toshiaki [8645-2] S2  
Kurihara, Takayuki [8644-14] S4  
Kurimura, Sunao [8635-32] S6, [8635-32] S9  
Kurka, Jacob [8624-18] S5  
**Kurokawa, Kazuhiro** [8571-16] S3, [8571-18] S3  
Kurosaki, Ryojo [8607-39] S11  
**Kurth, Steffen** [8614-2] S1  
Kurti, R. Steven [8566-20] SPSun  
Kurtin, Juanita [8641-48] S11  
Kurumida, Junya [8646-8] S4  
Kusaka, Hiroyuki [8629-29] S8  
Kusakabe, Kazuhide [8641-25] S6  
Kusek, Mark E. [8565-111] S4  
**Kushibiki, Toshihiro** [8581-113] SPSun, [8581-165] SPMon  
Küster, Matthias [8605-19] S4  
Kut, Carmen [8571-69] S11  
Kuttner, Yosef Yehuda [8594-22] S6  
Kuwata-Gonokami, Makoto [8623-27] S8  
Kuyyalil, Jitesh [8631-78] S15  
Kuzin, Evgeny A. [8601-82] SPTue, [8601-86] SPTue, [8604-21] S5  
Kuzmin, Anton [8630-16] S4  
Kuznetsov, Andrey [8601-57] S14  
Kuznetsov, Mark [8571-102] SPMon, [8571-103] SPMon  
Kuznetsov, Vladimir A. [8600-1] S1  
Kuznetsov, Yuri [8582-4] S6  
Kwak, Donghyeon [8587-56] SPMon  
Kwon, Churl-Su [8565-179] S3  
Kwon, Dong-Jun [8614-10] S2  
Kwon, Hyck-Jun [8608-18] S4  
Kwon, Hyunah [8613-20] S4  
Kwon, Janice [8572-38] S7  
Kwon, Jong-Oh [8616-40] S9  
Kwon, Kyung Mook [8630-47] SPWed  
Kwon, Min Woo [8644-43] SPWed  
Kwon, Oh-Jang [8621-17] S4  
Kwon, O-ki [8565-23] S2  
Kwon, Osung [8635-19] S5  
Kwon, Soon-Hong [8640-33] S8  
Kwon, Yong Ku [8622-3] S1  
Kwon, Yong Seok [8601-72] SPTue, [8604-51] SPTue  
Kwon, Yong-Hyok [8609-11] S3  
Kwon, Yongjoo [8643-4] S1  
Kwon, Young [8607-58] SPTue  
Kwong, David N. [8629-51] SPWed, [8630-38] S9, [8630-45] SPWed  
Kwong, Dim-Lee [8629-29] S8  
Kwong, Nai-Hang [8638-15] S4  
Kwong, Norman [8640-5] S1  
Kwong, Tiffany C. [8581-133] SPSun  
Kyriakides, Alexandros [8572-40] S8  
Kyriash, Matthew R. [8575-3] S1
- 
- L**
- La Rivière, Patrick J.** [8593-11] S3  
Laakso, Antti I. [8619-9] S2, [8640-63] S14  
Laamanen, Mari [8614-7] S2  
Labaria, George R. [8602-11] S3  
LaBarre, Paul [8615-29] S6  
Labau, Sébastien [8616-20] S5  
Labeysse, Pierre R. [8631-34] S7  
LaBrake, Dwayne L. 8613 Program Committee  
**Labroille, Guillaume** [8588-67] S10  
Lachaine, Rémi [8611-4] S1  
Lachinova, Svetlana L. [8610-18] S4  
Lacombe, Francois 8575 Program Committee, 8575 S1 Session Chair, [8575-15] S4, [8575-2] S1  
LaConte, Stephen M. [8578-94] SPSun  
Lacourt, Pierre-Ambroise [8608-15] S3  
Lacroix, Steve [8587-28] S4, [8588-22] S3  
Laczko, Gabor 8590 Program Committee  
Lademann, Jürgen M. 8580 Program Committee, 8580 S4 Session Chair, [8580-18] S4, [8588-24] S3, [8588-52] S8, 8591 Program Committee, 8591 S3 Session Chair, [8591-14] S3  
Laderer, Mathew C. [8631-9] S2  
Lægsgaard, Jesper [8601-19] S5, [8601-21] S6, [8601-29] S7, [8601-73] SPTue  
Laffray, Sophie [8588-22] S3  
Lafon, Robert E. [8610-16] S4  
Lafosse, Frederic [8621-48] SPWed  
Lafosse, Xavier [8631-69] S13  
Laframboise, Sylvain R. [8631-82] S16  
Legendijk, Ad [8632-27] S6  
Lagerwaard, Frank J. [8574-25] SPSun  
Lagin, Larry 8602 Program Committee  
Lagoda, Gwen A. [8565-193] S2, [8565-39] S2, [8565-40] S2  
**Lai, Kin Seng** [8599-48] S4, [8599-48] S9  
Lai, Po-Yen [8601-67] SPTue, [8601-84] SPTue  
Lai, Puxiang [8581-105] SPSun, [8581-51] S8  
Lai, Ryan [8604-6] S2  
Lai, Tom [8588-101] SPSun  
Lai, Wei-Cheng [8570-6] S2, [8570-9] S2, [8627-20] S5  
Lai, Yicheng [8628-21] S7, [8629-13] S3  
Lai, Yi-Ying [8606-13] S4  
Lai, Yu-Hung [8581-98] SPSun  
**Lai, Zhenhua** [8588-56] S8, [8589-36] S8, [8621-30] S6  
Laing, Anthony [8628-16] S6  
Laissue, Jean A. [8565-235] SPSun  
Lakhiani, Chrisovalantis [8618-5] S11, [8618-5] S2  
**Lakhtakia, Akhlesh** 8613 Program Committee, [8620-2] S1, [8620-4] S1, [8620-47] S1  
Lakowicz, Joseph R. 8588 Program Committee, 8597 Conference Chair, 8597 S5 Session Chair, 8597 S6 Session Chair, 8597 S7 Session Chair, 8597 S8 Session Chair  
Lakshman, Minalini [8581-130] SPSun, [8587-36] S5  
Lakshmana, Sudheendra [8596-13] S2, [8596-13] S4  
Lalanne, Philippe [8623-28] S8, [8627-32] S8, 8633 Program Committee, 8633 S8 Session Chair, [8633-4] S2, [8633-6] S2  
Lalkens, Birka [8595-10] S2  
LaLumondiere, Stephen [8605-22] S5, [8620-58] S14, [8625-32] S7, [8640-52] S12  
**Lam, Edmund Y.** [8571-87] SPMon  
**Lam, Stephen** 8565 Conference Chair, 8565 S1 Session Chair, 8565 S7 Panel Moderator, [8565-113] S4, [8565-97] S1, [8565-98] S1, [8565-99] S1, 8575 Program Committee  
Lam, Sylvia F. [8572-38] S7, [8592-3] S1  
Lamainière, Laurent [8602-15] S4  
Lamarque, Frederic [8618-16] S5  
**Lambin Iezzi, Victor L.** [8623-63] SPWed  
**Lambrecht, Armin** 8631 Program Committee  
Lambrechts, Andy [8613-39] S8  
Lambrechts, S.A.G. [8587-49] S7  
Lambson, Kara [8568-11] S3  
**Lamela Rivera, Horacio** [8565-38] S4, [8581-39] S7, 8619 S6 Session Chair, [8619-37] S9, [8624-22] S6, [8624-26] S7, [8624-27] S7  
Lammertyn, Jeroen [8629-4] S1  
Lamouche, Guy [8583-19] S4, [8583-9] S2  
Lamour, Tobias P. [8604-29] S6  
Lampin, Jean-François [8624-22] S6  
Lamprecht, Tobias [8630-30] S8  
Lamy, Jean-Michel J. [8640-16] S4  
Lan, Dongchen [8620-28] S7  
Lan, Gongpu [8567-3] S1, [8567-45] S8, [8567-5] S1, [8571-122] SPMon  
Lan, Xinwei [8601-119] SPTue, [8601-120] SPTue, [8613-56] SPTue, [8621-21] S4, [8621-63] SPWed, [8622-56] SPWed, [8626-66] SPWed  
Lan, Yi-Hsin [8643-17] S4  
Lanari, Ann [8601-34] S8  
Lancaster, David G. [8599-6] S2, [8632-21] S5  
Lanco, Loic [8619-5] S1  
Landaís, David [8621-32] S7  
Landaís, Pascal [8627-14] S4  
Landon, Chelsea [8584-4] S5  
Landry, Gary D. [8639-17] S5  
Landry, James P. [8587-66] SPMon  
**Lane, Pierre M.** [8565-113] S4, [8565-97] S1, [8565-98] S1, [8572-38] S7  
Lane, Stephen M. [8589-20] S4  
Lang, Keith D. [8605-25] S5  
Lang, Klaus-Dieter [8622-8] S2  
Langa, Sergiu [8614-13] S3  
Lange, Bjoern I. [8641-31] S7  
Lange, Christoph [8623-8] S3  
Lange, Jeffrey J. [8590-9] S2  
Lange, Nicolas [8616-27] S6  
Lange, Robert 8610 Program Committee  
Langelaar, Matthijs [8627-40] S9, [8632-36] S9  
Langenbucher, Achim [8565-69] S4  
Langer, Klaus-Dieter [8645-23] S7, [8645-23] S7B  
Langer, Torsten [8625-72] SPWed  
Langford, Nathan K. [8636-38] S8  
Langner, Andreas [8601-15] S4, [8601-15] S9  
Lani, Sébastien [8616-16] S3, [8616-16] S4  
Lanigan, Peter [8586-23] S5  
Lansford, Rusty [8593-19] S5  
Lantier, Thomas [8602-15] S4  
Lantz, Eric [8592-10] S4  
Lanuti, Michael [8565-117] S5, [8571-23] S4  
Lanza, Gregory M. [8581-145] SPMon  
Lanzieri, Claudio [8624-42] S10  
Lanzillotti-Kimura, Norberto Daniel [8629-23] S7



# Index of Authors, Chairs, and Committee Members

- Lanzoni, Patrick [8616-18] S3, [8616-18] S4, [8616-44] S9, [8618-13] S4  
Lapayre, Jean-Christophe [8572-51] SPSun  
Lapointe, Éric [8578-78] S13  
Lapointe, Jean [8613-12] S3  
Lappa, Alexander [8565-17] SPSun, [8579-37] SPMon  
Lara-Peña, Mayra Alejandra [8644-40] SPWed  
Laref, Slimane [8632-55] S12  
Large, Maryanne C. J. 8632 Program Committee  
Larger, Laurent [8600-12] S3, [8600-73] SPTue  
**Larin, Kirill V.** 8567 Program Committee, 8567 S3 Session Chair, [8567-42] S8, [8567-52] S9, [8571-64] S10, [8571-82] S12, 8580 Conference Chair, 8580 S2 Session Chair, [8580-1] S4, [8580-26] S5, [8580-28] S5, 8593 Program Committee, [8593-14] S3, [8593-18] S4  
Larina, Irina V. [8567-42] S8, [8580-26] S5, [8593-14] S3  
Larisch, Gunter [8639-30] S8  
**LaRocca, Francesco** [8567-18] S4, [8567-34] S6  
Larouche, Carl [8576-21] S4  
Larouche, Stéphane [8628-17] S6  
Larson Smith, Kjersta [8581-37] S6  
Larson, Bjorg A. [8565-1] S1, [8565-88] S8, [8572-36] S7, [8577-5] S2  
Larson, Timothy A. [8595-6] S1, [8596-16] S5  
Larsson, Anders 8639 Program Committee, [8639-28] S7, [8639-32] S8  
Larsson, Marcus [8578-116] SPSun  
Lartigue, Leniac [8595-40] S9  
Larusson, Fridrik [8578-22] S4  
Lasanajak, Yi [8597-37] S8  
Lasciari, Alessandro [8595-37] S9  
Lasfargues, Gilles [8621-14] S3  
Lashkari, Bahman [8565-230] S3  
Laskin, Alexander V. [8600-38] S1, [8600-38] S9, [8642-17] S5, [8644-5] S2  
Laskin, Vadim [8600-38] S1, [8600-38] S9, [8642-17] S5, [8644-5] S2  
Lasri, Jacob [8601-54] S13  
**Lasser, Theo** [8571-48] S8, [8571-54] S8, [8571-79] S12, [8589-51] S11, [8590-8] S2  
Latas, Sofia C. [8604-22] S5  
Latham, Bruce [8571-68] S11  
Latimer, Cassandra [8565-4] S8  
Latka, Ines [8577-18] S7, [8615-5] S1  
Latkowski, Sylwester [8627-14] S4  
**Latrive, Anne** [8565-184] S4, [8571-25] S4, [8571-51] S8, [8575-23] S6  
Lau, Darryl [8588-21] S3  
Lau, Kei May [8628-13] S5, 8641 Program Committee, 8641 S9 Session Chair  
Lau, Wei-Pin Ernest [8599-48] S4, [8599-48] S9  
Laufer, Jan G. [8581-32] S6, [8581-67] S9  
Lauffer, P. [8641-47] S10  
Laughney, Ashley M. [8592-14] S4, [8592-31] S7, [8592-34] S8  
Lauprêtre, Thomas [8636-22] S5  
Laurain, Alexandre [8606-13] S4  
Laurent, Thomas [8640-9] S2  
Laurila, Marko [8601-19] S5, [8601-21] S6, [8601-29] S7, [8601-73] SPTue  
Lauritsen, Kristian [8588-33] S5, [8590-15] S4, [8590-25] S7, [8590-36] SPSUN, [8601-93] SPTue, [8604-8] S2  
Laursen, Bo W. [8590-6] S1  
Lausten, Rune [8589-29] S6  
Lautenschläger, Stefan [8625-80] SPWed  
Lauwers, Gregory [8575-6] S2  
Laux, Sébastien [8599-45] S8  
Lavastre, Eric A. G. [8602-15] S4  
Lavery, Martin P. J. [8610-20] S4, [8637-46] SPWed, [8637-51] SPWed  
Lavey, Brent J. [8569-25] SPSat  
Lavin, Victor [8600-70] SPTue  
Lavinsky, Daniel [8567-7] S2, [8567-8] S2, [8567-9] S2  
**Lavoie, Félix-Antoine** [8570-12] S3, [8597-23] S5  
Lavrinenko, Andrei V. [8627-33] S8  
Law, Kwok Keung 8631 S4 Session Chair  
Lawall, John R. [8633-23] S7  
Lawrence, Nate [8635-29] S6, [8635-29] S9  
**Lawson, Joseph L.** [8612-1] S1, [8612-21] SPTue  
Lawson, T. [8628-16] S6  
Lazar, Alexander J. [8571-82] S12, [8580-28] S5  
Lazdovica, Kristine [8622-52] SPWed  
Lazouli, Mohamed [8604-33] S7  
Lazzari, Jean-Louis [8620-20] S5  
Le Bahers, Tangui [8641-61] S4  
Le Bris, Arthur [8620-16] S4  
Le Coarer, Etienne P. [8616-20] S5, [8627-19] S5  
Le Conte de Poly, Bertrand [8565-116] S5, [8565-184] S4, [8565-37] S1, [8572-21] S4  
Le Corre, Alain [8631-78] S15, [8634-5] S1  
Le Cren, Elodie [8600-16] S4  
Le Goffic, Olivier [8621-32] S7  
Le Maitre, Christine [8571-92] SPMon  
Le Perchec, Jérôme [8631-14] S3, [8631-71] S13  
Le Pioufle, Bruno [8595-34] S8  
Le Roux, Xavier [8621-2] S1, [8627-34] S8  
Le Rouzo, Judikaël [8619-27] S7, [8619-29] S7  
Le Thomas, Nicolas [8627-18] S5  
**Le, Du Vinh Nguyen** [8573-21] S6, [8576-22] S4, [8579-25] S6  
Le, Hanh N. D. [8573-22] S6  
Le, Khoa [8599-23] S5  
Le, Quang Trung [8645-7] S4, [8645-9] S4  
Le, Thanh T. [8600-14] S4  
Leach, Jacob H. [8625-69] S14, [8625-83] SPWed  
Leach, Jeffrey H. [8605-38] SPTue  
Leach, Jonathan [8597-35] S8, [8635-28] S6, [8635-28] S9  
Leach, Richard R. 8602 Program Committee, [8602-16] S4, [8602-2] S1  
Leadley, David R. [8629-32] S9  
**Leahy, Martin J.** [8571-88] SPMon, 8580 Conference Chair, 8580 S4 Session Chair, [8580-1] S4, [8580-20] S4, [8580-33] S7, [8580-38] S8  
**Lear, Kevin L.** 8639 Program Committee  
**Learkthanakhachon, Supannee** [8633-34] S10  
**Leary, James F.** 8587 Conference CoChair, 8587 S10 Session Chair, 8587 S11 Session Chair, [8587-41] S7, [8615-11] S3, 8618 S1 Session Chair, 8618 S2 Session Chair  
Leatherbury, Linda [8593-26] SPSun, [8593-9] S2  
Leathersich, Jeffrey M. [8625-68] S14  
**Leavesley, Silas J.** [8589-27] S6  
LeBeau, J. [8625-91] S14  
Lebel, Réjean [8574-22] S5  
LeBlanc, Herve P. [8631-22] S4, [8640-42] S10  
**Leblond, Frederic** 8565 Program Committee, 8565 S4 Session Chair, [8574-3] S1, 8578 Program Committee, 8578 S11 Session Chair, [8578-69] S11, [8578-81] S13  
Lebovka, Nikolai I. [8637-29] S7  
Lebugle, Maxime [8611-38] S8  
Leburton, Jean-Pierre [8631-43] S8  
Lecart, Sandrine [8590-43] SPSUN  
Lechuga, Laura Maria 8570 Program Committee, 8597 Program Committee, 8629 Program Committee  
Leclair, Sébastien [8583-5] S2  
Lecomte, Roger [8574-22] S5  
Ledemi, Yannick [8621-54] SPWed, [8632-78] SPWed  
Ledentsov, Nikolay N. 8619 Program Committee, [8639-26] S7, [8639-30] S8  
Ledig, Johannes [8641-45] S10  
Ledingham, Patrick M. [8635-35] S10  
Ledoux-Rak, Isabelle N. 8622 Program Committee  
Ledwosinska, Elizabeth [8624-29] S8  
Lee Koo, Yong-Eun [8568-18] S4, [8581-61] S9, [8596-26] S8  
Lee, Alan W. M. [8585-7] S1  
Lee, Albert [8597-4] S1  
Lee, Anthony M. [8565-113] S4, [8565-7] S2, [8565-97] S1, [8565-98] S1  
Lee, Benjamin L. 8618 Program Committee, 8618 S6 Session Chair  
Lee, Bernard T. [8574-17] S4  
Lee, Byeong Ha [8567-51] S9, [8576-10] S2, [8589-50] S11, [8593-24] SPSUN  
Lee, Byeong Il [8589-42] S9, [8598-22] SPSUN  
Lee, Byeong-Hyeon [8619-45] S12, [8619-74] SPWed, [8627-45] SPWed  
**Lee, Byoung Ho** 8643 Program Committee, [8643-2] S1  
Lee, Carlos 8603 Program Committee, 8603 S3 Session Chair, 8608 Program Committee  
Lee, Chan Young [8565-195] S1  
Lee, Changho [8581-107] SPSun  
Lee, Chang-Lyoul [8643-16] S4  
Lee, Chang-Min [8634-4] S1  
Lee, Chang-won [8613-4] S1  
**Lee, Charles Y. C.** 8622 Program Committee  
Lee, Chee-Wei [8629-13] S3  
Lee, Cheng-Kuang [8565-9] S3, [8571-129] SPMon  
Lee, Cheng-ru [8581-74] S10  
**Lee, Chih-Kung** [8612-15] S3  
Lee, Chi-Sen [8640-4] S1  
Lee, Chung-Min [8623-61] S15  
Lee, Chun-Yao [8620-60] S15  
**Lee, Daeho** [8608-18] S4  
Lee, Daniel C. [8630-23] S6  
Lee, David [8565-188] SPSun  
Lee, Donghyun [8567-41] S8  
Lee, Dong-Mok [8624-26] S7, [8624-27] S7  
Lee, Dong-Ryoung [8589-53] SPWED  
**Lee, El-Hang** [8622-3] S1, 8628 Conference Chair, 8628 S4 Session Chair, 8628 S5 Session Chair, 8628 S8 Session Chair, [8628-25] SPWed  
Lee, Eun Seong [8574-11] S2, [8593-27] SPSUN  
Lee, Eunjoon [8588-112] SPSun  
Lee, Eun-Khwang [8632-54] S12  
Lee, Eunsung [8616-1] S1, [8616-1] S7  
Lee, Fred T. [8584-5] S2  
Lee, Geng-Yen [8625-70] SPWed  
Lee, Haekwang [8565-12] S3  
Lee, Hansuek [8594-3] S2  
Lee, Hee Kwan [8641-30] S6  
Lee, Hee Yoon [8571-29] S5, [8572-22] S4  
**Lee, Ho** [8579-4] S1, [8587-56] SPMon  
Lee, Hong-Seok [8643-4] S1  
Lee, Hsiang-Chieh [8571-99] SPMon  
**Lee, Hsuan** [8588-70] S10, [8597-26] S6  
Lee, Hwan Gon [8565-190] SPSun  
Lee, Hwang 8635 Conference Chair  
Lee, Hyung Seok [8589-44] S10  
Lee, Iksu [8630-20] S5  
Lee, Ilha [8622-6] S2  
Lee, Ill-Hwan [8622-9] SPWed  
Lee, Jae Hwi [8576-10] S2, [8593-24] SPSUN  
Lee, Jae Yong [8574-11] S2, [8593-27] SPSUN  
Lee, Jaejin [8614-17] S3  
Lee, Jae-Seung [8565-90] S9  
Lee, Jaesoong [8613-4] S1  
Lee, Jangwoon [8565-103] S2  
Lee, Jeong-Eom [8589-6] S2  
Lee, Jeonghyeon [8565-12] S3  
Lee, Jeong-Soo [8625-47] S11  
Lee, Ji Yeol [8571-131] SPMon  
Lee, Ji Youn [8573-23] S6, [8583-8] S2  
Lee, Jin [8630-41] S11, [8630-41] S2  
Lee, Jin-Ho [8612-22] SPTue  
Lee, Jin-Moo [8565-204] S5  
Lee, Jiun-Haw [8622-44] S10, [8642-31] SPWed, [8643-17] S4  
Lee, Jinnun-Yih [8642-31] SPWed  
Lee, Joan H H [8632-37] S9  
Lee, Jong Hwan [8578-41] S7, [8578-74] S12  
Lee, Jong-Chan [8635-19] S5  
Lee, Jong-Ha [8574-14] S3  
Lee, Jong-Ik [8625-56] S12  
Lee, Jong-Lam [8613-20] S4, [8622-37] S9, [8622-9] SPWed, [8625-24] S6  
Lee, Jong-Min [8589-53] SPWED  
Lee, Jun Ho [8571-131] SPMon, [8574-9] S2, [8575-16] S4, [8588-51] S8  
Lee, Junghoon [8616-15] S3, [8616-15] S4  
Lee, Jungsul [8572-1] S1  
Lee, Ka Chung [8636-38] S8  
Lee, Kee-Keun 8614 Program Committee, [8614-17] S3  
Lee, Kelly [8584-4] S5  
Lee, Kenneth K. C. [8565-236] S2, [8611-28] S6  
**Lee, Kijoon** [8580-27] S5, [8580-34] S7, [8592-19] S5  
Lee, Kwang-Geol [8623-40] S11  
**Lee, Kwang-Sup** 8622 Program Committee, 8622 S11 Session Chair, [8622-40] S10  
Lee, Kyoung Jin [8565-90] S9  
Lee, Kyu-Tae [8581-73] S10, [8627-25] SPWed  
Lee, Luke P. 8598 Conference Chair, 8598 S2 Session Chair  
Lee, Man Seop [8607-57] SPTue, [8611-54] SPTue, [8615-19] S4  
Lee, Marette [8572-38] S7  
Lee, Min-Goo [8565-90] S9  
Lee, Minsuk [8615-7] S2  
**Lee, Min-Tse** [8625-18] S4  
Lee, Pei-Yu [8643-17] S4  
Lee, Po-Wen [8595-22] S6  
Lee, Sang Hyuck [8567-73] SPSun  
Lee, Sang-Heun [8565-54] S1  
Lee, Sang-Hun [8616-40] S9  
Lee, Sang-Joon John [8643-21] SPWed, [8643-9] S2  
**Lee, Sang-Won** [8574-11] S2, [8593-27] SPSUN  
Lee, Sangyoon [8616-15] S3, [8616-15] S4, [8643-4] S1  
**Lee, Seung Gol** [8622-3] S1  
Lee, Seung Hee [8620-63] S15  
Lee, Seung Hee 8642 Program Committee  
Lee, Seung Suk [8573-27] SPSun  
Lee, Seung-Chang [8632-71] S16  
Lee, Seungduk [8565-190] SPSun, [8565-197] S5  
Lee, Seungwan [8615-7] S2, [8616-1] S1, [8616-1] S7, [8616-40] S9  
Lee, Shih-Wei [8614-15] S3  
Lee, Shin-Shian [8588-114] SPSUN

# Index of Authors, Chairs, and Committee Members

- Lee, Shu-Sheng** [8619-47] S12  
Lee, Shyh-Yuang [8566-9] S2  
Lee, Sin-Doo [8642-34] SPWed, 8643 Conference Chair  
Lee, Stephanie L. [8565-76] S6, [8565-86] S8  
Lee, Sunghoon [8565-12] S3  
Lee, SungNam [8641-13] SPWed  
Lee, Sungrae [8581-86] S11  
Lee, Taehwa [8581-71] S10, [8581-73] S10  
Lee, Tae-Kyeong [8619-45] S12, [8619-74] SPWed, [8627-45] SPWed  
Lee, Tae-Woo [8641-12] S3, [8643-16] S4  
**Lee, TaeWoong** [8590-41] SPSUN  
Lee, Tim K. [8592-43] SPSun  
Lee, Ting-Yim [8565-188] SPSun, [8578-10] S2, [8578-76] S12, [8579-26] S6  
Lee, Tsung-Xian [8620-39] S9, [8620-68] SPWed, [8641-68] SPWed  
Lee, W.P. Andrew [8578-71] S12, [8587-52] S8  
Lee, Wei-Sheng [8623-7] S3  
Lee, Wonju [8590-38] SPSUN, [8597-28] S6  
Lee, Won-Mean [8581-121] SPSun  
Lee, Wook-Jae [8630-47] SPWed  
Lee, Woon-Young [8612-22] SPTue  
Lee, Yeon Ui [8622-6] S2  
Lee, Yi-Chun [8606-21] S7, [8606-24] S7  
Lee, Yi-Jang [8582-22] SPTues, [8582-26] SPTues  
Lee, Yong J. [8579-4] S1, [8587-56] SPMon  
**Lee, Yong-Gu** [8595-56] S13  
Lee, Yong-Hee [8634-4] S1  
Lee, Yoon Kyung [8585-32] S6  
Lee, Young Hee [8622-6] S2  
Lee, Young Jong [8588-4] S1  
Lee, Youngbin [8641-12] S3  
Lee, Youngseop [8613-57] SPTue  
**Lee, Yuan-Hao** [8579-13] S3, [8579-34] S3  
Lee, Yueh-Lin [8626-56] SPWed, [8631-90] SPWed  
Lee, Yun Seog [8620-40] S10  
Lee, Yun Sung [8625-45] S10  
Lee, Yun-Shik 8604 Program Committee  
Leedle, Kenneth J. [8640-35] S8  
Leedy, Kevin D. [8626-1] S1, [8626-4] S1, [8626-5] S2  
Leem, Jung Woo [8631-42] S8  
Leemans, Wim  
Leenheer, Andrew J. [8632-12] S3  
Leenman, Dennis [8592-45] SPSun  
Lefebvre, Nicolas A. [8600-34] S8  
Lefebvre, Michel [8631-64] S12  
Lefkir, Yaya [8609-4] S1  
Lefort, Claire [8575-15] S4  
Lefumeux, Christophe [8590-43] SPSUN  
Légaré, François [8623-24] S6  
Legendre, Sébastien [8626-6] S2  
**Leger, James R.** 8600 Program Committee, 8600 S8 Session Chair, [8600-30] S7  
Legros, Philippe [8589-49] S11  
Lehmann, Jörg [8572-30] S6  
Lehnis, Reinhold [8599-44] S8, [8601-39] S9  
Lei, Chun 8639 Program Committee  
Lei, Tim C. [8567-50] S9  
**Lei, Tingjun** [8582-15] S4, [8596-5] S2, [8596-7] S2  
Leich, Martin [8601-15] S4, [8601-15] S9, [8601-23] S6, [8621-26] S5  
Leick, Lasse [8601-107] SPTue, [8601-96] SPTue, [8621-32] S7  
Leiers, R. [8641-47] S10  
**Leif, Robert C.** 8587 Conference Chair, [8587-50] S8  
Leif, Stephanie H. [8587-50] S8  
Leigh, Steven Y. [8565-182] S4, [8575-28] S1, [8575-28] S7, [8597-3] S1  
Leindecker, Nicholas C. [8604-29] S6  
Leinonen, Tomi [8606-3] S1  
Leisching, Patrick [8604-1] S1  
**Leisher, Paul O.** [8619-72] SPWed, [8640-57] S13  
Leite, Kátia R. M. [8565-52] SP1  
Leitenstorfer, Alfred [8588-84] SPSun, [8623-6] S3  
**Leitgeb, Rainer A.** [8567-21] S4, 8571 Program Committee, [8571-41] S7, [8571-55] S8  
Lekven, Arne C. [8593-20] S5  
Lelievre, Sophie A. [8615-11] S3  
Lemaître, Aristide [8619-5] S1, [8635-44] S13  
**Lemberg, Vladimir** [8565-13] S4, [8565-14] S4, [8579-5] S1  
Lembessis, Alkis [8644-19] S5  
Lemell, Christoph [8623-38] S10  
Lemieux, Dominic [8601-116] SPTue  
Lemij, Hans G. [8567-49] S9  
Lemire-Renaud, Simon [8575-22] S5  
Lemley, Evan C. [8642-33] SPWed  
Lemmonier, J. [8572-39] S8  
Lemmonier, J. [8572-39] S8  
Lemor, Robert M. [8591-14] S3  
Lemoult, Fabrice [8633-27] S8  
Lempe, Benjamin [8591-22] SPWed  
Lenenbach, Achim [8565-226] S2, [8615-50] SPTue  
Lenferink, Aufried T. M. [8591-11] S3  
Leng, Jinyong [8601-69] SPTue  
Lengignon, Christophe [8631-31] S6  
Lennsen, Kars-Michel H. 8643 Program Committee  
Lenz, Andrea [8634-11] S2, [8634-21] S5  
Lenz-Cesar, Carlos [8588-57] S8  
Lenzetti, Ivo [8567-62] SPSun  
Lenzhofer, Martin [8616-45] SPTue  
Leo, Giuseppe [8631-81] S16, [8635-44] S13  
Leon Luis, Sergio [8600-70] SPTue  
Leonard, Vincent M. [8621-3] S1  
Leone, Philippe [8626-52] SPWed  
Leong, Kin-Wai [8645-13] S5  
Leong, Wey-Liang [8581-26] S4  
Leoni, Roberto [8631-13] S3, [8635-46] S13  
Leopold, Steffen [8616-37] S8  
Lepore, Maria [8588-103] SPSun  
**Leproux, Anais** [8578-15] S3, [8578-17] S3, [8578-20] S4, [8578-96] SPSun  
Lerma Arce, Cristina [8598-20] S6, [8629-4] S1  
Lerner, Matthias [8619-32] S8, [8632-25] S6, [8635-46] S13  
Lerner, Teresa [8640-15] S3  
Lérondel, Gilles [8627-34] S8  
Lerosey, Geoffroy [8617-11] S3, [8633-27] S8  
Leroux, Thierry [8643-3] S1  
Lesage, Frédéric [8583-5] S2  
Lesage-Landry, Antoine [8638-17] S4  
Leseman, Z. [8632-30] S7  
Leshem, Ben [8637-19] S4  
Leshuk, Timothy [8581-120] SPSun  
Lesnyak, Vladimir [8635-45] S13  
Lessard, Reno [8600-64] S15  
**Lester, Luke F.** 8619 S3 Session Chair, [8619-10] S3, [8619-11] S3, [8619-6] S2, [8619-83] S9, [8620-57] S14, [8625-23] S5, [8625-27] S6, [8625-84] SPWed  
Leszczynski, Mike [8625-41] S9, [8625-61] S13  
Letartre, Xavier [8633-2] S1, [8639-7] S3  
Létoublon, Antoine [8631-78] S15  
Letsch, Andreas [8601-91] SPTue  
Lett, Paul D. [8636-17] S4  
Leuchs, Gerd [8600-49] S12  
Leung, David [8629-19] S4  
**Leung, HuiMin** [8574-21] S5, [8587-1] S1  
Leung, Man-Kit [8643-17] S4  
Leung, Sarah J. [8587-21] S3  
Leung, Terence S. [8578-45] S8, [8581-122] SPSun  
Leung, Yu Hang [8626-32] S8  
Leunig, Andreas [8565-94] S9  
Leute, Robert A.R. [8625-53] S12  
Leutenegger, Marcel [8590-8] S2  
Leuthold, Juerg [8600-9] S3, [8613-31] S7, [8615-39] S9, [8629-24] S7  
Lev, Dina C. [8571-82] S12, [8580-28] S5  
Levallois, Christophe [8631-78] S15  
Leveccq, Xavier [8589-33] S7, [8590-31] S9, [8600-34] S8  
Levene, Michael J. [8565-200] S5, [8588-55] S8  
Levenson, Juan Ariel [8636-54] S11  
Lévêque-Fort, Sandrine [8589-18] S4, [8589-37] S8, [8589-43] S9, [8590-4] S1, [8590-43] SPSUN, [8597-22] S5  
Lever, Leon J. [8629-32] S9  
Levi, Moshe [8605-4] S1, [8640-54] S12  
Levi, Ofer [8613-55] SPTue  
Levin, Wilfred [8565-75] S6  
Levitt, James A. [8588-116] SPSun  
Levrat, Jacques [8625-33] S8  
Lewish, Baruch [8624-16] S5  
Levy, Joseph [8605-25] S5, [8605-32] S7  
Levy, Lauren [8565-66] S3  
Levy, Michael [8597-41] S8  
**Levy, Uriel** 8613 Program Committee, 8636 Program Committee, [8636-14] S3, [8636-18] S4  
Lew, Matthew D. [8590-20] S6  
Lewicki, Rafal [8631-29] S6, [8631-86] S17  
Lewin, Alexander [8605-30] S7  
Lewis, Aaron [8589-4] S1, [8590-16] S5, [8594-22] S6, [8619-46] S12, [8619-68] SPWed  
Lewis, Benjamin [8605-26] S6  
Lewis, Jay S. [8626-40] S10  
Lewis, John [8596-47] S6  
Lewis, Lionel L. [8584-2] S1  
Lewis, Matthew [8586-20] S3  
Leyder, Stéphanie [8611-38] S8  
Leymarie, Christophe [8602-15] S4  
Li Tsui, Kelly [8643-21] SPWed  
Li, An-Cheng [8570-26] SPSun  
Li, Bei-Bei [8603-31] SPTue  
Li, Binlong [8587-70] SPMon  
Li, Buhong [8577-2] S1  
**Li, Changhui** [8581-100] SPSun, [8581-99] S8  
Li, Changqing [8578-48] S8, [8596-13] S2, [8596-13] S4  
Li, Chao [8611-52] SPTue  
Li, Chia-Chin [8581-70] S10  
Li, Chia-Yeh [8623-23] S6, [8623-66] SPWed  
Li, Chia-Yu [8581-70] S10  
Li, Chi-Kang [8634-30] SPWed  
Li, Chiye [8581-12] S2, [8581-140] SPMon, [8581-153] SPMon, [8581-43] S7, [8581-82] S11  
Li, Chong [8590-23] S3  
Li, Dachao [8572-3] SPSun, [8572-54] SPSun, [8576-29] SPSun, [8591-25] SPWed, [8591-5] SPWed, [8598-23] SPSUN, [8615-42] SPTue, [8615-9] SPTue, [8621-59] SPWed  
Li, Daizong [8639-23] S6  
Li, David U. [8588-34] S5, [8588-44] S7  
Li, Dehui [8638-7] S2, [8638-8] S2  
Li, Er Ping [8629-27] S7  
Li, Gong [8588-9] S1  
Li, Guifang [8624-34] S8, 8645 S2 Session Chair, 8646 S2 Session Chair, 8646 S7A Session Chair, 8647 Conference Chair, 8647 S2 Session Chair, 8647 S8 Session Chair, [8647-1] S1  
Li, Guo [8581-77] S11  
Li, Guoliang [8630-41] S11, [8630-41] S2  
**Li, Hai** [8581-129] SPSun, [8581-173] SPMon, [8581-174] SPMon  
Li, Haijun [8575-29] SPSun, [8575-31] S1, [8575-31] S7  
Li, Heng [8588-90] SPSun  
Li, Hua [8613-54] SPTue  
Li, Hui [8639-30] S8  
Li, Hui [8582-13] S3, [8596-10] S3  
Li, J. [8631-80] S15  
Li, J. Jack [8595-47] S10  
Li, Jih-Liang [8595-22] S6  
Li, Jianan [8665-104] S2, [8571-24] S4  
Li, Jianzhao [8607-17] S11, [8607-17] S5, [8611-39] S8  
Li, Jiao [8578-89] S14  
Li, Jiao [8574-23] SPSun, [8574-24] SPSun  
Li, Jiasong [8567-52] S9, [8571-64] S10, [8571-82] S12  
Li, Jiawen [8565-35] S7, [8565-8] S4  
Li, Jie [8576-5] S1, [8576-6] S1  
Li, Jing [8599-16] S3, [8599-49] S4, [8599-49] S9  
Li, Jingjing [8582-7] S1  
Li, Jing-Jing [8620-13] S3  
Li, Jiyou [8577-10] S5  
**Li, Joanne** [8565-13] S2, [8596-15] S2, [8596-15] S4  
Li, Julia [8587-44] S7  
Li, Kang [8622-33] S8, [8647-24] S10, [8647-24] S9  
Li, King C. P. [8581-123] SPSun, [8581-125] SPSun  
Li, Kwai Hei [8641-63] S4  
Li, Lan [8600-20] S5  
Li, Lei [8646-20] S7A, [8646-20] S8, [8646-23] S8, [8646-23] S9, [8647-19] S7  
**Li, Li** [8565-26] S4, [8581-79] S11  
Li, Lianhe H. [8585-8] S1, [8631-5] S2, [8632-2] S1, [8632-25] S6  
Li, Lin [8565-161] S5, [8565-165] S5  
Li, Ling-Han [8616-32] S7  
Li, Lu [8640-25] S6  
Li, Maximo Siu [8621-55] SPWed  
**Li, Meng-Lin** [8581-111] SPSun, [8581-35] S6, [8581-70] S10  
Li, Min [8576-3] S1  
Li, Ming [8600-10] S3, [8600-60] S14  
**Li, Ming-Jun** [8575-17] S4, [8621-16] S4, [8647-12] S6, [8647-8] S4  
Li, Mingshan [8609-14] S4  
Li, Ming-Shian [8642-14] S5  
Li, Nan [8586-14] S2  
Li, Nelson [8639-2] S1  
Li, Pai-Chi 8581 Program Committee, [8581-157] SPMon, [8581-74] S10  
Li, Paul C. H. [8615-32] S7  
Li, Peixu [8605-36] SPTue  
Li, Peng [8567-45] S8, [8571-63] S10, [8593-4] S1  
Li, Pulin [8587-16] S2  
Li, Qiming [8625-23] S5, [8625-27] S6, [8625-84] SPWed, [8641-64] S13  
Li, Qingbo [8577-10] S5  
Li, Qingyuan [8571-53] S8, [8575-16] S4, [8588-51] S8  
Li, Ran [8645-13] S5  
Li, Ronald A. [8588-69] S10  
Li, Rongling [8646-18] S7, [8646-18] S7B  
Li, Rui [8581-57] S8  
Li, Rui [8641-10] S3  
Li, Rukang [8604-1] S1  
Li, Runze [8588-93] SPSun  
Li, Ruxin 8602 Conference CoChair  
Li, Sheng [8607-18] S12, [8607-18] S6, [8607-24] S7  
Li, Shenping [8621-16] S4  
Li, Shibo [8580-19] S4, [8582-2] S6  
Li, Shidong [8618-1] S1, [8618-1] S10, [8618-2] S1, [8618-2] S10, [8618-3] S10, [8618-3] S10

# Index of Authors, Chairs, and Committee Members

- Li, Shuqiang [8605-36] SPTue  
 Li, Shutao [8567-23] S5  
 Li, Simon [8639-6] S2  
 Li, Siwen [8596-40] SPMon, [8596-6] S2  
 Li, Song-Mei [8634-15] S3  
 Li, Steven X. [8610-21] S4  
 Li, Ting [8565-167] S5, [8569-3] S1, [8586-15] S2, [8586-3] S1  
**Li, Tuotuo** [8618-1] S1, [8618-1] S10, [8618-2] S1, [8618-2] S10, [8618-3] S1, [8618-3] S10  
 Li, Weihua [8577-2] S1  
 Li, Weixiang [8619-63] SPWed  
 Li, Wenbo [8647-23] S10, [8647-23] S9  
 Li, WenKai [8635-3] S1  
 Li, Xiang [8565-35] S7, [8565-8] S4, [8581-10] S2  
 Li, Xiaofeng [8619-82] SPWed  
**Li, Xiaohang** [8625-42] S9  
 Li, Xiaosong [8569-17] S4, [8582-10] S2, [8582-16] S4, [8582-20] SPTues  
 Li, Xiaoyan [8565-115] S5, [8588-15] S2  
 Li, Xing [8625-52] S11, [8625-81] SPWed, [8625-87] SPWed  
**Li, Xingde** 8571 Program Committee, 8571 S4 Session Chair, [8571-38] S6, [8571-69] S11, [8575-17] S4, [8578-71] S12  
 Li, Xinying [8645-12] S5  
 Li, Xiong [8622-51] SPWed  
 Li, Xiujuan [8628-15] S6  
 Li, Xun [8619-26] S6  
 Li, Yahui [8588-90] SPSun  
 Li, Yan [8588-99] SPSun  
 Li, Yanlu [8633-28] S9  
 Li, Yanmin [8607-27] S8  
 Li, Yao [8565-109] S4  
 Li, Yen-Pu [8601-67] SPTue  
 Li, Yen-Yin [8601-84] SPTue  
 Li, Yi [8599-57] S11  
 Li, Yiming [8566-20] SPSun  
 Li, Ying [8628-15] S6  
 Li, Yingsong [8576-8] S2  
 Li, Yi-Qun [8641-51] S11  
 Li, Yongbiao [8565-74] S5, [8572-36] S7  
 Li, Yu [8628-13] S5  
**Li, Yuan** [8599-53] S10  
 Li, Yufeng [8605-18] S4  
 Li, Yuhua [8580-19] S4, [8582-1] S6, [8582-2] S6, [8582-3] S6  
 Li, Zheng [8580-19] S4  
**Li, Zhenyu** [8615-33] S7, [8615-52] SPTue  
 Li, Zhen-Yu [8625-75] SPWed, [8625-79] SPWed  
 Li, Zhifang [8582-13] S3  
 Li, Zhiming [8587-58] S9  
 Li, Zhiqiang Leo [8639-6] S2  
 Liang, Chia-Pin [8565-181] S4, [8572-10] S2  
**Liang, Haidong** [8629-15] S4  
 Liang, Hsing-Chih [8599-74] SPTue, [8606-21] S7, [8606-24] S7  
 Liang, Junlin [8628-15] S6  
 Liang, Kexian [8673-30] S5, [8573-31] SPSun, [8596-11] S3  
 Liang, Qian [8582-25] SPTues  
**Liang, Rongguang** 8573 Conference Chair, 8573 S5 Session Chair, [8573-15] S5, [8573-18] S5, [8573-2] S1, [8573-20] S6, [8573-4] S1, [8573-5] S2, 8583 Program Committee, [8618-15] S5  
 Liang, Shanshan [8565-35] S7, [8565-8] S4  
 Liang, Wei [8600-18] S5  
 Liang, Wenlang [8642-24] S7  
 Liang, Wenshuai [8615-42] SPTue  
 Liang, Wenxuan [8575-17] S4  
 Liang, Xinan [8644-15] S4, [8644-9] S3  
 Liang, Xing [8568-23] S6, [8568-39] SPMon  
 Liang, Xing [8568-11] S3, [8568-32] SPMon, [8568-4] S2  
 Liang, Yi [8622-47] S11  
 Liao, Ai-Ho [8581-74] S10  
 Liao, Che-Hao [8625-44] S10, [8625-5] S1, [8641-16] S4, [8641-29] S6, [8641-39] S9  
 Liao, Chen-Chin [8571-86] SPMon  
 Liao, Chen-Zi [8625-70] SPWed  
 Liao, Lun-De [8581-111] SPSun  
 Liao, Meisong [8604-45] SPTue, [8621-33] SPWed, [8621-34] SPWed, [8621-38] SPWed, [8621-39] SPWed, [8621-49] SPWed, [8621-60] SPWed  
 Liao, Shan [8565-176] S3  
 Liao, Steve M. [8572-15] S3  
 Liao, Yi-Hua [8565-6] S2, [8588-109] SPSun  
 Liao, Yufeng [8632-10] S2  
 Liao, Yu-Min [8641-28] S6  
 Libberton, Ben [8587-78] SPMon  
 Liberatore, Nicola [8631-85] S16  
 Liberman, Anatoly A. [8607-50] SPTue  
 Libertino, Sebania 8629 Program Committee, [8631-47] S9  
 Licht, Daniel J. [8578-2] S1  
 Lichtenstein, Norbert [8605-34] S7, [8605-7] S2  
 Lichy, Alison [8576-22] S4, [8579-25] S6  
 Lieber, Chad A. [8572-43] S8, [8572-44] S8  
**Lieber, Charles M.** [8600-50] S12  
 Liebert, Adam [8578-86] S14, [8583-21] S3, [8583-21] S5, [8583-5] S2  
 Liebich, Sven [8640-32] S7  
 Liebman, Judith A. [8602-11] S3  
 Liedl, Tim [8595-20] S5, [8595-50] S11  
 Liem, Andreas [8601-104] SPTue, [8601-27] S7  
 Liemert, André [8578-38] S7  
 Lien, Chi-Hsiang [8588-60] S9  
 Liero, Armin [8640-60] S13  
 Lieu, Deborah K. [8588-69] S10  
 Liew, Yih Miin [8565-10] S3  
 Liff, Shawa M. [8629-34] S9  
**Ligler, Frances S.** 8570 Program Committee  
 Ligthart, Jurgen [8565-39] S6, [8565-40] S6  
**Lilge, Lothar D.** [8592-17] S5  
**Lilicenko, Nadezda** [8609-2] S1  
**Lilledahl, Magnus B.** [8588-72] S10  
 Lim, Derrick [8595-9] S2  
 Lim, Emerson [8578-19] S4  
 Lim, Gukbin [8578-30] S5  
 Lim, Hee-Jin [8634-4] S1  
 Lim, Hwan Hong [8635-32] S6, [8635-32] S9  
 Lim, Hyun-Ju [8569-27] SPSat  
 Lim, Jaeguyn [8571-116] SPMon, [8571-119] SPMon  
 Lim, Jiseok [8630-20] S5  
 Lim, Kim-Peng [8628-21] S7, [8629-13] S3  
 Lim, Ki-Soo [8612-22] SPTue  
**Lim, Liang** [8565-19] S5  
 Lim, Seung-Hyuk [8625-57] S12  
 Lim, Soon Thor [8619-54] S14, [8629-27] S7, [8629-29] S8  
**Lim, Yiheng** [8567-13] S3, [8567-31] S6, [8571-14] S3  
 Lim, Young [8596-22] S7  
 Lim, Yu Xian [8599-48] S4, [8599-48] S9  
 Lima, Sthanley R. [8595-58] S13  
 Limaj, Odeta [8631-13] S3  
 Limantara, Leenawaty [8587-24] S4  
 Limao-Vieira, Paulo [8584-27] S8  
 Limpert, Jens [8565-185] S4, [8599-44] S8, [8601-105] S4, [8601-105] S9, [8601-14] SPTue, [8601-2] S1, [8601-39] S9, [8601-42] S10, [8601-43] S11, [8601-48] S12, [8601-50] S12, [8601-9] S2, [8604-20] S5, [8611-16] S4  
 Lin, Alexander J. [8578-63] S10  
**Lin, Angie** [8604-31] S7  
 Lin, Charles [8627-39] S8  
**Lin, Charles P.** 8587 Program Committee, [8587-16] S2, [8587-39] S6, [8588-91] SPSun  
 Lin, Cheng-An J. [8595-22] S6  
 Lin, Chen-Yu [8641-69] SPWed  
 Lin, Chen-Yu [8565-77] S6  
 Lin, Chia-Hui [8595-22] S6  
 Lin, Chien Chung [8620-59] S14, [8620-7] SPWed, [8641-73] SPWed  
 Lin, Chi-Feng [8622-44] S10, [8643-17] S4  
 Lin, Chih-Chun [8641-39] S9  
 Lin, Chih-Feng [8565-77] S6, [8577-25] S9  
 Lin, Chih-Wei [8641-67] SPWed  
 Lin, Chin-Teng [8581-111] SPSun  
 Lin, Chun-Han [8641-39] S9  
 Lin, Di [8599-51] S10  
 Lin, Guoping [8600-14] S4, [8600-25] S6  
 Lin, Hongtao [8600-20] S5  
 Lin, Jason [8604-6] S2  
 Lin, Jian [8588-9] S1  
 Lin, Jiao [8632-42] S10, [8632-68] S15  
 Lin, Jia-Yu [8581-74] S10  
**Lin, Jingyu** [8621-25] S5, 8631 S14 Session Chair, [8631-80] S15  
 Lin, Kuen Feng [8565-169] S5, [8566-8] S2, [8572-8] S2  
 Lin, Lisheng [8577-2] S1  
 Lin, Meng-Hsien [8623-33] S9  
 Lin, Min-Ching [8641-50] SPWed  
**Lin, Pei Wen** [8641-28] S6  
 Lin, Ray-Ming [8641-2] S1  
 Lin, Ron Reuven [8590-2] S3  
 Lin, Shawn-Yu 8632 Conference Chair, [8632-58] S13, [8632-6] S2  
 Lin, Ting Yu [8622-25] S6  
 Lin, Vivian [8588-83] SPSun  
 Lin, Wenhua [8628-6] S3  
 Lin, Wen-li [8588-65] S10  
 Lin, Wen-Yu [8641-72] SPWed  
 Lin, Xiaohui [8613-53] SPTue, [8630-9] S2  
 Lin, Yaomin [8607-59] SPTue, [8608-26] S5  
**Lin, Yi-Hsin** [8642-11] S3  
 Lin, Yong [8620-32] S8  
 Lin, Yuankun [8613-23] S5, [8613-47] SPTue, [8624-48] SPWed  
 Lin, Yuan-Ting [8641-69] SPWed  
**Lin, Yu-Cheng** 8615 Program Committee  
 Lin, Yuehe 8615 Program Committee  
 Lin, Yu-Rui [8619-66] SPWed  
 Lin, Yuting [8574-20] S5, [8574-4] S1, [8574-5] S1, [8581-133] SPSun  
 Lin, Yu-Ting [8607-20] S12, [8607-20] S6, [8623-14] S4  
 Lin, Zhiyuan [8631-51] S10  
 Lin, Zi-Jing [8565-161] S5, [8565-165] S5  
 Lin, Ziyun [8620-71] SPWed  
 Lin, Zunqi 8602 Program Committee  
 Linares, Jesus [8647-8] S4  
 Linask, Kersti K. 8593 Program Committee  
 Lincot, Daniel 8620 S10 Session Chair, [8620-36] S9, [8620-41] S10, [8620-44] S11, [8620-46] S11, [8620-8] S2  
 Lincot, Daniel 8620 Program Committee  
 Linden, Christoph [8613-7] S2  
**Linden, Kurt J.** [8565-95] S9, 8605 Program Committee, 8605 S5 Session Chair, 8641 Program Committee, 8641 S5 Session Chair  
 Linden, Stefan 8623 S4 Session Chair, [8623-17] S5, [8623-20] S5  
 Linden, Stina [8595-43] S10  
 Lindenmaier, Andras [8565-191] SPSun  
 Lindenmann, Nicole [8613-31] S7  
 Linderman, George C. [8571-26] S4, [8571-27] S4  
 Lindvold, Lars R. [8565-41] S2  
 Linfield, Edmund H. [8585-8] S1, [8631-2] S1, [8631-5] S2, [8632-2] S1, [8632-25] S6  
 Ling, Dongxiang [8600-77] SPTue  
 Ling, Tao [8581-108] SPSun, [8581-87] S11, [8600-58] S14, [8613-53] SPTue, [8627-25] SPWed  
 Lingle, Robert L. [8647-10] S5  
 Lino, Antonio C. L. [8572-45] S9  
 Lippo, Anton [8581-177] SPMon  
 Liotard, Arnaud [8616-44] S9  
 Liou, Bo-Ting [8619-66] SPWed, [8625-76] SPWed  
 Liow, Tsung-Yang [8629-29] S8  
 Lipp, Markus [8600-31] S7  
 Lippert, Thomas K. 8609 Program Committee  
 Lippitz, Markus 8623 S14 Session Chair, [8623-41] S11  
 Lips, Klaus [8620-14] S4  
 Lipscomb, Dawn [8585-14] S2  
**Lipson, Michal F.** [8630-22] S6, [8636-5] S1  
 Lisetski, Longin N. [8637-29] S7  
 Lishan, David G. 8612 Program Committee, 8612 S3 Session Chair  
 Lissotschenko, Vitalij N. [8600-37] S1, [8600-37] S9  
 Litorja, Maritoni [8573-13] S3, [8573-13] S5, [8573-23] S6, [8583-8] S2, [8618-4] S1, [8618-4] S10, [8618-6] S11, [8618-6] S2  
 Litt, Amardeep S. [8599-61] S12, [8605-13] S3  
 Little, Charles D. 8593 Program Committee, [8593-19] S5  
 Little, Michael J. [8613-13] S3  
 Littleton, Erik [8617-8] S2  
 Litvin, Igor A. [8637-42] S2  
 Litvin, Taras V. [8567-61] SPSun  
 Litvinovitch, Slava [8599-24] S5  
 Litzkendorf, Doris [8621-26] S5  
 Liu, Anjin [8633-26] S8  
 Liu, Baochang [8568-23] S6, [8568-4] S2  
 Liu, Changgeng [8587-6] S1  
**Liu, Chanjuan** [8572-29] S6  
 Liu, Cheng [8599-46] S8  
 Liu, Cheng-hui [8577-10] S5, [8577-11] S5  
 Liu, Cheng-Yi [8626-58] SPWed, [8641-19] S4, [8641-32] S7, [8641-41] S9  
 Liu, Chenyi [8567-81] SPSun  
 Liu, Chiyu [8639-2] S1  
 Liu, Chuanhong [8620-77] SPWed  
 Liu, Da-Ren [8600-29] SPTue  
 Liu, Dean-Mo [8581-35] S6  
 Liu, Di [8607-37] S11, [8607-42] S12, [8607-45] S12  
 Liu, Fang Zhou [8626-32] S8  
 Liu, Fei [8576-8] S2  
**Liu, Gangjun** [8571-80] S12, [8575-18] S4  
 Liu, George [8572-20] S4  
 Liu, Guanghui [8622-51] SPWed  
 Liu, Guangwei [8619-63] SPWed  
**Liu, Guangyu** [8613-36] S8, [8619-51] S13, [8641-55] S12  
 Liu, Haitao [8633-4] S2  
 Liu, Hanli [8565-161] S5, [8565-165] S5, [8565-198] S5, [8573-2] S1, 8578 S9 Session Chair, [8578-4] S1, [8578-57] S9, [8578-9] S2, [8578-93] SPSun  
 Liu, Han-Wen [8588-65] S10  
 Liu, Hong 8582 S6 Session Chair  
**Liu, Hong** 8580 Program Committee, [8580-19] S4, [8582-1] S6, [8582-11] S3, [8582-16] S4, [8582-2] S6, [8582-20] SPTues, [8582-3] S6, [8582-9] S2  
 Liu, Honghai [8587-68] SPMon



# Index of Authors, Chairs, and Committee Members

- Liu, Houkang** [8601-44] S11  
Liu, Hsueh-Hsing [8625-70] SPWed  
Liu, Hui Chun 8640 Program  
Committee  
Liu, Hui Chun [8631-82] S16, [8640-37] S9  
Liu, Jian [8601-117] SPTue, [8607-19] S12, [8607-19] S6, [8611-42] S3, [8611-42] S9  
Liu, Jing [8565-36] S4, [8574-27] SPSun  
Liu, Jing [8615-47] S10  
Liu, John K. [8631-24] S5, [8631-25] S5  
**Liu, Jonathan J.** [8567-20] S4, [8567-27] S5, [8567-32] S6, [8571-13] S3, [8571-8] S2  
**Liu, Jonathan T.** [8565-182] S4, [8575-28] S1, [8575-28] S7, [8583-14] S3, [8597-3] S1, 8616 Program  
Committee  
Liu, Jony Jiang [8610-36] S7  
Liu, Ke [8599-66] SPTue, [8601-74] SPTue  
Liu, Kun [8619-24] S6  
Liu, Lei [8594-23] S6  
Liu, Lina [8577-2] S1  
Liu, Linbo [8565-109] S4, [8565-111] S4, [8565-120] S6, [8565-121] S6, [8565-22] S2, [8565-25] S6, [8575-5] S2  
Liu, Linfeng [8622-51] SPWed  
Liu, Lixin [8588-90] SPSun  
Liu, Liying [8600-10] S3, [8600-60] S14  
Liu, Ming [8578-101] SPSun, [8578-104] SPSun  
Liu, Ming [8629-30] S8  
Liu, Neng  
Liu, Pengxiang [8604-13] S3  
Liu, Peter Q. [8640-50] S11, [8640-68] SPWed  
Liu, RenBao [8623-21] S6  
Liu, Sheng [8625-23] S5, [8632-63] S14  
Liu, Shi [8620-13] S3, [8631-51] S10  
Liu, Shiang [8599-79] SPTue, [8610-33] S7  
Liu, Shun-Wei [8622-44] S10  
Liu, Tonghui [8601-95] SPTue, [8619-12] S3  
Liu, Tsan-Chi [8565-169] S5, [8566-8] S2, [8572-8] S2  
Liu, Tzu-Jae K. [8614-3] S1  
Liu, Tzu-Ming [8581-74] S10, [8588-65] S10, [8588-75] SPSun, [8588-91] SPSun  
Liu, Wen 8613 Program Committee  
Liu, Wendy [8572-35] S7, [8577-12] S6, [8579-20] S5  
Liu, Wenqing [8631-31] S6  
Liu, Wenzhong [8581-160] SPMon  
Liu, Xiang [8626-67] SPWed, [8626-68] SPWed  
Liu, Xiangming [8619-1] S1  
Liu, Xiaojing [8571-101] SPMon, [8581-76] S11  
Liu, Xiaojun [8581-101] SPSun, [8581-18] S3, [8581-92] SPSun  
Liu, Xiaoming [8601-3] S1  
Liu, Xiaoqin [8593-26] SPSun, [8593-9] S2  
**Liu, Xinbing** 8608 Program  
Committee  
Liu, Xuan [8641-74] SPWed  
**Liu, Xuan** [8571-57] S9, [8571-60] S9, [8571-85] SPMon, [8576-31] SPSun  
Liu, Xudong [8619-67] SPWed  
Liu, Xuejun [8588-10] S1  
Liu, Yan [8604-55] SPTue  
Liu, Yang [8645-20] S7, [8645-20] S7B, [8645-22] S7, [8645-22] S7B  
Liu, Yang [8573-30] S5, [8573-31] SPSun  
Liu, Yang [8631-41] S8  
Liu, Yang [8580-32] S7, [8592-11] S4  
Liu, Yaqiao [8611-22] S5  
Liu, Yen-Hung [8625-5] S1  
**Liu, Yen-Shuo** [8641-41] S9  
Liu, Yue Maria [8567-64] SPSun  
Liu, Yu-Feng [8645-20] S7, [8645-20] S7B, [8645-22] S7, [8645-22] S7B  
Liu, Yu-Hao [8643-17] S4  
Liu, Yujia [8590-42] SPSun  
Liu, Yulong [8577-10] S5  
**Liu, Yuxiang** [8600-67] S16, [8616-31] S7  
Liu, Zhao [8571-67] S10, [8593-1] S1  
**Liu, Zhengfan** [8565-115] S5, [8588-15] S2  
Liu, Zhiqiang  
**Liu, Zhiwen** [8589-52] S11, [8600-59] S14, [8624-4] S2  
Liu, Zhuang [8603-34] SPTue  
Liu, Zhuolin [8567-17] S3, [8567-36] S7, [8567-38] S7  
Livengood, Ryan H. [8584-22] S6  
Livet, Jean [8588-67] S10, [8593-25] SPSun  
Livingston, Edward [8618-4] S1, [8618-4] S10, [8618-6] S11, [8618-6] S2  
Livshits, Daniil A. [8604-5] S2  
Llarena, Irantzu [8595-24] S7  
Llombart, Nuria [8624-2] S2  
Llopis, Olivier [8624-21] S6  
Lloyd, Seth 8635 Program Committee  
Lo Savio, Roberto [8629-43] S11  
Lo, Cecilia W. 8593 Conference Chair, [8593-12] S3, [8593-15] S4, [8593-26] SPSun, [8593-9] S2  
Lo, Eng H. [8565-177] S3  
Lo, Guo-Qiang [8629-29] S8  
Lo, Victor [8565-238] S5  
Lo, Yu-Hwa [8615-2] S1, [8615-26] S6  
Lo, Yu-Lung [8619-28] S7  
Lobach, Ivan [8601-55] S13  
Lobino, Mirko [8628-16] S6  
Lochner, Zachary [8625-42] S9  
Lock, Daren A. [8625-62] S13  
Lockau, Daniel [8620-54] S11, [8620-54] S13  
Locke, Timothy [8628-14] S5  
Lockhart, Robert [8616-18] S3, [8616-18] S4  
Lockner, Sarah A. [8587-40] S7  
Loeber, Thomas H. [8634-22] S5  
Loeschner, Udo [8603-20] S5, [8603-36] SPTue, [8607-61] S9  
Loew, Leslie M. [8588-48] S8  
Logan, David [8601-102] SPTue  
**Lohmann, Ulrich** 8630 Program  
Committee, [8630-16] S4  
Lohner, Tivadar [8627-4] S1  
Lohser, Sara [8568-22] S6  
Loiseau, Pascal [8621-64] SPWed  
Loison, Olivier P. [8597-22] S5  
Loke, Yee Cheong [8616-24] S5  
Lollia, Guillaume [8631-83] S16  
Lombardi, Anna [8623-25] S8  
Lombardi, Lorinna [8571-15] S3  
Lombardo, Salvatore A. [8631-47] S9  
Lombez, Laurent [8620-36] S9, [8620-79] S2, [8620-8] S2, [8631-78] S15  
Lompré, Louis-André [8602-15] S4  
Lonappan, Cejo K. [8587-38] S6  
**Loncar, Marko** 8613 Program  
Committee, [8631-9] S2, 8632  
Program Committee, 8632 S9  
Session Chair, [8632-1] S1, [8632-32] S8, [8632-35] S7, [8640-48] S11  
Long, Fan [8590-32] S9  
Long, Heng [8600-56] S13  
Long, James P. [8632-45] S10, [8634-12] S3  
Longdell, Jevon J. [8581-42] S7, [8635-35] S10  
Longhi, Stefano [8611-41] S8  
Longone, Roberto [8612-14] S3  
Lonnecker, Alexander T. [8596-22] S7  
Look, David C. 8626 Conference  
Chair, 8626 S1 Session Chair, [8626-1] S1, [8626-4] S1, [8626-5] S2, [8626-7] S2  
Loosen, Peter [8606-16] S5  
Lopatka, Rafal [8611-59] SPTue  
Lopes, Luis E. [8567-56] SPSun  
Lopes, Marcelo L. [8647-20] S7A, [8647-20] S8  
Lopez, Antonio [8589-51] S11  
Lopez, Daniel [8575-30] S1, [8575-30] S7  
López, Esther [8620-18] S5  
López, Iñaki [8626-28] S7  
Lopez, John [8611-43] S3, [8611-43] S9  
Lopez, Rene [8609-5] S1  
Lopez-Amo, Manuel [8636-20] S4  
**López-Higuera, José M.** [8592-14] S4, [8592-34] S8  
Lopez-Lisbona, Rosa [8565-113] S4, [8565-98] S1  
López-Mercado, Cesar A. [8601-114] SPTue  
Lopuszynski, Michal [8625-3] S1  
**Loranger, Sébastien** [8623-63] SPWed, [8638-17] S4  
**Lorbeer, Raoul-Amadeus** [8565-110] S4  
**Lorenser, Dirk** [8571-56] S9  
Lorenz, Adrian [8627-41] S9  
Lorenz, Katharina 8626 Program  
Committee, [8626-22] S5  
Lorenz, Pierre [8607-48] S13, [8607-48] S6, [8607-52] SPTue  
Loreti, Luigi [8618-24] S7  
Losse, Andy [8599-23] S5  
Loterie, Damien [8620-38] S9  
Lötsch, Daniela [8565-187] S4  
Lotshaw, William [8605-22] S5, [8620-32] S8, [8620-58] S14, [8625-32] S7, [8640-52] S12  
Lott, James A. [8630-27] S7, 8639  
Program Committee, [8639-26] S7, [8639-30] S8  
Lotz, Jens [8605-31] S7  
Lou, Qihong [8601-44] S11  
Loulache, Slimane [8631-78] S15, [8634-5] S1  
Louden, Christopher L. [8595-17] S4  
Louie, Sara [8584-27] S8  
Loulie, Karine [8593-25] SPSun  
Loulie, Karine [8588-67] S10  
Loumagne, Matthieu [8595-34] S8  
Louradour, Frédéric [8575-15] S4  
Lourenço, Sidney [8621-46] SPWed  
Lousteau, Joris [8601-76] SPTue  
Love, Gordon D. [8589-32] S7, [8593-2] S1  
Love, Steven P. [8618-11] S4, [8618-14] S4  
Low, Jeffrey J. [8572-41] S8  
Lowder, Tyson L. [8601-101] SPTue, [8601-102] SPTue  
Lowe-Webb, Roger R. [8602-2] S1  
Lozano, Gabriel [8641-65] S13  
Lozano, Pablo [8615-40] S9, [8615-43] S10, [8615-54] SPTue  
Lu, Chai [8601-92] SPTue  
Lu, Chen D. [8571-13] S3, [8571-15] S3  
Lu, Cheng-Ying James [8641-23] S5  
Lu, Chien-Yao [8639-23] S6  
Lu, Chih-Wei [8566-9] S2  
Lu, Chunte Andy [8601-123] SPTue, [8601-32] S8, [8601-45] S11, [8601-46] S11  
Lu, CuiXia [8582-33] SPTues  
**Lu, Dan** [8627-16] S4  
Lu, Fanglu [8633-21] S6  
**Lu, Feng** [8585-8] S1  
Lu, Hong [8565-41] S3  
Lu, Hsiang-Wei [8615-20] S5  
Lu, Hui [8567-83] SPSun  
Lu, Jian [8603-7] S10, [8603-7] S2  
Lu, Jian Heng [8620-73] SPWed  
Lu, Liangjun [8629-21] S6  
Lu, Lou [8598-23] SPSun  
Lu, Lu [8642-8] S3  
Lu, Ming [8630-37] S9  
Lu, Ming-Yen [8619-42] S10  
Lu, N.  
Lu, PeiXiang [8603-33] SPTue  
Lu, Qiang [8619-82] SPWed  
Lu, Quan-Yong [8631-21] S4, [8631-97] S1  
Lu, Rongwen [8567-44] S8, [8571-47] S7  
Lu, Sheng- Hwei D. [8589-1] S1  
**Lu, Sih Chen** [8597-39] S8, [8641-28] S6  
**Lu, Tao** [8594-3] S2  
**Lu, Tien-Chang** [8605-39] SPTue, [8633-11] S3  
Lu, Xuejun [8630-33] S8, [8631-27] S5  
**Lu, Yan-Qing** [8642-15] S5  
**Lu, Yicheng** [8630-37] S9  
Lu, Yiming [8572-11] S3, [8578-105] SPSun  
**Lu, Yong Feng** 8607 Program  
Committee, 8607 S4 Session Chair, [8607-21] S7, 8608 Conference  
Chair, [8608-20] S4, 8609 Program  
Committee, [8609-14] S4, 8611 S10  
Session Chair, [8613-6] S2  
Lu, Yu-Jung [8619-42] S10  
Lu, Zenghai [8565-11] S3, [8571-90] SPMon, [8571-92] SPMon, [8596-28] S8  
Lubatschowski, Holger [8579-2] S1  
Lubeigt, Walter [8599-29] S6, [8616-14] S3  
Lübking, Eike [8579-2] S1  
Lubner, Meghan G. [8584-5] S2  
Luby-Phelps, Katherine [8575-17] S4  
Lucas, Jacques 8621 Program  
Committee  
**Lucas, Pierre** 8576 Program  
Committee  
Lucas-Leclin, Gaëlle [8606-28] S8  
Luce, Jacques 8602 S2 Session  
Chair, [8602-8] S3  
Lucente, Rudolf [8621-10] S3  
Lucianetti, Antonio [8602-7] S2  
Luciani, Domenico [8631-85] S16  
Lücking, Fabian [8599-60] S12  
Ludwig, Anne [8621-26] S5  
Ludwig, Arne [8623-9] S3  
Ludwig, Astrid [8623-9] S3  
Ludwig, Katharina [8571-55] S8  
Lue, Niyom [8587-14] S2, [8587-32] S5, [8589-46] S10  
Luecke, Bernd [8637-26] S5, [8637-26] S8  
Luenenbuenger, Markus [8641-47] S10, [8641-9] S2  
Luff, B. Jonathan [8630-23] S6  
Luff, Axel [8603-9] S3  
Lugan, Simon [8601-37] S9  
Lugauer, Hans-Jürgen [8641-45] S10  
Lugli, Paolo [8640-40] S9  
Lühns, Christian [8571-59] S9  
Lui, Harvey [8565-22] S5, [8565-5] S2, [8565-7] S2, [8588-100] SPSun  
Lui, Kaying [8585-15] S3  
Luisa da Rosa, Andreia 8626 Program  
Committee  
Luis-Ramos, Arnulfo [8619-18] S5  
Lujan, Brandon J. [8571-4] S1  
**Luk, Alex** [8574-20] S5, [8574-4] S1  
Luk, Ting S. [8625-23] S5, [8625-27] S6, [8625-84] SPWed  
**Lukishova, Svetlana G.** [8642-9] S3  
Lukowski, Michal [8631-68] S12  
Lukyanov, Konstantin A. [8568-16] S4  
Lukyanov, Sergey Anatolyevich [8568-16] S4  
Lum, Abel Zhiming [8644-15] S4, [8644-9] S3  
Lumb, Matthew P. [8620-30] S8, [8620-53] S11, [8620-53] S13  
Lumeau, Julien [8599-52] S10, [8601-122] SPTue, [8603-3] S10, [8603-3] S2  
Lund, E. A. [8620-42] S10  
Lundquist, Paul [8590-17] S4  
Lunelli, Lorenzo [8576-30] S5, [8600-62] S15

# Index of Authors, Chairs, and Committee Members

- Lung-Chieh, Cheng [8625-70] SPWed  
Lunn, John A. [8569-17] S4, [8582-10] S2, [8582-9] S2  
Luo, Bin [8611-59] SPTue  
**Luo, Chih Wei** [8623-12] S4  
Luo, Meijie [8582-32] SPTues  
**Luo, Qingming** 8580 Program Committee, [8582-32] SPTues  
Luo, Shouhua [8565-70] S5  
Luo, Shuangjiang [8590-7] S1  
**Luo, Wei** [8570-22] S6, [8589-9] S2  
Luo, Ying [8630-41] S11, [8630-41] S2  
Luo, Yuan [8589-26] S5  
Luo, Zhihui [8574-28] SPSun  
Luong, Calvin [8605-9] S2  
Luong, Edward M. [8631-24] S5  
Lupan, Oleg [8626-59] SPWed, [8641-61] S4  
**Lupi, Alexandra** [8640-34] S8  
Lupi, Stefano [8631-13] S3  
Luppi, Eleonora [8629-37] S10  
Lupu, Anatole [8625-67] S14, [8627-13] S3, [8627-34] S8, [8629-46] SPWed  
Luque, Antonio [8620-18] S5  
Lureau, François [8599-45] S8  
Lurie, Kristen L. [8583-10] S3  
Lüscher, Christopher James [8629-9] S2  
Lussi, Adrian [8566-5] S1  
Luster, Andrew D. [8565-100] S1  
**Lutey, Adrian H.** [8608-3] S1  
Luther, Joseph M. [8620-27] S7  
**Luthra, Rajiv** [8574-12] S3  
Lutich, Andrew A. [8595-20] S5  
Lutkenhaus, Jeffrey R. [8613-23] S5, [8613-47] SPTue  
Luttgen, Madelyn [8587-44] S7  
Lutz, Barry R. [8615-35] S8  
Lützelshwab, Markus [8616-18] S3, [8616-18] S4  
Lützwow, Peter [8570-2] S1  
Lux, Oliver [8599-15] S3, [8600-5] S2  
**Luzhansky, Edward Y.** [8610-21] S4  
Luzius, Severin [8603-10] S3, [8603-13] S4  
Lv, Ting [8582-7] S1  
Lv, Xiao-Meng [8600-56] S13  
Lyakh, Arkadiy A. [8640-45] S11  
Lychagov, Vladislav Valerievich [8580-50] SPMon  
Lylova, Ann [8600-2] S1  
Lynch, Jennifer M. [8578-2] S1  
Lynn, Heather [8593-26] SPSun  
Lytle, Christian R. [8606-26] S8  
Lyubovitsky, Julia G. [8587-75] SPMon, [8587-79] SPMon  
**Lyuksyutov, Sergei F.** [8644-1] S1  
Lyytikäinen, Jari [8606-14] S5
- 
- M**
- M. S., Vidyasagar [8611-50] SPTue  
M., Krishna priya [8637-47] SPWed  
Ma, Chao [8604-55] SPTue  
Ma, Dinglong M. [8565-29] S4, [8565-36] S4  
Ma, Hongqiang [8590-32] S9  
Ma, Jie [8613-50] SPTue  
Ma, Jing [8576-8] S2  
Ma, Li Leo [8595-17] S4  
Ma, Liang [8572-28] S5, [8573-18] S5, [8588-68] S10  
Ma, Ourui [8621-15] S3  
Ma, Pei [8593-3] S1, [8593-7] S2  
Ma, Quian [8595-25] S7  
Ma, Renmin [8629-23] S7  
Ma, Shaozhen [8647-23] S10, [8647-23] S9  
Ma, Siyu [8580-51] SPMon  
Ma, Teng [8581-41] S7  
**Ma, Xiuguan** [8601-57] S14  
Ma, Yufei [8631-29] S6  
Ma, Yu-Sheng [8621-40] SPWed  
Ma, Yuxiang [8582-29] SPTues  
Ma, Zhenhe [8580-47] SPMon  
Ma, Zhenhe [8593-5] S1  
Ma, Zhenqiang [8633-29] S9  
Maamary, Rabih [8631-31] S6  
Maasskant, Pleun [8586-23] S5  
Maassdorf, Andre [8605-15] S4, [8605-29] S6  
Maboudian, Roya [8614-1] S1  
Mabuchi, Hideo 8635 Program Committee, 8635 S12 Session Chair, [8635-36] S11  
MacAulay, Calum [8565-113] S4, [8565-97] S1, [8565-98] S1, [8572-38] S7, [8572-42] S8, [8592-3] S1  
Maccabi, Ashkan [8585-33] S6  
Maccagnani, Piera [8631-46] S9  
Maccarini, Paolo F. [8584-26] S8, [8584-27] S8  
MacCraith, Brian D. 8594 Program Committee  
**Macdonald, Callum M.** [8592-15] S4  
**Macdonald, Rainer** [8578-62] S10, [8578-88] S14, [8583-11] S3, [8583-21] S3, [8583-21] S5  
MacEwan, Matthew R. [8581-79] S11  
MacFarlane, Duncan [8565-198] S5  
MacGowan, Brian J. 8602 Program Committee, [8602-2] S1  
Machairas, Vaia [8587-46] S7  
Machaty, Zoltan [8593-21] S5  
Machida, Manabu [8578-35] S6  
Machida, Naoki [8565-3] S8  
Machnev, Andrey A. [8626-29] S7  
Mackenzie, Jacob I. 8599 Program Committee, 8599 S7 Session Chair, [8599-7] S2  
**MacKinnon, Nicholas B.** [8587-29] S4, [8587-34] S5  
MacLaren, Donald A. [8626-18] S4  
Macnab, Andrew John [8565-34] S1  
Maco, Bohumil [8588-47] S7  
MacPherson, S. [8610-21] S4  
MacQuarrie, Evan R. [8609-17] S4, [8609-7] S2  
Madabhushi, Rangaraj 8645 Program Committee  
Madamopoulos, Nicholas 8645 Program Committee  
Madanipour, Khosro [8574-29] SPSun  
Madden, Kelley S. [8578-112] SPSun  
Madden, Timothy [8601-125] SPTue  
Maddera, Lucinda E. [8590-9] S2  
Madoe, Julien [8631-66] S12, [8640-38] S9  
Madhuri, Lakshmi [8642-30] SPWed  
**Madore, Wendy-Julie** [8571-56] S9, [8575-22] S5  
Madou, Marc J. Symposium Committee  
**Madsen, Steen J.** 8565 Conference Chair, 8565 S1 Session Chair, [8565-192] SPSun  
Maeda, Azusa [8581-26] S4  
Maeda, Junya [8639-22] S6  
Maeda, Naoki [8607-7] S2, [8607-7] S6  
Maeda, Narihiko 8625 Program Committee  
Maeda, Tsuyoshi [8620-7] S2  
Maeda, Yasuhiro [8587-24] S4, [8588-12] S2, [8591-10] S3  
Mafi, Arash [8632-80] SPWed  
Magalotti, Selena [8596-8] S3  
Magaña-Loaiza, Omar Santiago [8635-28] S6, [8635-28] S9  
Magazov, Salavat [8583-21] S3, [8583-21] S5  
Magis, Thomas [8612-10] S3  
Magnaldo, Alastair [8627-21] S5  
**Magnusson, Robert** [8570-21] S5, [8599-53] S10  
**Magrini, Taciana D.** [8577-13] S6, [8579-35] SPMon  
Maguen, Ezra 8567 Program Committee, 8567 S2 Session Chair, 8567 S4 Session Chair  
**Mah, Misoon Y.** 8622 Program Committee  
**Mahadevan-Jansen, Anita** 8565 Conference Chair, 8565 S1 Session Chair, [8565-208] S3, [8565-216] S3, [8565-231] S3, [8565-233] S4, [8565-234] S4, 8571 Track Chair, 8572 Conference Chair, 8572 S1 Session Chair, 8572 SPSun Session Chair, 8572 Track Chair, 8573 Track Chair, 8574 Track Chair, 8575 Track Chair, 8576 Track Chair, 8577 Track Chair, 8578 Track Chair, 8611 Track Chair, 8615 Track Chair  
Mahajan, Smridhi [8595-17] S4  
Mahajan, Sumeet [8597-5] S2  
Mahat, Sandeep [8620-75] SPWed  
Mahato, Krishna Kishore [8565-21] S5  
Mahendroo, Mala [8575-17] S4  
**Maher, Jason R.** [8565-219] S1  
Maher, Mary Ann 8612 Conference Chair, 8612 S1 Session Chair, 8612 S4 Session Chair  
**Mahjoubfar, Ata** [8611-22] S5  
Mahjouri-Samani, Masoud [8613-6] S2  
Mahlke, Megan [8585-37] S4  
Mahmoud, Mahmoud [8597-37] S8  
Mahon, Sari [8565-103] S2, [8565-8] S4  
**Mahou, Pierre** [8588-67] S10, [8593-25] SPSun, [8617-14] S3, [8622-24] S6  
Mahro, Anna-Katharina [8585-6] S1  
Mahrt, Rainer F. 8633 Program Committee, [8634-3] S1  
Mai, Katherine [8593-1] S1  
Mai, Tuan [8565-28] S7  
Mai, Zhiming [8568-17] S4  
Maia, Francisco C. B. [8624-13] S4  
Maia, Tereza C. [8569-23] SPSat  
Maier, Robert R. J. [8567-77] SPSun, [8576-7] S2  
Maier, Sebastian [8635-10] S3  
Mailloa, Jonathan [8620-40] S10  
Mainguy, Stéphane [8602-15] S4  
Maioli, Paolo [8623-25] S8  
Maisenbacher, Lothar [8623-38] S10  
Maisons, Grégory [8631-34] S7  
**Maissen, Curdin** [8623-31] S7, [8623-57] S15  
Maitland, Duncan J. 8579 Program Committee, 8579 S6 Session Chair  
**Maitland, Kristen C.** [8565-112] S4  
Maitre, Agnes 8631 S3 Session Chair, [8631-69] S13  
**Majaron, Boris** [8565-18] S5, [8579-33] S7  
Majdani, Omid [8573-12] S3, [8573-12] S5  
Majety, Sashikanth [8631-80] S15  
Majewski, Jacek A. [8625-3] S1  
Majid, Imtiaz [8601-1] S1  
Majidi, Ehsan [8586-6] S1  
Majumdar, Arka [8632-24] S6, [8635-41] S12  
Majumder, Anirban [8587-11] S2, [8593-17] S4  
Makarona, Eleni [8629-5] S1  
**Makarov, Nikolay S.** [8577-26] S9  
Makarova, Tamara [8579-37] SPMon  
Makarowa, Irina [8625-71] SPWed  
**Maker, Ashley J.** [8600-61] S14, [8627-24] S6  
Maker, Gareth T. [8606-22] S7  
Makhijani, Vikram S. [8571-4] S1  
Makihira, Tomoyuki [8571-44] S7  
Makio, Satoshi [8604-7] S2  
**Makita, Shuichi** [8567-2] S1, [8567-59] SPSun, [8571-14] S3, [8571-16] S3, [8571-18] S3  
Makiyama Mello, Marcio M. [8567-57] SPSun  
**Makowski, Alexander J.** [8565-233] S4, [8565-234] S4  
Makris, George [8565-181] S4  
Malandrini, Alex [8567-62] SPSun  
Malara, Pietro 8640 S11 Session Chair, [8640-23] S5  
Malcolm, Graeme P. A. [8606-22] S7  
Maldiney, Thomas [8626-26] S6  
Maldonado-Basilio, Ramon [8645-13] S5  
Maleki, Lute [8600-18] S5, [8600-51] S6  
Maleki, Sepideh [8591-28] SPWed  
Malek-Madani, Reza [8610-31] S7  
Malet, Géraldine [8616-38] S8  
Malic, Ermin [8623-30] S7  
Malik, Mehul [8635-28] S6, [8635-28] S9  
Malik, Nitin Singh [8619-33] S8, [8619-4] S1  
Malik, Omer [8611-22] S5  
Malikov, Alexandr G. [8603-37] SPTue  
Malinauskas, Mangirdas [8613-43] SPTue  
Malinovsky, Victor E. [8567-61] SPSun  
Malis, Oana [8640-27] S6  
Maliszewska, Sylwia [8571-114] SPMon  
Maliwal, Badri P. [8590-10] S2  
Malik, Guy [8585-17] S3  
**Maliko, Anton V.** [8620-62] S15  
Mallahzadeh, Hassan [8635-22] S6  
Mallard, Frédéric [8570-24] S6  
**Mallidi, Srivalleesha** [8568-45] SPMon  
Malloggi, Chiara [8596-24] S7  
Mallouk, Tom [8620-2] S1  
Malovichko, Galina [8587-66] SPMon  
Malureanu, Radu [8627-33] S8  
Malyutenko, Oleg Yu. [8629-44] SPWed, [8638-18] SPWed  
**Malyutenko, Volodymyr K.** [8629-44] SPWed, [8638-18] SPWed  
Mamedov, Nazim T. [8620-41] S10  
Mammadov, Eldar [8620-41] S10  
Mammen, Timothy P.V. [8601-10] S3  
Mamontov, Eugene [8585-36] S6  
Man, Tian [8611-52] SPTue  
Manabe, Atsutaka [8642-36] S8  
Manabe, Takeshi [8604-9] S2  
Manapuram, Ravi Kiran [8567-52] S9, [8571-64] S10, [8571-82] S12  
Mancarella, Fulvio [8612-14] S3  
Manchanda, Romila [8582-15] S4, [8596-7] S2, [8596-7] S2  
Mancinelli, Mattia [8629-28] S7  
Mancuso, J. Jacob [8565-12] S3  
Mancuso, James J. [8565-199] S1, [8565-202] S1  
Mandal, Arjun [8634-6] S2  
Mandava, Naresh [8611-8] S2  
Mandel, Yossi [8567-8] S2, [8567-9] S2, [8585-17] S3  
**Mandelis, Andreas** 8565 Conference Chair, 8565 S1 Session Chair, 8565 S2 Session Chair, [8565-230] S3, 8581 Program Committee, [8581-120] SPSun, [8581-154] SPMon, [8581-52] S8  
Mandella, Michael J. [8575-30] S1, [8575-30] S7  
Mandeville, Emiri T. [8565-177] S3, [8588-45] S7  
Mandl, Martin [8641-45] S10  
Mandolesi, Georgia [8588-47] S7  
Manduram, Mona [8566-2] S1  
Manea, Ana-Maria [8622-66] S7  
Manek-Hönninger, Inka B. [8599-50] S10, [8607-22] S7  
Mangeant, Mélanie [8602-15] S4  
Mangeney, Juliette [8640-38] S9, [8640-39] S9  
**Mangold, Mario** [8601-25] S7, [8606-15] S5, [8606-5] S2  
Manhas, Sandeep [8577-29] S10  
Maniewski, Roman [8578-86] S14  
Manilia, Filomena [8608-29] S13, [8608-29] S6  
Manivanh, Richard [8567-8] S2, [8585-17] S3  
Mann, Matthew [8604-31] S7, [8626-7] S2



# Index of Authors, Chairs, and Committee Members

- Manna, Liberato [8595-40] S9, [8595-48] S11
- Manni, Jeff G.** [8605-25] S5
- Mannis, Mark J. [8571-123] SPMon
- Manns, Fabrice 8567 Conference Chair, 8567 S10 Session Chair, 8567 S11 Session Chair, [8567-19] S4, [8567-29] S6
- Manohar, Srirang [8581-1] S1, [8581-23] S4, [8581-38] S7
- Manoharan, Vinothan N. [8632-43] S10
- Manquest, Christophe [8631-2] S1
- Manry, Michael T. [8578-4] S1
- Mans, Torsten G. [8599-42] S8
- Mansfield, Jessica C. [8588-19] S3
- Månson, Jan-Anders E. [8592-49] SPSun
- Mansson, Alf [8587-76] SPMon, [8587-77] SPMon, [8594-28] S7
- Mansur, David J. [8618-25] S7
- Mansuripur, Masud** [8619-57] S14
- Mansuripur, Tobias S. [8619-57] S14, [8640-22] S5, [8640-47] S11, [8640-48] S11
- Mansuripur, Tobias [8640-23] S5
- Mansuryan, Tigran [8575-15] S4
- Mante, Pierre-Adrien [8623-33] S9
- Mantulin, W. W. [8578-1] S1
- Manuel, Cyrus [8565-83] S7, [8565-92] S9
- Manuel, Keith [8567-6] S1
- Manz, Christian [8606-10] S3
- Manzani, Danilo [8604-52] SPTue
- Manzur, Tariq** [8626-10] S3, 8631 Program Committee, 8631 S6 Session Chair
- Mao, Dandan [8610-3] S1
- Mao, Qi [8575-17] S4
- Mapoles, Evan [8602-16] S4
- Mar Yi Lwin, Phyu Phyu [8644-15] S4, [8644-9] S3
- Marandi, Alireza [8604-19] S5, [8604-29] S6
- Marangoni, Marco [8604-24] S6
- Marcelo, Cynthia L. [8579-19] S5
- March, Kelsey [8596-29] S9
- Marchand, Paul [8571-54] S8
- Marchese, Linda [8614-22] S4, [8624-14] S4
- Marchington, Robert F. [8611-2] S1
- Marciano, Roberta S. [8569-10] S3
- Marciniak, Michael A.** [8603-25] S6
- Marconi, Jorge D. [8627-17] S4
- Marcoux, Carine [8612-11] S3
- Marcu, Laura 8565 Conference Chair, 8565 S4 Session Chair, [8565-29] S4, [8565-36] S4, [8568-35] SPMon, 8572 S5 Session Chair, [8573-15] S5, [8574-27] SPSun
- Marder, Seth R.** [8622] Program Committee
- Marega, Euclides [8621-54] SPWed, [8621-55] SPWed, [8632-77] SPWed, [8632-78] SPWed, [8634-13] S3
- Marell, Milan J. H. [8578-31] S5
- Margueron, Samuel [8626-37] S9
- Margulis, Walter [8576-13] S3
- Mariampillai, Adrian [8565-173] S2, [8565-236] S2, [8565-237] S5
- Mariani, Silvia [8631-81] S16
- Marie, Rodolphe [8629-9] S2
- Marie, Xavier [8631-78] S15
- Marina, Oana C. [8592-21] S6
- Marinan, Anne [8617-7] S2
- Marine, Wladimir I. [8611-38] S8
- Marinov, Val R. [8608-22] S5
- Marion, Samuel [8577-24] S9
- Marjanovic, Marina [8565-13] S2, [8572-20] S4, [8596-15] S2, [8596-15] S4
- Mark, Eugene J. [8565-117] S5, [8565-118] S5, [8571-23] S4
- Markel, Vadim A. [8578-35] S6
- Markelz, Andrea G. [8623-4] S2
- Marko, Igor P. [8640-64] S14, [8640-66] S14
- Marko, Matthew D. [8628-15] S6
- Markos, Christos [8619-64] SPWed, [8632-22] S5
- Markov, Vladimir B.** [8599-79] SPTue, [8610-33] S7, [8618-22] S7
- Markovic, Bojan [8631-48] S9
- Markovic, Stacey [8587-70] SPMon
- Marks, Daniel L. [8589-35] S8
- Marks, Tobin J. [8622-20] S1, [8622-20] S5
- Markwald, Roger R. [8580-51] SPMon
- Markweg, Eric [8616-7] S2
- Marmor, Michael F. [8567-9] S2
- Marona, Lucja [8625-36] S8, [8625-37] S8, [8625-41] S9
- Marotta, Tom R. [8565-236] S2
- Marozas, John A. [8602-12] S4, [8602-13] S4
- Marple, Eric [8565-19] S5
- Marquér, Catherine K. [8590-4] S1, [8590-43] SPSUN
- Marques, Aparecida Maria C. [8569-18] S4
- Marques, Manuel** [8571-117] SPMon
- Marques, Paulo V. S. [8611-30] S6, [8611-35] S7
- Marquestaut, Nicolas [8607-22] S7, [8607-25] S7, [8613-22] S5, [8632-41] S9
- Marquier, François [8631-69] S13
- Marris-Morini, Delphine [8628-2] S1, [8628-2] S10, [8629-25] S7
- Mars, Jérôme [8572-27] S5
- Marsden, Armando [8597-32] S7
- Marsh, Richard John [8590-27] S8
- Marshall, Christopher D. 8602 Program Committee
- Marshall, Michael J. [8619-44] S11, [8619-44] S13
- Marshall, Wallace Frank [8593-23] SPSun
- Marshall, William A. [8590-9] S2
- Martel, Catherine [8581-78] S11
- Martel, Richard [8621-2] S1
- Martelli, Fabrizio [8578-44] S8, [8583-11] S3, [8583-21] S3, [8583-21] S5, [8583-5] S2
- Martelli, Paolo [8647-5] S4
- Martens, Daan [8629-4] S1
- Marti Vega, Antonio 8620 S7 Session Chair
- Martí, Antonio 8620 Program Committee, [8620-18] S5
- Martin, Airton Abrahão [8565-32] SPSun, [8594-17] S5, [8594-18] S5
- Martin, Aude [8613-14] S4
- Martin, Bruno [8616-20] S5, [8627-19] S5
- Martin, Elizabeth [8571-63] S10
- Martin, Inocencio J. [8600-13] S4, [8600-70] SPTue
- Martin, Leopoldo L. [8600-13] S4, [8600-70] SPTue
- Martin, Michael C. [8623-7] S3
- Martin, Olivier J. F.** [8572-50] S9
- Martinelli, Mario [8647-5] S4
- Martinez Dávalos, Arnulfo [8578-48] S8
- Martinez Marrades, Ariadna** [8589-21] S5, [8632-53] S12
- Martinez, Alejandro [8632-31] S8
- Martinez, Daniel [8578-21] S4
- Martinez, Diana [8569-8] S2
- Martinez, Joshua [8585-34] S6
- Martinez, Juan [8622-33] S8, [8647-24] S10, [8647-24] S9
- Martinez, Ramses V. [8575-21] S5, [8575-5] S2
- Martinez, Rebecca J. [8631-57] S11
- Martinez, Ty** [8610-34] S7
- Martinez-Aragon, Edwin [8645-29] SPWed
- Martinez-Chapa, Sergio O.** [8619-30] S7
- Martinez-Rios, Alejandro [8621-20] S4
- Martini, Rainer [8624-41] S10
- Martin-Lopez, E. [8628-16] S6
- Martin-López, Sonia [8636-20] S4
- Martino, Mark [8578-7] S2
- Martins Filho, Joaquim F. [8646-12] S5
- Martins, Vanessa M. [8634-27] SPWed
- Martinsen, Rob 8605 Program Committee, 8605 S7 Session Chair, [8605-14] S3, [8605-23] S5
- Marti-Panameno, Erwin A. [8619-18] S5
- Marvdashti, Tahereh** [8572-22] S4
- Marx, Sebastian [8622-8] S2
- Maryenko, Denis [8626-15] S4
- Marzani, Franck S. [8572-51] SPSun, [8587-55] S8
- Maschke, Ronny [8591-22] SPWed
- Mascio-Kegelmeyer, Laura [8602-16] S4
- Mashanovich, Goran Z. 8629 Program Committee, [8629-18] S4
- Mashiattula, Maleeha [8567-42] S8, [8580-26] S5
- Mashimo, Hiroshi [8571-22] S4, 8575 Program Committee
- Masihzadeh, Omid [8567-50] S9, [8611-8] S2
- Masilamani, Vadivel [8577-19] S7, [8577-9] S4
- Masilii, Mauro [8567-55] SPSun
- Maskos, Michael [8595-63] S14
- Maslennikova, Anna V. [8578-58] S10
- Maslov, Konstantin I. [8581-104] SPSun, [8581-140] SPMon, [8581-147] SPMon, [8581-153] SPMon, [8581-155] SPMon, [8581-182] SPMon, [8581-19] S3, [8581-45] S8, [8581-64] S9, [8581-77] S11, [8581-78] S11, [8581-82] S11, [8581-83] S11, [8581-84] S11
- Masoller, Cristina [8636-46] S9
- Mason, Paul D. [8602-17] S4
- Masselink, W. Ted [8640-65] S14
- Massiot, Inès [8620-11] S3
- Massmann, Frank [8599-14] S3, [8599-27] S6
- Massodi, Iqbal [8568-17] S4, [8568-46] S7, [8568-47] S7
- Masson, Jean-François [8597-21] S5
- Massonneau, Marc [8574-22] S5
- Massons, Jaume [8594-6] S2
- Mastanduno, Michael A. [8578-16] S3, [8578-32] S6, [8578-33] S6
- Mastik, Frits [8581-14] S2
- Mastro, Michael A. [8604-30] S7
- Masuda, Koji [8604-16] S4
- Masui, Kyoko [8613-15] S4, [8613-25] S5, [8613-31] S7
- Masunaga, Kumi [8613-24] S5
- Masunov, Artem [8604-46] SPTue
- Maswadi, Saher [8579-34] S3, [8595-57] S13
- Matar, Suhail [8565-20] S1
- Matcher, Stephen J.** 8565 Program Committee, [8565-11] S3, [8571-90] SPMon, [8571-92] SPMon, [8583-17] S4, [8596-28] S8
- Mateasik, Anton [8588-32] S5, [8588-92] SPSun
- Matei, Daniela E. [8592-8] S3
- Mateo, Eduardo F. [8647-8] S4
- Mateos Ferre, Xavier [8594-6] S2, [8599-3] S1, [8625-26] S6
- Mateos, Luis [8594-6] S2
- Matharu, Avtar [8642-23] S7
- Mathevet, Fabrice [8622-45] S11
- Mathews, Marlon Stephen** 8565 Program Committee, [8565-168] S1
- Mathews, Scott A. [8567-28] S6, [8607-29] S9, [8608-25] S4, [8631-70] S13
- Mathieson, Keith [8567-8] S2, [8588-71] S10
- Mathieu, Lydie [8621-14] S3
- Mathis, Amaury [8608-15] S3, [8637-22] S4
- Mathivanan, Narayanasamy [8595-18] S4
- Matho, Katherine [8588-67] S10, [8593-25] SPSun
- Mathur, Keshav Lal [8634-6] S2
- Matic, Agnella I.** [8565-215] S3
- Matlock, Alex [8578-20] S4
- Matone, JoAnn T. [8602-9] S3
- Matsko, Andrew B. 8600 Program Committee, 8600 S4 Session Chair, [8600-51] S5, [8600-51] S6
- Matsubara, Masahito [8641-70] SPWed
- Matsumoto, Koh 8625 Program Committee
- Matsumoto, Naoya [8608-4] S1, [8608-8] S2
- Matsumura, Hiroyoshi [8571-94] SPMon
- Matsunaga, Takashi [8607-51] SPTue
- Matsuo, Shinji [8635-39] S12
- Matsu, Shoichiro [8601-94] SPTue, [8647-14] S6
- Matsushima, Miyoko [8565-106] S3
- Matsushita, Masafumi [8607-39] S11
- Matsushita, Nobuhiro
- Matsutani, Akihiro [8633-33] S10, [8639-14] S4, [8639-31] S8
- Matsuura, Akihiko [8646-24] S8, [8646-24] S9
- Matsuura, Yuji** 8576 Program Committee, [8576-1] S1, [8576-25] S5, [8576-26] S5, [8576-27] S5
- Matteini, Paolo [8581-34] S6
- Matthäus, Gabor [8624-47] S11
- Matthews, Daniel R. [8590-13] S2
- Matthews, Dennis L.** [8588-69] S10, [8591-18] S4
- Matthews, Jonathan C. [8628-16] S6
- Matthews, Thomas E. [8592-40] S9
- Mattila, Toni T. [8614-7] S2
- Mattioli, Francesco [8631-13] S3, [8635-46] S13
- Mattison, Scott P.** [8581-126] SPSun, [8581-81] S11
- Mattoussi, Hedi 8595 Program Committee, [8595-11] S2
- Matula, Thomas J. [8581-37] S6
- Maturo, Stephen [8565-80] S7
- Matuschek, Nicolai [8571-106] SPMon
- Matuszek, Anna [8615-34] S7
- Matyas, Alpar [8640-40] S9
- Matylytsky, Victor V. [8611-37] S8
- Maulini, Richard [8640-45] S11
- Maurer, Michael A. [8624-18] S5
- Maurin, Isabelle [8595-28] S7
- Mauskapf, Adam [8565-11] S7
- Maussang, Kenneth [8640-38] S9, [8640-39] S9
- Mavadia, Jessica [8571-69] S11
- Mavandadi, Sam [8591-20] S4
- Mawst, Luke J. [8620-58] S14, 8640 Program Committee
- Maximenko, Sergey [8620-30] S8
- Maxin, Jeremy [8624-21] S6
- May, Travis [8586-8] S2
- Maya Ordoñez, Felipe [8601-82] SPTue
- Mayer, Günter [8615-5] S1
- Mayet, Céline [8589-18] S4, [8590-43] SPSUN
- Maynard, Robert [8601-57] S14
- Mayo, Daniel C.** [8607-43] S12
- Maysonnave, Jean [8640-38] S9, [8640-39] S9
- Maytin, Edward V.** [8568-22] S6, [8568-31] S7, [8568-6] S2, [8568-9] S3
- Mazhar, Amaan [8565-27] S7, [8573-3] S1, [8578-61] S10
- Mazumder, Nirmal** [8588-76] SPSun
- Mazur, Courtney [8584-18] S5



# Index of Authors, Chairs, and Committee Members

- Mazur, Eric** [8607-14] S10, [8607-14] S4, [8607-20] S12, [8607-20] S6, [8607-35] S10, [8607-44] SPTue, [8607-7] S2, [8607-7] S6, [8608-28] S13, [8608-28] S6, [8609-3] S1, 8611 Program Committee, [8611-40] S8, [8611-60] SPTue, [8613-52] SPTue, [8623-14] S4, [8626-49] S12, [8627-47] SPWed, [8632-69] S15, [8632-82] SPWed  
Mazurczyk, Radoslaw [8620-15] S4  
Mazurenka, Mikhail [8578-88] S14, [8583-21] S3, [8583-21] S5, [8583-5] S2  
Mazurenko, Alexander [8631-16] S17  
Mazzillo, Massimo Cataldo [8629-45] SPWed, [8631-47] S9  
Mazzochi, Aggie [8565-31] SPSun  
Mazzola, Maurizio [8621-22] S5  
Mazzucchelli, Serena [8595-2] S1, [8595-3] S1  
McAlindin, Niall [8588-71] S10  
McAlpine, Jessica [8572-38] S7  
McArthur, Sally L. [8579-11] S3  
McAuslan, David L. [8581-42] S7  
McBrearty, Euan J. [8599-29] S6  
**McBride, Roy** [8605-6] S2  
McCabe, Eithne M. [8595-36] S8  
McCammion, Susan [8572-28] S5, [8573-18] S5, [8588-68] S10  
McCarthy, Darragh 8624 S11 Session Chair, 8624 S4 Session Chair, [8624-39] S10  
McCarty, Owen J. T. [8587-17] S2, [8587-44] S7  
McClane, Devon [8601-64] SPTue  
McClintock, Ryan [8626-20] S5, [8626-36] S8, 8631 Program Committee, [8631-102] S7, [8631-33] S7  
McClish, Mickel [8621-52] SPWed  
McClosky, David [8600-41] S11  
McClure, Jason [8587-31] S4  
**McComb, Timothy S.** [8601-101] SPTue, [8601-102] SPTue, [8601-57] S14  
McConnell, Gail  
**McCormack, Devin R.** [8580-39] S7  
McCormick, David A. [8565-200] S5  
McCoy, Darryl [8588-43] S7  
McCulloch, Stuart [8603-11] S3  
McCullough, Kevin [8637-6] S1  
McDaniel, Sean [8599-12] S3  
McDonald, Andre [8637-46] SPWed  
McDonald, Mark [8590-17] S4  
McDonald, Steve M. 8588 Program Committee  
McDonough, John [8588-64] S9  
McElroy, Austin B. [8571-2] S1  
McGarry, Jan F. [8610-3] S1  
McGee, Sasha [8572-35] S7, [8577-12] S6  
McGhee, Ewan J. [8588-71] S10  
McGlynn, Enda [8626-27] S6  
McGonigle, Lorcan P. [8617-8] S2  
McGoron, Anthony J. [8582-15] S4, [8596-5] S2, [8596-7] S2  
McGuire, John A. [8623-29] S7  
McHale, Quinn [8593-1] S1  
McIntire, Leva E. [8610-3] S1  
McIntosh, Bruce [8610-17] S4  
McIntosh, Christopher M. [8599-58] S11  
McIntyre, Colleen M. [8567-61] SPSun  
McKay, Aaron M. [8611-31] S6  
McKinnon, Graham [8612-13] S3  
McKinstrie, Colin J. [8604-57] SPTue  
McLain, Michael A. [8565-40] S2  
McLaren, Melanie G. [8637-25] S5, [8637-25] S8  
McLaughlin, Robert A. [8565-10] S3, [8565-108] S3, [8571-56] S9, [8571-68] S11, [8571-73] S11, [8579-24] S5, [8580-29] S6  
McLean, David I. [8565-7] S2  
McLean, James P. [8588-61] S9  
McLeod, Euan R. [8570-22] S6  
**McLeod, Robert R.** 8613 Program Committee  
McMackin, Ian [8613-28] S6  
McMahan, Steven J. [8639-20] S5  
McMahon, Peter L. [8635-10] S3  
McMillan, Dayton D. [8568-32] SPMon  
McMillan, James F. [8628-15] S6  
McMillan, Kathleen [8584-6] S2  
**McNabb, Ryan P.** [8567-18] S4, [8567-23] S5, [8567-34] S6  
McShane, Michael J. 8591 Program Committee, 8591 S1 Session Chair, [8591-4] S1  
McVeigh, Elliot [8571-69] S11  
McWilliams, Annette M. [8565-113] S4, [8565-98] S1, [8565-99] S1  
Mead, Roy D. [8601-36] S9  
Meade, Jeffrey T. [8572-37] S7  
Meadway, Alexander [8567-64] SPSun  
**Mechet, Pauline** [8627-6] S2  
Méchin, David [8621-32] S7  
Mecozzi, Antonio [8647-13] S6  
Medellin-Rodríguez, Francisco Javier [8570-18] S5, [8626-61] SPWed  
Medintz, Igor 8595 Program Committee, [8595-43] S10, [8595-44] S10, [8595-53] S12  
Medoff, Benjamin D. [8565-100] S1  
Medrano, Carolina C. [8622-10] S3, [8624-46] S11  
Medyukhina, Anna [8565-185] S4  
Mee, Jesse K. [8619-10] S3, [8619-11] S3  
Meech, Steve [8623-1] S1  
Mega, Yair J. [8588-61] S9, [8621-30] S6  
Megens, Mischa [8633-15] S5, [8633-16] S5  
Meghea, Aurelia [8622-26] S7  
**Megliński, Igor** 8580 Program Committee, 8580 S5 Session Chair, [8580-21] S1, [8580-42] S2, [8582-4] S6, [8592-15] S4, [8592-43] SPSun, [8598-8] S3  
Meglini, Marie [8580-21] S1  
Mégret, Patrice [8601-114] SPTue, [8601-55] S13  
Mehi, Jim [8581-130] SPSun  
Mehigan, Sam [8595-36] S8  
Mehn, Dora [8595-8] S2  
Mehner, Jan [8578-65] S11  
**Mehrabani Zeinabad, Simin** [8600-61] S14  
Mehran, Kamyar [8586-23] S5  
Mehregan, Darius [8596-32] S9  
Mehri, Lukas-Karim [8615-32] S7  
Mehrotra, Akhil [8620-31] S8, [8620-45] S11, [8620-65] SPWed  
Mehta, Dalip Singh [8587-5] S1, [8622-62] S9  
**Mehta, Nikhil** [8624-4] S2  
Mehta, Rita S. [8578-15] S3, [8578-17] S3  
**Mei, Liang** [8570-25] S6, [8579-22] S5, [8641-74] SPWed  
Mei, Zhe [8615-2] S1, [8615-26] S6  
**Meier, Amanda K.** [8623-43] S12  
**Meier, Christoph** [8566-5] S1, [8571-108] SPMon  
Meier, Norbert [8622-4] S1  
Meier, Thomas [8607-13] S10, [8607-13] S4  
**Meier, Torsten** 8623 Program Committee, [8623-17] S5, [8623-20] S5  
Meijer, Jan A. [8635-21] S6  
Meilhan, Jérôme [8624-45] S11  
Meinecke, Jasmin [8628-16] S6  
Meinecke, Georg [8615-50] SPTue  
Meininger, Gerald A. [8587-42] S7  
Meinke, Martina C. [8580-18] S4  
Meinschien, Jens [8605-16] S4, [8605-3] S1  
Meisch, Tobias [8625-53] S12  
Meissner, Ansgar [8599-16] S3, [8599-49] S4, [8599-49] S9  
Meissner, Kenith E. [8587-42] S7, 8591 Program Committee  
Meissner, Peter [8639-11] S4, [8639-15] S4, [8639-16] S4  
Meissner, Sven [8571-133] SPMon, [8611-19] S4, [8611-20] S4  
Meister, Jörg [8566-13] S3, [8566-15] S4  
Mejling, Lasse [8604-57] SPTue  
Meleshina, Aleksandra V. [8587-63] SPMon  
Melgaard, Seth D. [8606-9] S3, [8638-3] S1, [8638-4] S1  
Melkonian, Jean-Michel [8631-64] S12  
Mellinghoff, Ingo K. [8581-15] S3  
Melloni, Andrea I. 8627 Program Committee  
**Mellor, Alexander V.** [8620-18] S5  
Melnikov, Igor V. [8601-111] SPTue, [8626-29] S7, [8636-21] S4, [8636-57] S11  
Melo, Arline M. [8624-13] S4  
Melo, Claudia A. V. [8579-36] SPMon  
Melo, Miguel [8601-60] S14  
Melton, Andrew G.  
Mely, Yves [8588-29] S4, [8590-12] S2  
**Melzer, Jeffrey E.** [8576-33] S5  
Menabuoni, Luca [8567-62] SPSun  
Menard, Jean-Michel [8623-6] S3  
Mendes, Manuel José [8620-18] S5  
Mendez, Bianchi [8626-28] S7  
Méndez-Blas, Antonio [8626-61] SPWed  
Mendonça, Cleber R. [8604-50] SPTue, [8604-52] SPTue, [8612-23] SPTue  
Mendoza González, Gregorio G. [8619-18] S5  
Mendoza, Guillermo [8628-16] S6  
Mendrick, Mark C. [8641-37] S8  
Meneghesso, Gaudenzio [8625-58] S12, [8641-53] S11  
**Meneghini, Matteo** [8625-58] S12, [8641-53] S11  
Meng, Lingzhong [8578-1] S1  
Meng, Wei [8578-101] SPSun, [8578-104] SPSun  
**Meng, Zhaokai** [8572-57] SPSun, [8588-74] SPSun  
Mengali, Sandro [8631-85] S16  
Menicucci, Nicolas [8635-17] S5  
Menin, Angela [8612-14] S3  
Menko, Julia [8568-40] SPMon  
Mennea, Paolo L. [8627-29] S7  
Menodiago, Flores M. [8567-52] S9, [8571-64] S10, [8571-82] S12  
Menon, Jyothi [8594-26] S7  
Menon, Rajesh [8607-5] S2, [8607-5] S6  
Menon, Vinod M. 8634 Program Committee  
Menossi, Daniele [8608-29] S13, [8608-29] S6  
Mensah, Lawrence [8568-17] S4, [8568-45] SPMon  
Menyaev, Yulian A. [8581-171] SPMon, [8611-3] S1  
Menzel, Dietrich [8623-37] S10  
Menzel, Dirk [8625-72] SPWed  
Menzel, Ralf [8605-28] S6, [8640-56] S13  
Menzel, Stefan [8640-22] S5, [8640-46] S11, [8640-48] S11  
Mercado Sotelo, Emmanuel [8619-38] S9  
Mercatelli, Raffaella [8596-31] S9  
Mercier, Luc [8624-14] S4  
Mercuri, Alexandre, Odile [8638-1] S1  
Mereuta, Alexandru [8606-14] S5, [8639-27] S1, [8639-3] S1  
Merk, Vivian [8595-16] S4  
Merkel, Markus [8603-30] S7  
Merlo Ramirez, Juan Manuel [8619-18] S5  
Mermut, Ozzy [8576-21] S4, [8583-20] S3, [8583-20] S5, [8583-5] S2  
Meroni, Andrea [8612-14] S3  
Merricks, Elizabeth [8581-183] SPMon  
Merrigan, Carl [8609-17] S4  
Merritt, Charles D. [8631-58] S11  
Merritt, Scott A. [8610-21] S4  
Mery, Gil [8601-37] S9  
Merzlikin, Alexander M. [8632-9] S2  
Mesarikakis, Charis [8640-61] S13  
Mescheder, Ulrich [8616-34] S7  
Meshew, Gregory [8631-57] S11  
Mesquita-Ferrari, Raquel A. [8569-15] S4, [8569-16] S4, [8579-36] SPMon  
Messaddeq, Younes [8611-54] SPWed, [8632-78] SPWed  
Messaudi, Hamza [8626-27] S6  
Messenger, Scott R. [8620-30] S8  
Messery, Michael J. [8601-6] S2  
Messersmith, Phillip B. [8598-13] S4  
Messias, Camila [8595-24] S7  
Messias, Djalmar N. [8596-44] SPMon, [8619-76] SPWed, [8634-27] SPWed  
Messina, Gabriele [8609-9] S3  
Metkus, Kristin M. [8607-29] S9, [8631-70] S13  
Mettlen, Scott W. [8601-102] SPTue  
Metz, Philipp [8621-47] SPWed  
Metzger, Björn [8629-42] S11  
Metzger, Coby [8579-31] S7, [8583-6] S2  
Metzger, Robert [8625-69] S14  
Metzner, Sebastian [8625-86] SPWed  
Meunier, Michel 8607 Program Committee, 8611 Conference Chair, 8611 S2 Session Chair, [8611-4] S1  
Mexis, Meletios [8625-19] S5  
Meygaard, David S. [8641-57] S12  
Meyer, Bruno K. [8625-80] SPWed  
Meyer, Heiko [8565-110] S4  
**Meyer, Jerry R.** [8604-30] S7, [8620-53] S11, [8620-53] S13, 8631 Program Committee, 8631 S1 Session Chair, [8631-58] S11, 8640 Program Committee, 8640 S6 Session Chair  
Meyer, Ralf [8631-67] S12, [8640-40] S9  
Meyer, Tobias [8565-185] S4, [8611-16] S4  
Meyer, Travis A. [8571-83] S12  
Meza, Raecine 8618 Program Committee  
Mezzapesa, Francesco Paolo [8607-23] S7, [8631-4] S1, [8631-88] S18  
**Mhlanga, Thandeka I.** [8637-46] SPWed  
Mi, Zetian 8634 S2 Session Chair, [8634-8] S2  
Miao, Houxun [8600-67] S16, [8616-31] S7  
Miao, Hui [8582-3] S6  
Michaelian, Kirk H. [8581-120] SPSun  
Michaelis de Vasconcellos, Steffen [8619-5] S1  
Michaelsen, Kelly E. [8578-16] S3, [8578-37] S6  
Michael, Xavier [8590-2] S3, [8590-3] S3  
**Michalska, Aneta** [8614-8] S2  
Michaud-Belleau, Vincent [8600-57] S14  
**Michel, Jurgen** [8640-28] S7  
Michelberger, Patrick S. [8636-38] S8  
Michl, Josef [8620-27] S7  
Mickovic, Zlatko [8639-3] S1  
Middendorp, Elodie [8594-15] S4  
**Middlebrook, Christopher** [8624-18] S5  
Midolo, Leonardo [8632-2] S1, [8632-25] S6, [8632-26] S6  
Midorikawa, Katsumi [8607-15] S11, [8607-15] S5  
Mielczarek, Kamil [8622-36] S9  
Mielke, Michael M. 8611 Program Committee, 8611 S5 Session Chair

# Index of Authors, Chairs, and Committee Members

- Mies, Carolyn [8578-14] S3  
 Miethe, Peter [8615-21] S5  
 Migacz, Justin V. [8571-42] S7  
**Migdall, Alan L.** 8635 Program  
 Committee, [8635-31] S6, [8635-31] S9, [8635-34] S10  
 Migliozi, Daniel [8591-23] SPWed  
 Miglo, Alexander [8599-55] S11, [8599-56] S11, [8639-23] S6  
 Miida, Yusuke [8576-25] S5  
 Mikami, Takuya [8604-43] SPTue, [8604-56] SPTue  
 Mikhailov, Alexandr [8596-34] SPMon  
 Mikhailov, Eugeny E. [8636-12] S3, [8636-42] S8  
 Mikhailov, Vitaly [8647-22] S10, [8647-22] S9  
 Mikroulis, Spiros 8645 Program  
 Committee, 8645 S4 Session Chair, [8645-16] S6, [8645-18] S6  
 Mikryukov, Alexey S. [8607-50] SPTue  
 Mikuli?, Martin [8625-74] SPWed  
 Milanese, Daniel [8601-76] SPTue, [8621-32] S7  
 Milanic, Matija [8579-33] S7  
 Milanovic, Veljko 8616 Program  
 Committee, 8616 S8 Session Chair  
 Milazzotto, Marcella Pecora [8579-35] SPMon  
 Milej, Daniel [8578-86] S14, [8583-21] S3, [8583-21] S5, [8583-5] S2  
 Millera, Andrew [8596-7] S2  
 Milione, Giovanni [8577-22] S8, [8577-7] S2, [8637-3] S1, [8637-50] S2, [8637-51] SPWed  
 Milou, Amalia [8621-12] S3  
 Millar, Timothy M. [8595-1] S1  
 Millenheft, David [8639-24] S6  
 Miller, Alyssa J. [8565-100] S1  
 Miller, Andy [8638-15] S4  
 Miller, Andy [8601-33] S8  
 Miller, Andy [8612-17] S4  
 Miller, Benjamin L. 8570 Conference  
 Chair, 8570 S1 Session Chair, 8570 S3  
 Session Chair, 8570 S5 Session  
 Chair, [8570-8] S2  
 Miller, Daniel E. [8599-47] S4, [8599-47] S9  
 Miller, David A. B. [8627-26] S6, [8627-8] S2  
 Miller, Dianne [8572-38] S7  
**Miller, Donald T.** 8567 Program  
 Committee, 8567 S7 Session Chair, [8567-16] S3, [8567-17] S3, [8567-36] S7, [8567-38] S7  
 Miller, Eric L. [8578-22] S4  
 Miller, Harold C. [8600-71] SPTue  
 Miller, Joann [8568-7] S2  
 Miller, Kelly [8607-35] S10  
 Miller, Michael [8606-15] S5, [8606-16] S5, [8639-21] S6  
 Miller, Owen [8632-13] S3  
 Miller, Tom [8581-2] S1  
 Million, Nina [8608-24] S5  
 Mills, Ben [8621-3] S1  
**Mills, Jared B.** [8599-46] S8  
 Milman, Perola [8635-44] S13  
 Milner, Thomas E. [8565-12] S3, [8565-34] S5, [8571-2] S1, [8595-17] S4  
 Milner, Valery [8611-15] S3  
 Milosevic, Milan M. [8629-18] S4  
 Milster, Thomas D. [8613-19] S4  
 Mima, Kinioki 8602 Program  
 Committee  
 Mimun, Lawrence C. [8594-12] S4  
**Min, Eun Jung** [8576-10] S2, [8593-24] SPSun  
 Min, Kyungtaek [8641-75] SPWed  
 Min, Taegee [8565-23] S2  
**Min, Wei** [8588-111] SPSun, [8588-49] S8, [8588-7] S1  
 Min, Xiaolin [8580-46] SPMon, [8580-47] SPMon  
 Minaev, Vladimir P. [8565-17] SPSun  
 Minai, Limor [8575-10] S3, [8597-29] S6, [8597-31] S7, [8597-33] S7  
 Minakova, Ekaterina A. [8568-16] S4  
 Minamide, Hiroaki [8585-2] S1  
**Minamikawa, Takeo** [8588-26] S3  
 Minato, Kotaro [8587-65] SPMon  
 Minelly, John D. 8601 Program  
 Committee, 8601 S2 Session Chair  
 Minet, Jean [8610-35] S7  
 Ming, Tian [8607-14] S10, [8607-14] S4  
 Mingaleev, Sergei [8627-37] S9  
 Mino, Takuya [8625-59] S13  
 Mino-Kenudson, Mari [8565-117] S5, [8565-118] S5, [8571-23] S4  
 Minowa, Yosuke [8626-50] S11  
 Miotto, Ronei [8594-24] S6  
 Mir, Mustafa A. [8587-10] S1, [8587-11] S2, [8593-17] S4  
 Mira-Agudelo, Alejandro [8567-40] S7  
 Miranda, Anderson F. [8569-24] SPSat, [8569-26] SPSat  
 Miranda, Rajesh C. [8593-18] S4  
 Mirhosseini, Mohammad [8635-28] S6, [8635-28] S9  
 Miri, Mehdi [8632-34] S8  
 Mironov, Andrey E. [8626-29] S7  
**Mirzaei Zarandi, Soroush** [8578-3] S1, [8578-97] SPSun  
 Mirzoyan, Razmik [8621-5] S2  
 Mishima, Tetsuya D. [8640-25] S6  
 Mishra, Ashok Kumar 8596 Program  
 Committee  
 Mishra, Madhusmita [8570-28] SPSun  
 Misiakos, Konstantinos [8629-5] S1  
 Misiewicz, Jan 8631 Program  
 Committee, [8631-95] S18  
 Misoguti, Lino [8604-50] SPTue  
 Mita, Seiji [8625-91] S14, [8631-65] S12  
 Mitchell, Arnan [8615-34] S7, [8615-49] SPTue  
 Mitchell, James I. [8590-29] S8, [8607-8] S2, [8607-8] S6  
 Mitchell, Natalie A. [8578-112] SPSun  
**Mitin, Vladimir V.** [8624-37] S9  
 Mito, Jeffrey K. [8587-51] S8  
 Mitra, Soumya [8578-112] SPSun  
 Mitra, Thomas [8602-3] S1, [8605-16] S4, [8605-3] S1  
 Mitsuyama, Hiroshi [8640-13] S3  
 Mittag, Anja [8572-30] S6  
 Mittal, Richa [8575-18] S4  
 Mittler, Frédérique [8587-7] S1  
 Mittra, Erik [8581-15] S3  
**Mitus, Antoni C.** 8622 Program  
 Committee  
 Miura, Kiyotaka [8607-31] S9  
**Miura, Masahiro** [8567-2] S1, [8571-14] S3  
 Miura, Taisuke [8599-63] S12, [8603-2] S1, [8603-2] S9  
 Miyagi, Mitsunobu [8566-12] S3, [8576-1] S1  
 Miyajima, Hirofumi [8639-22] S6  
 Miyake, Hideto 8625 Program  
 Committee, 8625 S13 Session  
 Chair, [8625-14] S3, [8625-63] S14  
 Miyamoto, Isamu 8603 Program  
 Committee  
 Miyamoto, Kenji [8645-19] S6  
 Miyamoto, Masahiro [8639-22] S6  
 Miyamoto, Sayuri [8571-96] SPMon  
 Miyamoto, Yutaka [8646-24] S8, [8646-24] S9  
 Miyana, Noriaki [8599-82] SPTue, 8602 Program Committee  
 Miyano, Kenjiro [8620-48] S12, [8626-17] S4  
 Miyashita, Motoharu [8640-13] S3  
 Miyawaki, Kiichiro [8572-56] SPSun  
**Miyawaki, Mamoru** [8632-55] S12  
 Miyoshi, Norio [8587-24] S4  
 Miyoshi, Shunichiro [8565-3] S8  
 Mizaikoff, Boris [8570-27] SPSun, 8597 Program Committee, [8631-89] S18  
 Mizeikis, Vyngantas 8613 S2 Session  
 Chair, [8613-17] S4  
**Mizoguchi, Hakaru** [8607-51] SPTue  
 Mizuno, Masataka [8625-31] S7  
 Mizuno, Shintaro [8621-51] SPWed  
 Mizuno, Takayuki [8627-2] S1  
 Mizushima, Chiharu [8578-110] SPSun  
 Mizutani, Shugo [8641-70] SPWed  
**Mizuyama, Yosuke** 8613 Program  
 Committee  
 Mnymeh, Khaled [8613-12] S3  
 Mo, Jianhua [8565-104] S2, [8571-24] S4  
 Moalem, Anas [8599-22] S5  
 Mobeid-Miremedi, Maryam [8643-9] S2  
 Mocek, Tomáš? [8599-63] S12, [8602-7] S2, [8603-2] S1, [8603-2] S9  
**Mochizuki, Akihiro** 8643 Program  
 Committee  
 Modreanu, Mircea G. [8626-74] SPWed, [8631-78] S15  
 Moebius, Michael G. [8611-40] S8, [8611-57] SPTue, [8613-52] SPTue  
 Moen, Erick K. [8585-27] S5  
 Moench, Holger [8606-15] S5, [8606-16] S5, [8639-21] S6  
**Moerner, W. E.** [8590-20] S6, [8590-24] S7  
 Moetakef, Pouya [8626-14] S4  
 Moffatt, Douglas J. [8589-29] S6  
 Moffatt, Lauren T. [8565-30] S7  
 Moger, Julian J. [8587-23] S4, [8588-19] S3  
 Moghe, Prabhav V. [8597-6] S2  
**Moghim, Mohammad J.** [8617-6] S1  
 Mogi, Iwao [8621-4] S1  
 Mohajerani, Matin [8641-45] S10  
 Mohammad, Innus [8581-173] SPMon  
 Mohammad, Younis [8578-72] S12  
 Mohammadi, Saeed [8632-33] S8  
 Mohammed, Edris M. 8630 Program  
 Committee  
 Mohand-Said, Saddek [8615-6] S2  
 Mohanty, Samarendra K. 8586  
 Conference Chair, [8586-15] S2, [8586-20] S3, [8586-22] S3, [8586-25] S5, [8586-29] S4, [8586-3] S1, [8586-32] SPSun, [8586-5] S1, [8586-7] S1, [8594-26] S7  
 Mohanty, Sankhya [8608-23] S5  
 Mohar, Dilbahar [8565-8] S4  
 Mohrdiek, Stefan [8605-7] S2  
 Moine, Bernard [8620-15] S4  
 Moiseev, Alexander A. [8571-112] SPMon  
 Moision, Bruce [8610-37] S7, [8610-5] S2  
**Mokhov, Sergiy** [8603-3] S10, [8603-3] S2  
 Mokhun, Oleksiy [8599-52] S10  
 Molari, Pier Gabriele [8608-3] S1  
 Molchanov, Pavlo A. [8621-10] S3  
 Moldovan, Florina [8565-229] S3  
 Molina, Stephanie [8565-192] SPSun  
 Molinari, Emilio [8618-13] S4  
 Möller, Friederike [8595-10] S2  
 Moloney, Gregory [8588-101] SPSun  
**Moloney, Jerome** 8606 Program  
 Committee, 8606 S1 Session Chair, [8606-13] S4, [8606-18] S6, [8606-26] S8, [8606-4] S2, [8625-55] S12  
 Molter, Daniel [8585-3] S1  
 Momenpour, Ali [8576-14] S3  
 Monakhov, Andrey M. [8600-15] S4  
 Monastyrskiy, Grygorii [8640-65] S14  
 Monberg, Eric M. [8601-3] S1  
 Moncorgé, Richard [8599-1] S1, [8599-40] S8, [8611-23] S5  
**Mondal, Argha** [8594-26] S7  
 Mondet, Guillaume [8602-10] S3  
 Mondrik, Sharon [8565-85] S8  
 Monem Haghdoust, Zahra [8644-20] S5  
 Monemar, Bo [8625-11] S3  
 Mongillo, Marco [8588-95] SPSun  
 Monifi, Faraz [8627-23] S6  
 Monjardin, Jesus F. [8600-3] S1  
 Monneret, Serge [8587-48] S7, [8589-45] S10  
 Monro, Tanya M. [8570-15] S4, [8570-16] S4, [8595-35] S8, [8599-6] S2, [8600-72] SPTue, [8627-22] S5, [8632-21] S5  
 Monroy, Eva [8625-21] S5, [8625-67] S14  
**Monroy, Guillermo** [8571-115] SPMon, [8571-71] S11, [8572-20] S4  
 Montanari, Giovanni Battista [8612-14] S3  
 Monte, Adamo F. [8596-44] SPMon, [8619-76] SPWed, [8634-27] SPWed  
 Monteiro, Andrea M. [8571-96] SPMon  
 Monteiro, Juliana S. [8569-21] SPSat, [8569-23] SPSat, [8569-24] SPSat, [8569-26] SPSat  
 Monteiro, Teresa [8626-22] S5, [8626-75] S2  
 Montejo, Ludguier D. [8578-60] S10, [8581-109] SPSun  
 Montenegro Martos, Jose Maria [8595-59] S13  
 Montenegro, José Maria [8595-2] S1  
 Montero, Carlos T. [8647-8] S4  
 Monteville, Achille [8601-121] SPTue, [8621-32] S7  
 Montfort, Frédéric [8644-20] S5  
 Montrosset, Ivo [8640-61] S13  
 Morypenny of Pittmilly, James [8590-13] S2  
 Monzon-Hernandez, David [8621-20] S4  
 Moodie, Karen L. [8568-50] SPMon  
 Moodley, Vanessa [8567-85] SPSun  
 Moody, Baxter [8625-91] S14, [8641-36] S8  
 Moody, M. P. [8625-92] S4  
 Moody, Patrick [8565-35] S1  
 Moon, Kiwon [8624-6] S3  
 Moon, Suchei [8576-9] S2  
 Moon, Yong-Tae 8625 Program  
 Committee  
 Moor, Kamila [8587-69] SPMon  
 Moore, James C. [8626-11] S3  
 Moore, Matthew [8602-13] S4  
 Moore, Richard H. [8574-16] S4  
 Moore, Sean W. [8601-58] S14  
 Moores, John D. [8610-10] S3, [8610-22] S5, [8610-23] S5  
 Morachis, Jose [8615-2] S1  
 Morais, Paulo C. [8638-17] S4  
 Morand, Alain [8627-19] S5  
 Morandotti, Roberto [8623-24] S6  
 Moras, Melany [8586-27] S5  
 Morasso, Carlo [8595-8] S2  
 Morath, Christian P. 8631 S10 Session  
 Chair, [8631-28] S5, [8631-54] S19  
 More, Karren L. [8609-10] S3, [8609-16] S4  
 Moreels, Iwan [8634-3] S1  
 Moreira, Andre [8565-88] S8  
**Morelli, Gregg Leo** [8599-33] S6, [8599-77] SPTue  
 Moreno-??, Mauricio [8565-187] S4  
 Moreno, Tomas [8571-42] S7  
 Moreno, Vincente [8647-8] S4  
 Morenza, José Luis [8607-33] S10  
 Moretti, Adriana B. F. [8591-29] SPWed  
 Moretti, Cleber [8647-18] S7  
 Morgan, Janet [8568-12] S3  
**Morgan, Stephen P.** 8573 Program  
 Committee  
 Morgner, Uwe [8604-26] S6, [8609-13] S3  
 Morgounova, Ekaterina [8581-63] S9, [8596-25] S8  
 Mori, Midori [8641-17] S4, [8641-20] S4, [8641-70] SPWed  
 Mori, Naoki [8625-43] S9  
 Mori, Takayoshi [8647-9] S5  
 Mori, Yusuke [8571-94] SPMon  
 Morin, Franck [8611-21] S5



# Index of Authors, Chairs, and Committee Members

- Morin, Xavier [8588-67] S10, [8593-25] SPSun  
Morino, Eric [8616-20] S5  
Morita, Takenori [8639-22] S6  
Morito, Ken [8630-26] S7  
Mørk, Jesper [8619-32] S8, [8619-33] S8, [8619-4] S1, [8633-8] S3, 8636 S3 Session Chair, [8636-11] S2  
Morkoç, Hadis 8625 Conference Chair, 8625 S1 Session Chair, 8625 S14 Session Chair, [8625-52] S11, [8625-81] SPWed, [8625-83] SPWed, [8625-85] SPWed, [8625-86] SPWed, [8625-87] SPWed  
Moroshkin, Peter [8638-11] S3  
Morozov, Alexander V. [8616-25] S6, [8643-4] S1  
Morozov, Andrey N. [8581-25] S4  
Morozova, Natalia V. [8612-20] S4  
**Morris, Michael D.** 8565 Conference CoChair, 8565 S3 Session Chair, 8565 S4 Session Chair, [8565-232] S4, [8577-17] S7, [8579-19] S5  
**Morris, Oliver J.** [8606-20] S6, [8606-23] S7  
**Morris, Stephanie** [8601-17] S5  
Morrison, John C. [8571-15] S3  
Morrison, Laura B. [8578-10] S2  
Morrison, Melanie [8565-75] S6  
Morrison, William A. [8587-40] S7  
Morrison, William A. [8617-8] S2  
**Mortensen, N. Asger** [8636-44] S9  
**Mortier, Michel S.** [8600-16] S4  
Morton, Glenn [8586-10] S2  
Morvan, Loic [8606-28] S8, [8624-21] S6  
Mosberger, Martin [8610-6] S2  
Moscatelli, Frank A. [8578-35] S6  
Moselund, Peter M. [8637-27] S7  
**Moser, Christophe** [8576-2] S1, [8592-49] SPSun, [8620-37] S9, [8620-38] S9, [8637-15] S3, [8643-5] S1, [8644-20] S5  
**Moser, Hansruedi** [8600-40] S1, [8600-40] S9  
Moser, Philip [8630-27] S7, [8639-30] S8  
Moser, Regina [8611-45] S10, [8611-45] S4  
Moser, Rüdiger [8586-4] S1, [8607-38] S11  
Moser, Tobias [8586-13] S2, [8586-4] S1  
**Mosk, Allard P.** [8632-27] S6, [8634-23] S5, [8637-30] S7  
Moskalenko, Valentina [8627-14] S4  
Moskalyuk, Sergey A. [8607-50] SPTue  
Moss, Gary [8580-15] S2  
**Moss, Steven C.** [8605-22] S5, [8620-58] S14, [8625-32] S7, [8640-52] S12  
Mosse, Sandy [8568-49] S5  
**Motamedi, M. Edward** Symposium Committee  
Motamedi, Massoud [8572-28] S5  
Mote, Bobby [8583-9] S2  
Motegi, Hiroshi [8604-7] S2  
Motoczynska, Marta [8567-72] SPSun, [8571-43] S7  
Motohashi, Sayaka [8565-3] S8  
Mottay, Eric P. [8599-40] S8, [8599-42] S8, [8601-12] S3, [8601-49] S12, 8611 Program Committee, 8611 S4 Session Chair, [8611-18] S4, [8611-21] S5, [8611-23] S5, [8611-43] S3, [8611-43] S9, [8621-64] SPWed  
Motyka, Marcin [8631-95] S18  
Moudakir, Tarik [8626-36] S8  
Moulton, Peter F. 8601 Program Committee, 8601 S10 Session Chair  
Mourad, Pierre D. [8585-20] S3  
Mourant, Judith R. [8592-21] S6  
**Moustafa, Zaki** [8588-102] SPSun  
**Moustakas, Theodore D.** [8625-16] S4  
Movaghar, Arezoo [8574-29] SPSun  
Mowbray, Andrew [8631-57] S11  
Moy, Justin [8565-15] S4  
Moy, Wesley [8565-15] S4  
Moya, Rosimere Jordão Valverde [8579-32] S7  
Moya, Sergio E. [8595-24] S7  
**Mrongovius, Martina L.** 8644 Program Committee, 8644 S7 Session Chair  
Mroz, Pawel A. [8582-6] S1  
Mruthyunjaya, Prithvi [8567-43] S8  
Mu, Xiaojing [8616-3] S1, [8616-3] S7  
Muangnaphor, Tanyakorn [8613-36] S8  
Mudanyali, Onur [8570-22] S6, [8572-48] S9  
**Muellenbroich, Marie Caroline** [8588-71] S10  
Mueller, Alexander H. [8638-12] S3  
**Mueller, Antoine** [8631-19] S4  
Mueller, Dean A. [8581-121] SPSun  
Mueller, Dirk [8608-12] S3  
**Mueller, Jenna L.** [8587-51] S8  
Mueller, Joachim D. [8565-60] S2  
Mueller, Markus [8625-21] S5  
Mueller, Thomas [8600-55] S13  
Muendel, Martin H. 8601 Program Committee  
Mugnier, Carl [8619-75] SPWed  
**Muhammad, Waleed** [8595-56] S13  
Muhammed, Habeeb M. [8595-11] S2  
**Mujat, Mircea** [8567-35] S7, [8567-37] S7, [8572-19] S4  
Mukai, David [8565-103] S2  
Mukerjee, Anindita [8590-10] S2  
Mukherjee, Sayan D. [8620-57] S14  
**Mukherjee, Sushmita** [8565-116] S5, [8565-37] S1  
Mukherjee, Tamal 8612 Program Committee  
Mukoyama, Kenta [8604-49] SPTue  
Mulder, Monique T. [8581-10] S2  
Mullen, Jessica C. [8637-37] S9  
**Müller, André** [8604-3] S1  
Müller, Bernhard [8616-34] S7  
Muller, Berrend G. [8565-47] S4  
Müller, Jens [8640-15] S3  
Müller, Kai [8623-55] S14  
Müller, M. [8625-92] S4  
**Muller, Matthew S.** [8567-33] S6, [8567-61] SPSun  
Müller, Matthias [8591-16] S4  
Müller, Sebastian [8599-5] S2  
Mulvaney, Paul 8595 Program Committee  
Mulvihill, Maureen Meeting VIP  
Mummert, Mark [8590-6] S1  
Mumolo, Jason M. [8631-24] S5, [8631-25] S5  
Munding, Chelsea E. [8581-154] SPMon  
Muneeb, Muhammad [8627-6] S2, [8633-28] S9  
Munin, Egberto [8596-42] SPMon  
Munk, Alexander [8599-21] S5  
Munn, Lance L. [8565-176] S3  
**Munoz, Aaron A.** [8592-46] SPSun  
Muñoz, Pascual [8627-7] S2  
Munoz, Philip A. [8632-69] S15, [8632-82] SPWed  
Munsch, Mathieu [8619-33] S8, [8619-4] S1  
Muoth, Matthias [8614-15] S3  
Mura, Emanuele [8601-76] SPTue  
Murai, Kensuke [8632-76] SPWed  
Murakami, Kenzi 8575 Program Committee  
Murakowski, Janusz A. [8624-19] S5, [8624-33] S8  
Murakowski, Maciej [8624-33] S5  
Muralidharan, Krishna [8632-55] S12  
Muratt, Martin [8607-47] S13, [8607-47] S6  
Muranaka, Hidenobu [8630-3] S1  
Murauskas, Tomas [8626-37] S9  
Murgu, Septimiu D. 8565 S7 Panel Member, [8565-96] S1  
Murphy, Anthony 8624 Program Committee, [8624-39] S10  
Murphy, Daniel V. [8610-23] S5  
Murray, Christopher B. [8588-45] S7, [8596-20] S6  
Murray, Coleman [8587-38] S6  
Murray, Kristin [8574-20] S5  
Murray, Kyle [8629-26] S7  
Murray, Melissa [8577-5] S2  
Murrell, David [8619-10] S3  
Murthy, Avinash [8596-16] S5  
Murthy, Shashi K. [8587-39] S6  
Murty, M. V. Ramana [8639-1] S1  
Murugan, G. S. [8599-7] S2  
Murugkar, Sangeeta [8597-35] S8  
Murzina, Tatyana V. [8627-51] SPWed  
Musacchia, Joe J. [8565-177] S3  
Mu'evic, Igor [8642-13] S5  
Musgraves, J. David [8600-20] S5  
Muskens, Otto L. [8595-1] S1, [8623-56] S14, [8637-30] S7  
Musrin, Alexander I. [8623-67] SPWed  
**Mussina, Raushan** [8619-61] SPWed  
Mussot, Arnaud [8600-78] SPTue, [8601-47] S12  
Muthu, Vijay Kumar [8642-30] SPWed  
Muthuvelu, Kulandaivel [8577-6] S2  
Mutombo, Pingo [8625-88] SPWed  
Mutter, Lukas [8639-27] S7  
Mytal, Nikhil N. [8592-35] S8  
Muzhikyan, Pavel Hrychya [8621-57] S2  
Muziol, Grzegorz [8625-35] S8  
Myra, Mikhaël [8606-25] S8  
Myers, Jeffrey A. [8565-31] SPSun  
Myers, John D. [8626-51] SPWed  
Myers, Michael J. [8565-31] SPSun, [8626-51] SPWed  
**Myers, Richard A.** [8621-52] SPWed  
Myers, Sean [8565-31] SPSun  
**Myers, Stephen A.** [8631-54] S19  
**Mylylä, Risto** 8591 Program Committee, [8613-42] SPTue  
Myneni, Krishna [8636-15] S3  
Myronov, Maksym [8629-32] S9  
Mysliwiec, Jaroslaw 8622 Program Committee, [8622-13] S3  
Myung, Seungjae [8575-16] S4
- 
- N**
- Na, Bock Soon [8626-42] SPWed  
Na, Jun-Hee [8642-34] SPWed  
Nachev, Philipp [8608-24] S5  
Naciri, Jawad [8595-53] S12  
Naczynski, Dominik J. [8597-6] S2  
Nadav, Shavit [8643-18] SPWed  
**Nadeau, Jay L.** 8595 Program Committee, 8595 S6 Session Chair, [8595-30] S7  
**Nadeau, Kyle P.** [8573-3] S1  
Nader-Esfahani, Nima [8624-25] S7  
Naderi, Nader A. [8631-17] S4  
Naderi, Nader A. [8619-6] S2  
Naderi, Shadi A. [8601-125] SPTue, [8601-34] S8, [8604-23] S5  
**Nadkarni, Seemantini K.** [8565-14] S2, [8565-44] S1, [8571-34] S6, [8579-23] S5, [8591-15] S4, [8592-9] S3  
Nadler, Zach [8567-71] SPSun  
Nadvoretzkiy, Vyacheslav V. [8581-175] SPMon, [8581-176] SPMon, [8581-177] SPMon, [8581-22] S4  
Naem, Khurram [8621-18] S4  
Nag, Jooeeta [8609-17] S4, [8609-7] S2  
Nag, Okhil Kumar [8582-16] S4, [8582-21] SPTues  
Nagai, Akiko  
Nagakura, Takehito [8639-22] S6  
Nagakura, Toshiaki [8575-33] SPSun  
Nagar, Saurabh [8626-60] SPWed, [8626-9] S2  
Nagase, Satoko [8567-14] S3  
Nagashima, Takahiro [8607-39] S11  
Nagashima, Toru [8641-36] S8  
Nagatani, Munehiko [8646-24] S8, [8646-24] S9  
**Nagel, James A.** [8601-61] S15  
Nagel, James R. [8619-20] S5  
Nagengast, Wouter B. [8572-32] S6  
Naghavi, Negar [8620-11] S3, [8620-41] S10, [8620-46] S11  
**Nahas, Amir** [8571-25] S4, [8571-51] S8, [8574-8] S2  
**Naidoo, Darryl** [8637-41] S10  
Naik, Gururaj V. [8619-23] S6  
Naito, Hideyuki [8639-22] S6  
Najafi Sohi, Ali [8614-9] S2  
Najda, Stephen P. [8625-41] S9  
Najiminaini, Mohamadreza [8597-24] S5, [8597-42] S8  
Nakagawa, Takayuki [8565-63] S3  
**Nakagawa, Wataru** [8613-46] SPTue  
Nakagita, Taihei [8625-17] S4  
Nakahama, Masanori [8639-14] S4  
Nakajima, Hideaki [8619-1] S1  
**Nakamura, Daisuke** [8607-2] S1, [8607-2] S5, [8626-30] S7, [8626-31] S7  
Nakamura, Keigo [8611-58] SPTue, [8612-8] S2  
Nakamura, Kenji [8613-24] S5  
Nakamura, Kosuke [8594-4] S2  
Nakamura, Masao [8626-17] S4  
Nakamura, Shuji [8639-5] S2  
Nakamura, Tetsuya [8565-3] S8  
Nakanishi, Takayuki [8626-25] S6  
Nakanishi, Tsutomu [8613-24] S5  
Nakano, Keimei [8572-56] SPSun  
Nakano, Makoto [8608-4] S1, [8608-8] S2  
Nakano, Masaki [8630-31] S4  
Nakano, Masaki [8626-17] S4, [8626-38] S9  
Nakano, Motohiro [8632-76] SPWed  
Nakano, Yoshiaki [8616-32] S7, [8620-48] S12, [8620-52] S12  
Nakarmi, Bikash [8621-11] S3  
Nakashima, Hisao [8647-19] S7  
Nakashima, Satoshi [8641-70] SPWed  
Nakashima, Syozi [8566-2] S1  
Nakata, Yoshiaki 8607 Conference Chair, 8607 S12 Session Chair, [8607-2] S1, [8607-2] S5  
Nakazawa, Masataka 8647 Program Committee  
Nalcioglu, Orhan [8574-20] S5, [8578-20] S4, [8578-30] S5  
Nalin, Marcelo [8604-52] SPTue  
Nam, HongGil [8588-112] SPSun  
Nam, Juttaek [8571-53] S8  
Nam, Ki-Bum 8625 Program Committee  
Nam, Minwoo [8614-17] S3  
Nam, Sunyoung [8622-40] S10  
Nam, Woongsik [8607-8] S2, [8607-8] S6  
**Namati, Eman** [8565-105] S3, [8565-107] S3  
Nami, M. [8619-83] S9  
Namiki, Shu 8646 Program Committee, 8646 S4 Session Chair, [8646-8] S4  
**Namita, Takeshi** [8578-109] SPSun  
Nan, Xiaoli [8626-53] SPWed, [8626-54] SPWed  
Nanishi, Yasushi 8625 Conference Chair, 8625 S5 Session Chair, [8625-1] S1  
Naniwae, Koichi [8641-17] S4  
**Nankivil, Derek** [8567-34] S6  
Naniwotzki, Artur [8599-27] S6  
Narang, Prineha [8632-12] S3  
Narazaki, Aiko [8607-39] S11  
Narshi, Paul [8620-25] S6  
Narducci, Frank A 8636 Conference Chair



# Index of Authors, Chairs, and Committee Members

- Narimatsu, Michimasa [8594-4] S2  
 Narukawa, Mitsuhsu [8625-14] S3  
 Narula, Navneet [8565-116] S5  
 Naruse, Sho [8565-33] S8  
 Nascimento, Clístenes W. A. [8587-60] SPMon  
 Nash, Kelly L. [8579-34] S3, [8585-28] S5, [8595-57] S13  
 Nashed, Ahmed I. [8624-7] S3  
 Nashima, Shigeki [8604-12] S3, [8604-53] SPTue  
**Nasirivanaki, Mohammadreza** [8581-128] SPSun, [8581-155] SPMon  
 Nasr, Maohemd A. [8632-52] S12  
 Nassi, Jonathan J. [8586-9] S2  
 Nataraj, Latha [8634-25] S5  
**Natarajan, Chandra M.** [8635-10] S3  
**Natarajan, Lalgudi V.** [8642-26] S8  
 Nathan, Vaidya 8631 Program Committee, [8631-26] S5  
 Nathanael, Rhessa [8614-3] S1  
**Nau, William H.** [8565-4] S8  
**Naulleau, Patrick P.** 8613 Program Committee  
 Nava, Michele M. [8611-10] S2  
 Navara, Christopher [8585-37] S4  
 Navarro-Contreras, Daniel [8600-13] S4, [8600-70] SPTue  
**Navarro Y Garcia, Fabrice P.** [8587-7] S1  
 Navarro, Julien [8595-34] S8  
 Navarro, Ricardo S. [8577-14] S6  
 Navarro-Contreras, Hugo [8632-5] S1  
 Navruz, Isa [8572-48] S9  
 Nawashiro, Hiroshi [8565-170] S1, [8581-62] S9  
 Naylor, Mark F. 8582 Program Committee, 8582 S2 Session Chair, [8582-9] S2  
 Naylor, William R. [8635-35] S10  
 Nazabal, Virginie [8632-59] S13  
 Nazac, André [8577-29] S10  
 Nazarathy, Moshe [8647-17] S7  
 Nazarkin, Michael Yu [8626-29] S7  
 Nazimov, Alexey I. [8580-48] SPMon  
 Nazir, Muhammad Rashid [8613-34] S7  
 Ndhundhuma, Ivy M. [8568-43] SPMon  
 NDong, Christian [8584-15] S5  
 Neacsu, Florin [8572-33] S6, [8574-17] S4  
 Neale, Steven L. [8615-31] S7  
 Néauport, Jérôme [8602-15] S4  
 Neculac, Adrian [8576-4] S1  
 Nedeljkovic, Milos [8629-18] S4  
 Nedivi, Elly [8588-54] S8  
 Nedosekin, Dmitry A. [8565-87] S8, [8581-163] SPMon, [8581-164] SPMon, [8581-167] SPMon, [8581-170] SPMon, [8581-172] SPMon, [8581-3] S1, [8581-54] S8, [8581-55] S8, [8581-75] S11, [8582-19] S5  
 Needles, Andrew [8581-130] SPSun, [8581-132] SPSun  
 Neel, Delphine [8625-19] S5  
 Neel, Victor A. [8577-31] S10, [8580-35] S2  
 Neels, Antonia [8607-12] S3, [8607-12] S9, [8614-21] S4  
 Neethling, Johannes H. [8567-85] SPSun  
 Nefedov, Igor S. [8596-38] SPMon  
 Nefedova, Viorel [8605-18] S4  
**Nehmetallah, George T.** [8644-1] S1  
 Nehorai, Arye [8615-33] S7, [8615-52] SPTue  
**Nehru, Neha** [8594-5] S2, [8613-5] S1  
 Neiffeld, Mark Allen [8636-47] S9  
 Neikirk, Dean P. [8616-46] SPTue  
 Neil, Mark [8586-23] S5, [8589-7] S2  
 Nejat, Ali [8634-18] S4  
 Nejdil, Jaroslav [8600-6] S2  
 Nejezchleb, Karel [8599-69] SPTue  
 Nelisse, Martin [8572-9] S2, [8574-15] S3  
 Nelson, Bryce [8581-26] S4  
 Nelson, Charles [8610-31] S7  
 Nelson, Leonard Y. [8566-21] SPSun, [8566-3] S1, [8583-15] S4  
 Nelson, Robert L. 8622 Program Committee, 8627 Program Committee  
**Nemat-Nasser, Siavouche** [8632-28] S7  
**Nemec, Michal** [8566-12] S3, [8599-13] S3, [8599-69] SPTue, [8599-75] SPTue  
 Nemova, Galina A. 8638 S4 Session Chair, [8638-17] S4, [8638-5] S1  
 Nemukhin, Alexander V. [8590-1] S3, [8590-39] SPSUN  
 Neo, Wee Keong [8616-3] S1, [8616-3] S7  
 Neppel, Stefan [8623-37] S10  
 Nerger, Bryan A. [8632-1] S1  
 Neshet, Elimelech [8565-168] S1  
 Neshev, Dragomir N. [8613-30] S7  
 Nesladek, Milo? [8635-1] S1  
 Nesvizhevsky, Valery V. [8600-24] S12  
 Netto, Manoel B. [8569-22] SPSat  
 Neu, Jens [8585-6] S1  
 Neubauer, Paul [8584-33] S9  
 Neubert, Sebastian [8626-33] S8  
 Neubrech, Frank F. [8631-10] S3  
**Neuenschwander, Beat** 8607 Program Committee, [8607-12] S3, [8607-12] S9, [8607-13] S10, [8607-13] S4, [8607-53] SPTue  
 Neugebauer, Joerg [8641-31] S7  
**Neugroschl, Daniel** [8601-118] SPTue  
 Neumann, Benjamin [8601-110] SPTue  
 Neumann, Cornelius [8641-6] S2  
 Neumann, Jörg [8599-22] S5, [8601-26] S7, [8601-30] S8, [8604-26] S6, [8609-13] S3  
 Neves, A. J. [8626-75] S2  
 Neves-Petersen, Maria Teresa [8568-5] S2, [8587-53] S8, 8590 Program Committee  
 Nevins, Jessica E. [8567-71] SPSun  
 Nevitt, Mark A. [8615-17] S4  
 Newbry, Scott P. [8618-25] S7  
**Newman, Scott R.** [8632-39] S9  
 Newman, Tracey [8595-1] S1  
 Newton, Mark A. 8602 Program Committee  
 Neyts, Kristiaan [8622-41] S10, [8639-13] S4, [8639-9] S3, 8642 Program Committee  
 Nfonsam, Valentine N. [8577-32] S10  
 Ng, Alan Man Ching [8626-67] SPWed, [8626-68] SPWed  
**Ng, Alan Man Ching** [8626-32] S8  
 Ng, Annie [8626-32] S8, [8626-67] SPWed, [8626-68] SPWed  
 Ng, Doris K. [8628-21] S7, [8629-13] S3  
 Ng, Eldon [8579-30] S7, [8579-38] SPMon  
 Ng, Joanna [8565-180] S3  
 Ng, Joseph [8572-41] S8  
 Ng, Mi-Li [8613-16] S4  
 Ng, Ray [8632-35] S7  
 Ng, Tien Khee [8640-4] S1  
 Ng, Tony C. [8590-13] S2  
 Ng, Yip Hang [8626-32] S8  
 Ngo Phong, Linh [8614-22] S4  
 Nguyen, Binh-Minh 8631 S19 Session Chair, [8631-41] S8  
 Nguyen, Cac [8571-71] S11  
 Nguyen, Dan Trung [8570-3] S1, [8601-88] SPTue, [8638-15] S4  
 Nguyen, David [8613-46] SPTue  
 Nguyen, Duc V. [8571-37] S6, [8583-4] S1  
 Nguyen, Freddy T. [8587-14] S2  
 Nguyen, Hieu P. [8634-8] S2  
 Nguyen, Hoai Thi Lam [8631-73] S15  
 Nguyen, Hong C. [8630-11] S3, [8636-33] S7  
 Nguyen, Huy K. [8601-94] SPTue  
 Nguyen, John N. [8574-17] S4  
**Nguyen, John Quan M.** [8565-28] S7  
 Nguyen, Khanh T. [8624-16] S5, [8624-5] S3  
 Nguyen, Kytai [8594-26] S7  
 Nguyen, Q. [8610-21] S4  
 Nguyen, Thanh Tra [8631-78] S15  
 Nguyen, Thien An [8637-51] SPWed  
 Nguyen, Thu [8576-22] S4, [8579-25] S6  
**Nguyen-Huu, Nghia** [8619-28] S7  
 Ni, Haiqiao [8640-67] SPWed  
 Ni, Jiazuan [8588-96] SPSun  
 Ni, Xiaohui 8577 Program Committee  
 Ni, Xiao-wu [8603-31] SPTue, [8603-7] S10, [8603-7] S2  
 Nicastro, Luciano [8618-13] S4  
 Nicholaou, Costa [8613-55] SPTue  
 Nichols, Alexander J. [8587-2] S1  
 Nichols, Timothy [8581-183] SPMon  
 Nicholson, Jeffrey W. [8601-3] S1, [8601-5] S1, [8647-10] S5  
 Nickels, Jon [8585-36] S6  
 Nicolau, Dan V. 8587 Conference Chair, 8587 S4 Session Chair, 8587 S5 Session Chair, 8587 S6 Session Chair, [8587-76] SPMon, [8587-77] SPMon, [8587-78] SPMon, 8594 Conference Chair, 8594 S3 Session Chair, 8594 S6 Session Chair, 8594 Track Chair, [8594-25] S7, [8594-28] S7, [8594-29] S7, 8595 Track Chair, 8596 Track Chair, 8597 Track Chair, 8598 Track Chair  
 Nicoletti, Sergio [8631-34] S7  
 Nida, Selamnesh [8631-100] S4, [8631-17] S4, [8631-21] S4  
 Nie, Liming [8581-145] SPMon, [8581-4] S1, [8581-5] S1  
 Nie, Shuming 8597 Program Committee  
 Nie, Yingbin [8577-2] S1  
**Nie, Zhaojun** [8568-26] S7  
 Nie, Zhihong [8619-24] S6  
 Niebuhr, Mario [8640-56] S13  
 Niedre, Mark J. 8578 Program Committee, 8578 S13 Session Chair, [8578-50] S8, [8578-66] S11, [8587-39] S6, [8587-70] SPMon  
 Niedrig, Roman [8603-5] S10, [8603-5] S2  
 Nielsen, Frederik D. [8637-27] S7  
**Nielsen, Michael P.** [8623-58] S15, [8627-36] S6  
 Niemi, Tapio [8640-63] S14  
 Nieminen, Timo A. [8637-4] S1  
 Niemi, Angelika [8615-20] S5  
 Niendorf, Thoralf [8578-62] S10  
 Nienuis, Gerard 8637 Program Committee  
 Nieri, Paola [8596-31] S9  
 Niesler, Fabian B. P. [8623-17] S5, [8623-20] S5  
 Niessen, Katherine [8623-4] S2  
 Nieuwland, Rienk [8591-11] S3, [8592-22] S6  
**Nieva, Patricia** [8614-9] S2  
 Niimura, YASUO [8571-11] S2  
 Niino, Hiroyuki 8607 Program Committee, 8607 S10 Session Chair, [8607-39] S11  
 Nikitchev, Daniil I. [8604-5] S2, [8640-61] S13  
**Nikkhah, Hamdam** [8627-31] S7, [8645-13] S5  
 Nikol, Hans 8641 Program Committee, 8641 S4 Session Chair  
 Nikolaus, Joerg [8588-30] S4  
 Nikolskij, Andrej [8644-7] S2  
**Nikumb, Suwas** [8612-2] S1  
**Nikzad, Shouleh** [8625-68] S14  
 Nilson, David [8572-24] S5  
 Nilsson, Gert E. 8591 Program Committee  
 Nilsson, J. [8634-2] S1  
 Ning, Cun-Zheng 8619 Program Committee  
**Ning, Tingyin** [8604-37] S8  
 Ning, Yuebin [8612-13] S3  
 Ninkov, Zoran [8618-10] S4  
 Ninov, Victor [8572-24] S5  
 Niparko, John [8565-64] S3  
 Niruthisard, Somchai [8575-8] S2  
 Nishi, Hidetaka [8628-5] S3  
 Nishida, Kazuhiro [8578-109] SPSun  
 Nishida, Kohji [8567-60] SPSun  
 Nishida, Takehiro [8640-13] S3  
**Nishidate, Izumi** [8565-170] S1, [8578-110] SPSun  
 Nishihara, Masato [8646-20] S7A, [8646-20] S8, [8646-23] S8, [8646-23] S9  
 Nishihara, Taishi [8623-50] S13  
 Nishimoto, Yusuke [8587-69] SPMon, [8588-12] S2  
 Nishimura, Akihiko [8603-32] SPTue  
**Nishimura, Goro** 8578 SPSun Session Chair, [8578-84] S14  
 Nishino, Michiteru [8607-39] S11  
 Nishio, Gou [8625-14] S3  
 Nishio, Kenzo [8633-31] S10  
 Nishioka, Norman S. [8571-21] S4, 8575 Program Committee, [8575-12] S3, [8575-27] S6, [8575-6] S2  
 Nishiwaki, Shiro [8607-47] S13, [8607-47] S6  
 Nishiyama, Nobuhiko [8630-7] S2  
**Nishizawa, Norihiko** [8565-106] S3, [8571-10] S2, [8571-94] SPMon, [8588-6] S1  
 Nitti, Simone [8595-1] S1  
 Niu, Hanben [8588-99] SPSun, [8594-23] S6  
 Niu, Hanben [8588-85] SPSun, [8588-96] SPSun  
 Niu, Xuehui [8624-9] S3  
 Niv, Eyal [8617-17] S3  
 Niyuki, Ryo [8599-38] S7  
 Nizamoglu, Sedat [8598-6] S3, [8598-7] S3, [8598-9] S3  
 Njoroge, Martin [8570-11] S3  
 No, Keunsik [8591-9] S2  
 Noble, Peter B. [8565-108] S3  
 Noda, Susumu 8632 Program Committee  
 Noell, Wilfried [8616-18] S3, [8616-18] S4  
 Nofiele, Joris [8581-146] SPMon  
 Noga, Janusz [8607-50] SPTue  
 Nogales, Emilio [8626-28] S7  
 Nogata, Kohei [8621-51] SPWed  
 Noiseux, Isabelle [8583-5] S2  
 Nojiri, Hidetoshi [8607-4] S1, [8607-4] S5  
 Nolan, Daniel A. [8637-3] S1, [8637-50] S2, [8637-51] SPWed  
 Nolan, Ryan [8571-71] S11, [8572-20] S4  
 Noll, Reinhard [8565-226] S2, [8615-50] SPTue  
 Nölle, M. [8646-1] S1  
 Nolte, David D. [8592-8] S3, [8593-21] S5, [8619-13] S3  
 Nolte, Felix [8565-236] S2  
 Nolte, Stefan [8601-27] S7, 8607 S3 Session Chair, 8611 Conference Chair, 8611 S9 Session Chair, [8611-33] S7, [8611-47] S11, [8611-47] S5, [8611-48] S12, [8611-48] S6, [8611-9] S2, [8624-47] S11  
 Nolvi, Anton [8604-44] SPTue  
 Nomura, Tsuyoshi [8619-26] S6  
 Nonell, Santi [8596-9] S3  
 Noordegraaf, Danny [8601-29] S7  
 Noordmans, Herke Jan [8572-9] S2, [8574-15] S3, [8576-16] S3  
**Nordlander, Peter** [8623-26] S8, [8632-43] S10

# Index of Authors, Chairs, and Committee Members

- Nordquist, Robert E. [8569-17] S4, [8582-10] S2, [8582-11] S3, [8582-9] S2
- Nordstrom, Robert J. 8573 Program Committee, 8573 S3 Session Chair, 8583 Conference Chair, 8583 S1 Session Chair, 8583 S4 Session Chair, 8583 S5 Session Chair
- Norimatsu, Takayoshi 8602 Program Committee
- Noriyuki, Unno [8644-34] SPWed
- Norman, Michael J. [8602-6] S2
- Norris, Greg
- Northan, Brian M. [8589-3] S1
- Northrup, John E. [8625-60] S13
- Norton, Andrew P. [8617-9] S2
- Norton, Bryan J. [8579-8] S2
- Norwood, Robert A.** [8570-3] S1, [8601-33] S8, [8601-51] S12, [8601-88] SPTue, 8622 Program Committee, 8622 S2 Session Chair, [8622-1] S1, [8632-18] S4
- Nosaka, Hideyuki [8646-24] S8, [8646-24] S9
- Nose, Keisuke** [8588-35] S5
- Nose, Toshiaki [8642-5] S2
- Notomi, Masaya 8632 Program Committee, [8635-39] S12
- Nouzi, Farouk [8565-166] S1
- Noury, Adrien [8621-2] S1
- Novak, Benjamin [8617-7] S2
- Novak, Jakub [8602-7] S2
- Novak, Michael [8571-71] S11
- Novák, Ondřej [8599-63] S12, [8603-2] S1, [8603-2] S9
- Novelli-Rousseau, Armelle [8570-24] S6
- Novikova, Irina [8600-22] S6, 8636 Program Committee, [8636-12] S3, [8636-42] S8
- Novikova, Tatiana [8577-29] S10
- Novozhylov, Pavel B. [8626-29] S7
- Nowak, Anna [8619-5] S1
- Nowak-Sliwinska, Patrycja M. [8568-51] SPMon
- Nozaki, Kengo [8635-39] S12
- Nozaki, Takaaki [8643-11] S3, [8643-13] S3
- Nozik, Arthur J. [8620-27] S7
- Ntsame Guilengui, Vilianne [8631-72] S13
- Ntziachristos, Vasilis** [8572-32] S6, 8581 Program Committee, 8581 S3 Session Chair, [8581-110] SPSun, [8581-139] SPMon, [8581-20] S3, [8581-44] S7, [8581-60] S8, [8581-89] SPSun, [8600-8] S2
- Nubile, Alessio [8612-14] S3
- Nuccitelli, Pamela [8585-15] S3
- Nuccitelli, Richard [8585-15] S3
- Nuccitelli, Richard 8585 Program Committee
- Nunes, Fabio D. [8579-36] SPMon
- Nunes, Frederico D. [8634-13] S3
- Nunes, L. A. O. [8621-54] SPWed, [8621-55] SPWed
- Nunn, Joshua [8636-38] S8
- Nunoue, Shinya [8625-49] S11
- Nunzi Conti, Gualtiero [8576-30] S5, [8600-16] S4, [8600-62] S15, [8621-22] S5, 8627 Conference Chair, 8627 S6 Session Chair, [8627-4] S1, [8627-51] SPWed
- Nunzi, Jean-Michel** 8622 Program Committee
- Nurmikko, Arto V. [8586-8] S2
- Nuster, Robert [8581-115] SPSun, [8581-169] SPMon, [8581-24] S4
- Nuttall, Alfred L.** 8565 Program Committee, 8565 S2 Session Chair, 8565 S3 Session Chair, [8565-58] S1, [8565-65] S3, [8565-81] S7, [8571-127] SPMon, 8586 Program Committee, [8586-17] S3
- Nyeo, Su-Long [8567-6] S1
- Nyman, Jeffrey S. [8565-23] S3, [8565-233] S4, [8565-234] S4
- O**
- O, Beom-Hoan [8622-3] S1
- O'Faolain, Liam [8629-32] S9, [8629-43] S11, [8630-24] S6
- Obara, Go [8607-7] S2, [8607-7] S6, [8609-3] S1
- Obara, Minoru [8607-7] S2, [8607-7] S6, [8609-3] S1, [8637-45] SPWed
- Obata, Toshiyuki [8641-36] S8
- Ober, Raimund J.** 8589 Program Committee, 8589 S2 Session Chair, [8589-5] S1
- Oblak, Daniel [8635-22] S6
- O'Brien, Jeremy L.** [8628-16] S6, [8635-16] S5
- O'Brien, Peter A. [8614-11] S2
- Obrig, Hellmuth [8578-65] S11
- Ocaña, José Luis [8603-12] S4
- Ochiai, Shunsuke [8625-63] S14
- Ochs, Markus [8595-31] S8
- Ochs, Matthias [8565-110] S4
- O'Connor, Shawn [8599-18] S4, [8604-30] S7, [8638-2] S1
- Oda, Shoichiro [8647-19] S7
- Oden, Patrick I.** Symposium Committee, 8618 Conference Chair
- O'Donnell, Kieran [8596-34] SPMon
- O'Donnell, Matthew** 8581 Program Committee, 8581 S2 Session Chair, [8581-178] SPMon, [8581-37] S6
- O'Dwyer, Colm [8625-26] S6
- Oechsner, Andreas [8603-30] S7
- Oeder, Andreas [8637-38] S9
- Oehme, Michael [8628-18] S7
- Oeschlaeger, Antje [8616-42] S9
- Offerhaus, Herman L. [8588-25] S3
- Offrein, Bert-Jan [8622-4] S1, 8630 Program Committee, 8630 S6 Session Chair
- Ofuji, Taihei [8626-30] S7
- Ogawa, Emiyu [8565-3] S8, [8579-12] S3
- Ogawa, Kensuke [8629-29] S8
- Ogawa, Naoki [8626-17] S4
- Ogbuu, Okechukwu [8600-20] S5
- Ogden, Tyler M. [8578-43] S7, [8578-7] S2
- Ogedengbe, Olanrewaju [8626-40] S10
- Oghalai, John S.** [8565-56] S1
- Ogier, Simon [8608-16] S3
- Ogilvie, Jennifer P. [8588-59] SPSun
- Ogimoto, Yasushi [8626-17] S4
- Ogiwara, Akifumi [8642-16] S5
- Ogiwara, Takafumi [8608-4] S1
- Ogle, Brenda M. [8587-37] S6
- Ogunlade, Olumide [8581-56] S8
- Oh, Cha-Hwan [8628-26] SPWed
- Oh, Christian M. [8565-203] S5, [8571-111] SPMon
- Oh, Chung-Hun [8569-27] SPSat
- Oh, Eunkeu [8595-44] S10
- Oh, Geum-Yoon [8619-45] S12, [8619-74] SPWed, [8627-45] SPWed
- Oh, JungHwan [8565-38] S2, [8565-51] S1
- Oh, Kyunghwan Ken [8581-86] S11
- Oh, Min-Cheol** 8627 Program Committee, [8627-48] SPWed, [8627-49] SPWed, [8627-50] SPWed, [8643-15] SPWed
- Oh, SeBaek [8589-26] S5
- Oh, Seung Jae [8613-20] S4
- Oh, Seung Jae** [8585-31] S6
- Oh, WangYuhl 8565 S2 Session Chair, [8565-14] S2, [8565-21] S5, [8565-23] S2, [8571-116] SPMon, [8571-12] S2, [8571-34] S6, [8571-36] S6
- Oh, Yong Kyun [8576-32] SPSun, [8581-162] SPMon
- Oh, Youngjin** [8590-38] SPSUN, [8597-28] S6
- Oh, Yujin [8565-102] S2
- OHara, Keith E.** [8567-21] S4
- Ohbayashi, Kohji [8571-11] S2
- Ohishi, Yasutake [8604-45] SPTue, 8621 Program Committee, 8621 S6 Session Chair, [8621-33] SPWed, [8621-34] SPWed, [8621-38] SPWed, [8621-39] SPWed, [8621-49] SPWed, [8621-51] SPWed, [8621-60] SPWed
- Ohlinger, Kris [8613-47] SPTue
- Ohmi, Masato [8571-95] SPMon
- Ohmori, Tsutomu** [8567-60] SPSun
- Ohno, Yuko [8575-33] SPSun
- Ohshima, Hiroyoshi [8565-106] S3
- Ohtani, Keishi [8565-113] S4, [8565-98] S1
- Ohtani, Kiyoshi [8587-69] SPMon
- Oi, Ryutaro [8644-10] S3
- Oiwa, Akira [8626-15] S4
- Ojefua, Emmanuel [8585-26] S5
- Ojha, Shilpa [8565-78] S7, [8565-80] S7
- Ok, Jong G. [8581-71] S10, [8581-73] S10
- Okada, Eiji** [8578-108] SPSun
- Okada, Narihito [8625-2] S1
- Okada, Shuji 8622 Program Committee
- Okada, Tatsuo** [8607-2] S1, [8607-2] S5, 8626 Program Committee, [8626-30] S7, [8626-31] S7
- Okada, Yoshitaka [8620-51] S12
- Okamoto, Atsushi [8647-11] S5
- Okamoto, Ryo [8635-26] S7, [8635-32] S6, [8635-32] S9
- Okamoto, Shinya** [8626-50] S11
- Okamoto, Takayuki [8604-43] SPTue
- Okano, Makoto [8623-50] S13
- Okano, Masayuki [8635-32] S6, [8635-32] S9
- Okawa, Shinpei [8578-117] SPSun, [8581-113] SPSun, [8581-165] SPMon
- Okazaki, Kota [8607-2] S1, [8607-2] S5, [8626-30] S7, [8626-31] S7
- Okazaki, Toshiya [8621-2] S1
- Okhotnikov, Oleg G. [8601-71] SPTue, [8606-14] S5
- Okishev, Andrey V. [8599-26] S6, [8602-12] S4, [8602-13] S4
- Okoshi, Masayuki [8607-4] S1, [8607-4] S5
- Oksanen, Jani [8619-25] S6, [8625-78] SPWed
- Oktyabrsky, Serge** [8640-41] S10
- Oku, Hiromasa [8617-5] S1
- Okubo, Kaito** [8644-33] SPWed
- Okuma, Junyui [8608-8] S2
- Okur, Serdal [8625-52] S11, [8625-83] SPWed, [8625-85] SPWed, [8625-86] SPWed
- Okuyama, Daisuke [8626-38] S9
- Okuyama, Fumio** [8644-38] SPWed
- Okuyay, Ali K.** [8626-41] S10, [8626-65] SPWed
- Oladepo, Sulayman [8581-120] SPSun
- Olafsen, Linda J.** [8631-62] S18
- Olbricht, Benjamin C. [8622-29] S7, [8622-30] S7, [8624-33] S8
- Oldenburg, Amy L.** [8571-132] SPMon, [8571-74] S11, [8580-2] S1, [8581-183] SPMon, [8592-37] S9
- Oldham, Kenn R. [8575-29] SPSun, [8575-31] S1, [8575-31] S7, [8616-8] S2
- Oleinick, Nancy L. 8568 Program Committee
- Olischer, Kay [8587-22] S4
- Oliveres-Pérez, Arturo [8644-35] SPWed, [8644-36] SPWed, [8644-40] SPWed, [8644-41] SPWed
- Olive, D. Michael 8596 Program Committee
- Oliveira, Julio C. [8646-3] S2
- Oliveira, Michael C. [8571-111] SPMon
- Oliveira, Priscila C. [8569-21] SPSat
- Oliveira, Rosa Maria [8644-27] S7
- Oliveira, Sandra [8644-29] S7
- Oliveira, Susana Carla P. [8569-23] SPSat, [8569-24] SPSat
- Oliveira, Tiago R. [8584-27] S8, [8584-4] S5
- Oliver, Jeffrey W. [8579-39] S3
- Oliver, Rachel A. [8625-92] S4
- Olivera, Susana P. S. [8569-21] SPSat
- Olivero, Massimo [8601-112] SPTue, [8601-115] SPTue
- Oliver, Scot S.** 8617 Conference Chair
- Olivo, Malini C. [8595-29] S7
- Olle, Vojtech [8640-17] S4, [8640-6] S1
- Ollier, Nadège [8601-68] SPTue
- Ollila, Jyrki [8630-14] S4
- Olmos, Lisa [8615-6] S2
- Olson, Don [8605-17] S4
- Olson, Matthew** [8599-77] SPTue
- Olson, Zachery [8615-2] S1
- Olsson, Roy H. [8604-36] S8, [8632-30] S7
- Olufayo, Oluwole [8567-85] SPSun
- Omelchenko, Alexander Ivanovich [8595-60] S14
- Omelchenko, Irina [8586-17] S3
- Omiya, Kota [8565-24] S9
- Omota, Emiko [8571-10] S2
- Omori, Masaki [8625-43] S9
- O'Neill, Brian E. [8581-123] SPSun, [8581-125] SPSun
- O'Neill, Kevin [8621-56] SPWed
- Ong, Daniel [8608-27] S13, [8608-27] S6
- Onstad, Andrew P. [8631-62] S18
- Ono, Atsushi [8622-11] S3
- Ono, Shimpei [8626-17] S4, [8626-38] S9
- Ono, Shunsuke [8611-58] SPTue
- Onose, Takashi [8607-51] SPTue
- Ono, Swe Z.** [8597-2] S1, [8632-57] S13
- Oohashi, Hiromi 8646 Program Committee
- Ooi, Boon-Siew** [8640-4] S1
- Opalevs, Dmitrijs [8604-1] S1
- Ophir, Noam [8628-22] S8
- Oraevsky, Alexander A.** 8581 Conference Chair, 8581 S1 Session Chair, [8581-175] SPMon, [8581-176] SPMon, [8581-177] SPMon, [8581-2] S1, [8581-22] S4
- Orazi, Leonardo [8603-14] S4, [8603-15] S4
- Orcutt, Jason S. [8629-14] S4
- Ordóñez, Simon** [8586-25] S5
- Ordóñez-Padilla, Manuel Jorge [8644-35] SPWed, [8644-36] SPWed
- Orenstein, Meir [8636-29] S6
- Orieux, Adeline [8635-44] S13
- Orii, Yosuke [8604-9] S2
- Oriishich, Anatoly M. [8603-37] SPTue
- Orlova, Anna G. [8578-58] S10, [8581-25] S4
- Orobtschouk, Régis [8620-15] S4
- Oron, Dan [8595-47] S10, [8637-19] S4
- Orozco, Luis A. [8637-31] S7
- Orringer, Daniel A. [8568-18] S4, [8588-21] S3, [8588-81] SPSun
- Orsal, Gaëlle [8626-36] S8
- Orsinger, Gabriel V. [8587-21] S3
- Orta, Renato [8633-10] S3
- Ortega, Arthur [8571-111] SPMon
- Orth, Charles D. [8602-9] S3
- Ortiz, Gerardo G. [8610-15] S3
- Ortiz, Mayreli [8615-37] S8, [8615-55] SPTue
- Ortiz-Zapater, Elena [8590-13] S2
- Ortmaier, Tobias [8573-12] S3, [8573-12] S5
- Ortmann, Uwe [8588-30] S4, [8588-36] S5, [8588-88] SPSun, [8620-9] S2
- Ortolani, Luca [8607-1] S1, [8607-1] S5
- Ortolani, Michele [8624-42] S10, [8631-13] S3
- Oruc, Feyza [8626-41] S10, [8626-65] SPWed
- Oruganti, Tanmayi [8581-67] S9
- Ory, Daniel [8620-8] S2



# Index of Authors, Chairs, and Committee Members

- Osako, Yasu 8608 Program Committee
- Osama, Mohammad [8579-29] S7
- Osborn, Eric A. [8565-11] S7
- Osellame, Roberto 8608 Program Committee, [8611-10] S2, [8611-41] S8
- Osgood, Richard M. 8628 Program Committee
- Oshika, Tetsuro [8567-13] S3, [8567-14] S3
- Oshikane, Yasushi [8632-76] SPWed
- Osinski, Marek 8595 Conference Chair, 8595 S1 Session Chair, [8595-46] S10, [8595-51] S11, [8595-64] S14, 8619 Conference Chair, [8619-22] S5, [8619-38] S9, [8619-8] S2, 8620 Program Committee, 8620 S9 Session Chair
- Osório, Sergio P. A. [8621-54] SPWed, [8632-77] SPWed
- Oswiecki, Gaël [8613-46] SPTue
- Ossadnik, Katharina [8591-14] S3
- Ossicini, Stefano [8629-37] S10
- Ossig, Robert [8609-11] S3
- Ostendorf, Andreas** [8607-30] S9, 8608 Program Committee, [8609-18] S1, [8609-18] S5, [8637-33] S8
- Ostendorf, Ralf [8640-49] S11
- Ostermeyer, Martin D. [8599-14] S3, [8599-27] S6
- O'Sullivan, Ciara K. 8615 Program Committee, 8615 S3 Session Chair, [8615-14] S3, [8615-37] S8, [8615-40] S9, [8615-43] S10, [8615-53] SPTue, [8615-54] SPTue, [8615-55] SPTue
- O'Sullivan, Colin [8635-28] S6, [8635-28] S9
- O'Sullivan, Créidhe M. 8624 Conference Chair, [8624-39] S10
- O'Sullivan, Thomas D.** [8578-20] S4, [8578-96] SPSun
- Ota, Kohei [8622-28] S7
- Ota, Satoshi [8594-4] S2
- Otero, Isabel [8587-59] SPMon
- Otero, Nerea [8612-7] S2
- Otomo, Akira** 8622 Program Committee, [8622-28] S7, [8622-55] SPWed, [8627-3] S1, [8632-81] SPWed
- Otsuji, Eigo [8572-53] SPSun
- Otsuji, Taiichi [8624-37] S9
- Otsuka, Shota [8594-16] S5
- Otsuka, Yoichi [8588-6] S1
- Ott, Daniel** [8601-123] SPTue, [8644-4] S1, [8644-8] S2
- Otte, Andreas [8576-4] S1
- Otto, Cornelis [8588-25] S3, [8591-11] S3
- Otto, Hans-Jürgen** [8601-105] S4, [8601-105] S9, [8601-14] SPTue, [8601-2] S1, [8601-9] S2
- Otto, Pamela [8581-2] S1
- Otto, Thomas [8613-59] SPTue, [8616-30] S6
- Otugen, M. Volkan** [8600-65] S15
- Ou, Sin-Liang [8641-26] S6
- Ou, Tan [8571-15] S3
- Oubaha, Mohamed [8611-11] S2
- Ouellette, Daniel [8626-14] S4
- Ougazzaden, Abdallah [8626-36] S8
- Oulton, Rupert F. [8619-40] S10
- Ouslimani, Hana** [8627-15] S4
- Ouspenski, Vladimir [8621-23] S5
- Ouyang, Kathy [8615-45] S10
- Ouzounov, Dimitre G. [8575-14] S4
- Overberg, Mark [8628-23] S8
- Overstolz, Thomas [8614-6] S2
- Ovsyannikov, Sergey V. [8612-20] S4
- Owen, David [8572-42] S8
- Owrutsky, Jeffrey [8632-45] S10, 8634 S3 Session Chair, [8634-12] S3
- Owsik, Jan A. [8607-50] SPTue
- Oyaizu, Masaki [8608-4] S1, [8608-8] S2
- Oyama, Satoshi [8635-26] S7
- Ozaki, Masanori 8642 Program Committee, 8642 S6 Session Chair, [8642-10] S3
- Ozaki, Tsuneyuki [8623-24] S6
- Ozawa, Glen Y. [8567-61] SPSun
- Ozawa, Masaaki [8622-55] SPWed
- Ozawa, Shohei [8644-33] SPWed
- Özbay, Ekmele** 8632 Program Committee, 8632 S15 Session Chair, 8632 S16 Session Chair, [8632-62] S14, 8633 S9 Session Chair, [8633-24] S7
- Ozcan, Aydogan** [8570-22] S6, [8572-48] S9, [8589-28] S6, [8589-9] S2, [8591-20] S4, [8615-25] S6, 8621 Program Committee
- Ozcan, Meric** [8644-11] S3, [8644-12] S3
- Özdemir, Sahin Kaya Kaya [8627-23] S6
- Ozden, Ilker [8586-8] S2
- Ozeki, Yasuyuki [8588-35] S5, [8588-6] S1
- Ozen, Metin 8612 Program Committee
- Özgür, Ümit 8625 Program Committee, [8625-52] S11, [8625-81] SPWed, [8625-83] SPWed, [8625-85] SPWed, [8625-86] SPWed, [8625-87] SPWed
- Ozharar, Sarper** [8599-41] S8
- Ozols, Andris** [8622-52] SPWed
- 
- P**
- P., Sakthivel [8629-33] S9
- Paajaste, Jonna [8640-63] S14
- Pabla, Arbinder S. [8644-2] S1
- Pabst, Oliver [8615-15] S4
- Pache, Christophe [8571-48] S8, [8571-54] S8, [8589-51] S11, [8590-8] S2
- Pacheco, Marcos T. T. [8565-33] SPSun, [8565-52] SP1
- Padera, Timothy P. [8565-176] S3
- Padgen, Michael R.** [8615-13] S3
- Padgett, Miles J.** [8610-20] S4, [8618-17] S5, [8636-9] S2, 8637 Program Committee, 8637 S4 Session Chair, [8637-25] S5, [8637-25] S8, [8637-46] SPWed, [8637-49] S10, [8637-51] SPWed
- Padilla, Willie J. [8632-74] S16
- Padilla-Martinez, Juan Pablo** [8611-55] SPTue
- Padmanabhan, Swati [8572-48] S9
- Padovini, Giorgio Michele [8631-48] S9
- Pagano, Roberto [8631-47] S9
- Page, Norman A. [8610-24] S5
- Pagel, Mark D. [8574-21] S5
- Pagies, Antoine [8631-40] S8
- Pagliano, Francesco [8632-25] S6
- Pagnozzi, Alex M. [8565-108] S3
- Pahl, Ulrich [8605-26] S6
- Pahlevaninezhad, Hamid [8565-113] S4, [8565-97] S1
- Pahng, Seong Ho [8596-33] SPMon
- Paik, Seonghyun [8640-35] S8
- Paipulas, Domas [8613-17] S4
- Paire, Myriam [8620-36] S9, [8620-8] S2
- Pal, Bishnu P. 8645 S4 Session Chair, 8646 Program Committee, [8646-17] S6
- Pal, Mrinmay [8601-106] SPTue
- Pal, Sagnik [8647-26] SPWed
- Palácios, Francisco [8572-45] S9
- Paladini, Bryan [8597-6] S2
- Palanisamy, Nithiyantham [8567-46] S8
- Palanker, Daniel V.** 8567 Program Committee, 8567 S8 Session Chair, [8567-7] S2, [8567-8] S2, [8567-9] S2, [8585-17] S3
- Palestino, Gabriela [8570-18] S5, [8626-61] SPWed
- Palima, Darwin** 8637 Program Committee, 8637 S10 Session Chair
- Palit, Sabarni
- Pallmann, Wolfgang P.** [8606-15] S5
- Palma, Jesse [8602-2] S1
- Palmer, Frank [8565-88] S8
- Palmer, Gregory M. [8578-51] S9
- Palmer, Robert [8629-24] S7
- Palomares, Emilio J. [8595-25] S7, [8595-49] S11
- Palonpon, Almar F. [8587-74] SPMon
- Palsdottir, Bera [8601-5] S1, [8647-10] S5
- Pålsson, Magnus [8605-1] S1
- Paltauf, Günther** 8581 Program Committee, 8581 S8 Session Chair, [8581-115] SPSun, [8581-169] SPMon, [8581-24] S4
- Paluchowski, Lukasz A.** [8565-23] S6, [8578-29] S5
- Pan, Ching-Jen [8641-50] SPWed
- Pan, Ci-Ling** 8642 Program Committee
- Pan, Dipanjan [8581-145] SPMon
- Pan, Huai-Te [8620-60] S15
- Pan, Huapu [8600-19] S5, [8630-10] S3
- Pan, Hui-Ping [8626-47] S12
- Pan, James [8581-26] S4
- Pan, Jiaoqing [8640-67] SPWed
- Pan, Leo L.** [8581-156] SPMon
- Pan, Noren [8620-58] S14
- Pan, Yingtian 8571 Program Committee, 8571 S11 Session Chair
- Pan, Yuechao** [8644-15] S4, [8644-9] S3
- Pan, Yunxiang** [8603-7] S10, [8603-7] S2
- Pan, Zeyu** [8627-35] S8
- Panajotov, Krassimir** 8639 Program Committee, 8639 S4 Session Chair, [8639-13] S4, [8639-25] S7, [8639-29] S8, [8639-9] S3
- Pancrati, Ovidiu [8614-22] S4
- Pande, Paritosh** [8565-28] S7, [8589-30] S6
- Pandey, Ravindra K. 8568 Program Committee
- Pang, Shuo [8587-43] S7
- Panigrahi, Prasanta K. [8580-22] S4
- Panigrahy, Ashok [8565-163] S5
- Pannala, Sreekanth [8609-15] S4
- Pantzas, K. [8626-36] S8
- Panyutin, Vladimir L. [8604-43] SPTue
- Panzeri, Francesco [8590-2] S3, [8590-3] S3
- Paoli, Flavia [8569-10] S3
- Papadopoulos, Dimitris N. [8601-49] S12
- Papadopoulos, Ioannis N. [8576-2] S1, [8637-15] S3
- Papagiakoumou, Eirini I. [8637-19] S4
- Papautsky, Ian 8615 Program Committee
- Papay, Joel A.** [8567-61] SPSun
- Papernov, Semyon [8599-26] S6
- Papon, Gautier [8589-49] S11, [8607-22] S7, [8613-22] S5, [8632-41] S9
- Papour, Asael [8572-23] SPSun
- Paquet, Alex** [8576-21] S4, [8600-64] S15, [8614-14] S3
- Parak, Wolfgang J. 8595 Conference Chair, [8595-2] S1, [8595-31] S8, [8595-33] S8, [8595-59] S13
- Parameswaran, Vijay [8620-56] S14
- Parameswaran, Krishnan R. [8631-30] S6
- Pardo, Fabrice [8631-74] S14, [8632-8] S2
- Parel, Jean-Marie 8567 Program Committee, 8567 S2 Session Chair, [8567-19] S4, [8567-29] S6, [8567-53] S10, [8567-84] SPSun
- Parilov, Gene [8568-48] SPMon, [8596-30] S9, [8623-64] SPWed
- Parisi, Antonino [8629-45] SPWed
- Park, B. Hyle [8565-175] S2, [8565-203] S5, [8571-111] SPMon, [8571-125] SPMon, [8571-126] SPMon
- Park, Byung Wok [8642-12] S3
- Park, Byung-Gook [8619-56] S14
- Park, Chan Young [8616-40] S9
- Park, Cheolmin [8622-34] S8
- Park, Chungghyun [8592-13] S4, [8592-47] SPSun
- Park, Gun-Sik 8585 Program Committee, [8585-9] S1
- Park, Hee K. [8607-37] S11, [8607-42] S12, [8607-45] S12
- Park, Hee K. [8607-43] S12
- Park, Hong-Gyu [8600-50] S12, [8640-33] S8
- Park, Hoyong [8579-4] S1
- Park, Hyeon-Cheol [8615-7] S2
- Park, Hyeong Ju [8589-42] S9
- Park, Hyeongchan [8607-54] SPTue
- Park, Hyo-Hoon** 8630 Program Committee, 8630 S3 Session Chair
- Park, Hyun-Chul [8634-15] S3
- Park, Hyung Gyu [8623-31] S7
- Park, HyunJoo [8592-48] SPSun
- Park, Ik Gon [8601-72] SPTue, [8604-51] SPTue
- Park, J. B. [8608-20] S4
- Park, Jae Seok [8589-42] S9, [8598-22] SPSUN
- Park, Jae-Hong [8565-190] SPSun
- Park, Jaehun [8585-35] S6
- Park, Jeong-Woo [8624-6] S3
- Park, Jesung [8565-28] S7, [8565-56] S1
- Park, Jihoon [8565-26] S6
- Park, Jong Yeon** [8616-46] SPTue
- Park, Jongchul [8601-118] SPTue
- Park, Joo Hyun** [8574-11] S2, [8593-27] SPSun
- Park, Joongseo 8641 Program Committee, 8641 S7 Session Chair
- Park, Joung-Man [8614-10] S2
- Park, Jun Hyuk [8619-73] SPWed, [8641-4] S1, [8641-58] S12
- Park, Jung Hoon [8641-7] S2
- Park, Jung-Hoon [8592-13] S4, [8592-44] SPSUN, [8592-47] SPSUN
- Park, Kibeom [8565-54] S1
- Park, Kwan Seob [8589-50] S11, [8593-24] SPSUN
- Park, Kyoungwon [8595-47] S10
- Park, Kyung Hyun [8604-51] SPTue, [8624-6] S3
- Park, Min Woo [8565-90] S9
- Park, Myoung Jin [8597-9] S3
- Park, Namkyoo [8597-9] S3
- Park, Q-Han [8592-20] S5
- Park, Sang Hyun [8628-25] SPWed
- Park, Sang-Gil [8613-57] SPTue
- Park, Sangyong [8565-90] S9
- Park, Se-Geun [8622-3] S1
- Park, Seong-Ju** 8625 S12 Session Chair, [8625-46] S10, 8626 S5 Session Chair, [8626-19] S5
- Park, Seong-Wook [8624-41] S10
- Park, Seoung-Hwan [8625-34] S8
- Park, Su-Hyun [8627-48] SPWed
- Park, Sung-Jo [8581-86] S11
- Park, TaeJin [8571-12] S2
- Park, Yeonji [8585-31] S6
- Park, Yeonsang [8613-4] S1
- Park, Yong-Hwa** 8616 Conference Chair, 8616 S3 Session Chair, [8616-40] S9
- Park, YongKeun** [8571-116] SPMon, [8571-12] S2, [8587-19] S2, [8587-57] S8, [8592-13] S4, [8592-4] S2, [8592-44] SPSUN, [8592-47] SPSUN, [8592-48] SPSUN, [8592-5] S2
- Park, Yongsoo [8619-52] S13, [8641-15] S4, [8641-7] S2
- Parker, Stefan [8602-6] S2
- Parrotta, Daniele C. [8606-11] S4



# Index of Authors, Chairs, and Committee Members

- Parsley, Margaret A. [8581-6] S1  
 Parson, Simon H. [8567-77] SPSun  
**Parsy, Francois** [8627-11] S3  
 Partanen, Ari [8584-31] S9  
 Parvinnezhad Hokmabadi, Mohammad [8585-34] S6, [8632-70] S15  
 Paschalis, Eleftherios P. 8565  
 Program Committee  
 Paschen, Uwe [8631-44] S9  
 Paschke, Katrin [8640-55] S12, [8640-9] S2, [8643-6] S1  
 Pashaie, Ramin [8586-30] SPSun, [8586-6] S1, [8621-7] S2  
 Pashkin, Alexej [8623-6] S3  
 Paskova, Tania [8625-88] SPWed  
 Paskova, Tanya [8625-83] SPWed  
 Pasour, John A. [8624-16] S5  
 Pasqualucci, Carlos A. [8565-52] SP1  
 Pasquardini, Laura [8576-30] S5, [8600-62] S15  
 Passilly, Nicolas [8616-2] S1, [8616-2] S7  
 Pataca, Daniel M. [8646-3] S2  
 Patane, Amalia [8631-60] S11  
 Patankar, Manish [8588-60] S9  
**Patch, Sarah K.** [8581-91] SPSun  
 Patel, Ankit H. [8567-35] S7, [8567-37] S7  
 Patel, Ankitkumar N. [8646-4] S2  
**Patel, C. Kumar N.** [8640-45] S11  
 Patel, Pranav M. [8565-8] S4  
 Patel, Rajesh S. [8608-9] S2  
 Patel, Rakesh [8577-30] S3, [8577-31] S10, [8580-23] S4, [8580-35] S2  
**Patel, Snehal** [8565-74] S5, [8565-88] S8  
 Patel, Sravan Kumar K. [8596-21] S7  
 Pathak, Rajiv [8605-12] S3, [8605-25] S5  
 Pathak, Saurav [8578-14] S3, [8578-35] S6  
 Pati, Gour S. 8636 Program  
 Committee, [8636-13] S3  
 Patil, Chetan A. [8571-83] S12, [8580-39] S7  
 Patimisco, Pietro [8631-32] S6, [8631-82] S16  
**Patonay, Gabor** 8596 Program  
 Committee, 8596 S3 Session Chair, [8596-4] S2  
 Patra, Krishna Chandra [8621-61] SPWed, [8621-62] SPWed  
 Patrascioiu, Adrian [8607-33] S10  
 Patriarche, Gilles [8626-36] S8  
 Patrick, Michael [8596-21] S7  
 Pattanasak, Satjana [8575-8] S2  
**Pattani, Varun** [8579-7] S2  
 Patten, Kessen [8565-229] S3  
 Patterson, Jason [8605-14] S3  
 Patterson, Brian D. [8601-58] S14  
**Patterson, Michael S.** [8568-26] S7  
 Patterson, Michelle [8581-68] S9  
 Patterson, Steve [8605-2] S1, [8605-31] S7, [8640-62] S14  
 Patting, Mathias [8573-26] SPSun  
 Patton, Brian R. [8589-34] S7, [8617-15] S3  
 Patton, Brian R. [8628-16] S6  
 Pätz, Daniel [8616-37] S8  
 Patzelt, Alexa [8580-18] S4, [8591-14] S3  
 Paul, Justin R. [8606-26] S8  
 Paul, Mitanu [8602-9] S3  
 Paul, Mukul Chandra [8601-106] SPTue  
 Paul, Oliver [8586-13] S2, [8586-4] S1  
**Paul, Sujoy** [8639-11] S4, [8639-15] S4, [8639-16] S4  
 Pauli, Jutta [8596-17] S5  
**Paulsen, Keith D.** [8578-16] S3, [8578-32] S6, [8578-33] S6, [8578-37] S6, [8592-14] S4, [8592-31] S7, [8592-34] S8  
**Paulus, Yannis M.** [8567-7] S2  
 Pauporté, Thierry 8626 Program  
 Committee, 8626 S8 Session Chair, [8626-35] S8, [8626-59] SPWed, [8641-61] S4  
**Pavesi, Lorenzo** [8600-54] S13, [8604-34] S7, [8629-28] S7, [8629-39] S10  
 Paviolo, Chiara [8579-11] S3  
**Pavlichin, Dmitri S.** [8635-36] S11  
 Pavlov, Alexey N. [8580-48] SPMon, [8580-49] SPMon, [8580-50] SPMon  
 Pavlov, Nikolai [8621-56] SPWed  
**Pavone, Francesco Saverio** [8565-16] S4, 8588 S9 Session Chair, [8588-47] S7, [8588-48] S8, [8588-86] SPSun, [8588-95] SPSun  
 Pawluk, Hanna C. [8565-99] S1  
 Pax, Paul H. [8601-4] S1, [8601-6] S2  
**Paxton, Alan H.** 8600 Conference  
 Chair, 8600 S1 Session Chair, 8600 S16 Session Chair, [8600-71] SPTue  
 Payne, Andrew [8571-31] SPMon  
 Pazour, Gregory J. [8593-26] SPSun  
 Peacock, Anna C. [8629-18] S4  
 Peake, Gregory M. [8628-23] S8  
 Peaks, Ya-Sin [8565-72] S5  
 Peale, Robert E. [8624-25] S7  
 Pearce, John A. 8584 Program  
 Committee, 8584 S4 Session Chair, 8584 S5 Session Chair, [8584-19] S6, [8584-9] S3  
 Pearce, Stuart J. [8604-35] S7  
 Pearson, Jeremy [8571-65] S10  
**Pearton, Stephen J.** [8625-29] S7  
 Peccianti, Marco [8623-24] S6  
 Pechou, Renaud [8625-22] S5  
 Peck, Roger [8615-23] S5  
 Peckham, David W. [8610-16] S4  
 Peczkalski, Adam [8614-12] S3  
 Peddie, Victoria [8622-60] SPWed  
 Pedersen, Christian [8604-27] S6, [8604-28] S6  
 Pedersen, Jonas Nyvold [8629-9] S2  
**Pedersen, Pernille K.** [8624-12] S4  
 Pederzoli, Cecilia [8576-30] S5, [8600-62] S15  
 Pedesseau, L. [8626-74] SPWed  
 Pedesseau, Laurent [8631-78] S15  
 Pegoraro, Adrian F. [8589-29] S6  
 Peise, Jan [8637-26] S5, [8637-26] S8  
 Pekarski, Pavel [8639-21] S6  
 Pelc, Jason S. [8635-10] S3  
 Peled, Ania [8597-25] S5  
 Peleg, Ophir [8605-4] S1  
 Pelegati, Vitor B. [8588-57] S8  
**Pelegriña-Bonilla, Gabriel** [8609-13] S3  
 Pelivanov, Ivan M. [8581-178] SPMon, [8581-37] S6  
 Pelizzone, Marco [8615-6] S2  
 Pelled, Galit [8586-14] S2  
 Pellegrino, Joseph G. 8631 Program  
 Committee, 8631 S10 Session  
 Chair  
 Pellegrino, Teresa [8595-40] S9, [8595-48] S11  
 Pelli, Stefano [8621-22] S5, [8627-4] S1  
 Pelliccia, Maria [8595-5] S1  
 Pelouard, Jean-Luc [8620-11] S3, [8620-36] S9, [8631-74] S14  
 Peña Delgado, Adrián F. [8580-42] S2  
 Pena, Guido [8601-116] SPTue, [8611-17] S4  
 Peña, Jose Ignacio [8626-46] S12  
 Peng, Bo [8600-59] S14  
 Peng, Chen [8643-19] SPWed  
 Peng, Henry [8607-27] S8  
 Peng, Jiahui [8601-35] S9  
 Peng, Lee [8567-3] S1, [8567-5] S1, [8571-122] SPMon  
 Peng, Leilei L. [8587-33] S5, [8589-57] SPWed  
**Peng, Tong** [8587-58] S9  
 Peng, Wei-Chih [8625-25] S6  
 Peng, Xiang [8615-30] S7  
 Peng, Xiaoyuan [8599-80] SPTue  
 Peng, Yuan Han [8599-48] S4, [8599-48] S9  
 Peng, Zhen [8628-1] S1, [8628-1] S10, [8633-19] S6  
 Penninck, Lieven [8639-13] S4  
 Penninckx, Denis [8602-8] S3  
 Penot, Alexandre [8624-8] S3  
 Penty, Richard V. [8630-17] S4, 8640  
 Program Committee, [8640-17] S4, [8640-6] S1  
**Pera, Vivian E.** [8578-50] S8, [8578-66] S11, [8587-39] S6  
 Peralta, Xomalin G. [8585-14] S2  
 Perchuk, Igor [8580-17] S4  
 Peredereeva, Svetlana [8644-2] S1  
 Pereira, Antonio [8620-15] S4  
 Pereira, Daniel [8624-13] S4  
 Pereira, Marcelo A. [8621-55] SPWed  
 Pereira, Pedro J. S. [8584-27] S8  
 Pereira, Stephen P. [8568-10] S3, [8568-49] S5  
 Perelaer, Jolke [8615-15] S4  
 Péré-Laperne, Nicolas 8631 Program  
 Committee  
 Perelman, Lev T. 8592 Program  
 Committee, 8592 S5 Session Chair  
**Perera, Agu Unil** [8634-28] SPWed  
 Peretti, Romain [8620-15] S4  
 Perez Ramos, Aldo E. [8645-29] SPWed  
 Perez Rodriguez, Carla [8600-13] S4, [8600-70] SPTue  
 Perez-Fornos, Angelica [8615-6] S2  
 Perez-Wurfl, Ivan [8620-71] SPWed  
 Pergande, Daniel [8570-2] S1  
**Periasamy, Ammasi** 8587 Track  
 Chair, 8588 Conference Chair, 8588 SAWD Session Chair, 8588 Track Chair, 8589 Track Chair, 8590 Track Chair, 8591 Track Chair, 8592 Track Chair, 8593 Track Chair, 8594 Program Committee  
 Perlin, Piotr [8625-35] S8, [8625-36] S8, [8625-37] S8, [8625-41] S9, [8625-61] S13, [8625-71] SPWed  
 Perna, Tobias [8568-29] S7  
**Perram, Glen P.** [8603-25] S6, [8604-2] S1, [8610-30] S7  
 Perrien, Daniel Scott [8565-231] S3  
 Perrin, Mathieu [8631-78] S15  
 Perrone, Guido [8601-112] SPTue, [8601-115] SPTue  
 Perrot-Minnot, Etienne [8602-15] S4  
 Perrotti, Linda [8586-3] S1  
 Pershing, Dean E. [8624-16] S5  
 Persichetti, Gianluca [8615-1] S1, [8627-10] S3  
 Persson, Malin [8587-76] SPMon, [8587-77] SPMon, [8594-28] S7  
 Peruzzo, Alberto [8628-16] S6  
 Pervak, Vladimir [8599-60] S12  
 Pesala, Bala [8633-13] S4  
 Peschel, Ulf [8611-33] S7  
 Pesquera, Luis [8639-33] SPWed  
 Pestana, Noah [8587-39] S6  
 Peter, Jörg [8573-24] S6, [8574-2] S1  
 Peterer, Dominik [8613-48] SPTue  
**Peters, David W.** 8633 S4 Session  
 Chair, [8633-32] S10  
 Peters, Jeffrey [8635-34] S10  
 Peters, Jon D. [8629-36] S10  
 Petersen, Paul M. [8604-3] S1, [8605-20] S5  
**Petersen, Sidsel R.** [8601-19] S5, [8601-21] S6  
 Petersen, Steffen B. [8568-5] S2, [8587-53] S8  
 Peterson, Gary [8565-73] S5  
 Peterson, Lindsay M. [8571-67] S10, [8593-1] S1, [8593-3] S1  
 Peterson, Rita D. 8604 Program  
 Committee, [8604-31] S7, [8604-40] S8  
 Petit, Yannick G. [8607-22] S7, [8607-25] S7, [8608-2] S1, [8613-22] S5, [8632-41] S9  
**Petkovsek, Rok** [8601-78] SPTue  
 Pétremand, Yves [8614-5] S1, [8616-16] S3, [8616-16] S4  
 Petri, Aspasia G. [8594-14] S4  
 Petrie, Tracy C. [8565-58] S1, [8565-65] S3, [8565-81] S7  
 Petri-Fink, Alke [8595-59] S13  
 Petropoulos, Ioannis [8645-16] S6, [8645-18] S6  
 Petrosyan, Ashot G. [8621-57] S2  
 Petrosyan, Silva I. [8626-64] SPWed  
 Petrou, Panayioti [8629-5] S1  
 Petrov, Andrey [8581-180] SPMon, [8581-181] SPMon, [8581-6] S1, [8581-7] S1  
 Petrov, Georgi I. [8572-57] SPSun, [8588-74] SPSun, [8591-26] SPWed  
 Petrov, Pavel O. [8596-46] SPMon  
 Petrov, Valentin P. [8599-41] S8, [8604-43] SPTue, [8604-56] SPTue  
 Petrov, Yuriy Y. [8581-180] SPMon, [8581-181] SPMon, [8581-6] S1, [8581-7] S1  
 Petrova, Elena V. [8615-18] S4  
 Petrova, Irene Y. H. [8581-180] SPMon, [8581-181] SPMon, [8581-6] S1, [8581-7] S1  
 Petryk, Alicia A. [8584-1] S1, [8584-2] S1, [8584-3] S10  
 Petrzelka, Joseph E. [8612-4] S1  
**Petterson, Maureen K.** [8620-61] S15  
 Petykiewicz, Jan [8619-31] S8  
 Peupelmann, Jens [8571-8] S2  
 Pey, Kin Leong [8631-40] S8  
**Peyghambarian, Nasser N.** [8588-13] S2, [8601-33] S8, [8601-51] S12, [8601-88] SPTue, [8604-54] SPTue, [8618-21] S6  
 Peyrot, Donald A. [8575-15] S4  
 Pyskens, Frederic [8627-18] S5  
 Pezze, Luca [8637-26] S5, [8637-26] S8  
 Pezzimenti, Federica [8595-5] S1  
 Pezzoli, Daniele [8596-24] S7  
 Pezzoli, Fabio [8623-8] S3  
 Pfaff, Dominik [8623-51] S13  
 Pfefer, T. Joshua [8567-28] S6, 8573  
 Conference CoChair, 8573 S2  
 Session Chair, [8573-11] S3, [8573-11] S5, [8573-21] S6  
 Pfeffer, Christian P. [8565-95] S9  
 Pfeifer, Ronny [8603-18] S5  
 Pfeiffer, Christian [8595-59] S13  
 Pfeiffer, Hans-Ulrich [8605-7] S2  
 Pfeiffer, Tom [8567-22] S4, [8571-1] S1, [8571-128] SPMon  
 Pfeiffer, Walter 8623 Program  
 Committee  
 Pfeifle, Joerg [8600-9] S3, [8629-24] S7  
 Pfister, Olivier 8635 S7 Session Chair, [8635-17] S5  
 Pfitzner, Dieter [8603-26] S6  
**Pflaum, Christoph** [8599-34] S7, [8600-33] S8  
 Pflöging, Wilhelm 8608 Program  
 Committee, 8608 S4 Session Chair, [8608-5] S1, [8608-6] S1  
 Pflueger, Silke 8603 Program  
 Committee, 8603 S5 Session Chair, [8603-28] S7  
 Pflügl, Christian J. [8640-48] S11  
 Pfuch, Andreas [8626-27] S6  
 Pham, Hoa V. [8587-47] S7  
 Pham, Tien Dat [8645-14] S5  
 Phelan, Shelley [8587-18] S2  
 Philippe, Anthony [8619-75] SPWed  
 Phillips, David B. [8637-34] S8  
 Phillips, Jamie D. [8633-36] S10  
 Phillips, Kasey C. [8607-14] S10, [8607-14] S4, [8623-14] S4

# Index of Authors, Chairs, and Committee Members

- Phillips, Kevin G.** [8587-17] S2, [8587-44] S7  
Phillips, Mark C. [8631-37] S6, [8631-7] S2  
**Phillips, Ronald L.** 8610 Program Committee  
**Phillips, Zachary F.** [8580-2] S1  
**Phipps, Jennifer E.** [8565-12] S3  
Phipps, Marshall [8565-3] S1  
Phua, Poh Boon [8599-17] S4  
Piacentini, Fabrizio [8635-31] S6, [8635-31] S9  
Piana, Angelo [8631-47] S9  
**Piao, Daqing** [8578-40] S7, [8578-56] S9  
Piao, Jing-Ai [8644-44] SPWed  
Piao, Mei-Lan [8644-44] SPWed  
Piatkevich, Kiryl [8581-117] SPSun  
Piazzolla, Sabino [8610-37] S7  
Pich, Andrij [8608-24] S5  
Pichette, Julien [8578-78] S13  
Pickwell-MacPherson, Emma 8585 Program Committee, [8585-16] S3, [8623-3] S2  
Picot-Clemente, Jérémy [8621-14] S3  
Picraux, Samuel Tom [8631-41] S8  
Pieper, Christoph M. [8590-26] S7  
Pieralli, Christian [8572-51] SPSun  
Pierangelo, Angelo [8577-29] S10  
Pierce, Mark C. [8565-85] S8  
Pierce, Richard [8596-8] S3  
Piero, Leoni [8622-22] S2  
Pierro, Michele L. [8578-12] S2, [8578-6] S1  
Pierrot, Simonette [8601-38] S9  
Pierscinski, Kamil [8606-14] S5  
Pierz, Klaus [8623-46] S12  
**Piestun, Rafael** [8590-20] S6, [8590-21] S6, [8590-24] S7, [8611-32] S7, [8617-17] S3  
Pietarinen, Henna [8604-37] S8  
Pietrzak, Agnieszka [8605-11] S3  
Pietscher, Hans-Georg [8625-72] SPWed  
Pifferi, Antonio [8578-82] S13, [8578-88] S14, [8583-11] S3, [8583-21] S3, [8583-21] S5, [8583-5] S2, [8619-55] S14, [8631-48] S9  
Pikal, Jon Michael [8619-78] SPWed  
Pikov, Victor [8585-22] S4  
Pikula, Dragan [8621-16] S4  
Pila?, Jan [8602-7] S2  
**Pilla, Viviane** [8595-58] S13, [8596-42] SPMon, [8621-46] SPWed  
Pillet, Grégoire [8624-21] S6  
Pinchasov, Albert [8565-168] S1  
**Pinheiro, Antônio Luiz B.** [8569-18] S4, [8569-20] SPSat, [8569-21] SPSat, [8569-22] SPSat, [8569-23] SPSat, [8569-24] SPSat, [8569-26] SPSat  
**Pini, Roberto** [8565-16] S4, 8567 Program Committee, 8567 S9 Session Chair, [8567-62] SPSun, [8581-34] S6, [8596-46] SPMon  
Pinnisch, Melanie [8625-80] SPWed  
Pinsky, Renee W. [8581-121] SPSun  
Piper, James A. [8590-42] SPSUN  
Piper, Roland [8620-14] S4  
**Piper, Sophie K.** [8578-65] S11  
Piprek, Joachim 8619 Program Committee, 8619 S2 Session Chair, [8619-35] S9, 8625 Conference CoChair, 8625 S8 Session Chair  
**Piqué, Alberto** Symposium Chair, 8607 Program Committee, [8607-29] S9, 8608 Program Committee, 8608 S3 Session Chair, [8608-25] S4, 8631 S8 Session Chair, [8631-70] S13  
Piqueras, Javier [8626-28] S7  
Piras, Daniele [8581-38] S7  
**Pircher, Michael** [8567-12] S3, [8567-15] S3, [8567-25] S5, [8567-39] S7, [8571-40] S7, [8571-44] S7, [8571-45] S7, [8571-77] S12  
**Pires de Sousa, Marcelo V. P.** [8569-4] S1, [8572-45] S9  
Pires-Santos, Gustavo M. [8569-21] SPSat, [8569-23] SPSat, [8569-24] SPSat, [8569-26] SPSat  
**Pirnstill, Casey W.** [8591-1] S1  
Piron, Rozenn [8634-5] S1  
Pissadakis, Stavros [8576-13] S3  
Pitchumani, Mahesh 8613 Program Committee  
Pitris, Costas [8571-30] S5, [8572-40] S8, [8591-12] S3  
Pitta, Ivan R. [8569-22] SPSat  
Pitter, Ken [8581-15] S3  
Pittroff, Wolfgang [8640-12] S3  
Pitwon, Richard C. [8630-35] S9  
**Piyawattanametha, Wibool** 8575 Program Committee, [8575-30] S1, [8575-30] S7, [8575-8] S2, 8616 Conference Chair, 8616 S2 Session Chair  
Planat-Chrétien, Anne [8578-79] S13, [8592-28] S7  
Plausinaitiene, Valentina [8626-37] S9  
Plech, Anton [8611-33] S7  
Plecha, Donna [8572-35] S7, [8577-12] S6, [8579-20] S5  
Pleros, Nikos [8621-12] S3, [8629-11] S3  
Pletschen, Wilfried [8586-4] S1, [8607-38] S11, [8625-38] S8  
Plick, William N. [8635-30] S6, [8635-30] S9  
Ploch, Simon [8625-48] S11  
Ploog, Klaus H. [8641-23] S5  
Plotegher, Matheus B. [8624-13] S4  
Plötner, Marco [8616-21] S5  
Plumley, John B. [8595-46] S10, [8595-64] S14  
Pluska, Mariusz [8625-37] S8  
Png, Ching Eng J. [8619-54] S14, 8629 Program Committee, 8629 S10 Session Chair, 8629 S11 Session Chair, [8629-27] S7, [8629-29] S8, [8632-17] S4  
Pocas, Stephane [8624-45] S11  
Pochet, Juliette [8621-29] S6  
Pochet, Michael C. [8628-14] S5  
Poddar, Raju [8571-123] SPMon  
Podivilov, Evgenii V. [8601-87] SPTue  
**Podoleanu, Adrian Gh.** 8571 Program Committee, 8571 S9 Session Chair, [8571-117] SPMon, [8571-31] SPMon, [8571-89] S5, [8621-31] S6  
Poe, Dennis S. [8565-95] S9  
Poggesi, Corrado [8588-48] S8  
Poggi, Antonella [8631-85] S16  
Poghosyan, Armen R. [8626-63] SPWed, [8626-64] SPWed  
**Pogue, Brian W.** 8568 Program Committee, [8568-10] S3, [8568-24] S6, [8568-42] SPMon, [8568-45] SPMon, [8568-49] S5, [8568-50] SPMon, [8568-8] S2, [8568-9] S3, [8574-3] S1, [8577-20] S8, 8578 Program Committee, 8578 S5 Session Chair, [8578-16] S3, [8578-28] S5, [8578-32] S6, [8578-33] S6, [8578-37] S6, [8578-68] S11, [8578-69] S11, [8578-81] S13, 8592 Program Committee, [8592-14] S4, [8592-31] S7, [8592-34] S8  
Poh, Catherine F. [8592-3] S1  
Poher, Vincent [8572-27] S5, [8578-26] S5, [8592-28] S7  
Pohl, Johannes [8640-9] S2, [8643-6] S1  
Pohl, Martina [8640-12] S3  
Pohl, Udo W. [8634-11] S2  
Poirier Richard, Hugo-Pierre [8597-21] S5  
Poirier, Michel [8576-21] S4  
**Pokhrel, Madhab** [8641-21] S4, [8641-52] S11  
Poland, Simon P. [8588-34] S5, [8588-44] S7  
Polhan, Mila [8594-22] S6  
Poli, Federica [8576-13] S3, [8601-96] SPTue  
Polignano, Giovanni Augusto C. [8569-10] S3  
Politi, A. [8628-16] S6  
Pollet, Olivier [8612-11] S3  
Pollick, Andrea [8621-13] S3, [8624-17] S5, [8647-16] S7  
Pollnau, Markus 8599 Program Committee, [8599-2] S1, [8599-8] S2, [8627-12] S3  
Pollock, John A. [8596-21] S7  
Pollock, Raphael E. [8571-82] S12, [8580-28] S5  
Polly, Stephen J. [8620-21] S5  
Polojärvi, Ville [8620-55] S14  
Polyakov, Sergey V. [8635-31] S6, [8635-31] S9, [8635-34] S10  
Pomeranz, Leonard A. [8604-14] S4  
Pomplun, Jan [8627-37] S9, [8641-11] S3, [8642-4] S2  
Ponce Mejia, Luciano L. [8581-7] S1  
Ponce, Fernando [8625-42] S9, [8625-50] S11  
Ponchet, Anne [8631-78] S15  
Ponevchinsky, Vladislav V. [8637-29] S7  
Pongratz, Thomas [8565-46] S3, [8565-60] S2, [8565-94] S9  
**Ponticorvo, Adrien** [8565-27] S7, [8578-61] S10, [8578-63] S10  
Pontius, Peter [8621-13] S3, [8624-17] S5, [8647-16] S7  
Pontreau, Laurie [8621-29] S6  
**Poole, Kristin M.** [8571-70] S11  
Poole, Philip J. [8613-12] S3, 8634 Program Committee  
Poole, Zsolt [8613-47] SPTue  
**Poon, Andrew W.** 8600 Program Committee, 8600 S14 Session Chair, [8628-13] S5, 8629 Program Committee, 8629 S1 Session Chair, 8629 S2 Session Chair, [8629-3] S1  
Poon, Joyce K. S. [8600-19] S5, [8645-4] S3  
**Poon, Kelvin W.** [8565-178] S3, [8588-14] S2  
Pope, Ava G. [8581-183] SPMon  
**Popescu, Gabriel** [8587-10] S1, [8587-11] S2, [8587-13] S2, [8587-47] S7, [8592-6] S2, [8593-17] S4  
Poplack, Steven P. [8578-37] S6  
Popoff, Sébastien [8617-11] S3  
Popov, Andrey Yu. [8569-11] S3  
Popov, Konstantin [8589-29] S6  
Popova, Elena [8621-5] S2  
Popova, Nataliya A. [8569-11] S3  
**Popp, Jürgen** [8565-185] S4, [8565-186] S4, [8577-18] S7, [8591-27] SPWed, [8611-16] S4, [8615-5] S1  
Porchet, Jaques-André [8614-6] S2  
Poreddy, Amruta R. [8596-36] SPMon  
Porer, Michael [8623-6] S3  
Porowski, Sylvester A. [8625-35] S8, [8625-77] SPWed  
Porro, Juan Antonio [8603-12] S4  
Portaccio, Marianna [8588-103] SPSUN  
Portalupi, Simone Luca [8629-43] S11  
Pospischil, Andreas [8600-55] S13  
Potasek, Mary J. [8568-48] SPMon, [8596-30] S9, [8623-64] SPWed  
Pothen, Aijt [8576-16] S3  
Poti, Shannon [8574-27] SPSun  
Potier, Marie-Claude [8590-4] S1, [8590-43] SPSUN  
**Potma, Eric O.** [8575-18] S4, 8588 S2 Session Chair, [8588-10] S1  
Potsaid, Benjamin [8567-20] S4, [8567-27] S5, [8567-32] S6, [8571-13] S3, [8571-22] S4, [8571-8] S2, [8571-99] SPMon  
Pottiez, Olivier J. [8601-82] SPTue, [8601-86] SPTue, [8604-21] S5  
Potvin, Simon [8600-57] S14  
**Poulet, Patrick** [8565-166] S1, [8572-26] S5  
Poulios, Kostantinos [8628-16] S6  
Poulsen, Peter Behrensdorff [8641-44] S10  
**Pourabolghasem, Reza** [8632-33] S8  
Pouraghajani, Ozra [8644-2] S1  
Pourebahimi, Behnaz [8581-143] SPMon, [8581-146] SPMon  
Pourroy, Genevieve [8572-26] S5  
Poutous, Menelaos K. [8599-53] S10, 8613 Program Committee  
**Povinelli, Michelle L.** 8600 Program Committee, 8600 S12 Session Chair, 8636 S4 Session Chair, [8636-3] S1  
Powell, Samuel [8578-45] S8  
Powers, Nathan [8599-46] S8  
**Powers, Peter E.** [8570-17] S4, [8599-12] S3, 8604 Program Committee, 8604 S4 Session Chair, [8604-17] S4  
Pozo, Jose M. 8614 Program Committee, [8614-16] S3  
Pozzi, Paolo [8580-30] S6  
Pozzo, Danilo [8581-37] S6  
Prabhat, Prashant [8589-27] S6  
Prabhu, David [8565-41] S3  
**Prabhu, Vijendra** [8565-21] S5  
Pradhan, Asima [8580-22] S4  
Pradilla, Gustavo [8565-172] S2  
Prakash, Aniruddh [8584-26] S8  
Prakash, Punit [8584-29] S8, [8584-30] S9, [8584-34] S9  
Pralle, Arnd [8595-39] S9  
Prasad, Krishma [8593-18] S4  
Prasad, Krishna [8642-30] SPWed  
**Prasad, Narasimha S.** 8599 Program Committee, 8599 S5 Session Chair, [8601-33] S8  
**Prasad, Paras N.** [8588-41] S7, 8594 Program Committee, 8594 Track Chair, 8595 Track Chair, 8596 Track Chair, 8597 Track Chair, 8598 Track Chair  
Prates, Renato [8569-4] S1  
**Prather, Dennis W.** 8613 Program Committee, [8622-29] S7, [8622-30] S7, [8624-19] S5, [8624-33] S8, 8632 Program Committee  
Pratuch, Steven M. [8602-2] S1  
Prawer, Steven [8635-6] S2, [8635-6] S4  
Preble, Edward A. [8625-69] S14  
Predojevi?, Ana [8635-43] S13  
**Preece, Daryl C.** [8637-4] S1  
Premru, Jan [8579-33] S7  
Press, David L. [8635-10] S3  
Presser, Nathan [8605-22] S5, [8640-52] S12  
Preuss, Annegret [8568-29] S7  
Preza, Chrysanthe 8589 Program Committee, 8589 S1 Session Chair, [8589-10] S2  
Prezgot, Daniel [8597-10] S3  
Prezgot, Daniel [8597-11] S3  
Price, Jonathan H. [8606-7] S2  
Price, Kirk [8605-23] S5, [8605-5] S1  
Price, Michael [8568-1] S1  
Price, Randy [8622-18] S4  
Price, Roderick [8572-38] S7  
Priehs, Marc [8599-22] S5  
Prieto, Pedro M. [8642-7] S2  
Prieto, Xesus [8647-8] S4  
Primot, Jérôme [8632-8] S2  
Prins, Andrew [8625-62] S13  
Prins, Christian [8581-38] S7  
Priolo, Francesco [8629-43] S11  
Priti, Rubana B. [8620-75] SPWed  
Privador, Valeriy A. [8565-17] SPSun  
Priyadarshi, Shekhar [8623-46] S12  
Priyadarshi, Manish K. [8570-28] SPSUN, [8598-25] SPSUN  
Probst, Roland [8634-14] S3  
Prohl, Christopher [8634-11] S2



# Index of Authors, Chairs, and Committee Members

Pröll, Johannes [8608-5] S1, [8608-6] S1  
 Pronin, Oleg [8599-60] S12  
 Proskurnin, Mikhail A. [8581-163] SPMon  
 Prospero, Davide 8595 S9 Session Chair, [8595-2] S1, [8595-3] S1, [8595-8] S2  
 Protzenko, Dimitry E. [8584-11] S3  
 Proudian, Andrew P. [8587-66] SPMon  
 Prough, Donald S. [8581-180] SPMon, [8581-181] SPMon, [8581-6] S1, [8581-7] S1  
 Prtljaga, Nikola [8600-54] S13  
**Pryanikova, Tatiana I.** [8578-58] S10  
 Przybilla, Frédéric [8590-12] S2  
 Przybylski, Marius 8608 Program Committee  
**Psaltis, Demetri** [8576-2] S1, [8589-23] S5, [8637-15] S3, [8637-36] S9  
 Psarouli, Aimilia [8629-5] S1  
 Ptacin, Jerod L. [8590-24] S7  
 Pu, Jing [8628-21] S7, [8629-13] S3, [8629-38] S10  
 Pu, Yang [8565-50] SP1, 8577 S2 Session Chair, [8577-1] S1, [8577-10] S5, [8577-8] SPWed, [8587-73] SPMon, [8590-33] S9  
 Pucker, Georg [8600-54] S13, [8604-34] S7  
**Puckett, Maria** [8592-3] S1  
 Puelis, Michaela [8565-36] S1  
 Puers, Robert [8629-4] S1  
 Puffenburger, Kent [8599-23] S5  
 Puget, Renaud [8616-20] S5  
 Pügner, Tino [8616-19] S5  
 Pujol Baiges, Maria Cinta [8594-6] S2, [8599-3] S1  
 Pukstad, Brita S. [8565-23] S6, [8578-29] S5  
 Pule, Martin [8581-32] S6  
 Pulford, Benjamin [8601-34] S8  
 Pung, Aaron J. [8599-53] S10  
 Puretzky, Alex A. [8609-10] S3, [8609-15] S4, [8609-16] S4  
 Purlys, Vytautas [8613-17] S4  
 Purschke, Martin [8565-29] S7  
 Pushkarsky, Michael [8631-18] S4  
 Puzska, Agathe [8578-79] S13  
 Puth, Jason C. [8602-14] S4  
 Puthen-Veettil, Binesh [8620-71] SPWed  
 Puthukodan, Sujitha [8624-22] S6  
 Putney, Jeffrey [8572-20] S4  
 Putt, Mary E. [8578-14] S3  
 Puzikov, Vyacheslav M. [8599-13] S3, [8599-75] SPTue  
 Pyschny, Nicolas [8606-17] S5  
 Pyun, Kyungsuk P. [8616-25] S6

## Q

Qassim, Hammam [8597-35] S8  
 Qazilbash, M. Mumtaz [8632-68] S15  
**Qi, Jing** [8588-85] SPSun  
 Qi, Minghao [8570-1] S1  
**Qi, Wei** [8591-24] SPWed  
 Qi, Wenjuan [8571-80] S12  
 Qian, Ruobing [8592-25] S6  
 Qian, Wei [8595-52] S12  
 Qian, Wei [8630-23] S6  
 Qian, Zhiyu [8582-14] S4, [8596-6] S2  
 Qiao, Sha [8582-32] SPTues  
 Qin, Jia [8571-84] SPMon, [8580-40] S8, [8580-41] S9  
 Qin, Wan [8587-68] SPMon, [8615-30] S7  
 Qin, Xuwei [8601-70] SPTue, [8604-41] SPTue  
 Qin, Yi [8573-8] S2  
 Qin, Zhuanning [8578-101] SPSun, [8578-104] SPSun, [8578-91] SPSun  
 Qiu, Changren [8601-92] SPTue  
 Qiu, Cheng-Wei [8637-8] S2  
 Qiu, Chuankai [8617-1] S1

Qiu, Feng [8622-7] S2  
 Qiu, Jianjun [8588-76] SPSun  
 Qiu, Suimin [8572-28] S5, [8573-18] S5, [8588-108] SPSun, [8588-68] S10  
 Qiu, Wenjun [8604-36] S8, [8636-7] S2  
 Qiu, Yafeng [8621-42] SPWed  
**Qiu, Yuchen** [8582-2] S6  
**Qiu, Zhen** [8575-29] SPSun, [8575-31] S1, [8575-31] S7, [8616-8] S2  
 Qiu, Zhihai [8577-2] S1  
**Qu, Jianan Y.** 8572 S3 Session Chair, [8588-110] S8, [8588-18] S3  
 Qu, Junle 8588 Program Committee, [8588-85] SPSun, [8588-90] SPSun, [8588-99] SPSun  
 Qu, Weijuan [8599-80] SPTue, [8644-39] SPWed  
 Quadir, Anita [8624-40] S10  
 Quan, Tingwei [8589-48] S11  
 Quan, Yuhua [8565-102] S2  
 Quang, Timothy [8565-85] S8  
 Quaresima, Valentina [8578-111] SPSun  
**Quarles, Gregory J.** 8599 Track Chair, 8600 Track Chair, 8601 Track Chair, 8602 Track Chair, 8603 Track Chair  
 Quarterman, Adrian H. [8640-6] S1  
 Quenzer, Hans-Joachim [8612-18] S4, [8613-44] SPTue, [8616-9] S2  
 Quercioli, Franco [8596-31] S9  
 Quimby, Richard S. [8638-2] S1  
 Quinci, Thomas [8631-78] S15  
 Quinlan, Robert [8577-30] S3, [8580-23] S4  
 Quinlan-Pluck, Fiona [8590-4] S1  
 Quinn, Shannon [8593-15] S4  
 Quinones-Hinojosa, Alfredo [8571-69] S11  
 Quiquempois, Yves [8600-78] SPTue  
 Quirce, Ana [8639-33] SPWed  
 Quirk, Bryden C. [8565-108] S3, [8571-56] S9  
 Quirk, Kevin J. [8610-27] S6

## R

R., Rai [8577-6] S2  
 Rabaud, Wilfried [8624-45] S11  
 Rabeau, James R. [8635-14] S4  
 Rabin, Bryan [8647-22] S10, [8647-22] S9  
 Rabot, Olivier [8581-49] SPSun  
 Rabu, Pierre [8626-52] SPWed  
 Rachli, Noam [8579-31] S7, [8583-6] S2  
**Raciukaitis, Gediminas** 8607 Program Committee, 8607 S9 Session Chair, [8607-1] S1, [8607-1] S5, [8612-5] S1  
 Raczkowski, Joerg [8571-128] SPMon  
 Radabaugh, Rebecca [8584-6] S2  
 Rademeyer, Pieter [8630-19] S5, [8643-8] S2  
 Radermacher, Peter [8570-27] SPSun  
 Radier, Christophe [8599-45] S8  
**Radke, Andre** [8613-7] S2  
 Radosevich, Andrew J. [8592-35] S8  
 Raedel, Ulrich [8600-79] SPTue  
 Raelle, Marcus P. [8571-113] SPMon  
 Rafailov, Edik U. [8568-14] S3, [8572-7] S2, [8604-5] S2, [8640-61] S13  
 Rafailov, Michael K. [8594-21] S6  
**Rafol, Sir B.** [8631-24] S5, [8631-25] S5  
 Ragan, Regina [8632-50] S11  
**Raghavachari, Ramesh** 8573 Conference Chair, 8573 S3 Session Chair, 8573 S4 Session Chair, 8583 Program Committee, 8583 S5 Session Chair, 8587 Program Committee, 8596 Conference Chair, 8596 S4 Session Chair, 8596 S9 Session Chair, 8635 S2 Session Chair

Raghavan, Sridhi [8632-55] S12  
**Raghu Srimathi, Indumathi** [8599-53] S10  
 Raghunathan, Ravi [8619-10] S3, [8619-11] S3  
 Ragnow, Steffen [8607-48] S13, [8607-48] S6  
**Rahimi, Nassim** [8620-57] S14  
 Rahimi, Zhabiz [8599-34] S7, [8600-33] S8  
 Rahlves, Maik [8573-12] S3, [8573-12] S5  
 Rahm, Marco [8585-6] S1  
 Rahm, Marco [8585-3] S1  
**Rahman, Anis** [8624-24] S6  
 Rahman, Aunik K. [8624-24] S6  
**Rahman, Azizur** [8624-40] S10, [8629-19] S4  
 Rahman, Muhammad Mizanur [8589-10] S2  
 Rahn, Hans-Jürgen [8588-88] SPSun  
 Raimbault, Vincent [8595-34] S8  
 Raimondi, Manuela T. [8611-10] S2  
 Raimundo, Ivo M. [8570-27] SPSun  
 Raineri, Fabrice [8629-41] S11  
 Raino, Gabriele [8634-3] S1  
 Rais-Zadeh, Mina [8614-12] S3  
 Raj, Kannan [8630-41] S11, [8630-41] S2  
 Raj, Rama [8629-41] S11  
**Rajabhandharaks, Danop** [8565-43] S3  
**Rajadhaksha, Milind** 8565 Program Committee, 8565 S6 Session Chair, [8565-1] S1, [8565-2] S1, [8565-73] S5, [8565-74] S5, [8565-88] S8, [8572-19] S4, [8572-36] S7, 8577 Program Committee, [8577-5] S2, [8589-13] S3, [8596-32] S9  
 Rajagopal, Aditya [8632-11] S3  
 Rajagopalan, Raghavan [8596-36] SPMon  
 Rajarajan, Muttukrishnan [8597-40] S8  
 Rajaram, Narasimhan [8578-51] S9  
 Rajendiran, Vinoth Kumar [8572-55] SPSun  
 Rajesh, Desapogu [8619-81] SPWed  
 Rajuru, Suhrud M. [8565-214] S2, [8565-215] S3, [8565-68] S4  
 Rajian, Justin Rajesh [8581-16] S3, [8581-21] S4, [8581-61] S9  
 Rakhmatullina, Ekaterina [8566-5] S1  
 Rakich, Peter [8636-7] S2  
**Rakich, Peter T.** [8604-36] S8  
 Rale, P. [8631-78] S15  
 Ram, Rajeev Jagga [8629-14] S4, [8638-6] S2  
 Ram, Sripad [8589-5] S1  
**Ramachandran, Siddharth** 8601 Conference CoChair, 8601 S3 Session Chair, [8601-19] S5, [8601-53] S13, [8647-7] S4  
**Ramakrishnan, Sathish Kumar** [8594-15] S4  
**Ramamoorthy, Sriprya** [8565-58] S1, [8565-65] S3, [8565-81] S7  
 Raman, Ashok [8620-33] S8  
 Ramanathan, Shriram [8632-68] S15  
**Ramanujam, Nirmala** [8578-51] S9, [8587-51] S8  
 Ramaz, Francois [8581-58] S8, [8581-95] SPSun, [8581-96] SPSun  
**Ramella-Roman, Jessica C.** 8565 Program Committee, 8565 S2 Session Chair, [8565-30] S7, [8571-85] SPMon, [8573-21] S6, [8576-22] S4, 8579 Program Committee, 8579 S5 Session Chair, [8579-25] S6  
 Ramelow, Sven [8635-30] S6, [8635-30] S9  
**Ramesham, Rajeshuni** Symposium Committee, 8614 Conference Chair, 8614 S1 Session Chair, 8614 S3 Session Chair, [8614-20] S4  
 Ramirez Miquet, Evelio E. [8587-59] SPMon

Ramirez, David Alejandro [8634-30] SPWed  
 Ramirez, Joan Manel [8629-39] S10  
 Ramirez, Maria de la O [8594-6] S2  
 Ramirez, Omar [8590-22] S6  
 Ramirez-San-Juan, Julio Cesar [8611-55] SPTue  
 Ramiro, Iñigo [8620-18] S5  
 Ramiro-Manzano, Fernando [8600-54] S13  
 Ramkissoon, Shakti [8588-21] S3  
**Ramos, Mark** [8611-29] S6  
**Ramos-Garcia, Rubén** [8611-55] SPTue  
 Ramprasath, Chandrasekaran [8595-18] S4  
 Ramsey, Laurence C. [8594-28] S7, [8594-29] S7  
 Ramsis, Inas [8616-22] S5  
 Ramu, Rajasekaran [8577-6] S2  
 Ran, Qijiang [8633-9] S3  
 Rana, Omwati [8622-63] SPWed  
 Rancuret, Paul 8618 Program Committee, 8618 S4 Session Chair  
 Rand, Darren A. [8599-47] S4, [8599-47] S9  
 Randall, Matthew [8601-101] SPTue, [8601-102] SPTue  
**Randeberg, Lise L.** [8565-23] S6, [8578-29] S5  
 Randolph, Gwendalyn [8581-78] S11  
 Randolph, Mark A. [8565-180] S3  
 Raney, Aidan [8565-8] S4  
 Raniero, Leandro J. [8565-32] SPSun, [8594-17] S5, [8594-18] S5  
 Ranjan, Amalendu P. [8590-10] S2  
 Ranjha, Bilal A. [8645-28] SPWed  
**Ranji, Mahsa** [8580-31] S6, [8591-28] SPWed  
 Rank, Elisabeth [8567-58] SPSun  
 Ranta, Sanna [8606-3] S1  
 Rantamaki, Antti J. [8606-14] S5  
 Ranyuk, Elena [8574-22] S5  
 Ranzini, Stenio M. [8647-18] S7  
 Rao, Gopal L. N. [8598-26] S6  
 Rao, Masaru P. [8565-175] S2  
 Rao, Satish Bola Sadashiva [8565-21] S5  
 Rao, Yi [8633-15] S5, [8633-16] S5  
 Rao, Zhiming [8604-42] SPTue  
 Raphael, Patrick [8565-56] S1  
 Rapp, Bastian E. 8615 S8 Session Chair, [8615-39] S9  
 Rapp, Charles F. [8626-51] SPWed  
 Rapp, Ludovic [8607-16] S11, [8607-16] S5, [8607-32] S9  
**Rapp, Stephan** [8607-11] S3, [8607-11] S9, [8611-46] S10, [8611-46] S4  
 Rappaport, Noam [8605-4] S1, [8640-54] S12  
 Raptis, Ioannis [8629-5] S1  
 Rarity, John G. [8628-16] S6  
 Raschke, Markus B. 8623 S2 Session Chair, [8623-39] S11, [8631-37] S6  
 Rashid, Mohammad J. [8625-19] S5  
 Rasigade, Gilles [8628-2] S1, [8628-2] S10, [8629-25] S7  
 Rasio, Jonathan [8565-13] S2  
 Raskin, Jean-Pierre [8614-18] S4  
 Rasmussen, Jens C. [8646-20] S7A, [8646-20] S8, [8646-23] S8, [8646-23] S9, [8647-19] S7  
 Rasmussen, Kristian Hagsted [8629-9] S2  
 Rasoloniaina, Alphonse L. [8600-16] S4  
 Rass, Jens [8625-48] S11  
 Rastelli, Alessandra N. S. [8569-9] S2  
 Ratan, Rajiv R. [8588-83] SPSun  
 Ratautas, Karolis [8612-5] S1  
**Ratelle, Olivier** [8570-12] S3, [8597-23] S5  
 Rath, Detlef [8593-22] S5, [8595-16] S4, [8611-13] S3  
 Ratna, Banahalli R. [8595-53] S12



# Index of Authors, Chairs, and Committee Members

- Ratner, Daniel M. [8629-8] S2  
Ratner, Justin [8611-26] S5  
Rattanavarin, Santi [8575-30] S1, [8575-30] S7, [8575-8] S2  
Ratto, Fulvio [8581-34] S6, [8596-46] SPMon  
Rattunde, Marcel [8606-10] S3, [8606-19] S6  
Ratushny, Vladislav P. [8644-31] SPWed  
Rau, Ileana Bradusa 8622 Program Committee, 8622 S6 Session Chair, [8622-26] S7  
Rauscher, Sabine [8567-15] S3  
Raut, Sangram [8590-10] S2  
Rauter, Patrick [8640-22] S5, [8640-46] S11  
Rautiainen, Jussi [8606-14] S5  
Ravadgar, Parvaneh [8626-12] S3, [8626-47] S12  
Ravaro, Marco [8631-2] S1  
Ravets, Sylvain [8637-31] S7  
Rawat, Rohit [8578-4] S1  
**Ray, Aniruddha** [8581-17] S3, [8581-61] S9, [8596-26] S8  
Ray, Krishanu 8597 Conference CoChair  
Ray, Partha [8572-20] S4  
Ray, Sumon K. [8639-1] S1  
Raybaut, Myriam [8631-64] S12  
Raymond, Jeffery E. [8596-22] S7  
Raymond, Kevin P. [8632-1] S1  
Raza, Shaan [8571-69] S11  
Razani, Marjan [8565-173] S2, [8565-237] S5  
Razansky, Daniel [8581-139] SPMon, [8581-142] SPMon, [8581-20] S3, [8581-44] S7, [8581-60] S8, [8581-88] S11, [8581-89] SPSun, [8600-8] S2  
Razavipour, Seyed G. [8631-82] S16  
Razé, Gérard [8602-15] S4  
**Razeghi, Manijeh** 8626 Program Committee, [8626-20] S5, [8626-36] S8, 8628 Program Committee, 8631 Conference Chair, [8631-100] S4, [8631-102] S7, [8631-17] S4, [8631-21] S4, [8631-33] S7, [8631-97] S1, [8631-98] S10, [8631-99] S10, [8632-23] S6  
Re, Rebecca [8578-111] SPSun, [8578-114] SPSun  
Read, Graham [8640-32] S7  
**Reaver, Nathan** [8597-18] S4  
**Rebane, Aleksander K.** [8577-26] S9, [8596-29] S9, [8596-34] SPMon, [8622-18] S4, [8622-23] S6, 8635 Program Committee, [8636-55] S11  
Rech, Bernd [8620-54] S11, [8620-54] S13, [8626-33] S8  
Rech, Ivan [8590-2] S3, [8590-3] S3, [8631-46] S9  
Rechmann, Peter 8566 Conference Chair, 8566 S2 Session Chair, 8566 S4 Session Chair, [8566-14] S4  
Redarce, Tanneguy [8618-16] S5  
Reddy, Karthik [8615-47] S10  
Reddy, Ravinder [8578-115] SPSun  
Redmond, Robert W. [8598-6] S3  
Redondo-Cubero, Andrés [8626-22] S5  
Reece, Lisa M. [8615-11] S3  
**Reed, Graham T.** 8629 Conference Chair, 8629 S6 Session Chair, 8629 S7 Session Chair, [8629-18] S4, [8629-32] S9, [8630-24] S6  
Reed, Jason C. [8621-1] S1  
Rees-Whiphey, Daniel [8647-24] S10, [8647-24] S9  
Refrice, Susan [8578-19] S4  
Regar, Evelyn [8565-39] S6, [8565-40] S6  
Regehr, Martin W. [8610-13] S3, [8610-25] S5  
Regelskis, K?stutis [8612-5] S1  
Reggentin, Matthias [8640-9] S2  
Regillo, Carl [8615-6] S2  
Regmi, Murari [8609-10] S3, [8609-15] S4  
Rehbock, Christoph [8593-22] S5, [8595-16] S4, [8611-13] S3  
Rehm, Robert H. [8631-56] S10  
Rehman, Samee ur [8627-40] S9  
Rehmann, Georg [8601-15] S4, [8601-15] S9, [8603-9] S3  
Rehspringer, Jean-Luc [8622-22] S6  
Reichart, Rupert [8565-186] S4  
Reichenberg, Jason [8565-25] S6  
Reichert, Fabian [8599-5] S2  
Reichl, Christian [8623-57] S15  
Reid, Clay [8565-200] S5  
Reid, Sirandon A. H. [8577-32] S10  
Reid, W. Darlene [8591-8] S2  
Reidler, Andy [8593-12] S3  
Reif, Roberto [8571-63] S10, [8580-40] S8  
Reijnders, Bob [8632-37] S9  
Reimann, Andreas [8616-42] S9  
Reimer, Michael E. 8619 S8 Session Chair, [8619-2] S1  
Reinecke, Thomas L. [8635-12] S4  
Reinhard, Benjamin [8585-3] S1, [8585-6] S1  
**Reinhardt, Carsten** [8623-52] S14  
Reinholm, Carol [8630-10] S3  
Reinig, Marc R. [8617-9] S2  
**Reininger, Peter** [8631-20] S17  
Reinke, Charles M. [8632-30] S7  
Reis, Arnaldo F. [8596-44] SPMon, [8619-76] SPWed  
Reis, Dennys [8642-1] S1  
Reis, Jacklyn Dias [8647-15] S7  
Reisbeck, Mathias [8615-22] S5  
Reisman, Charles [8567-74] SPSun  
Reiten, Matthew T. [8623-19] S5  
Reiter, Christoph [8599-14] S3  
Reith, Loren [8565-210] S4, [8586-27] S5  
Reithmaier, Johann Peter [8619-37] S9, 8640 Program Committee, 8640 S2 Session Chair, [8640-2] S1, [8640-3] S1  
**Reithmeier, Eduard** [8573-12] S3, [8573-12] S5  
Reitzenstein, Stefan [8619-32] S8  
Rekas, Miroslaw [8601-104] SPTue, [8601-28] S7  
**Rekow, Mathew N.** [8601-91] SPTue  
Rellergert, Wade [8600-14] S4  
Rembiel?ska, Anna Z. [8607-50] SPTue  
Remer, Itay [8591-19] S4  
Remund, Stefan [8571-108] SPMon  
**Ren, Fan** [8625-29] S7  
Ren, Fanghui [8598-24] SPSUN  
Ren, Liqiang [8580-19] S4  
Ren, Liqiang [8600-60] S14  
Ren, Qiushi [8581-99] S8, [8587-58] S9, [8590-42] SPSUN  
Ren, Yongxiong [8647-6] S4  
Ren, Zhaoyu [8565-22] S5  
Ren, Zhongxiang [8605-36] SPTue  
**Rendall, Helen A.** [8611-2] S1  
Rendell, Ronald W. [8632-45] S10  
**Renkoski, Timothy E.** [8577-32] S10, [8577-4] S2  
Reno, John L. [8632-63] S14, [8640-27] S6  
Renou, G. [8620-41] S10  
Rentschler, Mark E. [8584-21] S6  
**Rentz Dupuis, Julia** [8618-25] S7  
Renversez, Gilles [8632-59] S13  
Renz, Günther [8599-59] S12  
Renz, Marc [8588-27] S4, [8590-11] S2  
Repasky, Kevin S. [8631-30] S6  
Resch-Genger, Ute [8595-55] S13, [8596-17] S5  
Reshef, Orad [8626-49] S12, [8627-47] SPWed  
Reshotko, Miriam R. [8629-34] S9  
Residori, Stefania [8636-8] S2  
Resnick, Paul J. 8612 Conference Chair, 8612 S2 Session Chair  
Ressel, Peter [8605-15] S4  
**Restaino, Sergio R.** [8610-34] S7, 8617 Program Committee  
Restlé, Tobias [8590-12] S2  
Resto, Vicente [8573-18] S5, [8588-68] S10  
Rethfeld, Bärbel [8607-9] S3, [8607-9] S9  
Reudink, Douglas [8584-26] S8  
Reuland, Warren [8578-3] S1  
Reuter, Dirk [8623-9] S3  
Reuter, Kirsten [8586-13] S2  
Reuter, Rainer [8601-100] SPTue  
Reuter, Rolf [8635-21] S6  
Reutsky-Gefen, Inna [8565-201] S1, [8567-10] S2  
Revera-Carpio, Carlos A. [8571-4] S1  
Reverchon, Jean-Luc [8625-65] S14  
Revin, Dmitry G. [8640-66] S14  
Reynaud, Stéphanie [8609-4] S1  
Reyné, Stéphane [8602-15] S4  
**Reynolds, Carissa** [8571-125] SPMon, [8571-126] SPMon  
Reynolds, Jeffery S. 8591 Program Committee  
Reynolds, John H. [8586-9] S2  
Rhee, Choong-ho C. [8575-31] S1, [8575-31] S7, [8616-8] S2  
**Rhee, Chung-Ku** 8565 Program Committee, 8565 S3 Session Chair, 8565 S4 Session Chair, [8565-62] S2  
Rhee, Jingeun [8630-20] S5  
Rhinehalt, Everett [8642-32] SPWed  
Rhodes, Michelle [8611-26] S5  
Rhonemichelle, Dan L. [8638-15] S4  
Rial, Nathaniel S. [8577-32] S10, [8577-4] S2  
Ribeiro, Martha [8569-4] S1  
Ribeiro, Sidney J. [8604-52] SPTue  
Ribeiro, Tiago [8584-26] S8  
Ribeiro, Vitor B. [8646-3] S2, [8647-18] S7, [8647-20] S7A, [8647-20] S8  
Ribet-Mohamed, Isabelle [8631-53] S19  
Ribitsch, Volker [8570-27] SPSun  
Ricaud, Jean-Luc [8570-24] S6  
Ricaud, Sandrine [8611-18] S4, [8621-64] SPWed  
Rice, Anthony L. [8631-65] S12  
Rice, Brad W. [8572-24] S5  
Rice, Christopher [8610-30] S7  
Rice, Cory T. [8568-7] S2  
**Rice, Joseph P.** [8573-13] S3, [8573-13] S5, [8583-8] S7  
Rice, Kyle [8565-171] S5  
Rice, Photini F. [8577-24] S9  
**Rice, Robert R.** [8601-18] S5  
Rice, T. [8625-91] S14  
**Rich, Ryan M.** [8590-10] S2, [8590-6] S1  
Rich, Thomas C. [8589-27] S6  
Richard, Cyrille [8626-26] S6  
Richards, Benjamin [8620-32] S8  
**Richards-Kortum, Rebecca** [8565-66] S3, [8565-85] S8, [8575-3] S1  
Richardson, David J. [8601-99] SPTue  
**Richardson, Kathleen** [8600-20] S5  
Richardson, Martin 8599 Program Committee, 8599 S8 Session Chair, [8599-53] S10, [8601-107] SPTue, [8601-97] SPTue, [8611-29] S6, [8612-6] S2  
Richardson, Martin J. 8644 Program Committee, [8644-26] S7, [8644-28] S7, [8644-29] S7, [8644-30] S7  
Richter, Andre [8627-37] S9  
Richter, Claus-Peter 8565 S5 Session Chair, [8565-212] S3, [8565-213] S3, [8565-214] S2, [8565-215] S3, [8565-68] S4  
Richter, Daniel [8601-27] S7  
Richter, Johannes [8634-22] S5  
Richter, Lukas [8615-22] S5  
Richter, Sören [8611-33] S7, [8611-47] S11, [8611-47] S5, [8611-48] S12, [8611-48] S6  
Richter, Stefan [8616-11] S3  
Ricken, Raimund [8635-22] S6  
Riddle, Reed L. [8617-8] S2  
Ridge, Jeremy S. [8566-21] SPSun, [8566-3] S1  
Ridha, Mustafa [8565-188] SPSun  
Riddsdale, Andrew [8589-29] S6  
Riechert, Henning [8641-45] S10  
Riedel, Lisa [8616-11] S3  
Riedinger, Andreas [8595-48] S11  
Riedl, Michael [8630-28] S7, [8639-18] S5  
Riegel, Harald [8603-30] S7  
Riek, Claudius [8588-84] SPSun  
Rieke, Viola [8584-29] S8  
Rieken, Malte [8565-53] SP1  
Riemsperger, Thomas [8593-13] S3  
Riessens, Hans [8636-55] S11  
Riester, Markus B. K. [8630-1] S1  
Riggs, William [8565-19] S5  
**Righini, Giancarlo C.** 8621 Program Committee, 8621 S3 Session Chair, [8621-22] S5, [8627-4] S1, 8628 Program Committee  
Rigual, Nestor [8565-239] S9, [8568-36] SPMon  
Riley, Chris [8581-68] S9  
Rimler, Jonathan [8565-27] S7, [8578-61] S10  
Rinaldi, Rosaria [8595-31] S8  
Rindorf, Lars [8637-35] S8  
**Rinehart, Matthew T.** [8589-25] S5  
Rinnerbauer, Veronika [8632-7] S2  
Rinzler, Andrew G. [8620-61] S15  
Riordan, Jason [8576-14] S3  
Rios Leite, Jose R. [8636-46] S9  
Ripamonti, Giancarlo [8631-44] S9  
Ripken, Tammo [8565-110] S4, [8567-86] SPSun, [8579-2] S1  
Ripszam, R. [8623-55] S14  
Rishøj, Lars S. [8601-53] S13  
**Rissanen, Anna** [8614-7] S2  
Risse, Stefan [8613-18] S4  
Ristic, Davor [8621-22] S5  
Ristig, Simon [8595-59] S13  
Ritchie, David A. [8606-20] S6, [8606-23] S7, [8619-3] S1, [8631-5] S2, [8634-2] S1, [8640-39] S9  
Ritsch-Marte, Monika 8589 Program Committee, 8589 S6 Session Chair, [8589-24] S5, 8637 Program Committee  
Ritt, Mike [8629-6] S2  
Ritter, Markus [8567-12] S3  
Riva, Charles E. [8567-46] S8  
**Riva, Marco** [8618-13] S4  
Riva, Rudimar [8600-75] SPTue  
Rivera Gil, Pilar [8595-59] S13  
**Rivera, Antonio C.** [8595-46] S10, [8595-64] S14  
Rivera, David R. [8575-14] S4  
Rivera, Jose [8598-13] S4  
Rivoire, Kelley [8632-24] S6, [8635-40] S12  
Rizvi, Imran 8568 S4 Session Chair, [8568-17] S4, [8568-46] S7, [8568-47] S7  
**Roach, William P.** 8579 Program Committee, 8579 S1 Session Chair, 8579 Track Chair, 8580 Track Chair, 8581 Track Chair, 8582 Track Chair, 8583 Track Chair, 8584 Track Chair, 8585 Program Committee, 8585 Track Chair, 8586 Track Chair, [8601-123] SPTue, [8601-45] S11, [8611-56] SPTue  
Robborto, Massimo [8618-10] S4  
Robert, Cédric [8631-78] S15  
Robert, Sylvie [8626-37] S9  
Robert, Yannick [8640-61] S13  
Roberts, Charles D. [8603-25] S6  
Roberts, Lewis C. [8610-24] S5

# Index of Authors, Chairs, and Committee Members

- Roberts, Philipp [8567-12] S3  
Roberts, Randy S. [8602-16] S4  
Roberts, W. Thomas [8610-25] S5, [8610-26] S6  
Roberts, William W. [8581-18] S3  
Robertson, Claudia S. [8581-7] S1  
Robertson, David J. [8610-20] S4  
Robertson, John L. [8576-15] S3  
Robertson, Stewart A. [8612-17] S4  
Robey, Ian F. [8574-21] S5  
**Robin, Craig** 8601 Program Committee, 8601 S8 Session Chair, [8601-125] SPTue, [8601-32] S8, [8601-34] S8, [8604-23] S5  
Robin, Thierry [8601-121] SPTue, [8621-32] S7  
Robin, Thierry [8570-13] S3  
Robinson, Alan M. [8565-215] S3  
Robinson, Bryan S. 8610 S3 Session Chair, [8610-2] S1  
Robinson, Holly [8565-48] S4  
Robinson, J. Paul 8587 Program Committee  
Robinson, Michael E. [8565-45] S3  
**Robles, Francisco E.** [8565-3] S1, [8567-43] S8, [8589-8] S2  
**Roblyer, Darren M.** 8578 S6 Session Chair, [8578-15] S3, [8578-17] S3, [8578-96] SPSun  
Roche, Anderson [8624-13] S4  
Roche, Philip J. R. [8597-38] S8  
Rochester, Simon [8636-12] S3  
**Rockwell, Benjamin A.** [8569-25] SPSat  
Roczen, Maurizio [8620-9] S2  
Rodas Verde, María [8628-16] S6  
Rode, Andrei V. 8607 Program Committee, [8607-16] S11, [8607-16] S5  
Rodenburg, Brandon [8635-28] S6, [8635-28] S9  
Röder, Beate [8568-29] S7, [8568-30] S7  
Rodgers, Zachary [8578-115] SPSun  
Rodier, Jean-Francois [8572-26] S5  
Rodin, Aleksey M. [8607-58] SPTue  
Rödl, Claudia [8626-3] S1  
Rodrigues Roland, Mafouana [8622-22] S6  
**Rodrigues, Dario B.** [8584-26] S8, [8584-27] S8  
Rodrigues, J. [8626-75] S2  
Rodrigues, Joana [8626-22] S5  
Rodrigues, Nicolau A. S. [8600-75] SPTue  
Rodrigues, Silvia [8604-22] S5  
Rodríguez, Alejandro [8632-35] S7  
Rodríguez, Braulio [8592-33] S8  
Rodríguez, Carmen E. [8568-23] S6  
Rodríguez, Dania [8587-59] SPMon  
Rodríguez, Gilberto A. [8570-5] S1  
Rodríguez, Jean-Baptiste [8631-35] S7, [8631-53] S19, [8631-72] S13  
Rodríguez, Said RK [8641-65] S13  
Rodríguez, Vincent [8607-22] S7  
Rodríguez-Díaz, Eladio [8565-86] S8  
Rodríguez-Fernández, Jessica [8595-20] S5  
Rodríguez-Juarez, Rocio [8585-26] S5  
**Roe, Anna W.** 8565 S4 Session Chair, [8565-208] S3, 8586 Program Committee, 8586 S2 Session Chair, [8586-9] S2  
Roelkens, Gunther [8627-18] S5, [8627-6] S2, [8629-41] S11, [8631-35] S7, [8631-79] S15, 8633 S3 Session Chair, [8633-28] S9  
Roessler, Blake J. [8577-17] S7  
Rogalsky, Derek [8565-35] S1  
Rogers, David J. 8626 Conference Chair, [8626-20] S5, [8626-36] S8, [8626-73] SPWed, 8628 Program Committee  
**Rogers, Helen L.** [8627-28] S7, [8627-29] S7  
**Rogers, Jeremy D.** [8592-35] S8  
Rogers, John [8571-89] S5  
Rogers, John A. 8598 Conference Chair, [8598-1] S1, 8613 Program Committee  
Rogerson, David [8586-23] S5  
Roh, Young-Geun [8613-4] S1  
Rohling, Robert N. [8581-156] SPMon  
Rohrbach, Daniel J. [8568-12] S3, [8568-36] SPMon, [8568-37] SPMon  
Roides, Richard G. [8602-13] S4  
Roig, Anna [8595-62] S14  
Roig, Enrique [8615-6] S2  
Roitner, Heinz [8581-112] SPSun, [8581-115] SPSun  
Rojec, Brett [8637-6] S1  
Rofe, Daniel J. [8590-13] S2  
**Rollakanti, Kishore Reddy** [8568-31] S7  
**Rolland, Jannick P.** 8573 Program Committee  
Rollings, Mathew [8635-14] S4  
**Rollins, Andrew M.** [8565-205] S2, [8565-31] S8, [8565-41] S3, 8571 Program Committee, [8571-26] S4, [8571-27] S4, [8571-67] S10, 8593 Conference Chair, 8593 S1 Session Chair, 8593 S2 Session Chair, 8593 S3 Session Chair, 8593 S4 Session Chair, 8593 S5 Session Chair, 8593 SPSun Session Chair, [8593-1] S1, [8593-3] S1, [8593-6] S2, [8593-7] S2  
Rollins, Keith 8643 Program Committee  
Rolston, Steven L. [8637-31] S7  
Roman, Cosmin I. [8614-15] S3  
Roman, Manuela [8572-13] S3, [8578-24] S4, [8578-92] SPSun  
Romanenko, Sergii [8585-22] S4  
Romano, Giuseppe [8578-114] SPSun  
Romano, Valerio [8607-47] S13, [8607-47] S6  
Romanos, Georgios [8566-14] S4  
Romanov, Gleb [8636-42] S8  
Romanowski, Marek [8587-21] S3, [8595-26] S7  
Romanyuk, Oleksandr [8625-88] SPWed  
Romeike, Bernd F. M. [8565-186] S4  
**Romeo, Lorenzo** [8631-84] S16  
Römer, Friedhard 8619 S5 Session Chair, [8619-14] S4, [8619-53] S13  
Romero, Edwin [8578-94] SPSun  
**Romero, Orlando S.** [8620-57] S14  
Romero, Pablo M. [8612-7] S2  
Romijn, Elisabeth I. [8588-72] S10  
Rominger, Volker [8603-22] S5, [8603-26] S6  
Rommel, Christina E. [8587-9] S1  
Romoli, Luca [8608-14] S3  
Romolo, Francesco Saverio [8631-85] S16  
Ron, Avihai [8579-31] S7, [8583-6] S2  
**Rong, Haisheng** 8629 Program Committee, 8640 Program Committee, 8640 S7 Session Chair  
Rong, XuZheng [8580-44] SPMon, [8580-45] SPMon  
**Rong, Yaoguang** [8622-51] SPWed  
Rongish, Brenda [8593-19] S5  
Rood, Kyle [8570-11] S3  
**Roop, Ray M.** Symposium Committee  
Roorda, Austin [8567-30] S6, [8567-70] SPSun, [8571-4] S1  
Roosen, Harold H. A. J. [8587-78] SPMon  
Ropers, Claus 8623 S11 Session Chair, [8623-36] S10  
Ropp, Chad [8634-14] S3  
Røren, Thomas [8578-29] S5  
Rorrer, Gregory L. [8598-24] SPSUN  
Ros, Robert [8590-36] SPSUN  
Rosa, Lorenzo [8613-3] S1  
Rose, Brian A. [8627-24] S6  
Rose, Patrick [8637-11] S2  
Rosemann, Nils [8625-80] SPWed, [8629-42] S11  
Rosen, Jennifer E. [8565-76] S6, [8565-86] S8  
Rosen, Mark Alan [8578-14] S3  
Rosenberg, Elizabeth [8578-22] S4  
Rosenberg, Irwin H. [8578-11] S2  
Rosenberg, Mireille [8571-21] S4  
Rosenberger, Albert T. [8636-2] S1  
Rosenberger, Janosch [8607-11] S3, [8607-11] S9  
Rosenbury, Sarah B. [8565-4] S8  
Rosencher, Emmanuel 8631 S16 Session Chair, [8631-64] S12  
Rosenfeld, Arkadi [8607-6] S2, [8607-6] S6  
Rosenthal, Amir [8581-44] S7, [8581-89] SPSun, [8600-8] S2  
Rosete-Aguilar, Martha [8615-48] SPTue  
Roska, Botond [8586-23] S5  
Roskos, Kristina [8615-20] S5  
Rosssbach, Georg [8625-33] S8  
Rossetti, Leone [8580-30] S6  
Rossetto, Olivier [8619-30] S7  
Rossi, Francesca [8565-16] S4, [8567-62] SPSun, [8581-34] S6  
Rossi, Vincent M. [8592-24] S6  
Rössler, Robert [8626-33] S8  
Rossmel, John H. [8576-15] S3  
Rossow, Uwe [8625-72] SPWed  
Rostov, Andrey P. [8601-41] S10  
Rostovtsev, Yuri [8636-41] S8, [8636-49] S10  
Rotari, Eugeniu [8603-3] S10, [8603-3] S2  
Rotermund, Fabian [8599-41] S8  
**Roth, Caleb C.** [8585-27] S5, [8585-29] S5  
Roth, Franziska [8565-31] SPSun  
Roth, Jonathan E. [8628-19] S7  
Roth, Martin Matthias [8604-26] S6  
Roth, Stephan 8607 Conference Chair, 8607 S11 Session Chair  
Rothardt, Manfred [8577-18] S7, [8615-5] S1  
Rothen-Rutishauser, Barbara [8595-59] S13  
Rothhardt, Carolin [8601-28] S7  
Rothhardt, Jan [8601-48] S12  
Rothardt, Manfred [8611-16] S4  
**Rothman, Johan** [8621-14] S3, [8631-50] S10  
Rotter, Thomas J. [8606-12] S4, [8606-13] S4, [8620-57] S14  
Rottwitt, Karsten [8601-53] S13, [8604-57] SPTue  
Roudas, Ioannis 8647 Program Committee  
Rouet, Jean-Michel [8574-16] S4  
Rouified, Mohamed-Said [8628-2] S1, [8628-2] S10  
Rouillard, Yves [8631-95] S18  
Rouleau, Christopher M. [8609-10] S3, [8609-15] S4, [8609-16] S4  
Rouse, Andrew R. [8573-7] S2  
Roussakis, Emmanuel [8565-177] S3  
Rousseau-Cyr, Olivier [8600-64] S15  
Roussel, Gérard [8567-75] SPSun  
Roux, Filippus S. [8637-25] S5, [8637-25] S8, [8637-42] S2, [8637-46] SPWed  
Roux, Stéphane [8571-51] S8, [8574-8] S2  
Rouyer, Claude [8602-15] S4  
Rovati, Luigi 8567 Program Committee, 8567 S1 Session Chair, [8567-46] S8  
Rowe, Steven M. [8565-109] S4, [8565-120] S6, [8565-121] S6, [8575-5] S2  
**Rowe, T. Scott** [8583-18] S4  
Rowen, Eitan E. [8601-54] S13  
Rowland, Kristopher J. [8570-15] S4, [8570-16] S4, [8600-72] SPTue  
Rowlands, Christopher J. [8611-7] S2  
Roy Chowdhury, Dibakar [8623-19] S5  
**Roy Mahapatra, D.** [8570-28] SPSun, [8598-25] SPSUN  
Roy, Debjit [8573-1] S1  
Roy, Dominik [8634-11] S2  
Roy, Hemant K. [8592-38] S9  
Roy, Julien [8600-57] S14  
Roy, Vincent [8601-103] SPTue  
Royer, François 8627 Program Committee, [8627-11] S3  
Royon, Arnaud [8589-49] S11, [8607-22] S7, [8607-25] S7, [8611-29] S6, [8611-34] S7, [8613-22] S5, [8632-41] S9  
Rozhok, Sergey [8615-45] S10  
**Rozinek, Sarah C.** [8579-14] S3  
Rubin, Deborah C. [8596-11] S3  
Rubins, Uldis [8574-19] S4  
**Rubinsztein-Dunlop, Halina** 8637 Program Committee, 8637 S8 Session Chair, [8637-4] S1  
Rubio Noriega, Ruth E. [8627-43] SPWed  
Rubtsova, Svetlana A. [8594-21] S6  
Ruchert, Clemens [8604-11] S3  
Rückerl, Florian [8586-26] S5  
Rudd, Joe [8599-24] S5  
Rudin, Markus [8583-3] S1  
Rudney, Joel [8566-7] S2  
Rudolph, Jörg [8623-10] S3  
Rudy, Alexander R. [8617-8] S2  
**Rudy, Charles W.** [8604-19] S5  
Ruebenach, Olaf [8602-17] S4, [8605-8] S2  
Rueck, Angelika C. 8588 Program Committee, 8588 S4 Session Chair, [8588-31] S5  
Ruers, Theo J. M. [8581-1] S1  
Ruettinger, Steffen [8588-36] S5, [8590-15] S4, [8590-36] SPSUN, [8596-17] S5  
Ruggeri, Alessandro [8631-49] S9  
Ruggeri, Marco [8567-19] S4  
Rugonyi, Sandra [8593-4] S1  
Rui, Zhu [8576-29] SPSun, [8621-59] SPWed  
Ruiz de Lara, Leonardo [8603-12] S4  
Ruiz Valesco, Carmen [8587-44] S7  
Ruiz, Blanca [8622-10] S3, [8624-46] S11  
Ruiz, Myke [8640-61] S13  
Ruiz-González, Rubén [8596-9] S3  
Rukosuev, Alexey [8600-2] S1  
Rukonen, Osvaldas [8567-63] SPSun  
**Rulison, Aaron J.** [8590-17] S4  
**Ruminski, Daniel** [8571-20] S3, [8571-66] S10  
Rumpf, Raymond C. 8613 Conference Chair  
Rund, Laurie [8584-28] S8  
Runge, Keith [8632-55] S12  
Runnova, Anastasija E. [8580-49] SPMon  
Runyan, Raymond B. [8580-51] SPMon  
Ruoslahti, Erkki [8594-8] S3  
Ruppert, Claudia [8623-47] S12  
Ruppik, Stefan [8601-110] SPTue  
Rus, Bedrich [8600-6] S2, [8602-7] S2  
Ruske, Florian [8626-33] S8  
Russ, Detlef M. [8565-60] S2  
Russ, Simone [8608-13] S3  
Russell, N. [8628-16] S6  
Russell, Philip St.J. [8632-19] S5  
Ruther, Patrick [8586-13] S2, [8586-4] S1  
Rutkis, Martins A. [8622-27] S7, [8622-52] SPWed  
Ruzzene, Massimo 8632 S8 Session Chair, [8632-29] S7  
Ryan, Peter J. [8617-4] S1  
Ryan, Thomas 8584 Conference Chair, 8584 S1 Session Chair, [8584-23] S7, [8584-25] S7  
Ryasyanskiy, Aleksandr [8599-52] S10



# Index of Authors, Chairs, and Committee Members

- Ryba, Tracey [8605-37] SPTue  
Ryckboer, Eva [8627-6] S2, [8633-28] S9  
Ryckman, Judson D. [8570-5] S1, [8597-1] S1  
Ryczko, K. [8631-95] S18  
Ryckowski, Piotr [8604-44] SPTue  
Rydberg, Sara [8601-24] S6  
Rydberg, Skyler [8613-46] SPTue  
**Rylander, Christopher G.** [8576-15] S3, [8578-94] SPSun  
Rylander, Marissa Nicole 8579 Program Committee  
Rylyakov, Alexander [8630-10] S3  
Ryou, Jae-Hyun [8625-42] S9, [8625-50] S11, [8640-22] S5, [8640-48] S11  
Rytz, Daniel [8599-50] S10, [8621-64] SPWed  
Ryu, Gweon Young [8641-13] SPWed  
Ryu, Han-Cheol [8604-51] SPTue, [8624-6] S3  
Ryu, HeeJu [8596-26] S8  
Ryu, Kwanghyun [8607-54] SPTue  
Ryu, Sang Hun [8581-162] SPMon  
Ryu, Seung Eon [8585-35] S6  
Ryu, SoHo [8572-16] S4  
Ryu, Sukyoung [8565-21] S5  
Ryzhii, Victor [8624-37] S9
- 
- S**
- Saad, Mohammed** [8601-63] S15  
Saadany, Bassam [8616-13] S3, [8616-23] S5  
**Saager, Rolf B.** [8565-189] SPSun, [8565-20] S5, [8578-67] S11, [8587-34] S5  
Saal, David [8565-60] S2  
**Saari, Heikki K.** [8614-7] S2  
Saaski, Eric W. 8570 Program Committee  
Saba, Anna R. [8595-37] S9  
Saber, Aabed S. [8615-51] SPTue  
**Sabino, Caetano** [8569-4] S1  
Sabry, Yasser Mohammed [8616-13] S3, [8616-23] S5  
Saby, Julien [8601-38] S9, [8601-59] S14  
Sacconi, Leonardo [8588-47] S7, [8588-48] S8  
Sachdev, Robert N. S. [8565-200] S5  
Sacher, Wesley D. [8600-19] S5, [8645-4] S3  
Sackett, Dan L. [8596-32] S9  
Sackrow, Marcus [8573-26] SPSun, [8590-15] S4, [8590-36] SPSUN  
Sacks, Justin M. [8565-24] S6, [8578-71] S12, [8587-52] S8  
Sadana, Devendra K. [8626-20] S5, [8631-33] S7  
Sadasiyama, Jagannath [8587-38] S6  
Sadasiyan, Santosh [8581-7] S1  
Sadda, Srinivas R. [8567-24] S5  
Sadeghi, Seyed M. [8570-20] S5, [8634-17] S4, [8634-18] S4  
Sadi, Toufik 8619 S7 Session Chair, [8619-25] S6  
Sadofev, Sergey [8624-42] S10  
Sadofev, Sergey [8619-34] S8  
Sadovoy, Anton V. [8598-8] S3  
Sadowski, Bryan [8599-18] S4  
**Sadr, Alireza** [8566-2] S1  
Sadwick, Laurence P. 8624 Conference Chair, 8624 S10 Session Chair, 8624 S11 Session Chair, 8624 S2 Session Chair, 8624 S3 Session Chair, 8624 S4 Session Chair, 8624 S5 Session Chair, 8624 S6 Session Chair, 8624 S7 Session Chair, 8624 S8 Session Chair, 8624 S9 Session Chair  
Saeedkia, Daryoosh [8624-11] S4  
Safabakhsh, Reza [8574-29] SPSun  
Safaisini, Rashid [8639-32] S8  
Safaisini, Rashid [8639-28] S7  
Safavi-Naeini, Safieddin [8624-11] S4, [8624-7] S3  
Safran, Avinoam [8615-6] S2  
Saggese, Steve [8578-67] S11  
Saghati, Antonio [8605-28] S6  
Sagher, Oren [8568-18] S4, [8588-21] S3  
Sagir, Tugba [8568-33] SPMon  
Saglmyurek, Erhan [8635-22] S6  
Saglmbeni, Filippo [8637-49] S10  
Sagnes, Isabelle [8606-28] S8, [8619-5] S1  
Saha, Anushree [8572-35] S7, [8577-12] S6  
Saha, Ardhendu [8604-32] S7  
Saha, Ratan Kumar [8581-138] SPMon  
Sahakian, Alan V. 8631 Program Committee  
Sahel, José-Alain [8615-6] S2  
Sahin, Davut Erdem [8612-19] S4  
Sahin, Döndü [8635-46] S13  
Sailor, Michael J. 8570 Program Committee, [8594-8] S3  
Sain, Sasan [8565-103] S2  
Saini, Simarjeet S. [8623-62] S15  
Saint-Cyr, Michel [8618-5] S11, [8618-5] S2  
**Saito, Marcia T.** [8572-45] S9  
Saito, Shinji [8625-49] S11  
Saito, Yuji [8636-35] S7  
Saitoh, Daizoh [8581-8] S1  
Saitoh, Kunimasa [8601-64] SPTue, 8647 Program Committee, [8647-14] S6  
Sajer, Jean-Michel [8602-15] S4  
Sajti, Laszlo Csaba [8609-13] S3  
Sakad?ic, Sava [8565-177] S3, [8588-45] S7  
Sakaguchi, Takahiro [8633-33] S10, [8639-14] S4  
Sakakibara, Youichi [8571-10] S2  
**Sakakura, Masaaki** [8607-31] S9  
Sakamoto, Shinichi [8601-94] SPTue  
Sakamoto, Taiji 8647 S4 Session Chair, [8647-9] S5  
Sakamoto, Takeshi [8608-4] S1, [8608-8] S2  
Sakamoto, Tatsunori [8565-63] S3  
Sakamoto, Yuji [8644-13] S4, [8644-37] SPWed, [8644-38] SPWed  
Sakanyan, Vehary A. [8568-13] S3  
**Sakat, Emilie** [8631-74] S14  
Sakr, Salam [8625-67] S14  
Sakri, A. [8631-78] S15  
Sakurai, Ryo 8642 Program Committee, 8643 Program Committee  
Salahi, Sara [8584-26] S8  
Salama, Islam A. [8607-18] S12, [8607-18] S6, [8607-24] S7  
Salamero, Jean [8589-33] S7  
Salapatas, Alex [8629-5] S1  
Salazar, Arnoldo [8619-30] S7  
**Salceda-Delgado, Guillermo** [8621-20] S4  
Salcudean, Septimiu E. [8581-156] SPMon  
Saldana Cercos, Silvia [8646-2] S2  
Saldivar, Salvador [8572-38] S7  
Sale, Terry [8639-19] S5  
Saleem, Muhammad Rizwan [8613-11] S3  
Saleh, Khalidoun [8624-21] S6  
Salehi, Hamideh [8594-15] S4  
Salgaonkar, Vasant A. [8584-29] S8, [8584-30] S9  
Salih, Mohammed [8585-8] S1  
Salin, François [8601-38] S9, [8601-59] S14  
Saliy, Igor N. [8596-39] SPMon  
Salmi, Joel [8620-55] S14  
Salmon, Joseph Thaddeus [8602-2] S1  
Salomoon, Bekheit [8565-116] S5, [8565-37] S1  
Salter, C. L. [8634-2] S1  
Salter, Patrick [8611-36] S8, [8613-9] S2  
Saltyte, Zita [8626-37] S9  
Salvadori, Simone [8576-30] S5  
Salvatore, Stefano [8623-16] S5  
Salzmann, Joel [8615-6] S2  
Samarkin, Vadim [8600-2] S1  
Samarov, Daniel V. [8618-6] S11, [8618-6] S2  
Samatham, Ravikant V. [8592-30] S7  
Sam-Giao, Diane [8625-19] S5  
**Samkoe, Kimberley S.** [8568-45] SPMon, [8578-68] S11, [8584-14] S5  
Samora, Sally [8635-20] S5  
Sampaio, Brunna P. A. [8569-15] S4, [8569-16] S4  
Sampaio, Fernando J. P. [8569-21] SPSat, [8569-24] SPSat, [8569-26] SPSat  
Sampathkumaran, Uma [8581-133] SPSun  
**Sampson, David D.** 8565 Program Committee, [8565-10] S3, [8565-108] S3, [8571-56] S9, [8571-68] S11, [8571-73] S11, [8579-24] S5, [8580-29] S6, [8583-19] S4  
Samuel, Edmund P. [8604-45] SPTue  
**Samuel, Ifor D. W.** [8607-1] S1, [8607-1] S5  
Samuelson, Lars [8641-59] S13  
San Agustín, Jovenal [8593-26] SPSun  
Sanabria, Jorge [8608-14] S3  
Sanada, Akio [8632-61] S13  
Sánchez-Morales, María Eugenia [8615-48] SPTue  
Sanchez-Somolinos, Carlos [8642-3] S1  
Sandalphon, . [8606-3] S1  
Sandana, Vinod Eric 8626 S10 Session Chair  
Sandana, Vinod Eric [8626-2] S1  
Sandell, Julia [8568-23] S6, [8568-27] S7  
Sanders, Barry C. [8635-42] S12  
Sanders, Charlotte E. [8619-42] S10  
Sanders, Claire K. [8592-21] S6  
Sanders, Nicolai [8604-27] S6  
Sandfort, Christian [8601-91] SPTue  
Sandkuij, Daaf [8588-62] S9  
Sandner, Thilo [8616-45] SPTue, [8616-5] S2  
Sanfilippo, Delfo D. [8629-45] SPWed, [8631-47] S9  
Sang, Mei [8599-66] SPTue, [8601-70] SPTue, [8601-74] SPTue, [8601-92] SPTue, [8624-31] S8, [8624-34] S8, [8624-49] S4, [8624-9] S3  
Sänger, Martin [8565-69] S4  
**Sanghera, Jashinder S.** [8599-18] S4, [8601-108] SPTue, [8621-36] S7  
Sangiorgi, Bruno Braga [8569-22] SPSat  
Sangla, Damien [8601-38] S9, [8601-59] S14  
Sangregorio, Claudio [8595-37] S9  
Sanjines, Rosendo [8635-46] S13  
Sanna, Rousu [8597-2] S1  
Sanner, Nicolas [8611-38] S8  
Sannibale, Virginio [8610-15] S3  
Sano, Akihide [8646-24] S8, [8646-24] S9, 8647 Program Committee  
Sano, Hayato [8633-33] S10, [8639-14] S4  
Sano, Rubens S. [8577-14] S6  
Santacroce, Maria V. [8631-82] S16  
Santamoto, A. [8628-16] S6  
Santana, Cristiano L. [8569-15] S4, [8569-16] S4  
Santangelo, Philip J. [8590-42] SPSUN  
Santarelli, Giorgio [8631-2] S1  
Santhanam, Parthiban [8638-6] S2  
Santibáñez, Felipe [8590-22] S6  
Santori, Charles M. 8635 Conference Chair, 8635 S11 Session Chair, 8635 S3 Session Chair, [8635-13] S4, [8635-39] S12  
Santoro, Ylenia [8578-15] S3  
Santos, Arturo [8615-6] S2  
Santos, Fabiana [8569-15] S4, [8569-16] S4  
Santos, Luis [8637-26] S5, [8637-26] S8  
Santos, Marcos A. V. [8569-24] SPSat, [8569-26] SPSat  
Santos, Michael B. [8640-25] S6  
Santos, Priscila [8571-96] SPMon  
Santospirito, S.P. [8611-59] SPTue  
Santra, Swadeshmukul [8596-12] S2, [8596-12] S4  
Santschi, Christian [8572-50] S9  
Saracco, Matthieu J. [8601-101] SPTue, [8601-102] SPTue  
**Saraceno, Clara J.** [8601-25] S7  
Sarakinis, Andreas [8644-19] S5  
**Sarangan, Andrew M.** [8570-17] S4  
Sarapukdee, Pongsak [8575-30] S1, [8575-30] S7, [8575-8] S2  
Saratoon, Teedah [8581-30] S5  
Sardar, Dhiraj Kumar [8594-12] S4, [8641-21] S4, [8641-52] S11  
Sarder, Pinaki [8615-33] S7  
**Sariciftci, Niyazi Serdar** 8622 Program Committee  
Sarimollaoglu, Mustafa [8565-87] S8, [8581-164] SPMon, [8581-170] SPMon, [8581-171] SPMon, [8581-172] SPMon, [8581-3] S1, [8581-54] S8, [8581-55] S8, [8581-75] S11, [8582-19] S5  
Sarin, Neeru [8567-35] S7  
Sarioglu, Hakan [8595-59] S13  
Sarkhosh, Niusha [8590-2] S3, [8590-3] S3, [8611-22] S5  
Sarkisov, Sergey S. [8570-23] S6, [8622-47] S11  
Sarmani, Abdul Rahman [8601-63] S15  
Sarmiento, Azael [8596-7] S2  
Sarp, Ayse S. [8566-22] SPSun  
Sartorius, Bernd [8624-20] S6  
Sarunic, Marinko V. [8571-33] S5, [8571-62] S10  
Sarzalga, Robert P. [8639-25] S7  
Sasagawa, Takao [8623-7] S3  
Sasaki, Keiji [8599-38] S7, [8632-61] S13  
Sasaki, Masahide [8619-1] S1  
Sasaki, Nagisa [8575-33] SPSun  
Sasaki, Takashi [8617-3] S1  
Sasaki, Takeshi  
Sasaki, Yusuke [8647-14] S6  
Sasakura, Hirokata [8619-1] S1  
Sasamori, Takayuki [8642-5] S2  
Sasikumar, Harish [8629-16] S4  
Sass, Anne [8638-11] S3  
**Sassaroli, Angelo** [8578-11] S2, [8578-12] S2, [8578-22] S4, [8578-44] S8, [8578-6] S1, [8583-11] S3  
Sato, Akihiro [8590-8] S2  
Sato, Erika Tiemi [8577-16] S7  
Sato, Hidetoshi [8587-24] S4, [8587-69] SPMon, [8588-12] S2, [8591-10] S3  
Sato, Ken-ichi 8645 Program Committee  
Sato, Kunihiko [8647-11] S5  
Sato, Manabu [8578-110] SPSun  
**Sato, Shunichi** [8565-170] S1, [8578-110] SPSun, [8581-102] SPSun, [8581-62] S9, [8581-8] S1  
Sato, Shuya [8588-6] S1  
Sato, Tadataka [8607-39] S11  
Sato, Tomonari [8635-39] S12  
Sato, Tomoyuki [8622-11] S3  
Satou, Akira [8624-37] S9  
Satter, Md. Mahbub [8625-42] S9, [8625-50] S11



# Index of Authors, Chairs, and Committee Members

- Sattmann, Harald [8567-15] S3  
Sauer, Markus 8587 Program  
Committee, 8590 Program  
Committee  
Sauk, Jenny S. [8571-21] S4, [8575-12]  
S3, [8575-27] S6, [8575-6] S2  
Saunders, Christobel M. [8571-68]  
S11  
Saunter, Christopher D. [8589-32] S7,  
[8593-2] S1  
Saupe, Ray [8616-30] S6  
Sauze, Roland [8578-64] S11  
Savage-Leuchs, Matthias P. [8601-36]  
S9  
Savatie, Julien [8589-45] S10  
Savchenkov, Anatoliy A. [8600-18] S5,  
[8600-51] S6  
Savchuk, Oleksandr A. [8594-6] S2  
Savitsky, Alexander P. [8590-1] S3,  
[8590-39] SPSUN  
Sawa, Masanori [8587-69] SPMon  
**Sawaki, Nobuhiko** [8625-17] S4  
Sawicka, Magdalena [8602-7] S2  
Sawicka, Marta [8625-35] S8, [8625-  
77] SPWed  
Sawosz, Piotr [8583-21] S3, [8583-21]  
S5, [8583-5] S2  
**Sawruk, Nicholas W.** [8599-24] S5  
Saxena, Ravi [8590-17] S4  
Saxey, D. W. [8625-92] S1  
Say, Jana M. [8635-14] S4  
Sayed El-Ahl, Mohammed Hamza  
[8572-2] S1  
**Sayegh, Samir I.** [8567-66] SPSun,  
[8567-69] SPSun, [8567-76] SPSun,  
[8571-124] SPMon, [8591-30]  
SPWed  
Sayinc, Hakan [8601-26] S7, [8601-30]  
S8, [8604-26] S6, [8609-13] S3  
Sayre, Daniel B. [8602-11] S3  
Sazanovich, Igor V. [8588-115] SPSun  
Sbarbati, Andrea [8595-37] S9  
Sberveglieri, Giorgio [8626-21] S5  
Scaggis, Michael J. 8600 S6 Session  
Chair  
Scaggis, Michael J. 8600 Program  
Committee, [8600-27] S7  
Scalari, Giacomo [8623-31] S7, [8623-  
57] S15  
Scalora, Michael [8632-65] S14  
Scamarcio, Gaetano [8607-23] S7,  
[8631-32] S6, [8631-4] S1, [8631-82]  
S16, [8631-88] S18  
Scandeng, Miriam [8594-8] S3  
Scarcella, Carmelo [8631-49] S9  
Scarpignato, Gerardo C. [8601-76]  
SPTue  
**Scarpulla, Michael A.** 8620 Program  
Committee, 8620 S6 Session Chair,  
[8620-42] S10  
Schaaf, Hansgeorg [8572-31] S6  
Schackert, Gabriele [8565-183] S4,  
[8565-186] S4  
Schade, Lukas [8625-48] S11  
Schaefer, Arne [8623-10] S3  
Schaefer, Dagmar 8603 S6 Session  
Chair, [8608-7] S2, [8613-32] S7  
Schaefer, Lutz [8589-10] S2  
**Schaevitz, Rebecca K.** [8627-26] S6  
Schäfer, Peter [8626-22] S5  
**Schäfer, Rachel** [8574-21] S5, [8587-  
1] S1  
Schäffer, Christian G. [8646-15] S5  
**Schaffer, Christopher B.** 8611  
Program Committee  
Schäffler, Martin [8595-59] S13  
Schaffler, Mitchell [8590-33] S9  
Schanne-Klein, Marie-Claire [8587-  
46] S7, [8588-63] S9, [8593-25]  
SPSun, [8617-14] S3, [8622-24] S6  
Schanze, Kirk S. [8622-18] S4  
Schanzer, Sabine [8580-18] S4  
Schares, Richard Ludwig [8603-16]  
S4  
Scharf, Toralf [8613-45] SPTue, [8613-  
46] SPTue, [8620-72] SPWed,  
[8642-18] S6  
**Schartner, Erik P.** [8595-35] S8  
Schätzle, Jérôme [8613-40] S8  
Schiedler, Uwe [8595-55] S13  
Scheer, Sarah [8615-6] S2  
Scheffler, Rick [8584-5] S2  
Scheffel, Andy [8621-41] SPWed  
Scheidung, Sebastian [8613-18] S4  
Scheiman, David [8620-30] S8  
Scheit, Christian [8607-48] S13,  
[8607-48] S6  
Schejter, Adi [8567-10] S2  
**Schell, Andreas W.** [8635-15] S4  
Schell, Martin [8624-20] S6  
Schell, Florian [8566-13] S3, [8566-  
15] S4  
Scheller, Maik [8606-4] S2  
Schellhorn, Martin [8604-18] S4  
Schenk, Geert J. [8565-178] S3  
**Schenk, Harald** Symposium Chair,  
[8613-27] S6, [8614-13] S3, 8616  
Program Committee, 8616 S4  
Session Chair, [8616-19] S5, [8616-  
5] S2, 8618 S3 Session Chair  
Schenning, Albert P.H.J. [8642-22] S7,  
[8642-3] S1  
Schepler, Kenneth L. [8599-11] S3,  
[8599-12] S3, 8604 Program  
Committee, 8604 S6 Session Chair,  
[8604-31] S7, [8604-40] S8  
Scherer, Axel 8632 Conference Chair,  
8632 S4 Session Chair, [8632-11]  
S3  
Scherer, Manuel [8637-26] S5, [8637-  
26] S8  
Scherer, Torsten [8608-5] S1, [8608-6]  
S1  
Scherf, Ulrich [8607-1] S1, [8607-1] S5  
Scherman, Daniel [8626-26] S6  
Scherr, Douglas S. [8565-37] S1  
Scheuer, Jacob 8636 Program  
Committee, [8636-23] S5  
**Schiabel, Homero** [8567-55] SPSun  
Schick, Bernhard [8565-69] S4  
Schie, Iwan W. [8587-25] S4  
Schilcher, Kurt [8587-45] S7  
Schille, Joerg [8603-20] S5, [8603-36]  
SPTue, [8607-61] S9  
Schilling, Christian [8640-49] S11  
Schilling, Ryan [8613-55] SPTue  
Schimek, Mitja [8603-18] S5  
Schineller, Bernd [8641-47] S10,  
[8641-9] S2  
Schittny, Robert [8613-14] S4  
Schlachter, Simon [8575-12] S3  
Schlazer, Christina [8565-192] SPSun  
Schlegel, Andrea A. [8595-41] S9  
Schleife, Andre [8626-3] S1  
Schleife, Jeanette [8640-62] S14  
Schleitzer, Yvonne [8616-11] S3  
Schlessler, Raoul [8625-91] S14,  
[8641-36] S8  
Schleunig, David A. [8605-9] S2  
Schliwa, Andrei [8634-29] S2  
Schlosser, Peter J. [8606-11] S4  
Schlothauer, Jan C. [8568-29] S7,  
[8568-30] S7  
Schmetterer, Leopold [8571-41] S7  
Schmid, Jens 8627 Program  
Committee  
Schmid, Marc C. [8607-12] S3, [8607-  
12] S9, [8607-53] SPTue  
Schmid, Silvan [8600-26] S6  
Schmidt, Bruno E. [8623-24] S6  
Schmidt, Frank [8620-54] S11, [8620-  
54] S13, 8627 Program Committee,  
[8627-37] S9, [8641-11] S3, [8642-4]  
S2  
Schmidt, Gordon [8625-21] S5  
Schmidt, Holger 8629 Program  
Committee  
Schmidt, Karsten [8599-14] S3  
Schmidt, Lucas [8615-30] S7  
**Schmidt, Michael** [8572-31] S6, 8603  
Program Committee, [8603-24] S5  
Schmidt, Oliver G. 8570 Program  
Committee  
Schmidt, Ronny [8605-28] S6  
Schmidt, Shon A. [8629-8] S2  
**Schmidt, Timothy W.** [8620-14] S4  
Schmidt, Tobias [8565-57] S1  
Schmidt, Torsten [8603-28] S7, [8605-  
26] S6  
Schmidt-Erfurth, Ursula [8567-12] S3,  
[8567-39] S7  
Schmidtke, Hans-Juergen 8646  
Program Committee  
Schmidtke, Juergen [8642-8] S3  
Schmitt, Heather [8569-14] S4  
Schmitt, Joe [8572-10] S2  
Schmitt, Klemens [8585-6] S1  
Schmitt, Michael [8565-185] S4  
Schmitt, Robert [8618-19] S6  
Schmitz, Christoph Hubert [8578-65]  
S11  
Schmitz, Katja [8615-39] S9  
Schmocker, Andreas [8592-49]  
SPSun  
Schmogrow, Rene [8600-9] S3, [8613-  
31] S7  
**Schmoll, Tilman** [8567-21] S4  
Schnabel, Christian [8565-183] S4  
Schnall, Mitchell D. [8578-14] S3  
Schneck, Nathan [8608-22] S5  
Schneeberger, Stefan [8607-47] S13,  
[8607-47] S6  
Schneeloch, James [8635-27] S7  
Schneider, Christian [8635-10] S3  
Schneider, Eduardo O. [8647-18] S7  
Schneider, Garrett J. [8624-19] S5  
Schneider, Marc 8595 S4 Session  
Chair, [8595-19] S5  
Schneider, Stephan [8605-16] S4  
Schneider, Thomas [8595-13] S3  
Schneider, Thomas [8636-53] S11  
Schneider, Till [8603-13] S4  
Schnekenburger, Jürgen [8587-9] S1  
Schnitzer, Mark J. 8575 Program  
Committee, [8640-35] S8  
Schnitzieler, Claus [8599-42] S8  
Schöberl, Michael [8616-43] S9  
Schoellner, Dirk [8630-2] S1  
**Schoenfeld, Winston Vaughan** 8613  
Conference Chair, 8613 S5 Session  
Chair, [8626-62] SPWed  
Schoenlein, Robert W. [8623-7] S3  
**Schoenly, Joshua E.** [8566-14] S4  
Schöffel, Markus [8595-28] S7  
Schöll, Jon [8621-13] S3, [8624-17] S5  
Scholz, Ferdinand [8625-53] S12  
Scholz, Matthias [8604-1] S1  
Scholz, Thomas [8565-27] S7, [8578-  
61] S10  
Schomay, Theodore E. [8585-30] S5  
Schönau, Thomas [8588-33] S5,  
[8590-15] S4, [8590-25] S7, [8590-  
36] SPSUN, [8601-93] SPTue,  
[8604-8] S2  
Schönenberger, Christian [8623-31]  
S7  
Schoonover, Robert W. [8581-179]  
SPMon  
Schotland, John C. [8578-35] S6  
**Schötz, Gerhard** [8601-15] S4, [8601-  
15] S9  
Schow, Clint L. [8630-10] S3  
Schowalter, Leo J. [8641-37] S8  
Schowalter, Steven J. [8600-14] S4  
Schreiber, Peter [8643-10] S2  
Schreiber, Robert [8595-20] S5  
Schreiber, Thomas [8601-100] SPTue,  
[8601-104] SPTue, [8601-27] S7,  
[8616-21] S5  
Schreiner, Ruediger [8641-9] S2  
Schreiter, Cathleen [8565-69] S4  
Schrenk, Werner [8631-20] S17,  
[8640-43] S10, [8640-44] S10  
**Schriber, Cinia** [8601-25] S7  
Schriempf, J. Thomas [8601-40] S10  
**Schriever, Kenneth E.** [8607-43] S12  
Schröder, Henning [8622-8] S2,  
8630 Program Committee, 8630  
S5 Session Chair, [8630-35] S9,  
[8630-5] S1  
Schröder, Tim [8635-45] S13  
Schroetzelmaier, Florian [8565-60] S2  
Schröter, Siegmund [8601-20] S5  
Schubert, Colja [8646-1] S1  
**Schubert, E. Fred** 8641 Program  
Committee, 8641 S8 Session Chair,  
[8641-1] S1, [8641-57] S12  
Schubert, Robin [8589-22] S5  
Schubert, Ulrich [8615-15] S4  
Schubert, Ute [8608-27] S13, [8608-  
27] S6  
Schubert, William H. [8637-24] S5,  
[8637-24] S8  
**Schuck, P. James** 8609 Program  
Committee, [8627-27] S7  
Schuckman, Amanda E. [8607-18]  
S12, [8607-18] S6  
**Schuele, Georg** 8567 Program  
Committee, 8567 S6 Session Chair,  
[8567-7] S2  
Schueller, Verena J. [8595-50] S11  
Schuh, Dieter [8623-57] S15  
Schulein, Robert T. [8610-16] S4  
Schuler, Gerhard [8587-22] S4  
Schulte, Frank [8641-47] S10, [8641-9]  
S2  
Schultz, Emmanuelle [8572-39] S8  
Schulz, Olaf [8590-26] S7, [8590-36]  
SPSun  
Schulz, Wolfgang [8608-13] S3  
Schulze, Christian [8600-35] S8,  
[8601-20] S5, [8637-41] S10, [8637-  
43] S10  
Schulze, Haike [8605-11] S3  
Schulze, Marcel [8603-5] S10, [8603-  
5] S2  
Schulze, Tim Ferdinand [8620-14] S4  
Schulz-Hildebrandt, Hinnerk [8571-  
118] SPMon  
Schum, Tom [8599-23] S5  
Schumacher, Christoph M. [8595-  
41] S9  
Schumacher, Stefan [8623-13] S4  
Schuman, Joel S. [8567-71] SPSun  
Schummers, James [8588-102]  
SPSun  
**Schunemann, Peter G.** 8604  
Program Committee, 8604 S7  
Session Chair, 8604 S8 Session  
Chair, [8604-14] S4, [8604-31] S7  
Schuppang, Josephine [8634-11] S2,  
[8634-21] S5  
Schuster, Dietwald [8589-10] S2  
Schuster, Kay [8577-18] S7, [8601-15]  
S4, [8601-15] S9, [8615-5] S1,  
[8621-26] S5  
Schuster, Kurt J. [8569-25] SPSat,  
[8569-7] S2, [8579-39] S3  
Schütt, Casey [8599-15] S3  
Schütte, Julia [8615-10] S3  
Schütze, Christopher [8567-12] S3  
Schwab, Peter [8578-2] S1  
Schwab, Yannick [8622-22] S6  
Schwagmann, Andre [8619-3] S1  
Schwallier, Patrick [8607-53] SPTue  
Schwanke, Christoph [8620-54] S11,  
[8620-54] S13  
Schwartz, Daniel [8567-1] S1  
Schwartz, Osip [8637-19] S4  
Schwartz, Sylvain [8636-22] S5  
Schwarz, Benedikt [8631-20] S17  
Schwarz, Richard A. [8565-85] S8  
Schwarz, Thomas [8606-16] S5  
**Schwarz, Ulrich T.** 8586 S1 Session  
Chair, [8586-13] S2, [8586-4] S1,  
[8606-10] S3, [8607-38] S11, [8613-  
40] S8, 8625 Program Committee,  
[8625-38] S8, [8625-48] S11,  
[8640-16] S4  
Schwarzenberg, Markus [8616-5] S2  
Schwarzer, Roland [8588-30] S4  
Schwärzle, Michael [8586-13] S2,  
[8586-4] S1  
**Schwefel, Harald G.** [8600-49] S12  
Schweinsberger, Gino R. [8565-4] S8  
Schweitzer, Hagen [8616-26] S6

# Index of Authors, Chairs, and Committee Members

- Schwenke, Andreas [8609-13] S3  
Schwertfeger, Sven [8640-60] S13  
Schwind, Sascha [8603-20] S5  
Schwob, Catherine [8631-69] S13  
Schwuchow, Anka [8601-23] S6,  
[8621-26] S5, [8621-41] SPWed  
Sciancalepore, Corrado [8633-2] S1,  
[8639-7] S3  
Scintilla, Leonardo Daniele [8603-23]  
S5, [8603-29] S7  
Scott, Ernest L. [8565-194] S1  
Scott, J. Nathan [8596-34] SPMon,  
[8622-23] S6  
Scott, Mike [8599-54] S10  
Scott, Serena J. [8584-34] S9  
Scott, Serena J. [8584-30] S9  
Scranton, Gregg [8632-13] S3  
Scrymgeour, David A. [8613-37] S8,  
[8613-38] S8  
Searles, T. [8621-45] SPWed  
Seassal, Christian [8620-15] S4,  
[8633-2] S1, [8639-7] S3  
Sebag, Jerry 8567 Program  
Committee, 8567 S6 Session Chair,  
[8567-6] S1  
Sebastian, Juergen [8605-11] S3  
Seddighian, Pegah [8630-23] S6  
**Seddon, Angela B.** 8576 Program  
Committee, [8576-34] S5  
Sederberg, Matthew S. [8623-53] S14  
Sedhain, Ashok [8621-25] S5  
Sedky, Sherif [8616-22] S5  
Sedlmeir, Florian [8600-49] S12  
Sedmera, David 8593 Program  
Committee  
See, William A. [8581-91] SPSun  
Seeber, Wolfgang [8626-27] S6  
Seeliger, Erdmann [8578-62] S10  
Seemans, Rolf [8618-9] S3, [8618-9]  
S4  
Seeton, Roger [8581-180] SPMon,  
[8581-181] SPMon  
Sefler, George A. [8645-24] SPWed  
Sefunc, Mustafa Akin [8627-12] S3  
**SeGall, Marc** [8644-4] S1, [8644-8]  
S2  
Segaud, Roselyne [8612-11] S3  
Segref, Armin [8605-1] S1, [8605-10]  
S2  
**Seibel, Eric J.** [8566-21] SPSun,  
[8566-3] S1, 8573 Program  
Committee, [8575-9] S2, [8576-20]  
S4, [8576-21] S4, [8583-15] S4,  
[8592-16] S5, [8592-23] S6  
Seichter, Felicia [8570-27] SPSun  
**Seidel, David J.** [8600-18] S5, [8600-  
51] S6  
Seidel, Helmut [8611-5] S1  
Seider, Thomas [8616-30] S6  
Seifert, Hans Jürgen [8608-5] S1,  
[8608-6] S1  
Sek, Grzegorz 8631 S15 Session  
Chair, [8631-95] S18  
Seka, Wolf D. [8566-14] S4  
Sekiguchi, Shigeaki [8630-26] S7  
Sekine, Hitoshi [8641-20] S4  
Sekiya, Motoyoshi [8646-26] S10,  
[8646-26] S9  
Sela, Gali [8581-88] S11, [8588-77]  
SPSun  
Selb, Juliette J. [8578-43] S7, [8578-7]  
S2  
Seletskiy, Denis V. [8606-9] S3, [8623-  
23] S6, [8623-45] S12, [8623-66]  
SPWed, 8638 Conference Chair,  
[8638-3] S1, [8638-4] S1  
Selim, Maria Angelica [8565-3] S1  
Sellars, Matthew J. [8635-23] S6  
Selleri, Stefano [8576-13] S3, [8601-  
96] SPTue, [8608-29] S13, [8608-  
29] S6, [8608-3] S1  
Seltzer, Emily [8572-36] S7  
Selvan, Subramanian Tamil 8595  
Program Committee, 8595 S12  
Session Chair  
Selvaraja, Shankar Kumar [8627-18]  
S5  
Selviah, David R. [8619-61] SPWed  
Semenova, Elizaveta S. [8639-12] S4  
Sementsov, Dmitry I. [8601-109]  
SPTue  
Semke, William H. [8610-19] S4  
Semmler, Wolfhard [8573-24] S6  
Semond, Fabrice [8623-10] S3, [8625-  
19] S5  
Semonin, Tavi [8620-27] S7  
Semtsiv, Mykhaylo P. [8640-65] S14  
Semyachkina-Glushkovskaya, Oxana  
V. [8580-50] SPMon  
Senanayake, Pradeep N. [8634-30]  
SPWed  
Senatore, Michael A. [8637-24] S5,  
[8637-24] S8  
Sencan, Ikbal [8589-28] S6  
Senel, Mehmet [8568-33] SPMon  
Senellart, Pascale [8619-5] S1, [8631-  
69] S13  
Senger, Frank [8616-9] S2  
Senkevich, Jay J. [8632-7] S2  
**Sennaroglu, Alphan** [8599-28] S6,  
[8599-41] S8  
Sennato, Simona [8631-13] S3  
Senoh, Takanori [8644-10] S3  
Senthil-Kumar, Prabhu [8565-180] S3  
Sentis, Marc L. [8611-38] S8  
Seo, Changho [8574-9] S2  
Seo, In Seok [8565-190] SPSun  
Seo, Jeong Hwan [8576-32] SPSun,  
[8581-162] SPMon  
**Seo, Min-Kyo** [8632-54] S12  
Seong, Jihye [8586-18] S3  
**Seong, Tae-Yeon** 8625 Program  
Committee, [8625-51] S11  
Sepehr, Reyhaneh [8580-31] S6,  
[8591-28] SPWed  
Serak, Svetlana V. [8642-26] S8  
Serebrovskaya, Ekaterina O. [8568-16]  
S4  
Seredych, Mykola [8621-65] SPWed  
Sergeeva, Ekaterina A. [8587-63]  
SPMon  
Sergent, Sylvain [8625-19] S5  
Sergi, Vincenzo [8603-17] S5  
Sergienko, Alexander V. [8610-20] S4,  
8635 S5 Session Chair, [8635-29]  
S6, [8635-29] S9  
Sergio, Luiz Philippe S. [8569-10] S3  
Serier-Brault, Hélène [8600-16] S4  
Serra Coromina, Pere [8607-33] S10  
Serry, Moahemd [8616-22] S5  
Served, B. [8626-74] SPWed  
Sethi, Abhishek R. [8578-47] S8  
Settke, J. [8634-29] S2  
Setzler, Scott D. [8604-14] S4  
Seurin, Jean-Francois [8599-55]  
S11, [8599-56] S11, 8639 Program  
Committee, 8639 S5 Session Chair,  
[8639-23] S6  
Severi, Francesco [8596-31] S9  
Severová, Patricie [8599-33] S12,  
[8603-2] S1, [8603-2] S9  
Severson, Scott A. [8617-8] S2  
**Sevick-Muraca, Eva Marie** [8565-  
48] S4, 8578 Conference Chair,  
[8583-1] S1  
Sextl, Gerhard [8630-36] S9  
Seyringer, Dana [8627-42] SPWed  
Sez nec, Stéphane E. [8602-15] S4  
Sha, Jianjian [8601-80] SPTue  
Shabbir, Asim [8577-15] S7  
Shadbolt, Pete [8628-16] S6  
**Shadgan, Babak** [8565-34] S1, 8591  
S2 Session Chair, [8591-8] S2  
Shafiei, Brenda Meeting VIP  
Shafiiha, Roshanak [8630-23] S6  
Shafirstein, Gal [8565-91] S9  
Shagman, Laura [8565-198] S5  
**Shah, Amy** [8578-51] S9  
**Shah, Lawrence** [8601-107] SPTue,  
[8601-97] SPTue, [8612-6] S2  
Shahedipour-Sandvik, Fatemah Shadi  
[8625-68] S14  
Shahid, Wajih [8575-29] SPSun  
Shahmoon, Asaf [8572-31] S6  
**Shahriar, Selim M.** 8635 Program  
Committee, 8636 Conference  
Chair, 8636 S6 Session Chair,  
[8636-10] S2, [8636-13] S3, [8636-  
23] S5, [8636-50] S10  
Shaipanich, Tawimas [8565-113] S4,  
[8565-98] S1, [8565-99] S1  
**Shaked, Natan T.** [8589-39] S9,  
[8597-25] S5  
Shakhova, Natalia M. 8571 Program  
Committee  
Shakoor, Abdul [8629-43] S11  
Shalaby, Mostafa [8623-24] S6  
Shamay, Moshe [8605-4] S1, [8640-  
54] S12  
Shambat, Gary [8619-31] S8, [8627-  
26] S6  
Shaner, Eric A. [8632-64] S14  
Shang, Huiliang [8646-18] S7, [8646-  
69] S17  
Shang, Shuo [8608-19] S4  
Shank, Steven M. [8600-19] S5,  
[8630-10] S3  
Shankar, Raji [8631-9] S2  
Shao, Bing [8639-19] S5  
Shao, Fang-Yu [8595-22] S6  
Shao, Peng [8581-150] SPMon  
**Shao, Qi** [8581-63] S9, [8596-25] S8  
Shao, Yonghong [8587-68] SPMon,  
[8588-85] SPSun, [8588-90]  
SPSun, [8588-99] SPSun  
Shapiro, Benjamin [8634-14] S3  
Shapiro, Joshua N. [8634-30] SPWed  
Shapiro, Lucy [8590-24] S7  
Sharikova, Anna V. [8568-25] S6,  
[8568-28] S7, [8568-39] SPMon  
Sharipova, Margarita I. [8623-67]  
SPWed  
Sharkawy, Ahmed S. [8624-33] S8  
Sharma, Deepika [8632-68] S15  
Sharma, Enakshi Khular [8619-59]  
SPWed, [8619-70] SPWed, [8619-  
79] SPWed, [8621-61] SPWed,  
[8621-62] SPWed  
Sharma, Manu [8565-19] S5, [8565-  
25] S6, [8618-8] S11, [8618-8] S2  
Sharma, Nikhil [8607-18] S12, [8607-  
18] S6  
Sharma, Saurabh [8599-36] S7  
Sharma, Yagya D. [8631-28] S5  
Sharps, Paul [8620-32] S8  
Shatlova, Ksenia V. [8566-17] S4  
Shavlakadze, Tea [8579-24] S5  
**Shaw, Brandon** [8599-18] S4, 8601  
Program Committee, [8601-108]  
SPTue, [8621-36] S7  
Shaw, Larry [8599-53] S10  
Shaw, Thomas J. [8645-24] SPWed  
**Shchegrov, Andrei V.** 8604 Program  
Committee, 8604 S1 Session Chair,  
8604 S2 Session Chair  
Shchennikov, Vladimir V. [8612-20] S4  
Shchennikov, Vsevolod V. [8612-20]  
S4  
Shcheslavskiy, Vladislav I. [8588-28]  
S4  
**Shea, Herbert R.** 8614 Conference  
Chair, 8614 S2 Session Chair, 8614  
S4 Session Chair, [8614-21] S4,  
[8614-5] S1  
Shea, Kevin [8605-5] S1  
**Shechter, Revital** [8579-31] S7,  
[8583-6] S2  
Sheehy, Christy K. [8567-30] S6,  
[8567-70] SPSun  
Sheik-Bahae, Mansoor [8606-9] S3,  
[8623-23] S6, [8623-45] S12, [8623-  
66] SPWed, 8638 Conference  
Chair, [8638-10] S2, [8638-16] S4,  
[8638-3] S1, [8638-4] S1  
**Sheinfeld, Adi** [8581-27] S4, [8581-  
59] S8  
**Sheldon, Matthew T.** [8632-12] S3  
**Shelton, Ryan L.** [8571-65] S10,  
[8581-126] SPSun, [8581-81] S11  
**Shemonski, Nathan** [8571-115]  
SPMon, [8571-5] S1, [8571-71] S11,  
[8572-20] S4  
Shemyakin, Andrei N. [8600-1] S1  
Shen, Chao [8565-92] S9  
Shen, Dejun [8587-26] S4  
Shen, DeYuan Y. [8601-80] SPTue  
Shen, Duanwen [8587-73] SPMon  
Shen, Jung-Tsung [8632-4] S1  
Shen, Kai [8632-16] S4  
Shen, Kun-Ching [8641-43] S10,  
[8641-72] SPWed  
Shen, Mengzhe [8565-5] S2  
Shen, Shih-Chiang [8625-42] S9  
Shen, Tueng [8567-45] S8, [8571-63]  
S10  
Shen, Weilu [8607-20] S12, [8607-20]  
S6  
Shen, Yi-Chun [8594-19] S5  
Shen, Zhi-Xun [8623-7] S3  
Shen, Zhonghua [8603-31] SPTue,  
[8603-7] S10, [8603-7] S2  
Sheng, Zhigao [8626-17] S4  
Shenoi, Rajeev V. [8632-58] S13  
Sheno, Bhavy Maithry [8570-28]  
SPSun  
**Shenoy, Devanand K.** 8622 Program  
Committee  
Shephard, Jonathan D. [8567-77]  
SPSun, [8576-7] S2  
Shepherd, David P. [8599-4] S1,  
[8606-7] S2, [8621-3] S1  
Sher, Meng-Ju [8607-20] S12, [8607-  
20] S6, [8608-28] S13, [8608-28] S6  
Sherman, Adria J. [8572-23] SPSun  
Sherstnev, Viktor V. [8600-15] S4  
Sherwin, Mark S. 8623 S7 Session  
Chair, [8623-21] S6  
Sheth, Sameer A. [8565-179] S3  
Sheu, Jinn-Kong [8620-59] S14,  
[8626-57] SPWed  
Sheu, Yae-Lin [8581-157] SPMon  
Shevchuk, Maria M. [8565-37] S1  
Sheykin, Yury [8571-99] SPMon,  
[8587-26] S4  
Shi, Feifei [8619-67] SPWed  
**Shi, Kebin** [8589-52] S11  
Shi, Lei [8571-84] SPMon, [8580-40]  
S8, [8580-41] S9  
Shi, Liang [8593-4] S1  
**Shi, Lingyan** 8577 S9 Session Chair  
Shi, Nan [8628-15] S6  
Shi, Riyi [8587-41] S7  
Shi, Shouyuan S. [8622-29] S7, [8624-  
19] S5, [8624-33] S8  
Shi, Ting [8598-23] SPSUN  
Shi, Wei [8601-88] SPTue, 8604  
Program Committee, 8604 S3  
Session Chair, 8604 S5 Session  
Chair, [8604-13] S3, [8604-54]  
SPTue  
**Shi, Wei** [8581-80] S11  
Shi, Wei [8629-8] S2  
Shi, Yanrong [8567-84] SPSun  
Shi, Yi-Wei [8576-1] S1  
Shi, Zhimin [8635-28] S6, [8635-28]  
S9  
Shia, Kevin [8571-7] S2  
Shibata, Naotaka [8645-6] S4  
Shibuya, Josiane Aparecida  
Ferraretto [8579-32] S7  
Shibuya, Keisuke [8626-38] S9  
Shieh, Chen Yu [8625-75] SPWed,  
[8625-79] SPWed  
Shieh, Jeng J. [8596-36] SPMon  
Shields, Andrew J. [8619-3] S1, 8634  
S1 Session Chair, [8634-2] S1  
Shields, Joel F. [8610-13] S3  
Shigekawa, Naoteru [8641-22] S5  
Shih, Cheng-Yu [8609-16] S4  
Shih, Chih-Kang [8619-42] S10  
Shih, Chin-Ming [8641-67] SPWed  
**Shih, Meng-Mu** [8565-209] S4,  
[8565-8] S2, [8573-28] SPSun,  
[8619-80] SPWed, [8622-5] S1,  
[8625-89] SPWed, [8629-53]  
SPWed, [8644-23] S6



# Index of Authors, Chairs, and Committee Members

- Shih, Min-Hsiung [8594-20] S5, [8641-73] SPWed
- Shih, Wei-Chuan** [8565-207] S4, [8587-72] S11, [8587-72] S2, [8597-14] S4
- Shiina, Tsuyoshi [8581-106] SPSun
- Shiino, Masato [8630-3] S1
- Shiktorov, Pavel [8624-8] S3
- Shile, Roger [8615-38] S8, [8615-45] S10
- Shilyagin, Pavel A. [8571-112] SPMon, [8571-120] SPMon
- Shim, Dong-Sik** [8616-17] S3, [8616-17] S4
- Shim, Jong-In 8625 Program Committee, [8625-56] S12
- Shim, Munbo [8619-52] S13
- Shim, Young Bo [8576-11] S3, [8576-28] SPSun
- Shima, Darryl M. [8606-12] S4, [8606-13] S4
- Shima, Kensuke [8601-94] SPTue
- Shimada, Naoyuki [8640-13] S3
- Shimada, Yasushi [8566-2] S1
- Shimazaki, Natsumi [8565-33] S8
- Shimizu, Hisashi [8607-7] S2, [8607-7] S6, [8609-3] S1
- Shimizu, Koichi [8578-109] SPSun
- Shimizu, Sachiko [8575-33] SPSun
- Shimogaki, Tetsuya [8607-2] S1, [8607-2] S5, [8626-30] S7, [8626-31] S7
- Shimotsuma, Yasuhiko** [8607-31] S9
- Shin, Dong Ho [8576-32] SPSun, [8581-162] SPMon
- Shin, Dong Myung [8622-50] SPWed, [8641-13] SPWed
- Shin, Dong-Soo [8625-56] S12
- Shin, Haijin [8622-48] S7
- Shin, Heedeuk [8604-36] S8, [8636-7] S2
- Shin, Hyung-Cheul** [8565-190] SPSun
- Shin, In Hee [8589-42] S9, [8598-22] SPSUN
- Shin, Jaewoo [8565-190] SPSun
- Shin, Jang-In [8569-27] SPSat
- Shin, Jun Geun [8567-51] S9, [8576-10] S2
- Shin, Ki-Chul [8642-12] S3
- Shin, Young Jae [8627-25] SPWed, [8643-12] S3
- Shinde, Deepali [8615-20] S5
- Shinkawa, Mizuki [8636-33] S7, [8636-35] S7
- Shinohara, Leilei** [8579-17] S4
- Shinonaga, Togo [8609-12] S3
- Shinya, Akihiko [8635-39] S12
- Shipley, Heather J. [8595-17] S4
- Shipp, Dustin W.** [8592-25] S6
- Shiraishi, Takashi [8630-32] S8
- Shirakawa, Akira 8599 Program Committee
- Shirazi, Roza [8625-74] SPWed
- Shirey, Loretta [8632-45] S10
- Shirmanova, Marina V.** [8568-16] S4, [8587-63] SPMon
- Shishehchi, Sara [8619-16] S4
- Shishkov, Milen [8565-101] S2, [8575-12] S3
- Shiu, Kuen-Ting [8631-33] S7
- Shivananju, B.N. [8598-25] SPSUN
- Shoghi, Kooresh I. [8578-75] S12
- Shoham, Shy [8565-201] S1, [8567-10] S2, [8581-88] S11, [8588-77] SPSun
- Shoji, Satoru** [8613-15] S4, [8613-25] S5, [8613-33] S7
- Shokri Kojori, Hossein [8594-2] S1
- Shori, Ramesh 8599 Conference Chair, [8599-53] S10
- Short, Michael A. [8565-99] S1, [8572-42] S8
- Shorte, Spencer L. [8586-26] S5
- Shreffler, Wayne G. [8565-111] S4
- Shrekenhamer, David [8632-74] S16
- Shrestha, Annie [8566-16] S4
- Shrestha, Sebina [8565-28] S7
- Shribak, Michael I.** [8589-55] SPWED
- Shrikande, Gautam [8578-59] S10
- Shtauf, Mark 8647 S7 Session Chair, [8647-13] S6
- Shu, Zhe [8615-15] S4
- Shubin, Ivan [8630-41] S11, [8630-41] S2
- Shubidtze, Fridon [8584-13] S5, [8584-35] S10
- Shults, Ariana [8579-17] S4
- Shulyatyev, Victor B. [8603-37] SPTue
- Shumilov, Dmytro [8590-10] S2
- Shung, K. Kirk [8565-35] S7, [8565-8] S4, [8581-10] S2, [8581-140] SPMon, [8581-153] SPMon, [8581-41] S7, [8581-76] S11
- Shung, Wendy [8593-26] SPSun
- Shupp, Jeffrey W. [8565-30] S7
- Shurgina, Svetlana A. [8580-49] SPMon
- Shutts, Sam [8640-11] S2
- Shvets, Gennady B.** [8619-42] S10, [8632-73] S16, [8636-30] S6
- Shvydky, Alexander [8602-12] S4
- Si, Ke [8589-31] S7, [8617-10] S3
- Siah, Sin Cheng [8620-40] S10
- Siaj, Mohamed [8624-29] S8
- Sibai, Mira** [8565-189] SPSun
- Sicchieri, Leticia Bonfante [8591-13] S3
- Sichkovskiy, Vitalii [8619-37] S9, [8640-2] S1
- Siddiqui, Mahmudur [8635-28] S6, [8635-28] S9
- Siddiqui, Meena [8571-28] S5
- Sidhu, Sachdev [8581-26] S4
- Sidler, Meinrad [8640-22] S5
- Sidorin, Yakov** 8624 Track Chair, 8627 Program Committee, 8627 Track Chair, 8628 Track Chair, 8629 Track Chair, 8630 Track Chair
- Sidorov, Viktor V. [8572-7] S2
- Sieber, Oliver D. [8606-5] S2
- Siebert, Christof [8608-13] S3
- Siebert, Torsten [8588-33] S5, [8590-25] S7, [8601-93] SPTue, [8604-8] S2, [8620-9] S2
- Siegel, Peter H. 8585 Program Committee, [8585-22] S4
- Sieger, Markus [8631-89] S18
- Siekacz, Marcin [8625-35] S8, [8625-77] SPWed
- Sielaff, Hendrik [8588-27] S4
- Sieler, Marcel [8643-10] S2
- Siemeling, Ulrich [8609-2] S1
- Sierra, Heidi [8592-26] S6
- Sigal-Zafrani, Brigitte [8572-21] S4
- Sigrist, Markus W. [8591-16] S4
- Siitonen, Samuli [8597-2] S1
- Sikocinski, Pawel [8602-7] S2
- Sikora, Andrew [8565-66] S3
- Sikora, Uzair Y. [8572-48] S9, [8589-28] S6, [8589-9] S2, [8591-20] S4
- ?iler, Martin [8637-39] S9
- Silva de Brito, Otávio [8632-77] SPWed
- Silva, Anielle C. A. [8595-58] S13, [8621-46] SPWed
- Silva, Daliane Christine [8591-13] S3
- Silva, Daniela F.** [8569-15] S4, [8569-16] S4, [8579-32] S7
- Silva, Elias A. [8587-60] SPMon
- Silva, Flávio A. [8647-18] S7
- Silva, Paulo J. [8595-5] S1
- Silveira, Fabricio Luiz [8565-33] SPSun, [8565-52] SP1
- Silveira, Landulfo [8565-33] SPSun, [8565-52] SP1, [8569-20] SPSat, [8577-14] S6, [8591-29] SPWed
- Silverstone, Joshua W. [8628-16] S6
- Sim, Jeong-Eun [8565-197] S5
- Sim, Chaotan** [8627-29] S7
- Simao, Pamela [8615-38] S8
- Simmonds, Richard D. [8611-36] S8
- Simmons, Trevor J. [8632-5] S1
- Simoens, François** [8624-45] S11
- Simoes, Fabio Donati [8646-3] S2
- Simon, Brett A. [8565-26] S4
- Simon, David S.** [8635-29] S6, [8635-29] S9
- Simon, Eric [8616-38] S8
- Simon, Philipp [8613-7] S2
- Simon-Boisson, Christophe [8599-45] S8
- Simone, Charles B.** [8568-20] S5, [8568-23] S6, [8568-40] SPMon
- Simonen, Janne [8604-37] S8
- Sims, Matt T.** [8600-22] S6
- Simos, Hercules A. [8645-16] S6
- Simozrag, Bouzid [8631-34] S7
- Simpkins, Blake S. [8632-45] S10, [8634-12] S3
- Simpson, Mary Jane** [8565-3] S1
- Simpson, Stephen H. [8637-34] S8
- Sims, Robert Andrew** [8601-97] SPTue
- Sin, Yongkun [8605-22] S5, [8620-58] S14, [8625-32] S7, [8640-52] S12
- Sinar, Dogan [8612-2] S1
- Sinclair, Michael B. [8632-64] S14
- Sinclair, Neil [8635-22] S6
- Sinclair, Robert [8581-15] S3
- Singaravalu, Senthilraja [8607-43] S12
- Singer, Jonathan [8601-118] SPTue
- Singer, Kenneth D.** 8622 Program Committee
- Singh, Amardeep S. G. [8571-41] S7
- Singh, Danny R. [8607-24] S7
- Singh, Manmohan [8567-52] S9, [8571-64] S10
- Singh, P. [8634-6] S2
- Singh, Rahul S. [8624-2] S2
- Singh, Ranjan [8623-19] S5
- Singh, Rashmi [8619-70] SPWed
- Singh, Rohit [8623-4] S2
- Singh, Satya Pratap [8604-47] SPTue
- Singh, Sheela P. [8596-2] S1
- Singh, Umesh [8619-78] SPWed
- Singh, Vijay Raj [8588-54] S8
- Singleton, Jered [8615-29] S6
- Singleton, Thomas A. [8632-1] S1
- Sinhoff, Volker R. [8602-17] S4, [8605-8] S2
- Sinnaeve, Peter R. [8565-7] S3
- Sinsersuksakul, Prasert [8620-40] S10
- Sinzinger, Stefan [8613-40] S8, [8616-37] S8, [8619-19] S5, [8637-38] S9
- Sipe, John E. [8629-40] S11
- Sirbu, Alexei** [8606-14] S5, [8639-27] S7, [8639-3] S1
- Sironi, Laura [8580-30] S6
- Sirtori, Carlo 8631 S4 Session Chair, [8631-2] S1, [8631-66] S12, [8631-81] S16
- Sit, Wesley W. [8571-70] S11
- Sitar, Zlatko [8625-91] S14, [8631-65] S12, [8641-36] S8
- Sitnikova, Evgenia [8580-48] SPMon, [8580-49] SPMon
- Sivananthan, Sivalingam** [8631-52] S10
- Sivankutty, Siddharth [8590-43] SPSUN
- Sivaramkrishnan, Sivaraj [8629-6] S2
- Sivotthaman, Siva [8620-74] SPWed
- Skala, Melissa C. [8571-70] S11, [8571-83] S12, [8580-39] S7, [8588-73] SPSUN
- Skaptsov, Alexander [8571-97] SPMon
- Skiba-Szymanska, J. [8634-2] S1
- Skibina, Julia S. [8588-100] SPSun
- Skierbieszowski, Czeslaw [8625-35] S8, [8625-77] SPWed
- Skillman, David R. [8610-3] S1
- Skoczowski, Danilo [8605-28] S6, [8640-56] S13
- ?koda, Václav** [8599-69] SPTue
- Skogen, Erik J. [8628-23] S8
- Skommer, Joanna [8615-34] S7
- Skrypnik, Alexei V. [8566-17] S4
- Skutnik, Bolesh J.** [8576-18] S4
- Slater, Joshua A. [8635-22] S6
- Slatkin, Daniel N. [8565-235] SPSun
- Slaughter, Brian R. [8590-9] S2
- Slaveykova, Vera I. [8572-50] S9
- Slepchenkov, Michel M. [8596-39] SPMon
- Slepkov, Aaron D. [8589-29] S6
- Slezák, Ondrej [8602-7] S2
- Slipchenko, Mikhail N. [8581-57] S8, [8588-11] S2, [8588-17] S3, [8588-5] S1, [8590-29] S8
- Slivken, Steven 8631 S11 Session Chair, [8631-100] S4, [8631-21] S4, [8631-97] S1
- Slocum, Michael A. [8620-34] S8
- Sloyan, Katherine A.** [8626-43] S11
- Slump, Cornelis H. [8581-134] SPSun, [8581-23] S4
- Slyk, Kamil [8611-59] SPTue
- Slyman, Brian E. [8576-5] S1
- Small, Alex** [8590-35] S9, [8590-37] SPSUN
- Smalley, Daniel E. [8644-17] S4
- Smalling, Richard W. [8581-13] S2
- Smalyukh, Ivan** 8642 Program Committee
- Smauley, David A. [8602-2] S1
- Smerzi, Augusto [8637-26] S5, [8637-26] S8
- Smiri, Laila Samia [8626-52] SPWed
- Smirnov, Aleksandr V. [8596-32] S9
- Smirnov, Mikhail Z. [8580-17] S4
- Smirnov, Vadim [8599-52] S10, [8601-122] SPTue, [8601-45] S11, [8601-46] S11, [8603-3] S10, [8603-3] S2
- Smirnova, Tatiana [8578-58] S10
- Smit, Meint K. [8627-14] S4
- Smith, Alex [8565-109] S4
- Smith, Andrew T. [8607-29] S9, [8608-25] S4
- Smith, Arlee V. [8601-7] S2
- Smith, Brian [8631-57] S11
- Smith, Brian C. [8587-31] S4
- Smith, David D. 8636 Program Committee, [8636-15] S3
- Smith, David E. [8610-3] S1
- Smith, George D. W. [8625-92] S4
- Smith, Howard E. [8634-26] SPWed
- Smith, Jesse J. [8601-7] S2
- Smith, Larry K. [8602-2] S1
- Smith, Michael B. [8578-72] S12, [8581-173] SPMon
- Smith, Nicholas Isaac [8597-7] S2
- Smith, Paul J. [8615-34] S7
- Smith, Peter G. R. [8614-19] S4
- Smith, Peter G. R. [8621-6] S2, [8627-28] S7, [8627-29] S7
- Smith, Philip G. [8588-42] S7
- Smith, Remie [8581-2] S1
- Smith, Zachary J.** [8592-2] S1
- Smithson, Zachary [8585-36] S6
- Smolyakov, Gennady A. [8595-46] S10, [8595-51] S11, [8595-64] S14, [8619-22] S5, [8619-38] S9, [8619-8] S2
- Smolyanskaya, Olga [8567-65] SPSun
- Smouha, Eric [8565-66] S3
- Smowton, Peter M.** 8640 Conference Chair, 8640 S3 Session Chair, [8640-11] S2, [8640-53] S12
- Smr?, Martin [8599-63] S12, [8603-2] S1, [8603-2] S9
- Smyth, Ciarán [8595-36] S8
- Smyth, Hugh D. [8595-51] S11
- Smyth, Neil [8595-1] S1
- Smythe, Robert [8606-27] SPTue
- Snell, Edward [8623-4] S2
- Snijder, Jaap [8587-76] SPMon, [8587-78] SPMon
- Snopova, Ludmila B.** [8568-16] S4, [8578-58] S10



# Index of Authors, Chairs, and Committee Members

- Snow, Brent W. [8584-26] S8  
Snuderl, Matija [8565-179] S3  
Snure, Michael [8604-31] S7  
Snyder, Abraham Z. [8578-42] S7,  
[8578-8] S2, [8578-95] SPSun  
So, Jimmy B.Y. [8576-12] S3, [8577-15]  
S7  
So, Peter T. C. [8572-35] S7, 8575  
Program Committee, 8575 S4  
Session Chair, [8577-12] S6, [8579-  
20] S5, [8587-14] S2, [8587-35] S5,  
8588 Conference Chair, 8588 S6  
Session Chair, 8588 S7 Session  
Chair, [8588-104] SPSun, [8588-53]  
S8, [8588-54] S8, [8611-7] S2  
So, Soon-Yeol [8622-54] SPWed  
**So, Stephen** [8631-86] S17  
Soares de Lima Filho, Elton [8638-17]  
S4  
Soares, Carlos Alexandre [8579-35]  
SPMon  
Soares, Jaqueline S. [8572-35] S7,  
[8577-12] S6, [8579-20] S5  
Soares, Luiz Guilherme P. [8569-18]  
S4, [8569-20] SPSat  
Soares, M. J. [8626-75] S2  
Sobek, Jens [8596-35] SPMon  
Sobol, Emil Naumovich [8595-60] S14  
Sobotta, Stephan B. [8565-183] S4  
Sochacki, Tomasz [8625-10] S2  
Sodabanlu, Hassanet [8620-48] S12,  
[8620-51] S12  
Sodagar, Majid [8632-34] S8  
Sodeoka, Mikiko [8587-74] SPMon  
Söderberg, Per G. 8567 Conference  
Chair, 8567 S4 Session Chair,  
[8567-48] S9  
Sodhi, Avantika [8628-19] S7  
Sodnik, Zoran 8610 Program  
Committee, 8610 S4 Session Chair  
Soenen, Stefaan J. [8595-14] S4  
Soeratman, C. Linda R. [8587-24] S4  
**Soetikno, Brian T.** [8581-182] SPMon  
**Sogawa, Ichiro** [8565-15] S9, [8572-  
17] S4, [8575-4] S1  
Soh, Daniel B. 8601 Program  
Committee, 8601 S13 Session  
Chair, [8601-58] S14  
Sohler, Wolfgang [8635-22] S6  
Sohn, Ik-Bu [8579-4] S1  
Soibel, Alexander [8631-24] S5, [8631-  
25] S5  
So-In, Chakchai 8645 Program  
Committee  
Sojic, Neso [8590-4] S1  
Sokolov, Alexei [8585-36] S6  
Sokolov, Alexei [8601-35] S9  
**Sokolov, Konstantin V.** [8592-3] S1,  
[8595-17] S4, [8595-42] S9, [8595-  
6] S1, [8596-16] S5  
**Sokolovski, Sergei G.** [8568-14] S3,  
[8572-7] S2  
Sokolovskii, Grigori S. [8604-5] S2  
Sokolowski, Waldemar [8605-37]  
SPTue  
Sokolowski-Tinten, Klaus 8607  
Program Committee, 8607 S6  
Session Chair, [8607-10] S3, [8607-  
10] S9, 8611 S12 Session Chair  
Sola, Daniel [8626-46] S12, [8638-1]  
S1  
Solanki, Sanjeev [8644-9] S3  
**Solarte-Rodriguez, Efrain** [8583-13]  
S3  
Soldano, John [8592-33] S8  
Solé, Rosa M. [8594-6] S2  
Solenov, Dmitry [8635-12] S4  
**Soliz, Peter** 8567 Program  
Committee, 8567 S5 Session Chair  
Soljacic, Marin [8632-7] S2  
Sollier, Elodie [8587-38] S6, [8611-22]  
S5  
Solomatine, Iouri V. [8600-51] S6  
Solomon, Glenn S. [8635-38] S11,  
[8635-43] S13  
**Solomon, Metasebya** [8578-75] S12  
Solomonean, Vasile [8601-116] SPTue
- Solovoyov, Nikolai G. [8600-1] S1  
Solzbacher, Florian [8565-210] S4,  
[8586-27] S5  
Som, Madhura [8597-3] S1  
Soma, Kazutomo [8630-4] S1  
**Soma, Venugopal Rao** [8622-53]  
SPWed, [8623-65] SPWed  
Somesfalean, Gabriel [8570-25] S6,  
[8579-22] S5  
Sommer, Graham [8584-30] S9  
Sommer, Stanley C. [8602-2] S1  
Sommerhalder, Jorg [8615-6] S2  
Son, Dong Ick [8626-24] S5  
Son, Heyjin [8585-9] S1  
Son, Joo-Hiuk 8585 Program  
Committee, [8585-31] S6  
Son, Nam-Seon [8627-49] SPWed  
Son, Taeyoon [8565-26] S6  
Sonar, Punam Suresh [8637-47]  
SPWed  
Sone, Cheolsoo [8641-57] S12  
Sone, Naoki [8625-73] SPWed  
Song, Chengli [8571-105] SPMon  
Song, Cheol [8571-57] S9, [8576-17]  
S4  
**Song, Chul-Gyu** [8576-32] SPSun,  
[8581-162] SPMon  
Song, Dong Han [8642-35] SPWed  
Song, Feng 8621 Program Committee  
Song, Heng-Yu [8641-68] SPWed  
Song, Hoon [8616-15] S3, [8616-15]  
S4  
Song, Hyuna [8565-197] S5  
Song, Jihui [8603-9] S3  
**Song, Jin-Joo** 8623 Conference  
Chair, 8623 S12 Session Chair,  
8623 S7 Session Chair  
Song, Jung-Hoon [8625-47] S11  
Song, Jung-Hwan [8632-54] S12  
Song, Qinghai [8636-25] S5  
Song, Wei [8581-160] SPMon  
**Song, Weiwei** [8630-29] S7, [8630-  
37] S9, [8630-46] SPWed  
Song, Xuezheng [8594-9] S3, [8597-  
37] S8  
Songmuang, Rudeesun [8625-22] S5  
Sonnentfroth, David M. [8631-30] S6  
Sood, Anup [8574-20] S5  
Sood, Ashok K. [8626-10] S3  
Soper, Timothy D. [8575-9] S2  
Soppera, Olivier [8613-58] SPTue  
Sorba, L. [8631-84] S16  
Sordillo, Diana C. [8565-218] S1,  
[8565-220] S1  
Sordillo, Laura A. [8565-218] S1,  
[8565-220] S1, 8577 S6 Session  
Chair, [8577-7] S2  
Sordillo, Peter P. [8565-218] S1,  
[8565-220] S1, [8577-7] S2  
Soref, Richard [8627-35] S8  
Sorel, Marc [8629-18] S4  
Sorensen, Thomas Just [8590-6] S1  
**Sorg, Brian S.** 8580 Program  
Committee  
Sorger, Volker J. [8629-23] S7  
Soria, Silvia [8576-30] S5, [8600-62]  
S15, [8627-51] SPWed  
Soriano, Jonathan N. [8565-180] S3  
Sorin, Fabien [8620-16] S4  
Sorokin, Evgeni [8599-20] S4, [8599-  
43] S8, [8599-59] S12  
Sorokina, Irina T. [8599-20] S4, [8599-  
43] S8, [8599-59] S12, [8601-106]  
SPTue  
Soroshian, Behrouz [8581-103]  
SPSun  
Soshnikova, Yulia [8595-60] S14  
**Soskin, Marat S.** 8637 Conference  
CoChair, 8637 S1 Session Chair,  
[8637-28] S7, [8637-29] S7  
Sosnowski, Thomas S. [8601-57] S14  
Sotgiu, Giovanna [8596-31] S9  
**Sotobayashi, Hideyuki** [8646-28]  
S10, [8646-28] S9  
Sotrop, Jürgen [8611-46] S10, [8611-  
46] S4
- Soudagar, Yasaman** [8565-237] S5  
Sourati, Jamshid [8565-2] S1  
Soures, John M. 8602 Program  
Committee  
Sousa, João Manuel [8601-60] S14  
Sousa, John Gary [8565-95] S9  
**South, Fredrick A.** [8571-115]  
SPMon, [8572-20] S4  
Souza, Tamiris S. [8596-44] SPMon,  
[8619-76] SPWed  
Souza, Wellington S. [8641-49] S11  
Sova, Raymond [8610-31] S7  
Sozzi, Michele [8576-13] S3, [8601-96]  
SPTue, [8608-29] S13, [8608-29]  
S6, [8608-3] S1  
Spagnolo, Vincenzo [8607-23] S7,  
[8631-32] S6, [8631-82] S16  
Spanò, Paolo [8618-13] S4  
Sparacino, Pete [8610-21] S4  
Speck, James S. [8639-5] S2  
Speer, Dominic [8644-21] S5  
Speiser, Jochen [8599-59] S12  
Spencer, Chelsea [8582-12] S3  
Spencer, Rand [8615-6] S2  
Speranza, Giorgio [8621-22] S5  
Spiegelberg, Christine [8599-52] S10  
Spiekman, Leo [8645-5] S4  
Spieles, Monika [8596-17] S5  
Spieser, Samuel [8619-75] SPWed  
**Spigulis, Janis** [8574-19] S4  
Spilatro, Michael [8602-14] S4  
Spillane, Sean M. 8636 S9 Session  
Chair, [8636-50] S10  
Spillmann, Christopher M. [8595-53]  
S12  
Spinelli, Lorenzo [8578-111] SPSun,  
[8578-114] SPSun, [8578-82] S13,  
[8583-11] S3, [8583-21] S3, [8583-  
21] S5, [8583-5] S2  
Spirin, Vasily [8601-114] SPTue  
Spittel, Ron [8577-18] S7, [8615-5] S1,  
[8627-41] S9  
Spjut, Erik R. [8617-8] S2  
Spooner, Nigel A. [8627-22] S5  
Spoth, Katherine [8595-39] S9  
Sprague, Michael R. [8636-38] S8  
Sprague, Randall [8643-5] S1  
**Sprague, Robert A.** 8643 Program  
Committee  
Sprengers, Johannes P. [8635-46]  
S13  
Spring, Andrew M. [8622-7] S2  
Springeling, Geert [8581-10] S2  
Springer, André [8603-18] S5  
Spuesens, Thijs [8627-6] S2  
**Squier, Jeff A.** [8611-8] S2, [8623-43]  
S12  
**Sramek, Christopher** [8567-7] S2  
Sridhara, Aadi [8639-1] S1, [8639-19]  
S5  
Sridharan, Arun Kumar [8601-4] S1,  
[8601-6] S2  
Sridharan, Deepak [8635-38] S11  
Srinath, Srikar [8617-9] S2  
Srinivasan, Balaji [8601-98] SPTue,  
[8646-27] S10, [8646-27] S9  
Srinivasan, Kartik [8600-67] S16,  
[8616-31] S7  
Srinivasan, Meera [8610-13] S3,  
[8610-27] S6  
Srinivasan, Pradeep 8613 Program  
Committee, 8613 S7 Session Chair  
Srinivasan, Sudha [8630-42] S11,  
[8630-42] S2  
Srinivasan, Sudharsanan [8640-29]  
S7  
Srinivasan, Supriya [8582-15] S4  
Srinivasan, Vivek J. [8565-177] S3,  
[8571-87] SPMon  
**Sriram, Rashi** [8570-8] S2  
**Sriram, Sri** [8621-13] S3, [8624-17]  
S5, [8647-16] S7  
Srivastava, Abhishek [8642-15] S5  
Srivastava, Anand [8645-8] S4  
Srivastava, Ankit [8632-28] S7  
Srivastava, Anushree [8597-3] S1
- Srivastava, Atul [8578-47] S8  
**Srivastava, Atul K.** 8645 Program  
Committee, 8645 S1 Session Chair,  
8646 Conference Chair, 8646 S1  
Session Chair, [8646-5] S3, 8647  
Program Committee, 8647 S1  
Session Chair  
**Srivastava, Manas** [8601-98] SPTue  
Srivastava, Ritu [8622-43] S10, [8622-  
62] S9, [8622-63] SPWed  
Srivastava, Sangeeta [8621-62]  
SPWed  
Srivastava, Vishal [8587-5] S1  
**Sroka, Ronald** 8565 Program  
Committee, 8565 S4 Session Chair,  
[8565-36] S1, [8565-46] S3, [8565-  
60] S2, [8565-94] S9  
Srougi, Miguel [8565-52] SP1  
St. Lawrence, Keith [8565-188]  
SPSun, [8573-29] SPSun, [8578-10]  
S2, [8578-76] S12, [8578-87] S14,  
[8579-26] S6, [8581-151] SPMon,  
[8581-152] SPMon  
Staehler, Richard [8565-92] S9  
Staehler, Julia [8623-11] S4  
Staff, Alyssa [8597-10] S3  
Stafford, Jason H. [8596-3] S1  
Stafford, Ryan [8565-214] S2  
Stagg, Logan [8636-12] S3  
**Stahl, Charlotte S. D.** [8565-193] S2,  
[8565-39] S2  
Stahlheber, Shane P. [8590-37]  
SPSun  
Stalder, Kenneth R. [8584-23] S7,  
[8584-24] S7, [8584-25] S7  
Staley, Jacob W. [8581-94] SPSun  
Stampfl, Jürgen [8618-9] S3, [8618-9]  
S4  
Stan, Radu V. [8584-2] S1  
Stanca, Sarmiza [8615-5] S1  
Stanczyk, Szymon [8625-36] S8,  
[8625-61] S13, [8625-71] SPWed  
Standish, Beau A. [8565-173] S2,  
[8565-236] S2, [8565-237] S5,  
[8565-75] S6  
Stanga, Paulo [8615-6] S2  
Staninec, Michal [8566-4] S1  
Staniszewski, Kevin [8580-31] S6  
Stankiewicz, Maria [8571-66] S10  
Stankiewicz, Romuald [8625-9] S2  
Stankov, Hristomir [8600-5] S2  
Stankovic, Stevan [8627-6] S2  
Stanley, Ross P. [8613-48] SPTue,  
[8614-6] S2, [8616-18] S3, [8616-18]  
S4, [8631-91] SPWed, [8632-38] S9,  
8641 Program Committee, 8641  
S13 Session Chair  
Stanley-Clark, A. [8628-16] S6  
Stannowski, Bernd [8620-54] S11,  
[8620-54] S13  
Stanze, Dennis [8624-20] S6  
Starbuck, Andrew [8604-36] S8  
Starecki, Florent [8599-1] S1  
Starikov, E. [8624-8] S3  
Stark, Daniel [8573-23] S6  
Stark, Wendelin J. [8595-41] S9  
**Starkey, Jean R.** [8577-26] S9  
Starsosielec, Sebastian [8623-10] S3  
Starzl, Ravi [8587-52] S8  
Stasheuski, Alexander S. [8580-43]  
S7  
Staske, Ralf [8605-27] S6, [8640-12]  
S3, [8640-60] S13  
Staszczak, Grzegorz [8625-16] S4  
Staton, Kevin D. [8580-32] S7  
Staudé, Isabelle [8613-30] S7  
Stauffer, Paul R. 8584 Program  
Committee, [8584-26] S8, [8584-  
27] S8, [8584-4] S5  
Stavrinou, Paul N. [8620-53] S11,  
[8620-53] S13  
Stavros, A. Thomas [8581-2] S1  
Steckl, Andrew J. 8643 Program  
Committee  
Steegmüller, Ulrich [8641-45] S10  
Steel, Michael [8611-31] S6, [8635-14]  
S4

# Index of Authors, Chairs, and Committee Members

- Steenbergen, Wiendelt** 8581  
Program Committee, 8581 S10  
Session Chair, [8581-1] S1, [8581-23] S4, [8581-29] S5, [8581-38] S7, [8581-49] SPSun, [8581-94] SPSun
- Steenhusen, Sönke** [8630-1] S1, [8630-36] S9, [8630-8] S2
- Stefani, Alessio [8581-39] S7
- Stefanini, Aline R. [8577-14] S6
- Stefanski, Przemyslaw [8631-29] S6, [8631-86] S17
- Steffan, Andreas G. [8630-24] S6
- Stefuca, V. [8588-32] S5
- Steiauf, Daniel [8625-54] S12, [8641-54] S12
- Steibel, Jerome [8572-26] S5
- Steidl, Charles [8639-4] S2
- Steinberg, Idan** [8565-228] S3
- Steinbrink, Jens M. [8578-65] S11
- Steiner, Gerald [8565-183] S4
- Steiner, Stefan [8633-35] S10
- Steiner, Ullrich [8623-16] S5
- Steinert, Michael [8611-33] S7
- Steinkellner, Oliver [8578-62] S10, [8583-21] S3, [8583-21] S5
- Steinmetz, Alexander [8599-44] S8, [8601-39] S9
- Steinmeyer, Günther [8588-100] SPSun, [8611-26] S5
- Steinwurzle, Paul E. [8601-53] S13
- Stellacci, Francesco [8595-5] S1
- Stello, H. [8610-21] S4
- Stelzle, Florian [8572-31] S6
- Stelzle, Martin [8615-10] S3
- Stemmer, Susanne [8626-14] S4
- Stenchly, Vanessa [8613-44] SPTue
- Stenchly, Vanessa [8616-9] S2
- Stender, Benedikt [8630-36] S9
- Stenger, Vincent E. [8621-13] S3, [8624-17] S5, [8647-16] S7
- Stepanenko, Yuriy [8596-34] SPMon, [8622-18] S4
- Stephansen, Steve [8613-13] S3
- Stephens, Tim [8607-36] S10
- St?pie?, Ryszard [8599-67] SPTue
- Stapp, Herbert 8565 Program Committee, 8565 S3 Session Chair, [8565-36] S1
- Stenberg, Henricus J.** 8565  
Program Committee, [8578-25] S5
- Sterling, Julie A. [8565-231] S3
- Stern, Liron [8636-18] S4
- Sternklar, Shmuel [8565-168] S1
- Stery, Wolfram [8580-18] S4, [8591-14] S3
- Stevens, Timothy W. [8565-227] S2
- Stevens, Timothy W. [8565-227] S2
- Stevenson, R. Mark [8634-2] S1
- Steward, Neil A. [8572-7] S2
- Stewart, Jason B. [8610-23] S5, 8616  
Program Committee, 8616 S6  
Session Chair, [8616-35] S8
- Steyn, Lodewyk [8614-35] S1
- Stice, Steven [8587-11] S2, [8593-17] S4
- Stieglitz, Thomas 8615 Program Committee
- Stigliano, Robert V. [8584-13] S5, [8584-35] S10
- Stiharu, Ion [8612-19] S4
- Stimmer, Kirko [8599-27] S6
- Stimpfl, Joffrey [8603-16] S4
- Stivala, Salvatore [8629-45] SPWed
- Stock, Karl [8565-225] S2
- Stock, Stuart R.** [8565-214] S2, [8565-215] S3
- Stock, Volker [8616-30] S6
- Stockdale, Alan [8572-33] S6, [8574-17] S4
- Stockman, Mark I.** 8623 Program Committee, [8623-35] S10
- Stoddart, Paul [8579-11] S3, [8579-9] S2, [8613-21] S5
- Stoehr, Rainer [8635-21] S6
- Stöferle, Thilo [8634-3] S1
- Stoffer, Remco [8629-5] S1
- Stöhr, Detlef [8605-16] S4
- Stoian, Razvan 8607 Program Committee, 8608 Program Committee
- Stoica, Georgiana [8595-49] S11
- Stojanovic, Vladimir [8629-14] S4
- Stolen, Roger H. [8601-18] S5
- Stolov, Andrei A.** [8576-5] S1
- Stolow, Albert [8589-29] S6
- Stoltzfus, Caleb [8596-29] S9
- Stolz, Wolfgang [8606-18] S6, [8629-42] S11, [8640-32] S7
- Stöppler, Georg [8604-18] S4
- Stork, Wilhelm [8579-17] S4
- Storm, Mark E. [8601-62] S15, [8610-17] S4
- Stothard, David J. M. [8606-8] S3
- Stothers, Lynn [8565-34] S1
- Stover, Bobby [8596-16] S5
- Stowe, Ann [8565-196] S5
- Stracke, Gernot [8634-11] S2
- Strain, Michael [8629-18] S4
- Stranik, Ondrej [8595-13] S3
- Strassburg, Martin 8641 Conference CoChair, [8641-45] S10
- Strasser, Gottfried [8631-20] S17, [8640-43] S10, [8640-44] S10
- Strassner, Johannes H. [8634-22] S5
- Strawbridge, Rendall R. [8584-12] S4, [8584-18] S5, [8584-2] S1
- Streets, Aaron M. [8588-23] S3
- Streicher, Simon [8619-19] S5
- Strekalov, Dmitry V. [8600-25] S6, [8600-49] S12
- Streltsov, Sergey [8612-20] S4
- Stremplewski, Patrycjusz [8567-72] SPSun, [8571-43] S7
- Strenzke, Nicola [8586-13] S2
- Streubel, Klaus P.** Symposium Chair, 8605 Track Chair, 8606 Track Chair, 8619 Track Chair, 8625 Track Chair, 8639 Track Chair, 8640 Track Chair, 8641 Conference Chair, 8641 S1 Session Chair, 8641 Track Chair
- Streubel, René [8609-9] S3
- Striemer, Christopher C. 8570 Program Committee
- Strikwerda, Andrew [8624-12] S4
- Strittmatter, Andre 8634 S5 Session Chair, [8634-11] S2, [8634-20] S5
- Strobbe, Ernesto [8567-46] S8
- Stroea, Lenuta [8607-1] S1, [8607-1] S5
- Strohm, Eric M. [8581-158] SPMon
- Strohmaier, Stephan [8605-18] S4, [8605-30] S7
- Strojnik Scholl, Marija 8631 Program Committee, 8631 S5 Session Chair
- Strola, Samy Andrea [8572-39] S8
- Stromberg, Frank [8623-9] S3
- Strömberg, Tomas [8578-116] SPSun
- Strotkamp, Michael [8599-21] S5
- Strouse, Geoffrey F. 8595 Program Committee
- Strudley, Thomas [8623-56] S14, [8637-30] S7
- Strupler, Mathias [8565-229] S3, [8565-78] S7, [8565-80] S7, [8574-10] S2, [8574-6] S1, [8575-22] S5
- Stuerwald, Stephan [8618-19] S6
- Sturek, Michael [8581-9] S2
- Sturk, Auguste [8591-11] S3, [8592-22] S6
- Stutz, Michel [8616-11] S3
- Stutzki, Fabian [8601-105] S4, [8601-105] S9, [8601-14] SPTue, [8601-9] S2
- Stylianou, Andreas** [8594-14] S4
- Stys, Peter K.** [8565-178] S3, [8588-14] S2
- Su, Chia-Ying [8625-44] S10, [8641-16] S4
- Su, Guangyao [8620-17] S4, [8620-77] SPWed
- Su, Kuan-Wei [8599-74] SPTue, [8606-21] S7, [8606-24] S7
- Su, Li-Chen [8597-15] S4
- Su, Mehmet F. [8632-30] S7
- Su, Min-Ying [8578-20] S4
- Su, Ping-Jung [8587-37] S6
- Su, Richard [8581-177] SPMon, [8581-22] S4
- Su, Tung-Yu** [8597-26] S6
- Su, Yu-Chuan 8612 Program Committee
- Suarez, Guillaume [8572-50] S9
- Subash, Arman Ahamed** [8583-5] S2
- Subashchandan, Shanthy [8635-32] S6, [8635-32] S9
- Subbaraman, Harish** [8613-53] SPTue, [8629-49] SPWed, [8629-51] SPWed, [8630-12] S3, [8630-48] SPWed, [8630-9] S2
- Subhash, Hresh M. [8565-58] S1, [8565-65] S3, [8571-127] SPMon, [8571-88] SPMon, [8580-1] S4, [8580-20] S4, [8580-33] S7, [8586-17] S3
- Subchoev, Pavel V. [8581-25] S4
- Subrahmanyam, N. B. V. [8634-6] S2
- Subramania, Ganapathi S. [8625-23] S5
- Subramaniam, Balachundhar [8565-26] S4
- Subramanian, Ananth [8627-18] S5
- Subramanian, Hariharan [8592-32] S8
- Such, Mario [8601-15] S4, [8601-15] S9
- Suchalkin, Sergey [8640-21] S5
- Suchan, Fabian [8565-60] S2
- Sudharsanan, Rengarajan 8631 Program Committee
- Sudheendran, Narendran [8567-42] S8, [8580-26] S5, [8580-28] S5, [8593-18] S4
- Sudlow, Gail P. [8573-30] S5, [8573-31] SPSun, [8596-11] S3
- Südmeyer, Thomas [8601-25] S7, [8606-15] S5, [8606-5] S2
- Sudo, Kenta [8567-67] SPSun
- Suematsu, Katsuki [8630-3] S1
- Suemune, Ikuo 8619 Program Committee, 8619 S10 Session Chair, [8619-1] S1
- Suen, James Y. [8565-87] S8, [8581-170] SPMon, [8581-172] SPMon
- Suganuma, Akiko [8621-64] SPWed
- Suganuma, Hiroshi [8575-4] S1
- Sugar, Jacqueline M. [8595-64] S14
- Sugawara, Hiroshi [8601-79] SPTue
- Sugihara, Okihiro [8622-2] S1
- Sugimoto, Ryo [8601-94] SPTue
- Sugioka, Koji 8607 Program Committee, [8607-15] S11, [8607-15] S5, 8608 Program Committee
- Sugita, Atsushi [8622-11] S3
- Sugita, Mitsuro [8567-12] S3, [8571-44] S7, [8571-45] S7
- Sugiura, Tadao [8587-65] SPMon
- Sugiyama, Atsushi [8640-26] S6
- Sugiyama, Masakazu [8616-32] S7, 8620 Program Committee, 8620 S14 Session Chair, [8620-48] S12, [8620-51] S12, [8620-52] S12, [8625-59] S13
- Sugiyama, Masashi [8625-7] S2
- Sugiyama, Satoshi [8567-60] SPSun
- Sugiyama, Shigeru [8571-94] SPMon
- Sugliani, Simone [8612-14] S3
- Suh, Hwansoo [8613-4] S1
- Suh, Jin-Suck [8585-31] S6
- Suh, Kwang I. [8567-6] S1
- Suh, Minah [8565-197] S5
- Suh, Yung D. [8623-34] S9
- Suhrir, Ephraim** [8621-37] S7, 8630 Program Committee
- Suhling, Klaus [8588-116] SPSun
- Sui, Bin [8628-6] S3
- Sukhorukov, Andrey A. [8636-56] S11
- Sulc, Jan** [8566-12] S3, [8599-13] S3, [8599-67] SPTue, [8599-69] SPTue, [8599-75] SPTue
- Suleski, Thomas J.** Symposium Committee, 8613 Program Committee
- Sullivan, Erin [8578-17] S3
- Sullivan, Shannon [8604-46] SPTue
- Sulmoni, Luca [8640-16] S4
- Sumetsky, Misha [8600-45] S11, 8636 S2 Session Chair, [8636-1] S1
- Sumi, Yasunori [8566-2] S1
- Sumimura, Kazuhiko [8588-35] S5, [8588-6] S1
- Summitt, Chris** [8613-19] S4
- Sumpf, Bernd [8604-3] S1, [8640-12] S3, [8640-9] S2
- Sumrain, Shadi S. [8600-3] S1
- Sun, Chen-Hsin [8565-25] S6
- Sun, Chen-Hsin [8565-22] S2
- Sun, Chia-Wei [8565-169] S5, [8566-8] S2, [8566-9] S2
- Sun, Chia-Wei [8572-8] S2
- Sun, Chi-Kuang** [8565-6] S2, [8565-77] S6, [8573-10] S2, [8577-25] S9, [8581-98] SPSun, [8587-62] SPMon, [8588-109] SPSun, 8623 Program Committee, [8623-33] S9
- Sun, Cuiro** [8565-236] S2, [8565-237] S5
- Sun, Greg [8623-18] S5
- Sun, Hao [8619-13] S3
- Sun, Hongbo [8608-1] S1
- Sun, Jie** [8642-6] S2
- Sun, Kewei [8625-50] S11
- Sun, Li [8632-43] S10
- Sun, Lili [8629-21] S6
- Sun, Qiqi [8588-110] S8
- Sun, Tianbo [8633-15] S5, [8633-16] S5, [8633-21] S6, [8633-6] S2
- Sun, Tong [8605-24] S3
- Sun, Wenyang [8605-12] S3
- Sun, Xiao Wei** [8626-53] SPWed, [8626-54] SPWed, [8632-10] S2, [8641-18] S4, [8641-2] S1, [8643-20] SPWed
- Sun, Xiaoguang [8576-6] S1
- Sun, Xiaohan [8619-65] SPWed
- Sun, Xiaoli [8610-3] S1
- Sun, Xiaomeng [8629-21] S6
- Sun, Yang [8574-27] SPSun
- Sun, Yao** [8620-3] S1
- Sun, Yao [8581-123] SPSun, [8581-125] SPSun
- Sun, Yi [8577-10] S5, [8590-33] S9
- Sun, Yi [8647-10] S5
- Sun, Ying [8570-26] SPSun
- Sun, Zhe [8587-42] S7
- Sunar, Ulas** [8568-12] S3, [8568-36] SPMon, [8568-37] SPMon, [8568-38] SPMon
- Sundares, Mukta [8639-23] S6
- Sung, Chi-Hun [8627-49] SPWed
- Sung, Yongjin [8589-46] S10
- Suntivich, Jin [8607-14] S10, [8607-14] S4, [8623-14] S4
- Suomalainen, Soile [8640-63] S14
- Supatto, Willy [8588-67] S10, [8593-25] SPSun
- Supradeepa, V. R.** [8601-3] S1, [8601-5] S1
- Suratwala, Tayyab I. 8602 Program Committee, [8602-16] S4
- Suresh, Anil K. [8595-61] S14
- Suris, Robert A. [8634-7] S2
- Suryaceanu, Grigore [8639-3] S1
- Suryanarayanan, Sankar [8574-16] S4
- Suski, Tadek 8625 S3 Session Chair, [8625-16] S4, [8625-35] S8, [8625-36] S8, [8625-37] S8, [8625-41] S9, [8625-61] S13, [8625-71] SPWed
- Suslick, Kenneth S. [8565-13] S2
- Sussman, Benjamin J. [8589-29] S6
- Susumu, Kimihiro [8595-44] S10



# Index of Authors, Chairs, and Committee Members

- Suter, Melissa J. 8565 Conference Chair, 8565 S5 Session Chair, 8565 S7 Panel Member, [8565-100] S1, [8565-101] S2, [8565-117] S5, [8565-118] S5, [8571-21] S4, [8571-23] S4, 8575 Program Committee, [8575-27] S6, [8575-6] S2
- Sutherland, Richard L.** 8642 Program Committee
- Sutherland, Dawn M. [8621-16] S4
- Sutkus, Kestutis 8577 Program Committee
- Suto, Kaname [8622-11] S3
- Sutter, Dirk H. [8603-10] S3
- Sutter, Jens [8587-4] S1
- Suvarna, Puneet [8625-68] S14
- Suyama, Shiro [8643-1] S1
- Suzuki, Atsushi [8625-73] SPWed, [8641-17] S4, [8641-20] S4, [8641-70] SPWed
- Suzuki, Kazuhiro [8644-37] SPWed
- Suzuki, Luis [8569-4] S1
- Suzuki, Masaru [8588-64] S9
- Suzuki, Takenobu** [8604-45] SPTue, [8621-33] SPWed, [8621-34] SPWed, [8621-38] SPWed, [8621-39] SPWed, [8621-49] SPWed, [8621-51] SPWed, [8621-60] SPWed
- Suzuki, Yuta [8581-105] SPSun, [8581-51] S8
- Svanberg, Sune** [8570-25] S6, [8579-22] S5
- Svane, Axel [8625-16] S4
- Sverdlov, Boris N. [8605-7] S2
- Svyakhovskiy, Sergey E.** [8627-51] SPWed
- Swain, Debasis [8623-65] SPWed
- Swan, Anna K. [8631-38] S6
- Swanson, David L. [8609-10] S3
- Swartzlander, Grover 8637 Program Committee
- Swatowski, Brandon William [8622-4] S1
- Sweeney, Stephen J.** [8625-62] S13, [8640-1] S1, [8640-32] S7, [8640-64] S14, [8640-66] S14
- Sweeney, Timothy M. [8635-12] S4
- Swenson, Orven F.** [8608-22] S5
- Swillam, Mohamed A. [8616-22] S5, [8619-21] S5, [8623-60] S15, [8623-62] S15, [8627-39] S8, [8630-13] S3, [8632-52] S12
- Swinkles, Milo Y. [8632-26] S6
- Sy, Mouhamadou [8590-4] S1
- Syed, S. [8594-25] S7
- Syed, Saba H. [8567-42] S8, [8593-14] S3
- Sylwestrzak, Marcin** [8571-32] S5
- Sysoliatin, Alexey [8579-16] S4, [8601-109] SPTue
- Syvridis, Dimitris [8640-61] S13
- Szabo, Alex [8636-55] S11
- Szabo, Aniko [8587-22] S4
- Szameit, Alexander 8611 Program Committee
- Szczepanski, Daniel [8603-36] SPTue
- Szczerba, Krzysztof [8639-28] S7
- Szep, Attila A.** 8622 Program Committee
- Szkopek, Thomas [8624-29] S8
- Szklmowski, Maciej** [8567-72] SPSun, [8571-20] S3, [8571-32] S5, [8571-43] S7, [8571-79] S12
- Szlag, Daniel** [8571-32] S5, [8571-54] S8, [8571-79] S12, [8590-8] S2
- Szmulowicz, Frank 8634 Conference Chair
- Sznaier, Mario [8587-70] SPMon
- Sznitko, Lech [8622-13] S3
- Szu, Jenny I. [8571-125] SPMon, [8571-126] SPMon
- Szukalski, Adam [8622-13] S3
- T**
- Taalat, Rachid [8631-53] S19
- Tabakoglu, Hasim O. [8568-33] SPMon
- Tabatabaei, Nima** [8575-11] S3, [8575-12] S3, [8575-13] S3
- Tabiryan, Nelson V.** [8642-26] S8
- Tablero, César [8620-18] S5
- Tabor, Christopher E. 8622 Conference Chair, 8622 S1 Session Chair, [8622-38] S9
- Tabrizian, Maryam [8580-13] S2
- Taccheo, Stefano [8601-121] SPTue, [8621-32] S7, 8627 Program Committee, 8627 S3 Session Chair
- Tack, Klaas [8613-39] S8
- Tadatomu, Kazuyuki [8625-2] S1
- Tadayon, Mohammad Amin [8581-40] S7
- Tadokoro, Yuzuru** [8604-12] S3, [8604-53] SPTue
- Tafur-Monroy, Idelfonso [8646-2] S2
- Tagami, Junji [8566-2] S1
- Taghian, Alphonse [8591-30] SPWed
- Taha, Fathi Awad [8595-18] S4
- Taha, Hesham [8590-16] S5, [8619-46] S12
- Tahvil, Saeed [8627-14] S4
- Tai, Isabella T. [8572-42] S8
- Tai, Katherine [8584-14] S5
- Taibl, Jessica N. [8567-69] SPSun, [8567-76] SPSun
- Taillon, Yves [8601-103] SPTue
- Taira, Kenji 8573 Program Committee
- Taira, Takunori** [8604-4] S1
- Tajima, Tsutomu [8647-8] S4
- Tak, Youngjo [8641-7] S2
- Takahara, Tomoo [8646-20] S7A, [8646-20] S8, [8646-23] S8, [8646-23] S9
- Takahashi, Hideya** [8575-33] SPSun
- Takahashi, Hiroshi [8627-2] S1
- Takahashi, Kohki [8621-4] S1
- Takahashi, Masanari [8609-12] S3
- Takahashi, Mei [8565-3] S8, [8579-12] S3
- Takahashi, Satoru [8611-39] S8
- Takai, Hiroshi [8646-28] S10, [8646-28] S9
- Takaki, Yasuhiro** [8644-14] S4, [8644-16] S4
- Takamatsu, Tetsuro [8572-53] SPSun, [8572-56] SPSun, [8588-26] S3
- Takano, Takayoshi [8625-59] S13
- Takashima, Yuzuru** [8613-19] S4
- Takasugi, Mari [8625-7] S2
- Takatsuki, Seiji [8565-3] S8
- Takauchi, Tetsuya [8625-31] S7, [8625-73] SPWed, [8641-17] S4, [8641-20] S4, [8641-70] SPWed
- Takayama, Shuichi [8581-73] S10
- Takeda, Hidetoshi [8625-6] S2
- Takeda, Kazuo [8615-34] S7
- Takeda, Maki [8575-33] SPSun
- Takeishi, Takaaki** [8643-11] S3, [8643-13] S3
- Takemura, Yasushi [8594-4] S2
- Takenaga, Katsuhiro [8647-14] S6
- Taketani, Akinori [8587-24] S4, [8591-10] S3
- Takeuchi, Eric B. 8631 Program Committee
- Takeuchi, Hideki [8578-15] S3, [8578-17] S3
- Takeuchi, Shigeki [8635-26] S7, [8635-32] S6, [8635-32] S9
- Takida, Yuma** [8604-12] S3, [8604-53] SPTue
- Takiguchi, Yu [8608-4] S1, [8608-8] S2
- Takiya, Toshio [8604-49] SPTue
- Takubo, Yuya [8571-104] SPMon
- Takushima, Yuichi [8604-9] S2
- Talaat, Mahmoud M. [8599-81] SPTue
- Talantov, Fedor [8639-24] S6
- Talbot, Ryan [8615-20] S5
- Talebi Fard, Sahba [8629-8] S2
- Taliercio, Thierry [8631-72] S13, [8634-21] S5
- Taliscka, Courtney [8597-20] S5
- Tam, Joshua [8565-29] S7, [8588-20] S3
- Tam, Justina O. [8596-16] S5
- Tam, Man Chun Alan [8567-41] S8
- Tamaki, Ryo [8620-51] S12
- Tamaki, Takayuki** [8611-58] SPTue, [8612-8] S2
- Tamaoki, Yoshinori [8599-82] SPTue
- Tamborini, Davide [8631-48] S9
- Tamhankar, Ashwini [8608-9] S2
- Tamura, Atsuo [8623-5] S2
- Tan, Chee-Keong [8619-51] S13, [8641-55] S12
- Tan, Jun** [8630-37] S9, [8630-46] SPWed
- Tan, Khay M. [8565-100] S1, [8565-101] S2, [8565-118] S5, [8575-6] S2
- Tan, Lihao [8599-17] S4
- Tan, Meng Peun [8639-26] S7
- Tan, Timothy T. [8595-45] S10
- Tan, Weihong 8594 Program Committee, 8597 Program Committee
- Tan, Xin** [8576-23] S5
- Tan, Yongqiang [8582-16] S4
- Tan, Yunn Boon [8599-48] S4, [8599-48] S9
- Tanabe, Katsuaki [8640-31] S7
- Tanabe, Setsuhisa** 8621 Program Committee, [8626-25] S6
- Tanaka, Akihiro [8647-8] S4
- Tanaka, Akikazu [8625-7] S2
- Tanaka, Akira** [8635-32] S6, [8635-32] S9
- Tanaka, Atsushi [8565-19] S9, [8565-22] S2, [8571-91] S4
- Tanaka, Kazuhiro [8630-32] S8
- Tanaka, Kazuo A. 8602 Program Committee
- Tanaka, Koichiro 8585 Program Committee, [8585-4] S1, [8604-10] S3, [8623-49] S13
- Tanaka, Masato [8565-15] S9, [8572-17] S4
- Tanaka, Ryosuke [8588-106] SPSun
- Tanaka, Shigehisa [8640-14] S3
- Tanaka, Shinsuke [8630-26] S7
- Tanaka, Tooru [8579-27] S6
- Tanaka, Toshiaki [8646-20] S7A, [8646-20] S8, [8646-23] S8, [8646-23] S9
- Tanaka, Yoshito [8632-61] S13
- Tanaka, Yu [8630-26] S7
- Tanaka, Yuji [8588-107] SPSun
- Tanaka, Yuki [8576-27] S5
- Tanbakuchi, Anthony** [8612-16] S4
- Tandon, Rahul [8565-223] S2, [8565-227] S2
- Tane, Alexandrina [8622-26] S7
- Tang, Cha-Min [8572-10] S2
- Tang, Guichen [8565-50] SP1
- Tang, Kun [8629-13] S3
- Tang, Li-Shen [8641-26] S6
- Tang, Liyuan [8641-18] S4
- Tang, Ming [8600-56] S13
- Tang, Nan [8593-23] SPSun
- Tang, Qingmin [8605-36] SPTue
- Tang, Rui [8577-8] SPWed, [8587-73] SPMon
- Tang, Shuo [8565-5] S2, [8565-7] S2, [8571-14] S3, [8581-156] SPMon, [8588-100] SPSun, [8588-101] SPSun
- Tang, Wei [8631-41] S8
- Tang, Xiaohong [8616-24] S5
- Tang, Xiaohui [8614-18] S4
- Tang, Xiling [8626-66] SPWed
- Tang, Yongbo [8630-42] S11, [8630-42] S2
- Tang, Yuan [8582-15] S4
- Tang, Yuanhe [8587-58] S9
- Tange, Masa [8621-2] S1
- Tangella, Krishnarao V. [8587-47] S7
- Tanikawa, Tomoyuki [8625-17] S4
- Tanikawa, Yukari [8578-108] SPSun
- Taniyama, Hideaki [8635-39] S12
- Taniyasu, Yoshitaka [8625-13] S3
- Tannert, Sebastian [8573-26] SPSun, [8588-33] S5, [8590-15] S4, [8590-36] SPSun, [8596-17] S5
- Tanno, Fumihito [8604-58] SPTue
- Tanskanen, Antti [8630-14] S4
- Tansu, Nelson [8613-36] S8, [8619-51] S13, 8640 Program Committee, 8640 S1 Session Chair, [8640-19] S4, [8641-55] S12
- Tanter, Mickael [8581-96] SPSun
- Tao, Chao [8581-101] SPSun, [8581-18] S3, [8581-92] SPSun
- Tao, Fenggang [8617-1] S1
- Tao, Xiaodong [8617-13] S3
- Tao, Yuankai K. [8571-22] S4, [8571-99] SPMon, [8587-26] S4
- Tao, Zhenning [8646-20] S7A, [8646-20] S8, [8646-23] S8, [8646-23] S9, [8647-19] S7
- Tarameshloo, Nasim [8612-24] SPTue
- Tarasov, Aleksandr A. [8599-64] SPTue
- Tarelho, Luiz Vicente Gomes** [8571-113] SPMon
- Targowski, Grzegorz [8625-36] S8, [8625-41] S9, [8625-61] S13, [8625-71] SPWed
- Targowski, Piotr [8571-32] S5
- Tari, Ilker [8643-14] S3
- Tarka, Jan** [8631-29] S6
- Tarnok, Attila** [8572-10] S6, 8587 Conference CoChair, 8587 S7 Session Chair, [8587-22] S4, 8596 Program Committee
- Taroni, Paola** [8596-24] S7
- Taroux, Daniel [8602-15] S4
- Tarucha, Seigo [8626-15] S4
- Tarvainen, Tanja [8581-30] S5
- Tarvas, Shigeru [8622-11] S3
- Taschin, Andrea [8631-3] S1
- Tashiro, Takayoshi [8645-19] S6
- Tasoglu, Savas [8568-17] S4
- Tassaert, Martijn [8627-6] S2
- Tassano, John B. [8601-6] S2
- Tassev, Vladimir [8604-31] S7
- Tatavarti, Rao [8620-58] S14
- Tate, Jennifer A. [8584-15] S5, [8584-16] S5, [8584-17] S5, [8584-18] S5, [8584-3] S10
- Tathiredy, Prashant [8565-210] S4, [8586-27] S5
- Tatini, Francesca [8565-16] S4
- Taton, Andrew 8597 Program Committee
- Tatum, Jim A. [8639-17] S5
- Taubert, Dieter Richard [8583-21] S3, [8583-21] S5
- Taubman, Matthew S. [8631-37] S6
- Taudt, Christopher [8591-22] SPWed, [8611-19] S4
- Tauke-Pedretti, Anna [8628-23] S8
- Tavakoli, Behnoosh [8578-52] S9, [8581-129] SPSun
- Tavakolian, Pantea** [8581-151] SPMon, [8581-152] SPMon
- Tavast, Miki [8606-3] S1
- Tawfik, Sherif A. [8623-60] S15
- Taydas, Eren [8565-27] S7, [8578-61] S10
- Taylor, Antoinette J. [8623-19] S5
- Taylor, Hayden K. [8588-104] SPSun
- Taylor, Jonathan M. [8589-32] S7, [8593-2] S1
- Taylor, Kenneth D. [8584-21] S6
- Taylor, Luke R. [8581-42] S7
- Taylor, Michael B. [8610-16] S4
- Taylor, Rebecca E. 8622 Program Committee
- Taylor, Russell H. [8565-64] S3
- Taylor, Ulrike [8593-22] S5, [8595-16] S4, [8611-13] S3
- Taylor, Zachary D. [8624-2] S2
- Taysing-Lara, Monica [8633-5] S2, [8633-7] S2



# Index of Authors, Chairs, and Committee Members

- Tazawa, Masato [8642-16] S5  
Tchernycheva, Maria [8625-67] S14  
Tchivaleva, Lioudmila [8592-43] SPSun  
Tearney, Guillermo J. 8565  
Conference Chair, 8565 S1 Session Chair, 8565 S6 Session Chair, [8565-10] S9, [8565-105] S3, [8565-107] S3, [8565-109] S4, [8565-11] S7, [8565-111] S4, [8565-117] S5, [8565-120] S6, [8565-121] S6, [8565-18] S7, [8565-19] S9, [8565-20] S7, [8565-22] S2, [8565-25] S6, [8565-26] S4, [8565-42] S6, 8571 Program Committee, [8571-21] S4, [8571-23] S4, [8571-91] S4, 8575 Conference Chair, [8575-11] S3, [8575-12] S3, [8575-13] S3, [8575-21] S5, [8575-24] S6, [8575-27] S6, [8575-34] S1, [8575-5] S2, [8575-6] S2, [8575-7] S2, [8601-11] S3  
Techel, Anja 8603 Program Committee  
Tedde, Sandro F. [8615-22] S5  
Teepe, Mark [8625-60] S13  
Teh, Cathleen [8598-8] S3  
Teh, Ming [8576-12] S3, [8577-15] S7  
Teh, Seng Khoon [8588-110] S8, [8588-18] S3  
Teherani, Ferechteh Hosseini 8626  
Conference Chair, [8626-20] S5, [8626-36] S8, 8631 Program Committee, 8631 S15 Session Chair  
Tei, Kazuyoku [8565-221] S1  
Teichert, Christian [8626-44] S11  
**Teichman, Joel M.** 8565 Program Committee, 8565 S3 Session Chair, [8565-45] S3  
Teisseire, Jérémie [8620-16] S4  
Teissier, Roland [8631-83] S16  
Teixeira, Antonio L. J. [8647-15] S7  
Teixeira-Dias, Bruno [8615-40] S9, [8615-43] S10  
**Tejeda, Hector D.** [8586-22] S3  
Tekin, Tolga 8614 Program Committee  
Telenkov, Sergey A. [8581-120] SPSun, [8581-154] SPMon, [8581-52] S8  
Telfair, William B. 8567 Program Committee, 8567 S3 Session Chair, 8567 S7 Session Chair  
Tellez, Alejandra [8568-22] S6  
Tellier, Franklin [8572-26] S5  
Tempea, Gabriel [8588-98] SPSun  
Tempesta, Pasquale [8631-82] S16  
Tempez, Agnes [8626-6] S2  
Temyanko, Valery L. [8601-61] S15  
Ten Haken, Bennie [8581-1] S1  
Teng, Chu-Hsiang [8625-82] SPWed  
Tengattini, Andrea [8629-39] S10  
Teo, Siew Lang [8616-24] S5  
Teo, Wulin [8565-178] S3  
Teotia, Sumeet [8618-5] S11, [8618-5] S2  
Terada, Jun [8645-6] S4  
Terada, Takaya [8603-32] SPTue  
Terada, Yoshihiro [8629-29] S8  
**Terakawa, Mitsuhiro** [8581-102] SPSun, [8607-7] S2, [8607-7] S6, [8609-3] S1, [8611-1] S1, [8637-45] SPWed  
Teramae, Fumiharu [8641-20] S4, [8641-70] SPWed  
Teraoka, Soichiro [8626-15] S4  
Terashima, Wataru [8625-39] S9  
Terazzi, Romain [8631-19] S4  
Terentjev, Eugene [8642-8] S3  
Terraciano, Matthew [8607-55] SPTue  
Terry, Eugene A. [8600-66] S15  
Terry, Eugene [8642-8] S3  
Terron, Marc [8624-14] S4  
Terui, Toshifumi [8622-28] S7  
Teshome, Ayele [8622-60] SPWed  
Tesi, Chiara [8588-48] S8  
Tessler, Gilles [8589-21] S5, [8632-53] S12  
Tessler, Renana [8605-4] S1, [8640-54] S12  
Testa, Genni [8615-1] S1, [8627-10] S3  
Tetsuyama, Norihiro [8626-30] S7  
Teubert, Jörg [8613-40] S8  
Tewari, Priyamvada [8624-2] S2  
Tewari, Surya Prakash [8622-53] SPWed, [8623-65] SPWed  
Thacker, Hiren D. [8630-41] S11, [8630-41] S2  
Thakar, Vikram A. [8614-12] S3  
Thakor, Nitish V. 8586 Conference Chair, [8586-14] S2  
Thamdrup, Lasse Højlund [8629-9] S2  
Thappa, Sarah G. [8584-16] S5, [8584-2] S1, [8584-3] S10  
Tharoux, Pierre-Louis [8595-28] S7  
Thayer, David [8574-20] S5, [8574-4] S1  
Theeg, Thomas [8601-26] S7, [8601-30] S8  
Theis, Sebastian [8600-34] S8  
Theiss, Jesse [8632-49] S11  
Themistos, Christos [8624-40] S10  
Theodoropoulos, Catherine [8581-130] SPSun, [8581-132] SPSun  
Theogarajan, Luke [8628-19] S7  
Theuer, Michael [8585-3] S1  
Thévenaz, Luc 8636 S5 Session Chair, [8636-43] S9  
Thewalt, Mike L. [8635-7] S3  
Thiberville, Luc 8565 Program Committee, [8575-15] S4  
Thieblemont, Florent [8616-38] S8  
Thiel, Michael 8613 Program Committee, 8613 S4 Session Chair, [8613-14] S4, [8613-7] S2  
Thiele, Thomas [8595-55] S13  
Thiem, Hendrick [8640-9] S2  
Thieme, Björn [8610-6] S2  
**Thienpont, Hugo** [8639-29] S8, [8639-9] S3  
Thiermann, Raphael [8595-63] S14  
Thiery, Joachim [8587-22] S4  
Thilsted, Anil Haraksingh [8629-9] S2  
Thomas, Benjamin [8589-19] S4  
Thomas, Cindy [8587-25] S4  
**Thomas, Dennis** [8580-3] S1, [8580-4] S1  
Thomas, Fabrice [8616-20] S5  
Thomas, Jens Ulrich [8601-27] S7, [8623-43] S12  
Thomas, L. [8610-21] S4  
Thomas, Majorca [8581-91] SPSun  
**Thomas, Robert J.** 8579 Conference Chair, 8579 S4 Session Chair, 8579 S7 Session Chair, [8579-18] S4, 8585 Program Committee, [8585-30] S5  
Thomas, Sebastian [8623-38] S10  
Thomas, Simon [8641-47] S10  
Thomazy, David [8631-86] S17  
**Thompson, Alex C.** [8579-9] S2  
Thompson, Gary L. [8585-29] S5  
Thompson, Mark G. [8628-16] S6  
**Thompson, Oliver B.** [8580-6] S1, [8580-7] S1  
Thomsen, Carsten L. [8637-27] S7  
Thomsen, Christian [8634-29] S2  
Thomsen, Sharon L. 8584 Program Committee, 8584 S6 Session Chair, [8584-1] S1  
Thomson, David J. [8629-32] S9  
**Thoreson, Mark D.** 8619 S9 Session Chair, [8619-23] S6  
Thorpe, Philip E. [8596-3] S1  
Thorsen, Todd [8616-35] S8  
Thorseth, Anders [8641-44] S10  
Thrall, Michael J. [8565-115] S5  
Thränhardt, Angela D. [8629-40] S11  
Threlfall, Edward [8631-91] SPWed  
Thunich, Sebastian [8623-47] S12  
Thylén, Lars [8628-4] S11, [8628-4] S2  
Thyrrestrup, Henri [8623-59] S15  
Tian, Feng [8616-24] S5  
**Tian, Fenghua** [8565-198] S5, [8578-9] S2, [8578-93] SPSun  
Tian, Mengkun [8609-10] S3  
Tichauer, Kenneth M. [8568-50] SPMon, [8578-68] S11, [8578-69] S11, [8578-81] S13  
Tidemand-Lichtenberg, Peter [8604-27] S6, [8604-28] S6  
**Tidrow, Meimei Z.** 8631 Program Committee  
Tien, Alan [8571-68] S11  
Tignon, Jérôme [8631-66] S12, [8640-38] S9, [8640-39] S9  
Tijerina, Amanda J. [8579-39] S3  
Tijhuis, Anton G. [8619-61] SPWed  
Tilbury, Karissa B. [8588-60] S9  
Tilma, Bauke W. [8606-15] S5  
Tilton, Michael L. [8631-17] S4  
Timm, Ulrich [8572-6] S2, [8591-6] S2  
Timofeeva, Tatiana V. [8604-46] SPTue  
Timotijevic, Branislav [8613-48] SPTue, [8614-6] S2, [8616-18] S3, [8616-18] S4  
Tinevez, Jean-Yves [8586-26] S5  
**Ting, David Z.-Y.** [8631-24] S5, [8631-25] S5  
Ting, Shao-Ying [8641-29] S6  
Ting, Wei-Lun [8581-159] SPMon  
Tinling, Steven P. [8574-27] SPSun  
**Tinne, Nadine** [8579-2] S1  
Tinnefeld, Philip [8595-10] S2  
Tipton, Keith [8574-16] S4  
Tirumalasetty, Manasa [8587-79] SPMon  
Tiruvedhula, Pavan [8567-30] S6, [8567-70] SPSun  
Tisa, Simone [8631-44] S9, [8631-49] S9  
Tischler, Joseph G. [8620-53] S11, [8620-53] S13  
Tisserand, Stéphane [8581-49] SPSun  
Titova, Lyubov [8585-26] S5  
Tittel, Frank K. 8631 S18 Session Chair, [8631-29] S6, [8631-86] S17  
Tittel, Wolfgang [8635-22] S6  
Titterton, David H. 8599 Program Committee, 8599 S12 Session Chair  
Tiwari, Piyush [8577-32] S10  
Tiwari, Vidhu S. [8576-14] S3  
**Tkaczyk, Tomasz S.** 8573 Program Committee, [8575-3] S1  
To, Long [8629-19] S4  
Tober, Richard L. [8640-21] S5  
Tobet, Stuart [8570-10] S3  
Tobias, Ignacio [8620-18] S5  
Tobita, Kimimasa [8593-26] SPSun, [8593-9] S2  
Todd, Rhiannon [8581-151] SPMon  
Todorov, Yanko [8631-81] S16  
Todt, René [8605-34] S7  
Toelke, Tina [8626-27] S6  
Tokarz, Danielle B. [8588-66] S10, [8596-27] S8  
**Tokayer, Jason** [8571-15] S3  
Tokmakovs, Andrejs [8622-52] SPWed  
Tokranov, Vadim E. [8640-41] S10  
Tokumasu, Fuyuki [8573-23] S6, [8583-8] S2  
Tokura, Yoshinori [8626-17] S4, [8626-38] S9  
Tokuyama, Kazuhiro [8604-49] SPTue  
Toledo, Mauricio AP [8624-13] S4  
Toledo-Crow, Ricardo [8565-74] S5, [8572-36] S7  
Tolmachev, Alex [8647-17] S7  
Tolstik, Nikolai [8599-20] S4, [8599-43] S8  
**Tolstikhin, Valery I.** [8630-6] S2  
Tolstykh, Gleb [8585-29] S5  
Tomaney, Austin [8590-17] S4  
Tomatsu, Nobuhiro [8571-44] S7  
Tombelli, Sara [8596-31] S9, [8627-51] SPWed  
Tomes, Matthew [8600-23] S6  
Tomihari, Yasuhiro [8604-7] S2  
Tomimaga, Keisuke [8623-5] S2  
Tomita, Akihisa [8647-11] S5  
Tomkos, Ioannis [8645-18] S6  
Tomlins, Peter H. [8573-11] S3, [8573-11] S5, [8583-9] S2  
Tomm, Jens W. [8605-20] S5, [8640-51] S12, [8640-53] S12  
Tomoya, Kosuge [8578-117] SPSun  
Tona, Yosuke [8565-63] S3  
Tondiglia, Vincent [8642-26] S8  
Tondusson, Marc [8599-50] S10  
Tonelli, Mauro 8638 Program Committee, [8638-3] S1  
**Toney, James E.** [8621-13] S3, [8624-17] S5, [8647-16] S7  
Tong, Hoang Tuan [8621-39] SPWed, [8621-49] SPWed  
Tong, June [8565-27] S7  
Tong, Kevin K. [8571-4] S1  
Tonin, Mario [8637-9] S2  
**Topaloglu, Nermin** [8569-12] S3, [8579-15] S4  
Topart, Patrice [8614-14] S3  
Topic, Oliver [8637-26] S5, [8637-26] S8  
Töpfer, Tino [8606-10] S3, [8606-19] S6  
Topsakal, Erdem [8584-26] S8  
Torii, Kousuke [8639-22] S6  
Tormen, Maurizio [8616-18] S3, [8616-18] S4  
Tormen, Maurizio [8614-6] S2  
Toronov, Vladislav [8565-162] S1, [8571-98] SPMon, [8578-49] S8, 8580 Program Committee, [8580-25] S5  
Torosean, Sason [8568-42] SPMon  
Torosyan, Garik [8585-3] S1  
Torrens, Mabel [8615-55] SPTue  
Torres, David [8628-23] S8  
Torres, Jérémie [8624-8] S3  
Torres, Juan P. 8637 Program Committee  
Torres, Rémi [8611-43] S3, [8611-43] S9  
Torres, Richard [8588-55] S8  
**Torres-Mapa, Maria Leilani Y.** [8611-3] S1  
Torrucelli, Alessandro [8578-111] SPSun, [8578-114] SPSun, [8578-82] S13, [8583-11] S3, [8583-21] S3, [8583-21] S5, [8583-5] S2  
Tortiglione, Claudia 8595 Program Committee  
Tortschanoff, Andreas [8616-45] SPTue, [8616-5] S2  
Tortzicky, Teresa [8567-12] S3, [8567-15] S3, [8567-25] S5, [8571-45] S7, [8571-77] S12  
**Tosi, Alberto** [8578-82] S13, [8578-88] S14, [8619-55] S14, [8631-44] S9, [8631-45] S9, [8631-48] S9, [8631-49] S9  
Toth, Cynthia A. [8567-23] S5, [8567-35] S7, [8571-42] S7  
Touris, Todd C. [8602-14] S4  
**Tournié, Eric** 8631 Conference CoChair, 8631 S12 Session Chair, 8631 S19 Session Chair, [8631-35] S7, [8631-72] S13, [8634-21] S5  
Tournier, Jean-Nicolas [8589-54] SPWed  
Toutouzas, Konstantinos [8565-39] S6, [8565-40] S6  
**Towle, Erica L.** [8579-18] S4  
Toxqui-López, Santa [8644-41] SPWed  
Toyoshima, Morio 8610 Program Committee  
Tozburun, Serhat [8565-193] S2  
**Tozburun, Serhat** [8565-39] S2, [8565-40] S2  
Trachtenberg, John [8578-53] S9, [8578-56] S9  
Tracy, Erin [8568-36] SPMon  
Tracy, Joseph B. [8592-37] S9  
Träger, Frank 8609 Conference Chair, 8609 S2 Session Chair, [8609-2] S1  
Trail, Collin M. [8635-42] S12

# Index of Authors, Chairs, and Committee Members

- Trammell, Susan R.** [8565-27] S9, [8565-42] S3  
**Tran Quoc, Hoai** [8621-11] S3  
Tran, Quyen A. [8587-37] S6  
Tran, Stephanie U. [8566-21] SPSun  
Tranberg, Karl-Goran 8582 Program Committee  
Tränkle, Günther [8605-15] S4, [8605-29] S6, [8640-12] S3, [8640-60] S13  
Tran-Thi, Thu-Hoa [8570-24] S6  
Trappe, Neil [8624-39] S10  
Trasischker, Wolfgang [8567-12] S3, [8567-15] S3, [8567-25] S5, [8571-45] S7, [8571-77] S12  
Traxler, Lukas [8567-58] SPSun  
Traynor, Nathan B. J. [8620-57] S14  
Traynor, Nicholas [8601-37] S9  
Treadwell, Paul A. [8602-6] S2  
Trebaol, Stéphane [8600-16] S4  
**Trebino, Rick** [8611-24] S5, [8611-26] S5  
Tredicce, Jorge R. [8636-46] S9  
Tredicucci, A. [8631-3] S1, [8631-84] S16  
Treeby, Bradley E. [8581-67] S9  
Treffler, Alexander [8611-27] S5, [8637-20] S4  
Tregoa, Denis [8601-121] SPTue  
Trela, Natalia [8605-6] S2  
Tremblay, Bruno [8624-14] S4  
Tremblay, Eric J. [8620-37] S9, [8620-38] S9, [8643-5] S1  
Tremblay, B. Stuart [8584-12] S4  
**Treuillet, Sylvie** [8572-51] SPSun  
Tresch, Georg [8605-18] S4, [8605-30] S7  
Trevethan, John [8631-57] S11  
Trevino, Jacob T. [8635-29] S6, [8635-29] S9  
Tribuzi, Vinicius [8612-23] SPTue  
Tricarico, Luigi 8603 Program Committee, [8603-23] S5, [8603-29] S7  
Tricot, Sylvain [8631-78] S15  
Triesault, Nicholas [8565-25] S6, [8616-6] S2  
Trinité, Virginie [8631-34] S7  
Tripathi, Markandey M. [8591-15] S4  
Tripon-Canseliet, Charlotte [8631-40] S8  
Trivedi, Sudhir B. [8599-39] SPTue, [8621-45] SPWed, [8631-87] S17  
Trivellini, Nicola [8625-58] S12, [8641-53] S11  
Troester, Melissa A. [8580-2] S1  
**Tromberg, Bruce J.** [8575-18] S4, [8577-23] S8, 8578 Conference Chair, [8578-1] S1, [8578-15] S3, [8578-17] S3, [8578-20] S4, [8578-3] S1, [8578-63] S10, [8578-96] SPSun, [8578-97] SPSun, [8588-39] S6, [8591-9] S2, 8592 Program Committee, [8592-31] S7  
Trono, Cosimo [8572-49] S9, [8591-17] S4, [8596-31] S9, [8600-62] S15  
Troppenz, Ute [8624-20] S6  
Tropper, Anne C. 8606 Program Committee, 8606 S7 Session Chair, [8606-20] S6, [8606-23] S7, [8606-7] S2  
Troy, Mitchell [8610-24] S5  
Troy, Tyler [8620-14] S4  
Troynanova-Wood, Maria [8591-26] SPWed  
Trugman, Stuart A. [8623-19] S5  
Truong, Hoa H. [8588-97] SPSun  
Truong, Tuan N. [8610-24] S5  
Trywick, Carmen [8565-31] SPSun  
Tsai, Cheng-Kun [8588-65] S10  
Tsai, Chia-Chang [8570-26] SPSun  
Tsai, Chun-Chin [8641-50] SPWed, [8641-8] SPWed  
Tsai, Jui-Chang [8589-26] S5  
Tsai, Julius Ming-Lin [8616-3] S1, [8616-3] S7  
Tsai, Kai-An [8641-73] SPWed  
Tsai, Ko-Fan [8637-21] S4  
Tsai, Meng-Che [8620-39] S9  
Tsai, Meng-Tsan [8565-9] S3, [8571-129] SPMon  
Tsai, Ming-Rung [8565-6] S2, [8588-109] SPSun  
Tsai, Modie [8607-41] S11  
Tsai, Pei-I [8597-17] S4  
**Tsai, Tsung-Han** [8571-22] S4  
Tsai, Yu-Lin [8620-59] S14, [8620-70] SPWed  
Tsao, Stanley [8631-100] S4, [8631-17] S4, [8631-21] S4  
Tschekalinskij, Wladimir [8641-46] S10  
Tse, Eddy M. [8602-9] S3  
Tsekoun, Alexei [8640-45] S11  
Tsen, Kong-Thon 8623 Conference Chair  
Tseng, Hung-Yu [8597-19] S4  
Tseng, Po-jung M. [8574-5] S1  
Tseng, Ricky J. [8629-34] S9  
Tseng, Shih [8636-10] S2  
Tseng, Snow H. [8581-159] SPMon, [8592-42] S9  
Tskitis, Vassiliki L. [8577-32] S10  
**Tsiminis, Georgios** [8627-22] S5  
Tsin, Andrew [8594-12] S4  
Tsou, Chia-Han [8599-74] SPTue  
Tsu, Raphael  
Tsubaki, Kenji [8625-59] S13  
Tsubakimoto, Koji [8599-82] SPTue  
**Tsuchiya, Takayoshi** [8641-20] S4  
Tsuchizawa, Tai [8628-5] S3  
Tsuda, Hiroyuki [8627-2] S1  
Tsuiji, Shinji 8640 Program Committee, [8640-14] S3  
Tsuiji, Takeshi [8599-38] S7  
Tsukamoto, Katsutoshi 8645 Conference Chair, 8645 S5 Session Chair, 8645 S6 Session Chair, [8645-19] S6  
Tsukamoto, Masahiro [8609-12] S3  
Tsukazaki, Atsushi [8626-15] S4  
Tsunoji, Yasuyuki [8581-102] SPSun  
Tsur, Limor [8567-10] S2  
Tsumumi, Eishi [8613-24] S5  
Tsybouski, Dmitri [8581-177] SPMon, [8581-2] S1, [8581-22] S4  
Tsytsarev, Vassiliy [8581-155] SPMon  
Tu, Charn-Gan [8625-44] S10, [8641-16] S4  
Tu, Feng [8576-8] S2  
**Tu, Li-Wei** [8570-26] SPSun, 8641 Conference Chair, [8641-69] SPWed  
Tu, Po-Min [8625-75] SPWed  
Tu, Qingfeng [8582-7] S1  
Tu, Xiaoguang [8629-29] S8  
Tu, Yi-Chou [8571-86] SPMon  
Tuan, Tong Hoang [8604-45] SPTue  
**Tuchin, Valery V.** 8567 Program Committee, 8571 Conference Chair, 8571 S12 Session Chair, 8580 Conference Chair, 8580 S3 Session Chair, 8580 S8 Session Chair, 8580 S9 Session Chair, [8580-26] S5, [8580-53] SPMon, [8580-54] SPMon, [8580-55] SPMon, [8580-56] SPMon, 8582 Program Committee, [8596-46] SPMon  
Tuchina, Elena S. [8596-46] SPMon  
Tuci, Giulia [8596-31] S9  
**Tucker, Ryand** [8599-33] S6, [8599-77] SPTue  
**Tucker-Schwartz, Jason M.** [8571-70] S11, [8571-83] S12, [8580-39] S7  
Tuer, Adam E. [8588-62] S9, [8588-66] S10  
Tukiaainen, Antti [8620-55] S14  
Tukkiniemi, Kari [8629-5] S1  
Tulea, Cristian [8565-226] S2  
Tuli, Suneeth [8622-43] S10  
Tulip, John [8612-13] S3, [8631-61] S11  
Tulkki, Jukka [8619-25] S6, [8625-78] SPWed  
Tung, Burcu [8584-7] S2, [8584-8] S2  
Tung, Jung-Chen [8599-74] SPTue, [8606-21] S7, [8606-24] S7  
**Tunnell, James W.** [8565-19] S5, [8565-25] S6, [8579-7] S2, [8618-8] S11, [8618-8] S2  
**Tünnermann, Andreas** Symposium Chair, [8565-185] S4, [8599-44] S8, [8601-100] SPTue, [8601-104] SPTue, [8601-105] S4, [8601-105] S9, [8601-14] SPTue, [8601-2] S1, [8601-27] S7, [8601-28] S7, [8601-39] S9, [8601-42] S10, [8601-43] S11, [8601-48] S12, [8601-50] S12, [8601-9] S2, [8604-20] S5, [8611-16] S4, [8611-33] S7, [8611-47] S11, [8611-47] S5, [8611-48] S12, [8611-48] S6, [8611-9] S2, [8615-15] S4, [8616-21] S5, [8616-27] S6, [8624-47] S11, [8633-22] S7, [8633-35] S10  
Tuominen, Jarkko [8597-2] S1  
Tuomisto, Filip [8625-15] S4  
Turban, P. [8631-78] S15  
Turchin, Ilya V. [8568-16] S4, [8578-58] S10, [8578-73] S12, [8581-25] S4, [8587-63] SPMon  
Turchinovich, Dmitry [8623-22] S6  
Turecek, Josef [8586-11] S2  
Turek, John J. [8592-8] S3, [8593-21] S5  
Turitsyn, Sergei K. 8601 Program Committee  
Turko, Nir A. [8597-25] S5  
**Turnbull, Andrew** [8606-20] S6, [8606-23] S7  
Turner, Eric E. [8586-10] S2  
Turner, George [8615-6] S2  
Turola, Massimo [8578-114] SPSun  
Turowski, Marek [8620-33] S8  
Turrell, Sylvia J. [8621-22] S5  
Turro, Nicholas J. [8624-24] S6  
Turski, Henryk [8625-35] S8, [8625-77] SPWed  
Turton, David [8623-2] S1  
Turunen, Jari [8613-11] S3  
Tutuc, Emanuel [8630-12] S3  
Tutum, Cem Celal [8608-23] S5  
Twa, Michael D. [8567-52] S9, [8571-64] S10, [8571-82] S12  
Tweedy, J. [8625-91] S14  
Twigg, Mark E. [8604-30] S7  
Tyagi, Priyanka [8622-43] S10  
Tyler, Betty M. [8565-172] S2  
Tyndall, David [8588-34] S5  
Tyurin, Aleksandr V. [8569-11] S3
- 
- U**
- Uchijima, Koji [8626-48] S12, [8629-47] SPWed  
**Uchugonova, Aisada** [8579-1] S1, 8588 SPSun Session Chair, [8588-38] S6, [8588-46] S7, [8611-5] S1  
Uddin, Ashraf [8622-32] S8  
Ueda, Jumpei [8626-25] S6  
Ueda, Rieko [8622-28] S7  
Ueda, Shigeto [8578-15] S3  
Ueno, Kosei [8613-1] S1  
Uesugi, Tsutomu [8625-28] S7  
**Ughi, Giovanni J.** 8565 S5 Session Chair, [8565-6] S5, [8565-7] S3  
Ugolini, Alan [8630-2] S1  
Ugolini, Chris [8621-25] S5  
**Uhring, Wilfried** [8565-166] S1  
Uliaque, Katia [8615-40] S9  
Ullmann, Frank [8607-61] S9  
**Ulrich, Bruno** [8634-26] SPWed  
Ullsperger, Tobias [8611-48] S12, [8611-48] S6  
Ulrich, Artur [8576-7] S2  
Umeda, Shinya [8641-20] S4  
Umemura, Wataru [8588-6] S1  
Umesh Babu, Harsha [8579-17] S4
- 
- V**
- Vacas-Jacques, Paulino [8565-10] S9, [8565-18] S7, [8565-20] S7, [8575-12] S3, [8575-7] S2, [8592-1] S1  
Vagionas, Christos [8621-12] S3  
Vahala, Kerry J. [8600-11] S3  
Vahdati, Seyed Payam [8643-5] S1  
Vaicellunaita, Agne [8567-63] SPSun  
Vaillancourt, Jarrod N. [8631-27] S5  
Vaillancourt, Robert [8618-25] S7  
Vajzovic, Lejla [8567-43] S8  
Vakoc, Benjamin J. [8565-14] S2, [8571-28] S5, [8571-34] S6, [8571-36] S6  
Valea, Fidel A. [8592-27] S7  
Valencia-Acuña, Pavel Alejandro [8644-40] SPWed  
Valente, Paola [8567-62] SPSun  
Valentin, Constance [8600-78] SPTue  
Valentini, Gianluca [8578-70] S11, [8593-10] S3  
Valenziano, Luca [8618-13] S4  
Validire, Pierre [8577-29] S10  
Vallan, Alberto [8601-115] SPTue  
Valle, Angel [8639-33] SPWed  
Valle, Marcelo [8622-12] S3  
Vallee, Fabrice 8623 Program Committee, [8623-25] S8  
Vallee, Real [8601-52] S13  
Vallejo, Felipe A. [8604-59] SPTue  
Valley, George C. [8645-24] SPWed  
**Valmorra, Federico** [8623-31] S7, [8623-57] S15  
Valvo, Giuseppina G. [8631-47] S9  
Vamvakaki, Maria [8611-11] S2  
van Baal, Jeff G. [8572-29] S6  
van Beijnum, Judy [8568-51] SPMon  
van Beusekom, Heleen M. M. [8565-14] S2  
**Van Daele, Peter** 8630 Program Committee, 8630 S4 Session Chair, 8645 Program Committee  
Van Dalfsen, Koop [8599-2] S1



# Index of Authors, Chairs, and Committee Members

- van Dam, Annemieke [8587-49] S7  
Van de Sompel, Dominique [8583-7] S2, [8590-18] S4  
van de Ven, A. F. Jos J. [8587-78] SPMon  
Van De Ville, Dimitri [8581-144] SPMon  
Van de Walle, Chris G. [8625-54] S12, [8641-54] S12  
van Delft, Falco C. M. [8587-76] SPMon, [8587-77] SPMon, [8587-78] SPMon  
van den Berg, Albert 8615 Program Committee  
van den Bergh, Hubert E. [8568-51] SPMon  
Van Den Heuvel, Eric [8587-76] SPMon  
van der Beek, Timmo [8623-56] S14  
van der Heijden, Ferdi [8572-29] S6  
van der Mark, Martin B. [8578-31] S5  
van der Pol, Edwin [8571-37] S6, [8591-11] S3, [8592-22] S6  
van der Schoot, Josine [8567-49] S9  
**van der Slot, Peter J.** [8632-37] S9  
van der Steen, Antonius F. W. [8565-17] S3, [8581-10] S2, [8581-14] S2  
Van der Veen, Albert [8565-13] S4, [8565-14] S4, [8573-19] S5, [8576-16] S3, [8579-5] S1  
van der Zon, Ben [8614-16] S3  
Van Duyne, Richard P. 8597 Program Committee  
van Gemert, Martin J. C. [8592-22] S6  
van Geuns, Robert-Jan [8565-39] S6  
van Keulen, Fred [8627-40] S9, [8632-36] S9  
**van Leest, Thijs** [8570-7] S2  
Van Leeuwen, Robert [8599-55] S11, [8599-56] S11  
**van Leeuwen, Ton G.** [8565-47] S4, [8571-35] S6, [8571-37] S6, [8581-23] S4, [8581-38] S7, [8583-4] S1, [8587-49] S7, [8591-11] S3, [8592-22] S6, [8592-36] S9  
van Lier, Johannes [8574-22] S5  
Van Lieu, Neil R. [8606-3] S1  
van Miegheem, Nicholas [8565-40] S6  
van Netten, Jaap J. [8572-29] S6  
van Niekerk, Dirk [8572-38] S7  
van Otten, Frank W. M. [8632-2] S1, [8632-25] S6  
**van Soest, Gijs** 8565 S3 Session Chair, [8565-14] S2, [8565-17] S3, [8565-39] S6, [8565-40] S6, [8565-45] S1, [8581-10] S2, [8581-14] S2  
van Someren, Bob [8640-10] S2  
Van Thourhout, Dries [8627-6] S2, [8633-28] S9  
Van Tran, Thi Thanh [8621-22] S5  
van Veldhoven, René P.J. [8632-26] S6  
Van Veldhoven, Spiridon [8581-38] S7  
Van Vlack, Cole P. [8565-237] S5, [8603-27] S6  
van Wezel, Richard J. A. [8581-1] S1  
van Zalinge, Harm [8587-77] SPMon, [8587-78] SPMon, [8594-25] S7, [8594-28] S7, [8594-29] S7  
van Zijl, J. [8587-76] SPMon  
Van, Qui [8590-5] S1  
Vandamme, Nicolas [8620-11] S3  
Vandertop, Peter [8576-16] S3  
**Vangala, Shivashankar R.** [8604-31] S7  
Vanna, Renzo [8595-8] S2  
Varani, Luca [8624-8] S3  
Varas, Stefano [8621-22] S5  
Varchi, Greta [8596-31] S9  
Vargas, Carlos [8586-8] S2  
**Vargac, Gracie** [8572-28] S5, [8573-18] S5, [8588-108] SPSun, [8588-68] S10  
Vargas, Salvador [8629-50] SPWed  
Varlamov, Sergey [8608-27] S13, [8608-27] S6  
Varlet, Pascale [8565-184] S4  
Varshney, Arnavi [8565-182] S4  
Varshney, Shailendra K. [8604-47] SPTue  
Vartanyan, Tigran A.  
**Vasefi, Fartash** [8579-21] S5, [8581-151] SPMon, [8587-27] S4, [8587-29] S4, [8587-34] S5, [8597-24] S5, [8597-42] S8  
**Vashaei, Zahra** [8626-20] S5, [8631-33] S7  
Vashchenko, Elena  
Vashdi, Guy [8601-54] S13  
Vasil'ev, Peter P. [8640-17] S4  
Vasil'ev, Vasily [8637-28] S7  
Vasko, Fedir T. [8624-37] S9  
Vass, Clemens [8567-12] S3, [8567-21] S4  
Vassiliadis, Thomas [8632-22] S5  
Vaughan, Melville B. 8582 S3 Session Chair, [8582-12] S3  
Vawter, Gregory A. [8628-23] S8  
**Vázquez García, Carmen** [8629-50] SPWed  
Vázquez-Montiel, Sergio [8592-46] SPSun  
Veber, Philippe [8607-25] S7  
Vega-Acosta, Roger [8626-61] SPWed  
Végh, Attila-Gergely [8594-15] S4  
Veiga, Manoel [8573-26] SPSun  
Veilleux, Israel [8565-189] SPSun, [8578-53] S9, [8578-56] S9  
Veit, Peter [8625-21] S5  
Veitita, Andrzej [8628-15] S6  
Vekilov, Peter G. [8615-18] S4  
Vela, Deborah [8565-12] S3  
Véléz, Christian [8571-106] SPMon  
Velicu, Silviu [8613-41] S8, [8631-52] S10  
Vemishetty, Kalyanramu [8571-108] SPMon  
Vengris, Mikas [8567-63] SPSun  
Veniard, Valerie [8629-37] S10  
Venkataraman, Venkat [8641-10] S3  
Venkatraman, Vinu [8614-5] S1  
**Venkitesh, Deepa** [8601-98] SPTue, [8629-16] S4  
Venter, Petrus J. [8628-9] S4, [8630-19] S5, [8643-8] S2  
**Ventura, Liliane** [8567-55] SPSun, [8567-56] SPSun, [8567-57] SPSun  
Ventura, Michael James [8613-30] S7  
**Venugopal, Vijayakumar C.** [8620-24] S6  
Venugopal, Vivek [8572-33] S6, [8574-17] S4, [8578-26] S5, [8578-80] S13  
Venus, George B. [8601-122] SPTue, [8601-123] SPTue, [8601-46] S11  
Vera-Reveles, Gustavo [8632-5] S1  
Vercauteren, Tom K. [8575-2] S1  
Verdaasdonk, Rudolf M. 8565 Program Committee, 8565 S1 Session Chair, [8565-13] S4, [8565-14] S4, [8572-47] S9, [8572-9] S2, 8573 Program Committee, 8573 S1 Session Chair, [8573-19] S5, [8574-15] S3, [8574-25] SPSun, [8576-16] S3, [8579-5] S1  
**Verdecchia, Kyle** [8578-76] S12  
Vergaftman, Igor [8604-30] S7  
Vergani, Paolo [8612-14] S3  
**Vergien, Christopher L.** [8604-23] S5  
Verhaeghe, Geert G.  
Verhoeven, Adrie J. M. [8581-10] S2  
Verkhusha, Vladislav V. [8581-117] SPSun  
Verma, Inder M. [8590-30] S8  
Verma, Malvika [8567-1] S1  
**Verma, Pramode K.** [8610-14] S3  
Vermeer, Koenraad A. [8567-30] S6, [8567-49] S9, [8571-17] S3  
Vermersch, Sébastien [8602-15] S4  
Vermeulen, Diedrik [8633-28] S9  
Vernier, Paul Thomas 8585 Program Committee, 8585 S6 Session Chair, [8585-12] S2  
**Vernon, Jonathan P** [8642-26] S8  
Veronis, Georgios [8627-38] S9  
Verschuuren, Marc A. [8641-65] S13  
Verwaal, Nanko [8641-46] S10  
Vesalapu, Gowri Suresh [8616-28] S6  
Vesuna, Sam [8588-55] S8  
Vethake, Thilo [8605-18] S4  
Vetrovec, John [8599-61] S12, [8605-13] S3  
Vetsuypens, Arnout [8622-41] S10  
Vettenburg, Tom [8589-38] S8, [8637-16] S3  
Vever-Bizet, Christine [8575-15] S4  
Vezin, Herve [8601-68] SPTue  
Viana, Bruno [8621-23] S5, [8621-64] SPWed, 8626 Program Committee, 8626 S11 Session Chair, 8626 S12 Session Chair, [8626-26] S6, [8626-52] SPWed, [8626-59] SPWed, [8641-61] S4  
Viard, Thierry [8616-44] S9  
Viator, John A. [8570-11] S3  
Vicario, Carlo [8604-11] S3  
Vickers, Dwayne [8587-39] S6  
Vidal, Carola [8566-10] S2  
Vidal, Cynthia [8595-32] S8  
Vidal, François [8623-24] S6  
Vidi, Pierre-Alexander [8615-11] S3  
Vidovic, Luka [8565-18] S5, [8579-33] S7  
Viehoever, Amy R. [8572-14] S3, [8578-8] S2  
Vieira, Elzo E. S. [8591-29] SPWed  
**Vienola, Kari V.** [8567-30] S6, [8567-70] SPSun, [8571-17] S3  
Vieweg, Nico [8642-19] S6  
Vigil, Steve R. [8613-37] S8  
**Vignolini, Silvia** [8623-16] S5  
Vignoud, Severine [8570-24] S6  
Viherfilälä, Jukka [8640-63] S14  
Vijay, Jesus [8615-13] S3  
**Vijaya, Gopi Krishna** [8620-50] S12, [8620-65] SPWed  
**Vijayraghavan, Karun** [8631-67] S12, [8640-40] S9  
Vikartovska, A. [8588-32] S5  
Viktorovitch, Pierre 8633 Program Committee, 8633 S6 Session Chair, [8633-2] S1, [8639-7] S3  
Vilera, Mariafernanda [8640-59] S13  
Villa, Federica A. [8631-44] S9, [8631-48] S9  
Villagomez-Bernabe, Balder-Arturo [8604-21] S5  
Villa-Hernández, Joan Manuel [8644-40] SPWed  
Villalobos, Guillermo [8599-18] S4  
Villarreal-Reyes, Salvador [8645-29] SPWed  
Villarreal-Saucedo, Francisco J. [8600-3] S1  
**Villeneuve, Alain** [8601-113] SPTue, [8601-116] SPTue, [8604-6] S2, [8611-17] S4  
**Villiger, Martin L.** [8565-118] S5, [8565-14] S2, [8571-23] S4, [8571-34] S6, [8571-36] S6, [8571-48] S8, [8575-24] S6  
Vilmi, Paulina [8613-42] SPTue  
Vilnrotter, Victor A. [8610-29] S6  
Vinattieri, Anna [8625-58] S12  
Vincent, Grégory [8631-74] S14  
**Vincenti, Maria A.** [8632-65] S14  
Vinet, Eric [8640-61] S13  
Vinjimore Kesavan, Srikanth [8587-7] S1  
Vinogradov, Sergei A. [8565-177] S3, [8588-45] S7, [8596-20] S6  
Viola, Roberto [8631-85] S16  
**Virost, Léopold** [8628-2] S1, [8628-2] S10  
Viruthachalam, Thiagarajan [8568-5] S2, [8587-53] S8  
Vishwanatha, Jamboor K. [8590-10] S2  
Visscher, Martijn [8581-1] S1  
Viswanathan, Nirmal K. [8637-44] S10  
Viti, Leonardo [8631-84] S16  
Vitiello, Miriam S. 8631 Program Committee, 8631 S13 Session Chair, [8631-3] S1, [8631-82] S16, [8631-84] S16  
**Vitkin, I. Alex** [8565-191] SPSun, [8565-75] S6, [8592-12] S4  
**Vivien, Laurent** [8621-2] S1, [8628-2] S1, [8628-2] S10, [8629-25] S7  
Vizbaras, Augustinas [8631-67] S12, [8640-40] S9  
Vlachos, Kyriakos G. [8619-64] SPWed, [8632-22] S5  
Vlasov, Alexander N. [8624-16] S5  
Vlasov, Yurii A. [8600-19] S5, [8630-10] S3  
Vo, Sonny [8633-19] S6  
Vocanson, Francis [8609-4] S1  
VoDaniel, Richard S. [8621-16] S4  
**Vodhanel, Tuan** 8571 Track Chair, 8572 Conference Chair, 8572 S6 Session Chair, 8572 Track Chair, 8573 Track Chair, 8574 Track Chair, 8575 Track Chair, 8576 Track Chair, 8577 Track Chair, 8578 Track Chair, 8597 Conference Chair, 8597 S1 Session Chair, 8597 S2 Session Chair, 8597 S3 Session Chair, 8597 S4 Session Chair, [8597-34] S7, 8611 Track Chair, 8615 Track Chair  
Vodopyanov, Konstantin L. 8604 Conference Chair, 8604 S6 Session Chair, [8604-19] S5, [8604-29] S6  
**Voelkel, Reinhard** [8613-45] SPTue, [8613-46] SPTue, [8613-48] SPTue  
**Vogel, Alfred** 8579 Program Committee, 8611 Program Committee  
Vogel, Steven S. 8588 Program Committee  
Vogl, Ulrich [8636-17] S4, [8638-11] S3  
Vogler, Uwe [8613-48] SPTue  
Vogt, Josef [8570-27] SPSun  
**Vogt, William C.** [8578-94] SPSun  
Voigt, Sven [8614-2] S1  
Voigtländer, Christian [8601-27] S7  
Voisiat, Bogdan [8612-5] S1  
Vojteck, Gautier [8621-14] S3  
Volckens, John [8615-36] S8  
**Volet, Nicolas** [8606-14] S5, [8639-27] S7  
Volk, Martin [8585-6] S1  
Volkmner, Andreas [8588-98] SPSun  
**Volkova, Elena K.** [8571-97] SPMon  
Voll, Stefan L. [8646-13] S5  
Vollmer, Angelika [8587-9] S1, [8589-22] S5  
**Vollmer, Frank** [8570-19] S5  
Volodin, Boris L. [8572-43] S8  
Volonterio, Alessandro [8596-24] S7  
Volynskaya, Zoya [8579-20] S5  
Volz, Kerstin [8629-42] S11, [8640-32] S7  
von Bally, Gert [8589-22] S5  
von Freymann, Georg 8613 Conference Chair, 8613 S1 Session Chair, 8613 S3 Session Chair, 8613 S6 Session Chair, [8613-7] S2, [8613-8] S2  
von Moos, Nadia [8572-50] S9  
von Niederhäusern, Tim [8571-106] SPMon, [8571-108] SPMon, [8571-109] SPMon  
Vora, Kevin [8607-35] S10, [8611-40] S8, [8611-57] SPTue, [8613-52] SPTue  
Vorbeck, Sascha 8646 Program Committee  
Vorobiev, Nikolai [8599-52] S10  
Voronova, Olga [8579-16] S4  
Vorontsov, Mikhail A. [8601-41] S10, [8610-18] S4, [8610-35] S7, [8610-36] S7



# Index of Authors, Chairs, and Committee Members

- Vorreau, Philipp [8571-106] SPMon  
Vos, Willem L. [8623-48] S12, [8623-59] S15, [8632-27] S6, [8632-37] S9, [8634-23] S5, [8637-30] S7  
Voss, Heike [8599-14] S3  
Voss, Michael [8605-3] S1  
Voudouris, Kostantinos [8645-16] S6, [8645-18] S6  
Vu, Hoa Xuan [8597-41] S8  
Vu, Tania Q. 8595 Program Committee  
Vuckovic, Jelena [8619-31] S8, [8632-24] S6, [8635-41] S12  
Vukadinovic, Nicolas [8619-27] S7  
Vukelic, Sinisa [8565-49] S4, [8579-3] S1  
Vullev, Valentine I. [8568-41] SPMon, [8596-2] S1  
**Vuong, Barry** [8565-236] S2  
Vurgafman, Igor [8620-53] S11, [8620-53] S13, [8631-58] S11, [8635-25] S7  
Vyhlidal, David [8599-13] S3  
Vymyslicky, Michal [8571-93] SPMon
- 
- W**
- Waag, Andreas [8641-45] S10  
Waasem, Niklas [8621-8] S2  
Wabler, Michele [8584-37] S1  
Wabnitz, Heidrun [8578-62] S10, [8578-88] S14, 8583 Program Committee, 8583 S3 Session Chair, [8583-11] S3, [8583-21] S3, [8583-21] S5, [8583-5] S2  
Wabra, Stefan [8630-28] S7, [8639-18] S5  
Wachsmann-Hogiu, Sebastian 8577 Program Committee, [8592-2] S1  
Wächter, Christoph 8627 Program Committee, 8627 S9 Session Chair  
Wachter, Georg [8623-38] S10  
Wachter, Ulrich [8570-27] SPSun  
Wada, Kazumi [8628-5] S3  
Wada, Yuki [8571-95] SPMon  
Wadams, Robert C. [8622-38] S9  
Wade, Scott A. [8579-9] S2  
Wadsworth, William J. [8635-14] S4  
Wagener, Philipp [8609-9] S3  
Wägli, Philip [8591-16] S4  
Wagner, Bernd [8616-9] S2  
Wagner, Joachim H. [8586-4] S1, [8606-10] S3, [8606-19] S6, [8607-38] S11, [8625-38] S8, [8631-15] S17, [8640-49] S11  
Wahab, Hud [8565-226] S2  
Wahl, Michael [8573-26] SPSun, [8588-36] S5, [8588-88] SPSun, [8590-15] S4, [8590-36] SPSUN  
Wainner, Richard T. [8631-9] S2  
Wakayama, Yuta [8647-11] S5  
Wakjira, Jillcha [8630-2] S1  
Waks, Edo [8634-14] S3, [8635-38] S11  
Walasik, Wiktor [8632-59] S13  
Walavalkar, Sameer [8632-11] S3  
Walczak, Jaroslaw [8639-27] S7  
Walczuk, Joanna [8607-50] SPTue  
Waldbaur, Ansgar [8615-39] S9  
Wale, Mike J. [8627-14] S4  
Walecki, Peter [8614-4] S1  
Walecki, Wojciech [8614-4] S1  
Walker, Andrea V. [8567-61] SPSun  
Walker, Janice Meeting VIP  
Walker, Kim Meeting VIP  
Walker, Richard [8588-34] S5  
Walker, Scott Meeting VIP  
Wall, R. Andrew [8575-26] S6  
Wall, Simon [8623-11] S4  
**Wallace, Vincent P.** [8585-16] S3, [8623-3] S2  
Waller, Erik H. [8613-8] S2  
Waller, Laura [8589-58] S4  
Wallrabe, Ulrike [8637-20] S4  
Walmsley, Ian A. [8636-38] S8
- Walsh, Alex J.** [8588-73] SPSun  
Walsh, Gary F. [8594-11] S4  
Walters, Erin B. [8599-23] S5  
Walters, Robert J. 8620 Program Committee, 8620 S5 Session Chair, [8620-30] S8, [8620-53] S11, [8620-53] S13  
Walther, Martin [8631-56] S10  
Walton, Brial [8565-28] S7  
Wan, Ka-Wai [8580-15] S2  
Wan, Peng [8601-117] SPTue  
**Wan, Wenjie** [8600-42] S11  
Wan, Zhenmao [8600-63] S15  
**Wang, Alan X.** [8598-24] SPSUN, [8632-3] S1  
Wang, Aqin [8582-30] SPTues  
Wang, Baojun [8627-16] S4  
Wang, Bin [8613-54] SPTue  
Wang, Bingqing [8578-51] S9  
Wang, Buguo [8626-7] S2  
**Wang, Chad** [8639-24] S6  
Wang, Chao [8624-41] S10  
**Wang, Chao** [8587-38] S6, [8611-22] S5  
Wang, Chao [8586-18] S3  
Wang, Chen-Chia [8631-87] S17  
**Wang, Cheng** [8619-60] SPWed, [8619-7] S2  
Wang, Cheng [8571-105] SPMon  
Wang, Chengao [8638-10] S2, [8638-16] S4  
Wang, Chengming [8571-121] SPMon  
Wang, Che-Syuan [8642-31] SPWed  
Wang, Chung-Ren Chris [8581-70] S10  
Wang, Chung-Yi [8582-26] SPTues  
Wang, Chun-Yuan [8619-42] S10  
Wang, Churng-Ren [8581-74] S10  
**Wang, Danni** [8565-182] S4, [8575-28] S1, [8575-28] S7, [8583-14] S3  
Wang, Exing [8579-13] S3  
Wang, Fengwen [8593-5] S1  
Wang, Gang [8626-32] S8  
**Wang, George T.** [8625-23] S5, [8625-27] S6, [8625-84] SPWed, [8641-64] S13  
Wang, Guiling [8604-1] S1  
Wang, Hai [8613-26] S6  
Wang, Haifeng [8588-9] S1  
**Wang, Hanzheng** [8601-119] SPTue, [8601-120] SPTue, [8613-56] SPTue, [8621-21] S4, [8621-63] SPWed, [8622-56] SPWed, [8626-66] SPWed  
Wang, Hao [8565-10] S9, [8565-18] S7, [8565-20] S7  
Wang, Hay-Yan Jack [8570-26] SPSun  
Wang, Heng [8622-51] SPWed  
**Wang, Hequn** [8565-7] S2  
Wang, Hongjun [8595-12] S3  
Wang, Hongwei [8582-7] S1  
Wang, Hsiang-Chun [8626-57] SPWed  
Wang, Hsing-Wen [8565-35] S1  
Wang, Huaqing [8596-61] S14  
**Wang, Hui** [8565-43] S3  
Wang, Huolei [8640-67] SPWed  
Wang, Jenny [8567-7] S2  
Wang, Ji 8601 Program Committee  
Wang, Jian Jim 8613 Program Committee  
Wang, Jiangfeng [8625-22] S5  
Wang, Jianting [8588-83] SPSun  
Wang, Jiawei [8629-3] S1  
Wang, Jiayuan [8619-65] SPWed  
Wang, Jinfang [8636-25] S5  
Wang, Jing [8586-8] S2  
Wang, Jing [8580-52] SPMon  
Wang, Jingyi [8639-19] S5  
Wang, Joanna [8634-26] SPWed  
Wang, Junjun [8625-53] S12  
Wang, Kai [8630-35] S9  
Wang, Kaige [8588-85] SPSun  
Wang, Ke [8625-1] S1  
Wang, Ke [8588-11] S2, [8588-91] SPSun
- Wang, Kenneth K.** 8568 Program Committee, 8568 S5 Session Chair, [8568-19] S5  
Wang, Kun [8581-166] SPMon, [8581-179] SPMon, [8581-5] S1  
Wang, Lele [8567-8] S2  
Wang, Li [8639-2] S1  
Wang, Lidai [8581-147] SPMon, [8581-28] S5, [8581-43] S7, [8581-64] S9, [8581-78] S11, [8581-82] S11  
**Wang, Lihong V.** 8579 Program Committee, 8580 Program Committee, 8581 Conference Chair, 8581 S11 Session Chair, [8581-104] SPSun, [8581-105] SPSun, [8581-116] SPSun, [8581-117] SPSun, [8581-118] SPSun, [8581-119] SPSun, [8581-12] S2, [8581-128] SPSun, [8581-140] SPMon, [8581-145] SPMon, [8581-147] SPMon, [8581-153] SPMon, [8581-155] SPMon, [8581-182] SPMon, [8581-19] S3, [8581-28] S5, [8581-4] S1, [8581-43] S7, [8581-45] S8, [8581-47] S8, [8581-5] S1, [8581-51] S8, [8581-64] S9, [8581-77] S11, [8581-78] S11, [8581-83] S11, [8581-84] S11, [8581-85] S11, [8616-4] S1, [8616-4] S7  
Wang, Lihui [8617-5] S1  
Wang, Lingyan [8586-17] S3  
Wang, Liqun [8578-13] S3  
**Wang, Michael R.** [8567-83] SPSun, [8613-35] S8, 8630 Program Committee, 8630 S7 Session Chair, [8630-15] S4, [8632-16] S4  
Wang, Pei [8635-17] S5  
Wang, Ping [8588-11] S2, [8588-5] S1  
Wang, Pu [8581-9] S2, [8590-29] S8  
Wang, Qian [8628-21] S7, [8628-24] S8, [8629-13] S3, [8629-38] S10  
Wang, Qiang [8617-1] S1  
Wang, Qiang [8567-16] S3, [8567-17] S3, [8567-36] S7, [8567-38] S7  
Wang, Qiang [8624-15] S4  
Wang, Qiaoyun [8593-5] S1  
Wang, Qijie [8603-34] SPTue  
Wang, Qing [8609-14] S4  
Wang, Qing [8599-55] S11, [8599-56] S11  
Wang, Quanli [8578-51] S9  
Wang, Quanzeng [8573-21] S6  
Wang, Rain [8592-12] S4  
Wang, Ridong [8572-3] SPSun  
Wang, Rui [8580-51] SPMon  
**Wang, Ruikang K.** [8565-58] S1, [8565-65] S3, [8567-3] S1, [8567-45] S8, [8567-5] S1, [8567-79] SPSun, 8571 Program Committee, [8571-122] SPMon, [8571-127] SPMon, [8571-63] S10, [8571-76] S12, [8571-78] S12, [8571-84] SPMon, 8580 Conference Chair, 8580 S1 Session Chair, 8580 S6 Session Chair, 8580 S7 Session Chair, [8580-40] S8, [8580-41] S9, 8593 Program Committee, [8593-4] S1, [8593-5] S1  
Wang, Shang [8571-82] S12, [8580-28] S5, [8593-14] S3  
Wang, Shaohua [8581-101] SPSun  
Wang, Shengqin [8590-7] S1  
**Wang, Shing-Chung** [8633-11] S3  
Wang, Shuang [8565-22] S5  
Wang, Shuguo [8626-53] SPWed, [8626-54] SPWed, [8632-10] S2, [8641-18] S4, [8641-2] S1, [8643-20] SPWed  
Wang, Shun [8631-96] SPWed  
Wang, Si [8586-10] S2  
Wang, Steven [8587-30] S4, [8596-19] S6  
Wang, Sunling [8613-19] S4  
Wang, Tiejun [8571-53] S8, [8575-16] S4, [8588-112] SPSun, [8588-51] S8
- Wang, Tao [8631-31] S6  
**Wang, Thomas D.** 8575 Conference Chair, [8575-29] SPSun, [8575-31] S1, [8575-31] S7, [8575-35] S1, [8616-8] S2  
Wang, Tianhe [8604-41] SPTue, [8624-34] S8, [8624-49] S4  
**Wang, Tianheng** [8571-61] S9, [8571-75] S11, [8578-72] S12, [8581-168] SPMon  
Wang, Tianwu [8624-12] S4, [8631-81] S16  
Wang, Ting [8646-4] S2, [8647-8] S4  
Wang, Tracy [8567-61] SPSun  
Wang, Tsuei-Lian [8606-18] S6, [8606-26] S8  
**Wang, Tzu-Yu** [8641-43] S10  
Wang, Wanjun 8615 Program Committee, [8615-41] S9, 8616 Program Committee, [8616-33] S7, [8616-39] S8  
Wang, Wei [8620-25] S6  
Wang, Wei [8627-16] S4  
Wang, Weichao [8587-58] S9  
Wang, Weimin [8617-1] S1  
Wang, Winston K. [8643-9] S2  
Wang, Wubao [8565-50] SP1, [8577-1] S1, [8577-7] S2, [8577-8] SPWed, [8587-73] SPMon  
Wang, X. T. [8607-51] SPTue  
Wang, Xi [8565-115] S5, [8588-15] S2  
Wang, Xiangyu [8598-24] SPSUN  
Wang, Xiaofeng [8631-89] S18  
Wang, Xiaojun [8640-50] S11, [8640-68] SPWed  
Wang, Xiaoling [8640-67] SPWed  
Wang, Xiaolong [8601-74] SPTue  
Wang, Xiao-Ping [8582-25] SPTues  
Wang, Xiaoyang [8604-1] S1  
Wang, Xiaozhuo [8605-15] S4  
Wang, Xin [8574-23] SPSun, [8574-24] SPSun  
**Wang, Xingbing** [8603-33] SPTue, [8604-42] SPTue  
Wang, Xinqiang [8625-16] S4, [8641-25] S6  
Wang, Xiu-li [8582-7] S1  
**Wang, Xu** [8629-8] S2  
Wang, Xue [8641-45] S10  
**Wang, Xueding** [8581-101] SPSun, [8581-121] SPSun, [8581-124] SPSun, [8581-16] S3, [8581-17] S3, [8581-18] S3, [8581-21] S4, [8581-61] S9, [8581-72] S10, [8581-87] S11, [8581-92] SPSun, [8586-26] S8  
Wang, Yadong [8628-21] S7  
Wang, Yan [8565-203] S5, [8571-111] SPMon, [8571-125] SPMon, [8571-126] SPMon  
Wang, Yiguang [8646-18] S7, [8646-18] S7B  
Wang, Yina [8589-48] S11  
Wang, Ying [8565-29] S7  
Wang, Ying Min [8581-131] SPSun  
Wang, Yingjian [8631-31] S6  
Wang, Yingxiao [8586-18] S3  
Wang, Yishan [8622-33] S8  
Wang, Yong [8601-80] SPTue  
Wang, Yong [8588-10] S1  
Wang, Youmin [8565-25] S6, [8616-6] S2, [8618-8] S11, [8618-8] S2  
Wang, Yu [8581-85] S11  
Wang, Yuan [8578-102] SPSun, [8578-105] SPSun  
Wang, Yuan [8597-12] S3  
Wang, Yuanquan [8646-18] S7, [8646-18] S7B  
Wang, Yufei [8633-26] S8  
Wang, Yu-Hsin [8581-74] S10  
Wang, Yuhua [8596-10] S3  
Wang, Yunpeng [8620-48] S12, [8620-51] S12, [8620-52] S12  
Wang, Yuye [8604-13] S3  
Wang, Yves T. [8565-205] S2, [8565-31] S8, [8593-1] S1, [8593-3] S1, [8593-6] S2, [8593-7] S2

# Index of Authors, Chairs, and Committee Members

- Wang, Zhao [8565-41] S3, [8571-26] S4, [8571-27] S4  
Wang, Zhaomin [8644-39] SPWed  
Wang, Zhaoying [8599-66] SPTue, [8601-70] SPTue, [8601-92] SPTue, [8601-95] SPTue, [8604-41] SPTue, [8619-12] S3, [8624-31] S8, [8624-34] S8, [8624-49] S4  
**Wang, Zheng** [8604-36] S8, [8636-7] S2  
Wang, Zhenguo [8567-74] SPSun  
Wang, Zhiping [8582-27] SPTues  
**Wang, Zhiyong** [8565-115] S5, [8588-15] S2  
Wang, Zhonghai [8587-68] SPMon  
Wang, Zhonghua [8633-17] S5  
Wang, Zifei [8624-49] S4  
Wang, Zifei [8624-31] S8  
Wang, Zuo-Jia [8614-10] S2  
Wanke, Michael C. [8599-68] SPTue, 8624 Program Committee, 8624 S10 Session Chair  
Wanyo, Christy M. [8578-18] S3  
Ward, Arlen K. [8584-10] S3  
Ward, Benjamin G. [8601-125] SPTue, [8604-23] S5  
Ward, Colleen [8606-27] SPTue  
Ward, Elizabeth Sally [8589-5] S1  
Ward, Martin B. [8634-2] S1  
Warger, William C. [8565-105] S3, [8565-107] S3, [8565-42] S6  
Warner, Jeffrey H. [8620-33] S8  
**Warren, Robert V.** [8578-3] S1, [8578-96] SPSun  
**Warren, Warren S.** [8565-3] S1, [8567-43] S8, [8588-40] S6, [8589-8] S2  
**Warren, Zachary** [8636-13] S3  
Wäselmann, S. H. [8599-9] S2  
Washburn, Cody M. [8613-37] S8  
Washe, Alemayehu [8615-43] S10  
**Washio, Kunihiko** 8600 Conference CoChair, 8603 Program Committee, 8608 Conference Chair, 8608 S2 Session Chair  
Wasilewski, Zbigniew R. [8625-35] S8, [8625-77] SPWed, [8631-82] S16, [8640-40] S9  
**Watanabe, Akira** 8608 Program Committee, [8608-21] S5  
Watanabe, Kazuo [8621-4] S1  
Watanabe, Keisuke [8594-16] S5  
**Watanabe, Kentaroh** [8620-48] S12, [8620-52] S12  
Watanabe, Michiko [8565-31] S8, [8571-67] S10, 8593 Program Committee, [8593-1] S1  
Watanabe, Shuntaro [8607-51] SPTue  
**Watanabe, Wataru** 8611 Program Committee, 8611 S8 Session Chair  
Watanabe, Yuuki [8571-110] SPMon  
Waterkotte, Björn [8615-39] S9  
Watkins, Kenneth G. [8608-19] S4  
Watkins, Laurence S. [8599-55] S11  
**Watson, Jennifer M.** [8577-24] S9  
Wattellier, Benoit F. [8587-48] S7, [8589-45] S10  
Watts, Michael R. [8628-3] S11, [8628-3] S2, [8629-31] S8  
Watts, Mike P. 8613 Program Committee, [8613-13] S3  
Wawro, Debra D. [8570-21] S5  
**Wax, Adam** [8571-46] S7, [8589-25] S5, 8592 Conference Chair, 8592 S6 Session Chair, [8592-27] S7, [8592-40] S9  
Waxer, Leon J. [8602-12] S4, [8602-13] S4  
Webb, Watt W. [8575-14] S4  
Webber, Matthew [8617-7] S2  
Weber, Norbert [8641-46] S10  
Webster, Andrew [8615-6] S2  
**Webster, Paul J.** [8565-237] S5, [8603-27] S6  
Wedel, Bjoern [8601-15] S4, [8601-15] S9, [8603-5] S10, [8603-5] S2  
Weersink, Robert A. [8578-53] S9, [8578-56] S9  
Wegener, Martin [8613-14] S4, [8623-17] S5, [8623-20] S5, [8635-15] S4  
Wegkamp, Daniel [8623-11] S4  
Wegner, David [8595-43] S10  
Wegner, Paul J. [8602-2] S1  
Wegrowe, Jean-Eric [8631-73] S15  
Wegscheider, Werner [8623-57] S15  
Wehmann, Hergo-Heinrich [8641-45] S10  
Wehner, Eleanor F. [8618-4] S1, [8618-4] S10, [8618-6] S11, [8618-6] S2  
Wehrmann, Anja [8607-48] S13, [8607-48] S6  
Wei, Chen [8601-51] S12  
**Wei, Chen-Wei** [8581-178] SPMon, [8581-37] S6  
Wei, Dong [8636-8] S2  
Wei, Jian Dong [8641-45] S10  
Wei, Lian suo [8576-31] SPSun  
Wei, Lu [8588-111] SPSun, [8588-49] S8  
Wei, Mao-Kuo [8622-44] S10, [8643-17] S4  
**Wei, Ming** [8626-62] SPWed  
Wei, Qing [8581-160] SPMon  
Wei, Wei [8581-9] S2  
Wei, Xunbin [8581-124] SPSun, [8581-87] S11, [8587-16] S2  
Wei, Xunbin 8582 Program Committee, 8582 S5 Session Chair, [8582-18] S5, [8582-31] SPTues  
Wei, Yinan [8594-5] S2  
Wei, Yongqiang [8628-21] S7  
Wei, Yu Shan [8626-58] SPWed, [8641-19] S4, [8641-34] S7  
Weiblinger, Richard P. [8567-82] SPSun, [8579-10] S3  
Weichelt, Birgit [8621-64] SPWed  
Weichmann, Ulrich [8639-21] S6  
**Weida, Miles J.** [8631-18] S4  
Weidberg, Anthony R. [8639-20] S5  
Weidler, Peter G. [8608-6] S1  
Weidlich, Patrick [8565-36] S1  
Weidner, William Ken [8622-4] S1  
Weiershausen, Werner 8645 S2 Session Chair, 8646 Conference Chair, 8646 S2 Session Chair, 8646 S5 Session Chair, 8646 S8 Session Chair, 8647 S2 Session Chair, 8647 S9 Session Chair  
Weig, Thomas [8625-38] S8, [8640-16] S4  
Weigel, Peter O. [8613-36] S8  
Weigel, Udo [8583-5] S2  
**Weigl, Bernhard H.** 8615 Program Committee, 8615 S6 Session Chair, 8615 S7 Session Chair, [8615-23] S5, [8615-29] S6  
Weigl, Markus [8603-24] S5  
Weigl, Wojciech [8578-86] S14  
Weih, Robert [8631-59] S11, [8631-95] S18  
Weihls, Gregor [8635-43] S13  
Weiler, Sascha [8603-10] S3, [8603-13] S4  
Weimann, Claudius [8600-9] S3  
Weinberger, Stefan [8616-12] S3  
Weiner, Andrew M. [8588-5] S1  
**Weinigel, Martin** [8588-24] S3, [8588-52] S8, [8588-87] SPSun  
Weinstein, Julia A. [8588-115] SPSun  
Weiss, Alexander [8613-59] SPTue  
Weiss, Andrea [8568-51] SPMon  
Weiss, Sharon M. 8570 Program Committee, [8570-5] S1, 8594 S2 Session Chair, [8594-7] S3, [8597-1] S1, [8629-7] S2  
Weiss, Shimon 8590 Program Committee, [8590-2] S3, [8590-3] S3, [8595-47] S10  
Weisse-Bernstein, Nina Rae [8638-12] S3  
Weitz, Martin [8600-21] S6, 8638 S2 Session Chair, [8638-11] S3  
Weitz, Nicole [8578-27] S5  
Welch, Ashley J. [8579-18] S4  
Weldon, Alex L. [8613-36] S8  
**Welge, Weston A.** [8575-25] S6  
Weliwitigoda, Geethika [8578-22] S4  
Wellens, Thomas [8623-56] S14  
Weller, Horst 8595 Program Committee  
Weller, Marcel [8571-128] SPMon  
Wells, Wendy A. [8578-16] S3, [8592-14] S4, [8592-31] S7, [8592-34] S8  
Welna, Karl [8629-43] S11  
Welp, Hubert [8589-56] SPWed, [8592-41] S9  
Welser, Roger E. [8620-49] S12  
Welsh, John P. 8586 Program Committee, 8586 S5 Session Chair, [8586-11] S2  
Welsh, Mike [8620-32] S8  
Welsh, Stephen S. [8618-17] S5  
Wen, Pengyue [8639-19] S5  
Wen, Xiang [8580-52] SPMon  
Wen, Zilong [8588-110] S8  
Wende, Heiko [8623-9] S3  
**Wendel, Simon** [8641-6] S2  
Wendland, Jozef J. [8605-6] S2  
Wendt, Joel R. [8635-20] S5  
Wene, Lauren C. [8568-22] S6  
**Weng, Chun-Jen** [8600-29] SPTue  
Weng, Yiming [8595-61] S14  
Wenner, Brett R. [8570-1] S1, [8626-4] S1  
Wenzel, Gentiana I. [8565-69] S4  
Wenzel, Hans [8605-15] S4, [8640-60] S13  
Werdich, Andreas A. [8565-205] S2, [8593-6] S2  
Werkmeister, René [8571-41] S7  
Werner, Daniel [8593-22] S5, [8611-13] S3  
**Werner, John S.** [8567-1] S1, [8567-73] SPSun, [8571-123] SPMon  
Werner, Juergen [8591-27] SPWed  
Wernicke, Tim [8625-48] S11  
Werquin, Sam [8629-4] S1  
Werts, Martinus [8595-34] S8  
Wertz, Esther A. [8590-28] S8, [8597-20] S5  
Wessling, Volker [8603-18] S5  
Wessling, Christian [8602-17] S4, [8605-25] S5, [8605-8] S2  
West, Jennifer L. [8593-14] S3  
West, Jessica [8624-18] S5  
West, Paul R. [8619-23] S6  
West, Robert G. [8634-17] S4  
Westbergh, Petter [8639-28] S7, [8639-32] S8  
Westbrook, Paul [8601-3] S1, [8647-22] S10, [8647-22] S9  
Wester, Rolf [8606-16] S5  
**Wetzel, Christian** [8641-3] S1  
Weyers, Markus [8625-48] S11  
Weyers, Sascha [8631-44] S9  
**Weyrauch, Thomas** [8601-41] S10  
Whalen, Jay [8572-24] S5  
Whalin, Jeffrey [8614-14] S3  
Whang, Allen Jong-Woei [8620-39] S9, [8620-67] SPWed, [8620-68] SPWed, [8620-69] SPWed, [8620-78] SPWed  
**Whelan, William M.** 8581 Program Committee, [8581-68] S9  
White, Brian R. [8565-164] S1, [8578-42] S7  
White, Desiree [8587-41] S7  
White, Ian H. 8630 Program Committee, 8630 S8 Session Chair, [8630-17] S4, [8640-17] S4, [8640-6] S1  
White, John H. [8596-9] S3  
White, Richard M. [8587-16] S2  
White, Steve [8565-17] S3  
White, Timothy J. [8642-26] S8  
Whitesell, Kelsey A. [8620-12] S3  
Whitesides, George [8575-21] S5, [8575-5] S2  
Whyne, Cari M. [8565-238] S5, [8588-62] S9  
Wibowo, Andree [8620-58] S14  
Wick, Peter [8595-59] S13  
Wicker, Kai [8589-15] S4  
Wickland, David [8587-13] S2  
Wickline, Samuel A. [8581-145] SPMon  
**Wicks, Geoffrey R.** [8622-18] S4  
Wicks, Robert [8565-172] S2  
Widhalm, Georg [8565-187] S4  
Wieck, Andreas Dirk [8623-9] S3  
Wiegiersma, Sjoukje [8630-34] S9  
**Wiegraebe, Winfried** [8590-9] S2  
Wielunski, Leszek [8630-37] S9  
Wiemer, Maik [8616-2] S1, [8616-2] S7  
Wierer, Jonathan J. [8641-64] S13  
Wiersma, Kort [8601-33] S8  
Wierwille, Jeremiah [8565-35] S1  
Wieser, Wolfgang [8567-15] S3, [8567-22] S4, [8571-1] S1, [8571-128] SPMon, [8571-9] S2  
Wiesz, Giora [8565-19] S9, [8571-91] S4  
**Wiethoff, Helge** [8589-56] SPWed, [8592-41] S9  
Wigdor, Harvey A. 8566 Program Committee  
Wigle, Jeffrey C. [8569-25] SPSat, [8569-7] S2  
Wiguins, Etienne [8584-4] S5  
Wijesundara, Kushal C. [8571-132] SPMon  
Wilbert, David S. [8585-19] S3, [8585-34] S6, [8585-36] S6, [8632-70] S15  
**Wilcox, Christopher C.** [8610-34] S7  
Wilcox, Keith G. [8606-20] S6, [8606-23] S7, [8606-6] S2, [8606-7] S2  
Wilder-Smith, Petra [8573-16] S5, [8575-18] S4  
Wildmann, Johannes [8623-55] S14  
Wildsoet, Christine F. [8567-64] SPSun  
Wilganowski, Nathaniel [8565-48] S4  
Wilhelm, Claire [8595-40] S9  
Wilhelmsen, Karl [8602-2] S1  
Wilinski, Piotr [8625-9] S2  
Wilk, Andreas [8570-27] SPSun  
Wilk, Emilia [8565-224] S2  
Wilkinson, Mark [8571-92] SPMon  
Willander, Magnus 8626 S6 Session Chair, 8626 S7 Session Chair, [8626-23] S5  
Willemink, Rene G. H. [8581-23] S4  
Willett, Rebecca M. [8587-51] S8  
Williams, Christopher 8643 Program Committee  
Williams, Emery M. [8584-33] S9  
Williams, J. A. Gareth [8588-115] SPSun  
**Williams, James K.** [8615-13] S3  
Williams, James R. [8626-14] S4  
Williams, Michelle Diane [8565-85] S8  
Williams, Robin L. [8613-12] S3  
**Willis, Christina C. C.** [8599-35] S7  
**Willner, Alan Eli** 8610 Program Committee, [8610-4] S2, 8633 Conference Chair, 8635 Program Committee, [8646-21] S3, [8646-25] S8, [8646-25] S9, [8647-4] S4, [8647-6] S4  
Willoughby, William R. [8625-12] S3  
**Wilnink, Gerald J.** 8579 Program Committee, 8585 Conference Chair, 8585 S1 Session Chair, 8585 S5 Session Chair, [8585-14] S2, [8585-18] S3, [8585-25] S4, [8585-27] S5, [8585-30] S5  
Wilner, Alan [8610-20] S4  
Wilson, Brian C. [8565-189] SPSun, [8565-238] S5, [8576-21] S4, [8578-53] S9, [8578-56] S9, [8581-26] S4, [8588-62] S9



# Index of Authors, Chairs, and Committee Members

- Wilson, Carol [8580-20] S4  
Wilson, Daniel W. [8631-24] S5  
**Wilson, David L.** [8565-41] S3, [8571-26] S4, [8571-27] S4  
**Wilson, Jesse W.** [8565-3] S1, [8567-43] S8, [8588-40] S6, [8589-8] S2  
Wilson, Katherine E. [8581-36] S6  
Wilson, Keith E. 8610 S5 Session Chair, [8610-22] S5  
Wilson, Mark A. [8591-7] S2  
Wilson, Paul F. [8587-25] S4  
Wilson, Scott M. [8612-21] SPTue  
Wilson, Teresa [8586-17] S3  
Wilson, Tony 8589 Conference Chair, 8589 S9 Session Chair  
Wilson, William L. [8598-21] S6  
Wilsterman, Eric [8565-109] S4, [8565-111] S4, [8565-121] S6  
Wilt, David M. 8620 Program Committee, 8620 S8 Session Chair  
Wimmer, Mark [8626-33] S8  
Winebrenner, Dale Paul [8585-20] S3  
Winkelmann, Lutz [8601-110] SPTue  
Winkler, Amy M. [8581-45] S8, [8581-82] S11  
Winkler, Rolf [8603-30] S7  
Winograd, Jonathan M. [8565-180] S3  
Winter, David N. 8602 S1 Session Chair, [8602-6] S2  
Winters, Madeline E. [8568-40] SPMon  
Winzer, Torben [8623-30] S7  
Wippermann, Frank C. [8616-27] S6, [8616-42] S9  
Wippler, Matthias [8579-17] S4  
Wirth, Dennis J. [8565-179] S3  
Wirth, Janina [8595-13] S3  
Wirth, Justin C. [8570-1] S1  
Wise, Frank W. 8601 Program Committee, 8601 S12 Session Chair  
Wiseman, Paul W. 8588 Program Committee  
Wisniewski, P. [8625-41] S9  
Wi?niewski, Przemyslaw [8625-37] S8, [8625-61] S13, [8625-71] SPWed  
**Wisniewski-Barker, Emma** [8636-9] S2  
Witberg, Karen [8565-39] S6, [8565-40] S6  
Withers, Nathan J. [8595-64] S14  
Withford, Michael J. [8599-6] S2, [8611-31] S6  
Witte, Christian [8615-31] S7  
Witte, Monika C. [8602-2] S1  
Witte, Reiner M. [8607-47] S13, [8607-47] S6  
Witte, Ulrich [8605-29] S6  
Wittek, Michael 8643 Program Committee  
Witters, Daan [8629-4] S1  
Wittrock, Ulrich 8617 Program Committee  
Wittwer, Valentin J. [8606-15] S5, [8606-5] S2  
**Witzigmann, Bernd** 8619 Conference Chair, 8619 S1 Session Chair, [8619-14] S4, [8619-53] S13  
Wixforth, Achim [8626-39] S9  
Wlodawski, Mitchell S. [8601-118] SPTue  
Wlodkowic, Donald [8615-34] S7, [8615-49] SPTue  
Wnuk, Pawel [8596-34] SPMon, [8622-18] S4  
Woern, Heinz [8571-128] SPMon  
Woestenborghs, Wouter M. [8622-41] S10, [8639-13] S4  
Wohl, Gregory R. [8565-224] S2  
Wojcik, Aleksander K. [8601-35] S9  
Wojdyla, Jolette K. [8596-36] SPMon  
**Wojtkowski, Maciej** [8567-72] SPSun, 8571 Program Committee, [8571-114] SPMon, [8571-20] S3, [8571-32] S5, [8571-43] S7, [8571-66] S10, [8571-79] S12, [8601-11] S3  
Woldetensae, Mikias H. [8576-20] S4  
Wolf, Jean-Pierre [8611-14] S3, [8611-60] SPTue  
Wolf, Martin [8623-11] S4  
Wolf, Paul [8601-110] SPTue, [8605-10] S2  
Wolf, Philip [8639-30] S8  
Wolf, Roman F. [8582-11] S3, [8582-20] SPTues  
Wolf, Uwe [8616-11] S3  
Wolff, Markus [8565-200] S5  
Wolfsberger, Stefan [8565-187] S4  
Wollhofen, Richard [8587-45] S7  
Wollstein, Gadi [8567-71] SPSun  
Wolozko, Jean [8584-23] S7, [8584-25] S7  
Wolters, Janik [8635-15] S4  
Won Lee, Min [8622-35] S8  
Won, Chang-Hee [8574-14] S3  
Won, Emily [8565-238] S5  
Won, Ho-Yun [8585-19] S3  
Won, Yong Hyub [8621-11] S3  
Won, Yong-Yuk [8645-11] S5  
Wonfor, Adrian [8640-6] S1  
Wong, Alexander [8567-81] SPSun  
**Wong, Brian J. F.** 8565 Conference Chair, 8565 S1 Session Chair, 8565 S9 Session Chair, 8565 Track Chair, [8565-83] S7, [8565-84] S7, [8565-92] S9, 8566 Track Chair, 8567 Track Chair, 8568 Track Chair, 8569 Track Chair, 8570 Track Chair, [8584-11] S3  
Wong, Chee Wei [8628-15] S6  
Wong, H. S. Philip [8620-56] S14  
Wong, Jen N. [8602-2] S1  
Wong, Jonathan R. [8617-8] S2  
Wong, Ka Kan [8626-32] S8  
Wong, Kevin [8571-33] S5  
Wong, Li Yin [8593-26] SPSun  
**Wong, Philip** [8579-21] S5, [8581-184] SPMon  
Wong, Stephen T. C. [8565-115] S5, [8565-199] S1, [8565-202] S1, [8588-15] S2  
Wong, Tsz Chun [8611-24] S5  
Wong, Wee Hoong [8599-80] SPTue  
Woo, Han Young [8622-16] S4  
Woo, Jae-Heun [8622-6] S2  
Wood, Christopher J. [8590-9] S2  
Wood, Fiona M. [8565-10] S3  
Wood, Ryan [8585-15] S3  
Wood, William A. [8647-8] S4  
Woodruff, Steven D. [8637-37] S9  
Woods, Kevin [8575-12] S3  
Woolard, Dwight L. [8624-41] S10  
Wooley, Karen L. [8596-22] S7  
**Woolf, David** [8624-3] S2, [8632-35] S7  
Woolliams, Peter [8573-11] S3, [8573-11] S5  
Wooton, Jeffrey [8584-33] S9  
Wörhoff, Kerstin [8599-8] S2  
Wörl, Andreas [8631-56] S10  
Worschech, Lukas [8619-32] S8  
Woscholski, Ronja [8623-8] S3  
Wosinski, Lech [8628-4] S11, [8628-4] S2  
Wösten, Han A. B. [8588-58] S8  
Wrachtrup, Jörg 8635 Program Committee, [8635-21] S6  
Wright, Edward L. [8624-5] S3  
Wright, Eric [8573-29] SPSun  
Wright, Ewan Malcolm 8637 Program Committee  
**Wright, Jeremy B.** [8625-23] S5, [8625-27] S6, [8625-84] SPWed  
Wright, Logan G. [8603-27] S6  
Wright, Malcolm W. [8610-25] S5, [8610-26] S6  
**Wright, Patrick** [8565-164] S1, [8565-204] S5  
Wu, Bae-Ian [8624-30] S8  
Wu, Binlin [8574-1] SPSun  
Wu, Cheng-Che [8642-31] SPWed  
Wu, Chengping [8609-16] S4  
Wu, Chihhui [8619-42] S10, [8636-30] S6  
Wu, Chiung-Ting [8571-86] SPMon  
Wu, Chun-Hsien [8595-42] S9  
**Wu, Di** [8582-1] S6, [8582-3] S6  
Wu, Fan Lei [8620-73] SPWed  
**Wu, Frank F.** [8599-71] SPTue, [8599-72] SPTue, [8599-73] SPTue  
Wu, Gaoxiang [8619-24] S6  
Wu, Gongting [8581-183] SPMon  
Wu, Grace [8565-48] S4  
Wu, Huawen [8572-43] S8, [8572-44] S8  
Wu, Jeong-Weon 8622 Program Committee, [8622-6] S2  
**Wu, Jianfeng** [8629-15] S4  
Wu, Jih-Jen [8641-23] S5  
Wu, Joyce H. [8614-35] S1  
Wu, June-Tai [8571-129] SPMon  
Wu, Juwell [8588-91] SPSun  
Wu, Karin [8604-6] S2  
Wu, Lina [8581-145] SPMon  
Wu, Lingfeng [8620-28] S7, [8620-71] SPWed  
Wu, Linhui [8572-11] S3, [8574-23] SPSun, [8574-24] SPSun, [8578-101] SPSun, [8578-102] SPSun, [8578-105] SPSun  
**Wu, Marcelo** [8600-68] S16  
Wu, Meng-Chyi [8626-56] SPWed, [8631-90] SPWed  
Wu, Min [8581-10] S2  
Wu, Ming C. 8633 Program Committee, [8633-15] S5, [8633-16] S5  
**Wu, Ming Hsien** 8642 Program Committee, 8643 Conference Chair, 8643 S1 Session Chair, 8643 S2 Session Chair, 8643 S3 Session Chair  
Wu, Ning [8581-99] S8  
Wu, Pei-Chun [8588-65] S10, [8588-75] SPSun  
Wu, Pei-Heng [8631-92] SPWed, [8635-32] S6, [8635-32] S9  
Wu, Peng [8572-54] SPSun, [8576-29] SPSun, [8591-25] SPWed, [8621-59] SPWed  
Wu, Shang [8599-76] SPTue  
Wu, Sheng 8631 Program Committee, 8631 S6 Session Chair, [8631-8] S2  
Wu, Shing-Trong [8642-14] S5  
**Wu, Shin-Tson** 8642 Program Committee, 8642 S5 Session Chair, [8642-24] S7, [8642-6] S2  
Wu, Shu-Hsien [8633-11] S3  
Wu, Sih-Ying [8618-20] S6  
Wu, Sizhu [8607-15] S11, [8607-15] S5  
Wu, Tao [8575-13] S3  
Wu, Tao [8575-11] S3, [8575-12] S3  
Wu, Tao [8586-17] S3  
Wu, Tao [8631-31] S6  
Wu, Tao [8607-18] S12, [8607-18] S6  
Wu, Tao [8603-33] SPTue  
Wu, Tong [8617-3] S1  
**Wu, Tsung-Feng** [8615-26] S6  
Wu, Tzeng-Tsong [8633-11] S3  
**Wu, Tzu-Yu** [8573-7] S2  
Wu, Wei-Chen [8592-37] S9  
Wu, Xiang [8600-10] S3, [8600-60] S14  
Wu, Xiaodong [8567-24] S5  
Wu, Xizeng [8582-1] S6, [8582-3] S6  
Wu, Xunqi [8621-29] S6  
Wu, Yalun [8572-10] S2  
**Wu, Yen-Ju** [8626-58] SPWed, [8641-19] S4  
**Wu, Yi-Kuei Ryan** [8632-60] S13  
Wu, Yu [8565-119] S6  
**Wu, Yuchang** [8634-7] S2  
Wu, Yuh-Renn [8620-60] S15, [8634-30] SPWed, [8641-28] S6  
Wu, Yu-Yu [8595-22] S6  
Wu, Zhengzheng [8614-12] S3  
Wu, Zoe [8607-27] S8  
Wunder, Andreas [8578-65] S11  
Wunderer, Thomas [8625-60] S13  
Wunderlin, Jens [8605-18] S4  
Wurm, Holger [8565-225] S2  
Würth, Christian [8595-55] S13, [8596-17] S5  
Wurzinger, Gerhild [8581-169] SPMon, [8581-24] S4  
**Wuu, Dong-Sing** [8641-43] S10, [8641-72] SPWed  
Wynn, James D. [8639-23] S6  
Wynne, Karon E. [8581-6] S1  
Wynne, Klaas 8623 Program Committee, 8623 S2 Session Chair, [8623-2] S1  
**Wyrowski, Frank** [8616-26] S6  
Wysmolek, Mateusz [8601-26] S7, [8604-26] S6  
**Wysocki, Gerard** [8631-31] S6  
Wysocki, Ted [8599-23] S5  
Wyszkowska, Joanna [8571-66] S10

## X

- Xi, Jiefeng [8571-38] S6, [8571-69] S11  
**Xi, Peng** [8587-58] S9, [8590-42] SPSUN  
Xia, Andong 8590 Program Committee  
Xia, Anping [8565-56] S1  
Xia, Jinjun [8581-178] SPMon, [8581-37] S6  
Xia, Jun [8581-128] SPSun, [8581-145] SPMon, [8581-155] SPMon, [8581-19] S3, [8581-28] S5  
Xia, Kangwei [8635-21] S6  
Xia, Lei [8643-20] SPWed  
Xia, Tian [8632-2] S1, [8632-25] S6  
Xia, Wei [8605-36] SPTue  
Xia, Wenfeng [8581-38] S7  
Xia, Younan [8581-12] S2, [8581-79] S11  
Xia, Zhixuan [8632-51] S11  
Xiang, Lei [8647-21] S7A, [8647-21] S8  
**Xiang, Liangzhong** [8581-53] S8  
Xiang, Ning [8632-17] S4  
Xiao, Deng [8620-17] S4  
**Xiao, Hai** [8601-119] SPTue, [8601-120] SPTue, [8613-56] SPTue, [8621-21] S4, [8621-63] SPWed, [8622-56] SPWed, [8626-66] SPWed  
Xiao, Jinbiao [8619-65] SPWed  
Xiao, Jin-Long [8600-56] S13  
Xiao, Peng [8571-131] SPMon, [8571-53] S8, [8575-16] S4, [8588-51] S8  
Xiao, Shu 8585 Program Committee, [8585-21] S4  
Xiao, Xianghui [8593-11] S3  
Xiao, Yan [8605-17] S4  
**Xiao, Yun-Feng** [8600-52] S13  
Xiao, Zhisong [8636-26] S5  
Xie, Chuan [8639-2] S1  
Xie, Feng [8631-22] S4, 8640 S14 Session Chair, [8640-42] S10  
Xie, Guoqiang  
Xie, Hao [8587-58] S9  
Xie, Huai-Yi [8632-40] S9  
Xie, Jingya [8629-21] S6  
Xie, Jinqiao [8625-91] S14, [8631-65] S12, [8641-36] S8  
Xie, Shusen [8574-28] SPSun, [8577-2] S1, [8596-10] S3  
**Xie, X. Sunney** 8588 Program Committee, [8588-13] S2, [8588-21] S3, [8588-80] SPSun, [8588-82] SPSun  
Xie, Yi [8639-9] S3  
Xie, Yi [8639-13] S4  
Xie, Zhenda [8628-15] S6  
Xie, Zhixing [8581-121] SPSun, [8581-124] SPSun, [8581-18] S3, [8581-87] S11  
Xin, Hao 8585 Program Committee, [8585-5] S1  
Xin, Jianguo [8588-15] S2  
Xin, Xuying [8593-11] S3



# Index of Authors, Chairs, and Committee Members

- Xing, Da 8582 Program Committee, [8582-33] SPTues  
 Xing, Lei [8581-53] S8  
 Xing, Wenxin [8581-145] SPMon, [8581-147] SPMon, [8581-64] S9  
 Xiong, Qihua [8638-7] S2, [8638-8] S2  
 Xiong, Wei [8608-20] S4, [8613-6] S2  
 Xiong, Yihan [8605-30] S7  
**Xiong, Yule** [8629-48] SPWed  
 Xu, Anshi [8633-17] S5  
 Xu, Baogang [8577-8] SPWed, [8587-73] SPMon  
 Xu, Bing [8641-2] S1  
 Xu, Bing [8599-55] S11, [8599-56] S11  
 Xu, Chen [8578-34] S6  
 Xu, Chris [8575-14] S4, [8588-11] S2, [8588-83] SPSun, [8588-91] SPSun  
 Xu, Daguang [8589-12] S3  
 Xu, Dan-Xia 8629 Program Committee  
 Xu, Degang [8604-13] S3, [8604-54] SPTue  
**Xu, Faming** [8599-30] S6, [8599-32] S6  
 Xu, Fu-yuan [8643-19] SPWed  
 Xu, Gaixia [8588-96] SPSun  
 Xu, Gangyi [8631-5] S2  
**Xu, Guan** [8581-21] S4, [8581-92] SPSun  
 Xu, Guoyang [8599-55] S11, [8599-56] S11, [8639-23] S6  
 Xu, Heng [8572-24] S5  
 Xu, Huifang [8625-23] S5  
 Xu, Huiwen [8625-27] S6, [8625-84] SPWed  
**Xu, Jian** 8634 Program Committee  
**Xu, Kexin** [8580-44] SPMon, [8580-45] SPMon, [8580-46] SPMon, [8580-47] SPMon, 8591 Program Committee, [8591-5] SPWed, [8598-23] SPSun, [8615-9] SPTue  
 Xu, Lei [8600-10] S3, [8600-60] S14  
 Xu, Mi [8622-51] SPWed  
 Xu, Min [8587-18] S2, [8592-33] S8  
**Xu, Ronald** [8573-13] S3, [8573-13] S5  
 Xu, Shanshan [8578-15] S3  
**Xu, Xianfan** [8590-29] S8, 8607 Conference Chair, 8607 S2 Session Chair, [8607-8] S2, [8607-8] S6, 8608 Program Committee, 8609 Program Committee, 8609 S6 Session Chair  
 Xu, Xiangang [8605-36] SPTue  
**Xu, Xiao** [8581-105] SPSun, [8581-51] S8  
 Xu, Xiaochuan [8629-49] SPWed, [8629-51] SPWed, [8630-38] S9, [8630-45] SPWed, [8630-48] SPWed  
**Xu, Xiaodong** [8635-9] S3  
 Xu, Xiaojun [8601-69] SPTue  
 Xu, Xiaoping [8620-56] S14  
 Xu, Xiaoxiao [8615-33] S7, [8615-52] SPTue  
**Xu, Xiaoyun** [8565-115] S5, [8588-15] S2  
 Xu, XinAn [8628-15] S6  
**Xu, Xuewu** [8644-15] S4, [8644-9] S3  
 Xu, Yan [8578-34] S6, [8578-52] S9, [8578-72] S12, [8578-99] SPSun  
**Xu, Yaqiong** 8609 Program Committee  
 Xu, Yong 8632 Program Committee  
 Xu, Yuan [8571-98] SPMon  
**Xuan, Jason R.** [8565-43] S3, [8599-54] S10  
 Xuan, Weijun [8569-13] S3  
 Xue, Andrew [8617-8] S2  
 Xue, Jianpeng [8577-8] SPWed  
 Xue, Ping [8571-121] SPMon  
 Xue, Xiaojie [8621-60] SPWed  
 Xue, Zhong [8565-199] S1, [8565-202] S1
- Y**
- Yaakobi, Oded [8623-24] S6  
 Yablon, Andrew D. [8601-65] SPTue, [8601-66] SPTue  
 Yablon, Joshua [8636-10] S2  
 Yablonovitch, Eli 8632 Program Committee, [8632-13] S3, [8635-5] S2, [8635-5] S4  
 Yagi, Tetsuya [8640-13] S3  
 Yagisawa, Takatoshi [8630-32] S8  
 Yakes, Michael K. [8620-53] S11, [8620-53] S13  
**Yakimov, Mikhail Yu.** [8600-1] S1  
 Yakovlev, Vladislav V. [8572-57] SPSun, [8588-74] SPSun, [8591-26] SPWed  
 Yakovlev, Yury P. [8600-15] S4  
 Yakunin, Alexander N. [8580-53] SPMon  
 Yakunin, Sergey [8631-79] S15  
 Yam, Scott S. H. [8646-16] S6  
 Yamada, Hirohito [8626-48] S12, [8629-47] SPWed  
 Yamada, Hisashi [8571-11] S2  
 Yamada, Kai [8644-34] SPWed  
 Yamada, Kenji [8575-33] SPSun  
 Yamada, Koji [8628-5] S3  
 Yamada, Takefumi [8644-33] SPWed  
 Yamada, Toshiki [8622-28] S7  
 Yamada, Yasuhiro [8623-50] S13  
 Yamagata, Koichi [8635-26] S7  
**Yamaguchi, Kazuhiro** [8644-13] S4  
 Yamaguchi, Masahito [8625-17] S4  
 Yamaguchi, Renato Y. [8579-36] SPMon  
 Yamaguchi, Shigeru [8565-221] S1  
 Yamaguchi, Takeshi [8644-32] SPWed  
 Yamaguchi, Tokutarō [8597-9] S3  
 Yamaguchi, Tomohiro [8625-1] S1  
 Yamakawa, Makoto [8581-106] SPSun  
 Yamakawa, Shiro 8610 Program Committee  
 Yamamoto, Akio [8641-22] S5  
 Yamamoto, Fumihiko [8647-9] S5  
 Yamamoto, Fumihiko [8632-76] SPWed  
**Yamamoto, Hirotosugu** [8643-1] S1  
**Yamamoto, Kazuhiro** [8622-55] SPWed, [8622-7] S2, [8632-81] SPWed  
 Yamamoto, Kazuyo [8566-11] S3  
 Yamamoto, Kenji [8644-10] S3  
 Yamamoto, Kenji I. 8595 Conference Chair, 8595 S14 Session Chair  
 Yamamoto, Manabu [8644-33] SPWed, [8644-34] SPWed  
 Yamamoto, Naokatsu [8646-28] S10, [8646-28] S9  
 Yamamoto, Naoki [8623-5] S2  
 Yamamoto, Takashi [8647-9] S5  
 Yamamoto, Yoshihisa [8635-10] S3  
 Yaman, Fatih 8647 Program Committee, 8647 S5 Session Chair  
**Yamanaka, Masahito** [8597-26] S6  
 Yamanaka, Shogo [8646-24] S8, [8646-24] S9  
**Yamanari, Masahiro** [8567-13] S3, [8567-14] S3  
 Yamane, Keisuke [8625-2] S1  
 Yamanishi, Masamichi [8640-26] S6, [8640-47] S11  
**Yamaoka, Yoshihisa** [8572-56] SPSun  
 Yamashita, Kimihiro  
 Yamashita, Shinji [8571-104] SPMon  
 Yamashita, Yutaka [8571-50] S8  
 Yamauchi, Toyohiko [8571-50] S8  
 Yan, Bo [8588-110] S8  
 Yan, Chunsheng [8641-74] SPWed  
 Yan, Jack [8597-16] S4  
**Yan, Long** [8588-102] SPSun  
 Yan, Lu [8601-53] S13  
 Yan, Ping [8588-48] S8  
 Yan, Qimin [8625-54] S12, [8641-54] S12
- Yan, Tao [8641-23] S5  
 Yan, Wang [8588-85] SPSun  
 Yan, Weizhen [8647-19] S7  
 Yan, Xin [8621-34] SPWed  
 Yan, Yan [8647-6] S4  
 Yan, Yuling 8565 Program Committee, 8565 S5 Session Chair, [8565-70] S5  
**Yanagiya, Shinichiro** [8587-15] S2  
**Yang, Bin** [8616-6] S2, [8618-8] S11, [8618-8] S2  
 Yang, Bo [8565-181] S4  
**Yang, Changhui** [8581-131] SPSun, [8587-43] S7  
 Yang, Chanyoung [8644-38] SPWed  
 Yang, Charley Yongzhi 8618 Program Committee, 8618 S7 Session Chair  
 Yang, Chenying [8575-9] S2, [8583-15] S4  
 Yang, Chi [8631-17] S4  
 Yang, Chih-Chung [8571-129] SPMon, [8571-86] SPMon, [8597-19] S4, 8625 Program Committee, [8625-44] S10, [8625-5] S1, [8641-16] S4, [8641-29] S6, [8641-39] S9  
 Yang, Chih-Hsung [8565-9] S3  
 Yang, Chuan [8589-52] S11  
 Yang, Chunhui [8588-41] S7  
 Yang, Deok-Cho [8612-22] SPTue  
 Yang, Fang-Yi [8582-26] SPTues  
 Yang, Haeyeon [8634-9] S2  
 Yang, Hao [8573-4] S1  
 Yang, Hongjun [8633-29] S9  
 Yang, Hongqin [8574-28] SPSun, [8596-10] S3  
 Yang, Huaxiao [8587-68] SPMon  
 Yang, Hyunsoo [8639-8] S3  
 Yang, Jeng-Yuan [8646-26] S10, [8646-26] S9  
 Yang, Jia [8572-54] SPSun, [8591-25] SPWed  
 Yang, Jianjun [8573-4] S1  
**Yang, Jinghui** [8628-15] S6  
 Yang, Jingwen [8601-95] SPTue, [8619-12] S3  
 Yang, Jinping [8588-108] SPSun  
 Yang, Joon-Mo [8581-12] S2, [8581-140] SPMon, [8581-153] SPMon, [8581-78] S11  
**Yang, Lan** 8600 Program Committee, 8600 S13 Session Chair, [8600-52] S13, [8600-59] S14, [8627-23] S6  
 Yang, Lih-Mei [8601-117] SPTue, [8607-19] S12, [8607-19] S6, [8611-42] S3, [8611-42] S9  
 Yang, Lily [8635-12] S4  
 Yang, Min-Hao [8641-72] SPWed  
 Yang, Moonseung [8641-15] S4, [8641-7] S2  
 Yang, Qiang [8567-30] S6, [8567-70] SPSun  
 Yang, Qingbo [8590-7] S1  
 Yang, Quankui K. [8631-15] S17, [8640-49] S11  
 Yang, Rui Q. [8640-25] S6  
 Yang, Sang Sik [8614-17] S3  
 Yang, Seung-Burn [8615-7] S2  
 Yang, Shan [8577-27] S9  
 Yang, Shao-Horn [8607-14] S10, [8607-14] S4  
 Yang, Sheng-Chieh [8594-19] S5  
 Yang, Suhui [8599-16] S3, [8599-49] S4, [8599-49] S9  
 Yang, Taeseok Daniel [8565-90] S9  
 Yang, Tianxin [8599-66] SPTue, [8601-70] SPTue, [8601-74] SPTue, [8601-92] SPTue, [8601-95] SPTue, [8604-41] SPTue, [8619-12] S3, 8624 Program Committee, 8624 S2 Session Chair, 8624 S5 Session Chair, 8624 S9 Session Chair, [8624-31] S8, [8624-34] S8, [8624-49] S4, [8624-9] S3  
 Yang, Tsung-Lin [8594-19] S5
- Yang, Victor X. D.** 8565 Program Committee, 8565 S2 Session Chair, [8565-113] S4, [8565-173] S2, [8565-236] S2, [8565-237] S5, [8565-75] S6, [8571-98] SPMon  
 Yang, Wan-Hsi [8643-17] S4  
 Yang, Wei [8646-29] S5  
 Yang, Weijian [8633-15] S5, [8633-16] S5, [8633-21] S6, [8633-3] S1, [8633-30] S9, [8633-6] S2  
 Yang, Weili [8647-21] S7A, [8647-21] S8  
 Yang, Weiquan [8620-13] S3  
**Yang, Wenlong** [8588-13] S2, [8588-80] SPSun  
 Yang, William [8572-43] S8, [8572-44] S8  
 Yang, Xiaojie [8579-24] S5  
**Yang, Xinmai** [8581-103] SPSun  
 Yang, Xirong [8599-54] S10  
 Yang, Xu [8622-48] S7  
 Yang, Xuesong [8621-35] S7  
 Yang, Yamin [8595-12] S3  
 Yang, Yan Long [8588-93] SPSun  
 Yang, Yang [8632-10] S2  
 Yang, Yanshuang [8578-91] SPSun  
 Yang, Yi [8622-36] S9  
 Yang, Yi [8571-61] S9, [8571-75] S11, [8578-72] S12, [8581-129] SPSun, [8581-168] SPMon  
 Yang, Ying [8622-51] SPWed  
 Yang, Ying 8580 Program Committee, [8580-15] S2  
 Yang, Yiqun [8581-101] SPSun  
 Yang, Yuanlong [8577-1] S1  
 Yang, Yue-De [8600-56] S13  
 Yang, Zheng [8632-68] S15  
 Yang, Zhihong [8625-60] S13  
**Yanina, Irina Yu.** [8580-55] SPMon, [8580-56] SPMon  
 Yankelevich, Diego R. [8565-29] S4, [8565-36] S4, [8574-27] SPSun  
 Yannopoulos, Spyros N. [8632-22] S5  
 Yano, Yutaka [8647-8] S4  
**Yanson, Dan A.** [8605-4] S1, [8640-54] S12  
 Yao, Da-Kang [8581-116] SPSun, [8581-118] SPSun  
 Yao, Jianquan [8604-13] S3, [8604-54] SPTue  
 Yao, Jin [8630-41] S11, [8630-41] S2  
 Yao, Jun [8617-1] S1  
**Yao, Junjie** [8581-104] SPSun, [8581-140] SPMon, [8581-155] SPMon, [8581-78] S11, [8581-79] S11, [8616-4] S1, [8616-4] S7  
 Yao, Qi-Feng [8600-56] S13  
 Yao, Shu-De [8626-47] S12  
 Yao, Takafumi 8626 Program Committee  
 Yao, Xianghan [8604-38] S8  
**Yao, Xincheng** [8567-44] S8, [8571-47] S7  
 Yao, Y. Lawrence [8579-3] S1  
 Yao, Yu-Feng [8625-44] S10, [8641-16] S4, [8641-29] S6  
**Yapici, Murat Kaya** [8581-47] S8  
 Yaqoob, Zahid [8587-32] S5, [8589-46] S10  
 Yarmoska, Steven K. [8592-27] S7  
 Yaroslavsky, Anna N. [8565-179] S3, [8577-30] S3, [8577-31] S10, 8580 Program Committee, 8580 S1 Session Chair, 8580 S8 Session Chair, [8580-23] S4, [8580-35] S2  
 Yaroslavsky, Ilya V. [8580-17] S4  
 Yaseen, Mohammad A. [8565-177] S3  
 Yaseen, Mohammad T. [8594-20] S5  
 Yasmin, Zannatul [8579-34] S3, [8595-57] S13  
 Yasui, Kei [8622-55] SPWed  
 Yasui, Takeshi [8588-106] SPSun, [8588-107] SPSun  
 Yasumura, Yoshihiro [8645-2] S2

# Index of Authors, Chairs, and Committee Members

- Yasuno, Yoshiaki** [8567-13] S3, [8567-14] S3, [8567-2] S1, [8567-4] S1, [8567-59] SPSun, [8567-60] SPSun, 8571 Program Committee, 8571 S7 Session Chair, [8571-14] S3, [8571-16] S3, [8571-18] S3  
Yasuo, Kenzo [8566-11] S3  
Yaung, Jack [8614-3] S1  
Yavas, Seydi [8581-136] SPMon  
Yavtushenko, Marina S. [8579-16] S4, [8601-109] SPTue  
Yazawa, Naoya [8636-33] S7  
**Yazdanfar, Siavash** 8577 Program Committee  
Yazdani, Miad [8638-12] S3  
**Yazici, Birsan** [8578-113] SPSun  
Ye, Bo [8645-30] SPWed  
Ye, Changgeng [8601-81] SPTue  
Ye, Hao [8640-25] S6  
Ye, Jim [8631-16] S17  
Ye, Jun [8631-6] S2  
Ye, Shuoqi [8581-100] SPSun, [8581-99] S8  
Ye, Tong [8588-93] SPSun  
**Ye, Winnie N.** [8620-3] S1, [8629-48] SPWed  
Ye, Xiang [8565-208] S3  
Ye, Xingchen [8588-45] S7, [8596-20] S6  
Yeager, Douglas E. [8581-13] S2  
Yebo, Nebiyu A. [8627-18] S5  
Yee, Albert [8565-238] S5  
Yee, Dae-Su [8614-51] SPTue  
Yee, Kiju [8623-61] S15  
Yeganegi, Elahe [8632-27] S6, [8634-23] S5  
Yegnanarayanan, Siva [8632-51] S11  
**Yeh, Alvin T.** [8593-20] S3  
Yeh, Chenghung [8581-182] SPMon, [8581-83] S11, [8581-84] S11  
Yeh, Chia-Hua [8588-79] SPSun  
Yeh, Chien-Hung [8645-20] S7, [8645-20] S7B, [8645-22] S7, [8645-22] S7B  
Yeh, Chiou-Yueh [8588-65] S10  
Yeh, Pochi 8643 Program Committee  
**Yeh, Shu-Chi Allison** [8568-26] S7  
Yeh, Yi-Hsin [8620-69] SPWed  
Yeh, Yu-Hsiang [8626-57] SPWed  
Yeheskely-Hayon, Daniella [8575-10] S3, [8597-29] S6, [8597-31] S7, [8597-33] S7  
Yelbuz, Talât Mesud 8593 Program Committee  
**Yelin, Dvir** 8575 S5 Session Chair, [8575-10] S3, [8575-19] S5, [8575-20] S5, [8597-29] S6, [8597-31] S7, [8597-33] S7  
Yen, Chun-Wan [8622-38] S9  
Yen, Shih-Hsun [8620-76] SPWed  
Yen, Tzu-Chen [8581-35] S6, [8581-70] S10  
Yeng, Yi Xiang [8632-7] S2  
Yennu, Amarnath S. [8578-4] S1  
Yeoh, Khay Guan [8576-12] S3, [8577-15] S7  
Yew, Elijah Y. [8588-104] SPSun, [8588-53] S8  
Yi, Fei [8631-11] S3  
Yi, Ji [8571-39] S6, 8592 S8 Session Chair, [8592-38] S9, [8598-13] S4  
Yi, Xi [8574-23] SPSun, [8574-24] SPSun, [8578-101] SPSun, [8578-107] SPSun  
Yih, T. C. 8612 Program Committee  
Yildirim, Murat [8565-79] S7, [8575-32] SPSun, [8588-78] SPSun  
Yildirim, Remzi [8619-58] SPWed  
Yilmaz, Tolga [8601-36] S9  
Yin, Biwei [8571-2] S1  
Yin, Jay [8589-20] S4  
Yin, Lianghong [8630-37] S9  
Yin, Melissa [8587-36] S5  
Yin, Shizhuo [8589-52] S11  
Yin, Xin [8567-79] SPSun, [8571-78] S12, [8593-4] S1  
Yin, Yadong [8595-38] S5  
Yin, Yusong [8607-55] SPTue  
Ying, Howard S. [8567-80] SPSun  
Ying, Ming [8588-96] SPSun  
Ylinen, Sami [8629-11] S3, [8629-12] S3  
Yoder, P. Douglas [8625-42] S9, [8625-50] S11  
Yodh, Arjun G. [8568-40] SPMon, 8578 Conference Chair, 8578 S3 Session Chair, [8578-115] SPSun, [8578-14] S3, [8578-2] S1, [8578-21] S4, [8578-35] S6  
Yokouchi, Noriyuki 8639 Program Committee  
**Yokoyama, Hiroshi** 8642 Program Committee  
Yokoyama, Shiyoshi S. 8622 Program Committee, [8622-55] SPWed, [8622-7] S2, [8632-81] SPWed  
Yokus, Hamdullah [8585-19] S3  
Yonemaru, Yasuo [8597-26] S6  
Yoneyama, Takuo [8644-38] SPWed  
Yong, Derrick [8598-3] S2, [8615-3] S1  
Yong, Jiawey [8579-11] S3  
Yong, Saw Soon [8599-80] SPTue  
Yongjoo, Kwon [8616-15] S3, [8616-15] S4  
Yoo, Byung-Wook [8633-15] S5, [8633-16] S5  
Yoo, Dong Eun [8628-25] SPWed  
**Yoo, Hongki** [8565-11] S7, [8565-18] S7, [8565-20] S7, [8589-53] SPWed  
Yoo, InKyeong [8641-7] S2  
Yoo, Nali [8628-26] SPWed  
Yoo, S. J. Ben [8619-56] S14  
Yoo, Sonia [8567-84] SPSun  
Yoon, Changhyeng [8592-20] S5  
Yoon, David [8565-103] S2  
Yoon, Euijoon 8625 Conference CoChair, [8625-1] S1  
Yoon, Euisik [8581-73] S10  
Yoon, Heesun [8616-40] S9  
Yoon, HyeOk [8592-5] S2  
Yoon, Hyung Ki [8581-17] S3, [8596-26] S8  
Yoon, Jaewoong [8570-21] S5  
Yoon, Mina [8609-10] S3, [8609-16] S4  
Yoon, Min-Seok [8601-77] SPTue, [8621-17] S4, [8621-19] S4  
Yoon, Soon Fatt [8631-40] S8  
Yoon, Soon Joon [8596-16] S5  
Yoon, Tae-Hoon 8642 Conference CoChair, [8642-12] S3, [8642-35] SPWed, 8643 Program Committee  
Yoon, Tai Hyun [8565-90] S9  
Yoon, Yeoreum [8571-131] SPMon, [8571-53] S8, [8588-51] S8  
Yoon, Youngkab [8621-43] SPWed  
**Yoshida, Harumasa** [8565-16] S8, [8625-63] S14, [8639-22] S6  
Yoshida, Hidetsugu [8599-82] SPTue  
Yoshida, Hirofumi [8567-12] S3  
Yoshida, Hiroyuki [8610-7] S2  
Yoshida, Hiroyuki [8642-10] S3  
Yoshida, Keiichiro [8578-110] SPSun  
Yoshida, Minoru [8609-12] S3  
**Yoshida, Shuhei** [8644-34] SPWed  
Yoshida, Yuki [8645-2] S2, [8646-10] S4  
Yoshikawa, Akihiko [8641-25] S6  
**Yoshikawa, Hiroshi** 8644 Program Committee, 8644 S5 Session Chair, [8644-32] SPWed  
Yoshikawa, Kazushi [8566-11] S3  
Yoshimoto, Kayo [8575-33] SPSun  
Yoshimoto, Naoto [8645-19] S6, [8645-6] S4  
**Yoshimura, Elisabeth M.** [8569-4] S1, [8569-5] S1, [8569-8] S2, [8572-45] S9  
Yoshimura, Kazuki [8642-16] S5  
**Yoshimura, Tania** [8569-4] S1  
Yoshimura, Tetsuzo 8630 Program Committee  
Yoshioka, Yuki [8646-28] S10, [8646-28] S9  
You, In-Kyu [8626-42] SPWed  
You, Jang-Woo [8616-40] S9  
You, Jong-Bum [8630-47] SPWed  
You, Joon S. [8565-83] S7, [8565-92] S9  
Youn, Seo Ho [8589-35] S8  
Young, Amber L. [8635-20] S5  
Young, Hunter [8565-213] S3, [8565-215] S3  
Young, Madison A. [8565-27] S9  
Young, Stuart B. [8567-61] SPSun  
Yousefi, Siavash [8580-40] S8, [8580-41] S9  
Yova, Dido M. [8594-14] S4  
Yu, Aimin [8579-11] S3  
Yu, Anthony W. [8599-25] S5, [8599-7] S2, [8610-21] S4  
Yu, Bin [8594-23] S6  
**Yu, Bing** [8578-51] S9  
Yu, Dong X. [8607-37] S11, [8607-42] S12, [8607-45] S12  
Yu, Edward [8565-5] S2  
Yu, Fei [8576-7] S2  
Yu, Feng [8622-55] SPWed, [8622-7] S2  
Yu, Frank [8591-20] S4  
Yu, Haixia [8615-9] SPTue  
Yu, Hongbin [8616-3] S1, [8616-3] S7  
Yu, Hyeonseung [8571-116] SPMon, [8592-13] S4, [8592-44] SPSun, [8592-47] SPSun, [8592-48] SPSun  
Yu, Jae Su 8631 S2 Session Chair, [8631-42] S8, [8641-30] S6  
Yu, Jiali [8588-100] SPSun  
Yu, Jianhui [8613-50] SPTue  
Yu, Jianjun 8646 S4 Session Committee  
Yu, Jianjun 8646 S4 Session Chair, [8647-2] S2  
Yu, Jianjun [8645-12] S5  
Yu, Karen [8565-237] S5  
Yu, Kyoungsik [8630-47] SPWed  
Yu, Leo [8635-10] S3  
Yu, Liniang [8594-5] S2  
Yu, Li-Ping [8597-36] S8  
Yu, Nan [8600-14] S4, [8600-25] S6, [8600-44] S11  
Yu, Nanfang [8624-3] S2, [8633-20] S6, [8640-24] S6, [8640-47] S11  
**Yu, Peichen** 8620 Program Committee, 8620 S11 Session Chair, [8620-23] S6, [8620-59] S14, [8620-60] S15, [8620-70] SPWed  
Yu, Qingfeng E. [8590-9] S2  
Yu, Richard [8591-20] S4  
Yu, Ruo-Xi [8580-18] S4  
Yu, Sheng-Fu [8641-2] S1  
Yu, Siyuan [8628-16] S6  
Yu, Songlin [8591-5] SPWed  
Yu, Xia [8598-3] S2, [8603-34] SPTue, [8615-3] S1  
Yu, Yang [8599-80] SPTue  
Yu, Yu [8647-21] S7A, [8647-21] S8  
Yu, Zongfu [8632-66] S14  
**Yuan, Guangqian** [8581-174] SPMon  
Yuan, Hsiangkuo [8597-34] S7  
Yuan, Julie X. [8615-30] S7  
Yuan, Lei [8601-119] SPTue, [8601-120] SPTue, [8613-56] SPTue, [8621-21] S4, [8621-63] SPWed, [8622-56] SPWed, [8626-66] SPWed  
Yuan, Liang [8613-49] SPTue  
Yuan, Ping [8636-25] S5  
Yuan, Xiao [8599-76] SPTue, [8602-5] S2  
**Yuan, Xiaocong** [8615-30] S7  
**Yuan, Zhijia** [8567-74] SPSun  
Yüce, Emre [8623-48] S12  
Yue, Cheng-Feng [8641-50] SPWed, [8641-8] SPWed  
Yue, Yang [8647-6] S4  
Yueksel, Sahrü [8569-12] S3, [8579-15] S4  
Yuen, Horace P. 8635 Program Committee  
Yum, Woong-Sun [8625-51] S11  
Yun, Joosun [8625-56] S12  
Yun, Juhung [8594-2] S1  
Yun, Min Ju [8641-38] S8  
Yun, Seok Hyun 8598 Conference Chair, 8598 S1 Session Chair, [8598-12] S4, [8598-18] S6, [8598-2] S2, [8598-6] S3, [8598-7] S3, [8598-9] S3  
Yung, Teresa [8578-112] SPSun  
Yusoff, Mashitah [8642-23] S7  
**Yust, Brian G.** [8594-12] S4, [8641-21] S4  
Yuste, Rafael 8586 Program Committee, 8586 S4 Session Chair, [8586-12] S2  
Yvind, Kresten [8627-33] S8, [8633-34] S10, [8634-5] S1, [8636-11] S2, [8639-12] S4, 8640 Program Committee, [8640-34] S8  

---

## Z

Zablocki, Mathew J. [8624-33] S8  
Zaccanti, Giovanni [8583-11] S3, [8583-21] S3, [8583-21] S5, [8583-5] S2  
Zaccheo, T. Scott [8601-61] S15  
Zacharovas, Stanislovas J. [8644-7] S2  
Zachary, Christopher B. [8588-39] S6  
Zacherle, Adrian [8611-45] S10, [8611-45] S4  
Zadeh, Gelareh [8565-191] SPSun  
Zafir, Elad [8565-168] S1  
**Zagaynova, Elena V.** [8568-16] S4, [8587-63] SPMon  
Zagolla, Volker [8620-37] S9  
Zagoruiko, Yuri A. [8599-13] S3  
Zah, Chung-en [8631-22] S4, [8640-42] S10  
**Zaharans, Eriks** [8574-19] S4  
**Zaharans, Janis** [8574-19] S4  
**Zahedi, Atena** [8586-24] S5  
Zahid, Malina [8593-15] S4  
**Zahreddine, Ramzi N.** [8589-2] S1  
Zajac, Marcin [8625-9] S2  
Zakhidov, Anvar A. [8622-36] S9  
Zaks, Ben [8623-21] S6  
Zalev, Jason [8581-146] SPMon  
Zalev, Jason [8581-2] S1  
Zalevsky, Zeev [8572-31] S6, [8618-18] S6, [8643-18] SPWed  
Zalkovskij, Maksim [8624-12] S4  
**Zam, Azhar** [8572-31] S6, [8580-1] S4, [8580-38] S8  
**Zamani Aghaie, Kiarash** [8632-20] S5  
**Zamboni, Roberto** 8622 Program Committee  
**Zameroski, Nathan D.** [8599-68] SPTue  
Zamkotsian, Frédéric [8616-18] S3, [8616-18] S4, [8616-44] S9, [8618-13] S4  
Zamora Gomez, Alethea V. [8570-2] S1  
Zamora-Munt, Jordi [8636-46] S9  
Zampolli, Stefano [8631-85] S16  
Zang, Xuan [8593-5] S1  
**Zanganeh, Saeid** [8578-72] S12, [8578-99] SPSun, [8581-173] SPMon  
Zângaro, Renato Amaro [8565-33] SPSun, [8565-52] SP1  
Zanin, Fátima Antonia Aparecida [8569-24] SPSat, [8569-26] SPSat  
Zanin, Maria Antonia de Fatima [8569-21] SPSat  
Zanoni, Enrico [8625-58] S12, [8641-53] S11  
Zaouter, Yoann [8601-49] S12, [8611-21] S5, [8611-43] S3, [8611-43] S9  
Zapol, Warren M. [8592-1] S1  
Zappa, Franco [8631-44] S9, [8631-45] S9



# Index of Authors, Chairs, and Committee Members

- Zappe, Andrea [8635-21] S6  
 Zarifyussefian, Nikta [8574-22] S5  
**Zarifs, Elmars** [8622-52] SPWed  
 Zarrabi, Nawid [8587-20] S3, [8588-27] S4, [8590-11] S2  
 Zaugg, Christian A. [8606-15] S5  
**Zavada, John M.** 8621 Program Committee, 8621 S1 Session Chair, [8621-25] S5, 8631 Program Committee, 8631 S1 Session Chair  
 Zavaleta, Cristina L. [8581-15] S3, [8590-18] S4  
**Zaverton, Melissa A.** [8613-19] S4  
**Zawadzki, Robert J.** [8567-1] S1, [8567-73] SPSun, [8571-114] SPMon, [8571-123] SPMon, [8571-20] S3, [8571-6] S1, [8571-62] S10, [8583-18] S4  
**Zayats, Anatoly V.** [8628-11] S5  
 Zazueta, Joel [8604-46] SPTue  
 Zederbauer, Tobias [8631-20] S17, [8640-44] S10  
 Zediker, Mark S. 8605 Conference Chair  
 Zehender, Tilman [8637-30] S7  
 Zehnder, Sarah [8607-53] SPTue  
 Zeilinger, Anton [8635-30] S6, [8635-30] S9  
 Zeimer, Ute [8605-20] S5, [8640-53] S12  
 Zeitels, Steven M. [8565-79] S7, [8588-78] SPSun  
 Zeitner, Uwe Detlef [8613-18] S4  
 Zeitouni, Natalia [8568-12] S3  
 Zelakovic-Leon, Daria [8598-13] S4  
**Zelodovik, Boris V.** [8601-12] SPTue, [8603-3] S10, [8603-3] S2  
 Zellar, Ronald S. [8610-3] S1  
 Zeller, John W. [8626-10] S3  
 Zelman, David E. [8599-37] S7, 8601 Program Committee, 8601 S11 Session Chair  
 Zemánek, Pavel [8637-39] S9  
 Zemek, Josef [8625-88] SPWed  
 Zemp, Roger J. [8578-39] S7, [8581-11] S2, [8581-150] SPMon, [8581-46] S8, [8581-80] S11, [8592-18] S5  
**Zeng, Haishan** 8565 Conference Chair, 8565 S1 Session Chair, [8565-22] S5, [8565-5] S2, [8565-7] S2, [8565-99] S1, [8572-42] S8, [8588-100] SPSun  
 Zeng, Hongkui [8586-10] S2  
 Zeng, Jun [8593-25] SPSun, [8617-14] S3  
 Zeng, Shaoyun [8589-48] S11, [8590-32] S9, 8591 Program Committee  
 Zeng, Xiaoyan  
 Zeng, Yan [8588-110] S8  
 Zentner, Chris [8615-29] S6  
 Zerbi, Filippo Maria [8618-13] S4  
 Zeringue, Clint [8601-34] S8  
 Zervas, Mikhail N. [8600-43] S11, [8600-74] SPTue, 8601 Program Committee, 8601 S1 Session Chair, [8627-29] S7  
 Zervos, Nikos [8644-19] S5  
 Zgarian, Roxana [8622-26] S7  
 Zha, George [8631-31] S6  
**Zhan, Qiwen** 8627 Program Committee  
 Zhang, An [8574-28] SPSun  
**Zhang, Anqi** [8578-40] S7  
 Zhang, Binzhen [8616-33] S7  
**Zhang, Cheng** [8581-108] SPSun, [8600-58] S14  
 Zhang, Chi [8581-104] SPSun, [8581-118] SPSun  
 Zhang, Chong [8607-18] S12, [8607-18] S6, [8607-24] S7  
 Zhang, Chunjie [8631-10] S3  
 Zhang, Delong [8588-11] S2, [8588-5] S1  
 Zhang, Ellen Z. [8565-14] S2, [8571-34] S6, [8571-36] S6  
 Zhang, Fan [8625-52] S11, [8625-81] SPWed, [8625-85] SPWed, [8625-86] SPWed, [8625-87] SPWed  
**Zhang, Guofeng** [8590-23] S3, [8596-18] S5  
 Zhang, Guo-Yi [8619-17] S4  
 Zhang, Haibin 8607 S5 Session Chair, 8611 S11 Session Chair, [8611-44] S10, [8611-44] S4  
 Zhang, Haichong [8581-106] SPSun  
 Zhang, Haixiang [8620-71] SPWed  
 Zhang, Han [8590-34] S9  
 Zhang, Hao [8580-44] SPMon, [8580-45] SPMon  
 Zhang, Hao [8636-26] S5  
 Zhang, Hao F. [8573-20] S6, [8581-160] SPMon, [8581-161] SPMon, [8581-76] S11  
 Zhang, Hong-Chao [8603-31] SPTue  
 Zhang, Hualiang [8613-23] S5, [8613-47] SPTue, [8624-48] SPWed  
 Zhang, Ian [8595-61] S14  
 Zhang, Jason [8567-27] S5  
 Zhang, Jessica [8640-8] S2  
**Zhang, Jian J.** [8565-43] S3  
**Zhang, Jie** [8607-3] S1, [8607-3] S5  
 Zhang, Jing [8576-3] S1  
**Zhang, Jing** [8613-36] S8, [8619-51] S13, [8640-19] S4, [8641-55] S12  
 Zhang, Jing [8636-25] S5  
 Zhang, Jinggui [8611-49] S12, [8611-49] S6  
 Zhang, Jingyuan L. [8640-41] S10  
 Zhang, Jun [8599-46] S8  
 Zhang, Jun [8565-35] S7, [8565-8] S4, [8565-84] S7, [8571-80] S12  
 Zhang, Jun [8638-7] S2, [8638-8] S2  
 Zhang, Kai [8588-99] SPSun  
**Zhang, Kang** [8565-172] S2  
 Zhang, Labao [8631-92] SPWed, [8635-32] S6, [8635-32] S9  
 Zhang, Lei [8625-82] SPWed  
 Zhang, Leying [8595-61] S14  
 Zhang, Li [8587-16] S2  
**Zhang, Liang** [8566-3] S1, [8576-20] S4  
 Zhang, Limin [8572-11] S3, [8574-23] SPSun, [8574-24] SPSun, [8578-105] SPSun, [8578-107] SPSun, [8578-89] S14  
 Zhang, Lin [8640-28] S7  
 Zhang, Linda [8609-16] S4  
 Zhang, Lixin [8573-25] SPSun  
 Zhang, Ning [8571-121] SPMon  
 Zhang, P. [8628-16] S6  
 Zhang, Qiang [8605-30] S7  
 Zhang, Qiu-Xiang [8567-44] S8  
 Zhang, Ruikang [8627-16] S4  
 Zhang, Ruiying [8581-145] SPMon  
 Zhang, Sasa [8604-55] SPTue  
 Zhang, Shaofei [8634-8] S2  
 Zhang, Shiguo [8605-14] S3, [8605-23] S5, [8605-33] S7, [8640-57] S13  
 Zhang, Shiyi [8596-22] S7  
 Zhang, Shiyong [8640-66] S14  
 Zhang, Shuqiang [8576-8] S2  
 Zhang, Song [8640-67] SPWed  
 Zhang, Tao [8607-37] S11  
 Zhang, Tao [8573-4] S1  
 Zhang, Tian [8620-71] SPWed  
 Zhang, Wei [8630-44] SPWed  
 Zhang, Wei [8588-110] S8  
 Zhang, Wei [8572-11] S3, [8574-23] SPSun, [8574-24] SPSun, [8578-105] SPSun, [8578-89] S14  
 Zhang, Wei-jun [8631-31] S6  
 Zhang, Weizhi [8645-21] S7, [8645-21] S7B  
 Zhang, Xiang [8599-76] SPTue, [8602-5] S2  
**Zhang, Xiang** [8597-12] S3, [8629-23] S7, 8632 S14 Session Chair, [8632-67] S15, [8640-36] S8  
 Zhang, Xiangyang [8581-41] S7  
 Zhang, Xiao Li [8641-60] S13  
 Zhang, Xiaofeng [8572-12] S3  
 Zhang, Xiaojing [8565-25] S6, [8616-6] S2  
 Zhang, Xiaoli [8641-18] S4  
 Zhang, Xilin [8627-16] S4  
 Zhang, Xin [8605-36] SPTue  
 Zhang, Xingwang [8629-6] S2  
 Zhang, Xingyu [8624-44] S11  
 Zhang, Xinliang [8647-21] S7A, [8647-21] S8  
 Zhang, Xuping [8631-96] SPWed  
 Zhang, Yan [8607-49] SPTue  
 Zhang, Yang [8630-38] S9, [8630-45] SPWed  
 Zhang, Yaokun [8571-128] SPMon  
 Zhang, Ying [8603-34] SPTue  
 Zhang, Yinjun [8626-20] S5, [8631-102] S7  
 Zhang, Yixin [8631-96] SPWed  
 Zhang, Yong [8594-10] S3, [8635-3] S1  
 Zhang, Yong [8616-39] S8  
 Zhang, Yonggang [8584-37] S1  
 Zhang, Yong-Hang [8620-13] S3, [8631-51] S10, [8631-55] S19  
 Zhang, Yu [8581-12] S2, [8581-79] S11  
 Zhang, Yu [8605-9] S2  
 Zhang, Yuan [8565-65] S3  
 Zhang, Yuhua [8567-64] SPSun  
 Zhang, Yundong [8636-25] S5  
 Zhang, Yuying [8575-17] S4  
 Zhang, Zhaoqiang [8586-5] S1  
 Zhang, Zhaoxing [8618-23] S7  
 Zhang, Zhaoyu [8619-67] SPWed, [8620-17] S4, [8620-77] SPWed  
**Zhang, Zhe** [8595-9] S2  
 Zhang, Zhigang [8624-4] S2  
 Zhang, Zhihong [8582-32] SPTues  
 Zhang, Zhongchuan [8601-95] SPTue, [8619-12] S3  
 Zhang, Zhongxing [8578-100] SPSun  
 Zhang, Zhuo [8624-9] S3  
 Zhao, Baozhen [8599-46] S8  
 Zhao, C. [8639-1] S1  
 Zhao, Chengquan [8592-11] S4  
 Zhao, Chubiao [8582-23] SPTues  
 Zhao, Dawen [8596-3] S1  
 Zhao, Feng [8586-5] S1  
 Zhao, Haiyan 8608 Program Committee  
 Zhao, Hongping [8620-43] S10, [8641-42] S9  
 Zhao, Huijuan [8573-25] SPSun, [8578-101] SPSun, [8578-102] SPSun, [8578-104] SPSun, [8578-105] SPSun, [8578-106] SPSun, [8578-89] S14, [8578-91] SPSun  
 Zhao, Jiang [8590-7] S1  
 Zhao, Jiangbo [8595-35] S8  
**Zhao, Jianhua** [8565-22] S5, [8565-5] S2  
 Zhao, Juan [8596-41] SPMon  
 Zhao, Jun [8631-10] S3, [8631-76] S14  
 Zhao, Junliang [8641-2] S1  
 Zhao, Ken [8565-68] S4  
 Zhao, Lihua [8640-25] S6  
**Zhao, Lingjuan** [8627-16] S4  
 Zhao, Long [8636-26] S5  
 Zhao, Ming [8587-33] S5, [8589-57] SPWed  
 Zhao, Mingtao [8565-172] S2, [8565-64] S3, [8567-78] SPSun, [8571-72] S11  
 Zhao, Peng [8620-43] S10, [8641-42] S9  
 Zhao, Pu [8599-55] S11, [8599-56] S11  
 Zhao, Qiang [8630-44] SPWed  
 Zhao, Wei [8622-33] S8  
 Zhao, Weidong [8631-31] S6  
 Zhao, Yanzhu 8614 Program Committee  
 Zhao, Youbo [8592-39] S9  
 Zhao, Zhen [8565-199] S1, [8565-202] S1  
**Zharov, Vladimir P.** [8565-87] S8, 8580 Program Committee, 8580 S6 Session Chair, 8580 S7 Session Chair, 8581 Program Committee, [8581-163] SPMon, [8581-164] SPMon, [8581-167] SPMon, [8581-170] SPMon, [8581-171] SPMon, [8581-172] SPMon, [8581-3] S1, [8581-54] S8, [8581-55] S8, [8581-75] S11, 8582 Program Committee, [8582-19] S5  
 Zhegalova, Natalia [8587-30] S4, [8596-19] S6  
**Zheng, Bin** [8580-19] S4, [8582-2] S6  
 Zheng, Fan [8581-76] S11  
 Zheng, Gang [8581-26] S4  
 Zheng, Jiangjun [8628-15] S6  
 Zheng, Jing-gao [8571-121] SPMon  
 Zheng, Juanjuan [8588-93] SPSun  
 Zheng, Liqin [8596-10] S3  
 Zheng, Rui [8597-18] S4  
 Zheng, Ruitao [8644-15] S4, [8644-9] S3  
 Zheng, Siyang [8589-52] S11  
 Zheng, Wanhua [8633-26] S8  
 Zheng, Wei [8572-41] S8, [8576-12] S3, [8577-15] S7  
 Zheng, Wenxin [8601-79] SPTue  
 Zheng, Xu [8631-31] S6  
 Zheng, Xuezhe [8630-23] S6, [8630-41] S11, [8630-41] S2  
 Zheng, Yuan [8600-42] S11  
 Zheng, Zhenrong [8573-8] S2  
 Zhi, Zhongwei [8567-79] SPSun, [8571-63] S10, [8571-76] S12, [8571-78] S12  
 Zhigilei, Leonid V. [8609-16] S4  
 Zhong, Kai [8604-13] S3  
 Zhong, Qiaonan [8581-182] SPMon  
 Zhong, Xiewei [8580-52] SPMon  
 Zhong, Yongchun [8613-50] SPTue  
 Zhou, Beiming [8626-51] SPWed  
 Zhou, Bill L. [8581-76] S11  
 Zhou, Changhe 8602 Program Committee  
**Zhou, Chuanle** [8631-94] S15  
 Zhou, Chun [8607-51] SPTue  
 Zhou, Delai [8639-23] S6  
 Zhou, Elaine [8565-119] S6  
 Zhou, Feifan [8582-20] SPTues  
 Zhou, Feifei [8574-27] SPSun  
 Zhou, Guangya 8616 Program Committee, 8616 S5 Session Chair, [8616-24] S5, [8616-3] S1, [8616-3] S7  
 Zhou, Hailong [8605-23] S5  
 Zhou, Haoming [8584-37] S1  
 Zhou, Heiling [8596-3] S1  
 Zhou, Jiangfeng [8623-19] S5  
 Zhou, Jun [8601-44] S11  
**Zhou, Linjie** [8629-21] S6  
 Zhou, Lixin [8577-10] S5  
 Zhou, Mingda [8589-52] S11  
 Zhou, Mingzhou [8587-73] SPMon  
 Zhou, Qifa [8565-35] S7, [8565-8] S4, [8571-80] S12, 8581 Program Committee, [8581-10] S2, [8581-140] SPMon, [8581-153] SPMon, [8581-41] S7  
 Zhou, Quan [8575-29] SPSun  
 Zhou, Rongguo [8624-48] SPWed  
 Zhou, Tiejing [8571-121] SPMon  
 Zhou, Weibin [8589-57] SPWed  
**Zhou, Weidong** 8633 S10 Session Chair, [8633-29] S9  
 Zhou, Weimin 8633 Conference Chair, 8633 S1 Session Chair, [8633-5] S2, [8633-6] S2, [8633-7] S2  
 Zhou, Xiang 8647 Program Committee  
 Zhou, Xiaoming [8575-31] S1, [8575-31] S7  
 Zhou, Xiao-Qi [8628-16] S6  
 Zhou, Xiaoqing [8578-102] SPSun, [8578-104] SPSun, [8578-106] SPSun, [8578-91] SPSun



# Index of Authors, Chairs, and Committee Members

- Zhou, Xiuli [8619-71] SPWed  
 Zhou, Yan [8577-10] S5  
 Zhou, Yanyan [8632-46] S10  
 Zhou, Yanyang [8629-21] S6  
 Zhou, Yifeng [8588-101] SPSun  
 Zhou, Yong [8581-118] SPSun  
 Zhou, Yu [8631-92] SPWed  
 Zhou, Yunshen [8608-20] S4, [8613-6] S2  
 Zhou, Yuxuan [8615-41] S9  
**Zhou, Zhiping** 8629 Program Committee, 8629 S3 Session Chair, 8629 S4 Session Chair, [8630-40] S1, [8630-40] S10  
 Zhou, Zhongxing [8573-25] SPSun  
 Zhu, Alexander Yutong [8621-1] S1  
 Zhu, Banghe [8565-48] S4, [8583-1] S1  
 Zhu, Benyuan [8610-16] S4  
 Zhu, Cheng [8601-57] S14  
 Zhu, Congyong [8625-81] SPWed, [8625-87] SPWed  
**Zhu, Dan** [8580-24] S5, [8580-52] SPMon  
 Zhu, Dandan [8625-58] S12  
 Zhu, Feng [8615-49] SPTue  
 Zhu, Feng [8601-35] S9  
 Zhu, Hai [8621-1] S1, [8631-11] S3  
 Zhu, Hongliang [8627-16] S4  
 Zhu, Hongyu [8590-32] S9  
 Zhu, Jianguang [8627-23] S6  
 Zhu, Ke [8577-10] S5  
 Zhu, Li [8633-30] S9  
 Zhu, Ming-Qiang [8590-23] S3, [8596-18] S5  
 Zhu, Pan [8599-66] SPTue, [8601-74] SPTue  
**Zhu, Peifen** [8613-36] S8  
 Zhu, Peng [8632-47] S10  
 Zhu, Qingzhen [8573-25] SPSun  
 Zhu, Quan [8590-30] S8  
 Zhu, Quing [8571-61] S9, [8571-75] S11, 8578 Program Committee, [8578-13] S3, [8578-34] S6, [8578-52] S9, [8578-72] S12, [8578-99] SPSun, 8581 Program Committee, [8581-129] SPSun, [8581-168] SPMon, [8581-173] SPMon, [8581-174] SPMon, [8581-97] SPSun  
**Zhu, Timothy C.** 8568 S3 Session Chair, [8568-11] S3, [8568-23] S6, [8568-25] S6, [8568-27] S7, [8568-28] S7, [8568-32] SPMon, [8568-34] SPMon, [8568-39] SPMon, [8568-4] S2, [8568-40] SPMon  
 Zhu, Xiangdong [8587-66] SPMon  
 Zhu, Xinxi [8588-49] S8  
 Zhu, Xiushan [8601-33] S8, [8601-51] S12, [8601-88] SPTue  
 Zhu, Yi [8623-7] S3  
 Zhu, Yizheng [8592-27] S7  
 Zhu, Yu [8631-33] S7  
 Zhu, Yunhui 8636 S10 Session Chair, [8636-45] S9  
 Zhuang, Qiangong [8631-60] S11  
 Zhuo, Guan-Yu [8588-70] S10, [8588-75] SPSun, [8642-20] S6  
 Zhuo, Yue [8586-18] S3  
 Zia, Rashid 8632 Program Committee  
 Zibik, Evgeny A. [8605-7] S2  
**Ziebell, Melissa** [8628-2] S1, [8628-2] S10, [8629-25] S7  
 Ziegler, William [8599-23] S5  
 Zielinski, Rafal [8577-3] S1, [8578-85] S14  
 Ziemlewicz, Timothy J. [8584-5] S2  
 Zijlstra, Felix [8565-40] S6  
 Zilch, Christian [8615-12] S3  
 Zilinger, Katja [8565-36] S1  
 Zilio, Sérgio C. [8604-50] SPTue  
 Zilkie, Aaron J. [8630-23] S6  
 Zimakov, Vladimir P. [8600-1] S1  
 Zimer, Hagen [8601-15] S4, [8601-15] S9, [8603-5] S10, [8603-5] S2  
 Zimmer, Johannes [8626-39] S9  
 Zimmer, Klaus-Peter [8607-48] S13, [8607-48] S6, [8607-52] SPTue  
**Zimmerley, Maxwell** [8588-67] S10, [8593-25] SPSun, [8622-24] S6  
 Zimmermann, Bernhard 8588 Program Committee  
 Zimmermann, Bernhard B. [8578-7] S2  
 Zimmermann, Christian [8640-10] S2  
**Zimmermann, Felix** [8611-33] S7, [8611-47] S11, [8611-47] S5  
 Zimmermann, Markus [8607-13] S10, [8607-13] S4  
 Zimnyakov, Dmitry A. 8591 Program Committee  
 Zimprich, Martin [8640-32] S7  
 Zink, Christof [8605-28] S6, [8640-56] S13  
 Zink, Jeffrey I. 8597 Program Committee  
 Zint, Chantal-Virginie [8565-166] S1  
 Ziolkowski, Richard W. [8632-55] S12  
 Ziolkowska, Joanna [8588-30] S4  
**Zipfel, Warren R.** [8573-17] S5, 8588 Program Committee  
 Ziyadi, Morteza [8646-25] S8, [8646-25] S9  
 Zlotnik, Alex [8618-18] S6  
 Zocca, Marco [8632-36] S9  
 Zogal, Karolina [8639-11] S4, [8639-15] S4, [8639-16] S4  
 Zolek, Norbert [8583-21] S3, [8583-21] S5, [8583-5] S2  
 Zolnai, Zsolt [8627-4] S1  
 Zolotovskiy, Igor O. [8579-16] S4, [8601-109] SPTue  
 Zon, Leonard I. [8587-16] S2  
 Zong, Jie [8601-33] S8, [8601-88] SPTue, [8638-15] S4  
 Zorn, Martin [8605-11] S3  
 Zotter, Stefan [8567-12] S3, [8567-15] S3, [8567-16] S3, [8567-25] S5, [8571-44] S7, [8571-45] S7, [8571-77] S12  
 Zou, Bingrong [8647-21] S7A, [8647-21] S8  
 Zou, Chang-Ling [8600-52] S13  
 Zou, Da [8580-46] SPMon, [8580-47] SPMon  
 Zou, Jie [8616-31] S7  
 Zou, Jun [8581-119] SPSun, [8581-47] S8, [8581-78] S11, [8616-4] S1, [8616-4] S7  
 Zou, Kuaisheng [8599-76] SPTue, [8602-5] S2  
 Zou, Ling-Xiu [8600-56] S13  
 Zou, Wei-Xiong [8609-23] S6  
 Zou, Yi [8600-20] S5  
 Zou, Yi [8570-6] S2, [8570-9] S2, [8627-20] S5  
 Zou, Zhi [8629-21] S6  
 Zoubi, Alaa [8565-201] S1  
 Zschiedrich, Lin [8641-11] S3, [8642-4] S2  
 Zubairy, M. Suhail 8635 Program Committee, [8636-51] S11  
 Zuber, Maria T. [8610-3] S1  
 Zubieta, Angel [8595-6] S1  
 Zucchelli, Lucia M. G. [8578-111] SPSun, [8583-21] S3, [8583-21] S5  
**Zucker, Erik P.** 8605 Program Committee, 8605 S2 Session Chair, 8605 S6 Session Chair  
 Zucker, Robert M. 8587 Program Committee  
 Zuegel, Jonathan D. [8599-26] S6, [8602-13] S4, [8602-14] S4  
**Zujewski, Mateusz** [8639-29] S8  
**?ukauskas, Albertas** [8613-43] SPTue  
 Zulauf, Grayson [8584-12] S4  
 Zulfequar, M. [8622-63] SPWed  
 Zumbusch, Andreas [8588-84] SPSun  
 Zunoubi, Mohammad R. [8611-56] SPTue  
**Zuo, Duluo** [8603-33] SPTue, [8604-42] SPTue  
 Zurauskas, Mantas [8571-89] S5  
 Zürcher, Joseph [8607-53] SPTue  
 Zuzak, Karel J. 8587 S11 Session Chair, 8618 Program Committee, 8618 S2 Session Chair, [8618-4] S1, [8618-4] S10, [8618-5] S11, [8618-5] S2  
 Zvanut, Mary E. [8625-12] S3  
 Zwiller, Valery [8619-2] S1  
 Zywietz, Urs [8623-52] S14

SPIE Professional



Call for Articles

*SPIE Professional* is accepting article proposals for the SPIE member magazine.

Future issues of the open-access magazine will cover career and industry topics as well as advances in optics, sustainable energy, high-power lasers, and more.

Do you know of a researcher, engineer, or entrepreneur who is making the world a better place?

Please submit your idea as a short outline or abstract to:

[spieprofessional@spie.org](mailto:spieprofessional@spie.org)

## Registration

### Onsite Registration and Badge Pick-Up Hours

Moscone Convention Center, North Lobby

Saturday	.. 2 February	.....	7:00 am to 5:00 pm
Sunday	.... 3 February	.....	7:15 am to 5:00 pm
Monday	.... 4 February	.....	7:15 am to 5:00 pm
Tuesday	.... 5 February	.....	7:30 am to 5:00 pm
Wednesday	. 6 February	.....	7:30 am to 5:00 pm
Thursday	... 7 February	.....	7:30 am to 4:00 pm

### Conference Registration

Includes admission to all conference sessions, plenaries, panels, poster sessions, admission to the both BIOS Expo and Photonics West exhibitions, Welcome Reception, technical and networking events, coffee breaks, and a choice of proceedings. Student pricing does not include proceedings.

### Course and Workshop Registration

Courses and workshops are priced separately. Course-only registration includes your selected course(s), course notes, coffee breaks, and admittance to the exhibition. Course prices include applicable taxes. Onsite, please go to Course Materials Pickup after you pick up your badge.

Multiple facilities may be used for courses; allow yourself enough time to register, pick up your materials and possibly walk to a nearby facility before your course begins.

### Exhibition Registration

Exhibition-Only visitor registration is complimentary.

### SPIE Member, SPIE Student Member, and Student Pricing

- SPIE Members receive conference and course registration discounts. Discounts are applied at the time of registration.
- SPIE Student Members receive a 50% discount on all courses.
- Student registration rates are available only to undergraduate and graduate students who are enrolled full time and have not yet received their Ph.D. Post-docs may not register as students. A student ID number or proof of student status is required with your registration.

### Press Registration

For credentialed press and media representatives only. Please email contact information, title, and organization to [media@spie.org](mailto:media@spie.org).

### SPIE Cashier

Registration Area  
Open during registration hours

### Registration Payments

If you are paying by cash or check as part of your onsite registration, wish to add a course, workshop, or special event requiring payment, or have questions regarding your registration, visit the SPIE Cashier.

### Receipts and Certificate of Attendance

Preregistered attendees who did not receive a receipt may obtain one at Badge Corrections and Receipts next to SPIE Cashier. Attendees who need a Certificate of Attendance may obtain those from the SPIE Cashier.

### Badge Corrections

Badge corrections can be made at the Badge Corrections station. Please have your badge removed from the badge holder and marked with your changes before approaching the Badge Corrections & Receipts next to SPIE Cashier.

### Refund Information

There is a US\$40 service charge for processing refunds. Requests for refunds must be received by 24 January 2013; all registration fees will be forfeited after this date. Membership dues, banquet and reception tickets, and SPIE Digital Library subscriptions are not refundable.

### U.S. Government Credit Cards

U.S. Government credit card users: have your purchasing officer contact the credit card company and get prior authorization before attempting to register. Advise your purchasing agent that SPIE is considered a 5968 company for authorization purposes.

# General Information

## Attendee Services

---

### Internet Access

North Hall D Entrance (Exhibition Level)  
Esplanade Lobby (Esplanade Level)

Complimentary wired internet access is available; attendees can hook up their laptops or use provided workstations.

### Wireless

Near the SPIE Bookstore (Exhibition Level)  
South Lobby

Complimentary wireless access will be available; instructions will be posted onsite.

### SPIE Exhibitor Directory/Product Locator

North Lower Lobby in the iZone . . . . . Saturday through Thursday  
Inside BiOS Entrance . . . . . Saturday and Sunday  
South Upper Lobby. . . . . Saturday through Thursday  
Search exhibitors by name or booth numbers, browse products, and search technologies.

### SPIE Conference App and SPIE Exhibitor Directory/Product Locator Use these tools to help plan your week



#### SPIE Conference App

iZone (North Lower Lobby)

Search and browse the program, special events, participants, exhibitors, courses, and more. Build and print your schedule. The SPIE Conference App is also available for free download for iPhone and Android.

#### SPIE Exhibition Directory/Product Locator

iZone (North Lower Lobby)  
South Lobby (Street Level)

Search exhibitors by name or booth numbers, browse products, and search technologies. Build and print your schedule.

### SPIE Bookstore

Exhibition Level near Room 130

The SPIE Bookstore is your source for the latest SPIE Press Books, Proceedings, and Education and Professional Development materials. Become an SPIE member, explore the Digital Library, take home a free SPIE poster, or buy a souvenir (tie, t-shirt, educational toys, and more).

### SPIE Education Services

North Lobby

Browse course offerings and the other education services available: SPIE courses, videos, and CDs as well as customized in-company courses.

### SPIE Press Room

Room 214 (Mezzanine Level)  
Open during Registration hours

For Registered Press only. The Press Room provides meeting space, refreshments, access to exhibitor press releases, and Internet connections. Press are urged to register before the meeting by emailing name, contact information, and name of publication to [media@spie.org](mailto:media@spie.org). Pre-registration closes approximately 10 days before the start of the event.

### SPIE Luggage + Coat Check

Room 102 (Exhibition Level)  
Saturday through Thursday.

Complimentary luggage, package, and coat storage are available. Please note hours; no late pickup available.

### Moscone Business Center

Near South Hall C on the Exhibition Level  
Tuesday through Thursday

The Moscone Business Center provides full service business needs for your convenience. Their services include photocopying, faxing, computer workstations and printing services.

### Restaurant & City Information

South Lobby

Saturday through Thursday. . . . . 9:00 am to 5:00 pm

The San Francisco Travel Association will have Visitor's guides and maps available. Staff will be available during the posted hours to discuss city information including tips on local restaurants, the city's many attractions, sightseeing suggestions and transit information.

### Child Care Services:

- **ABC Bay Area Child Care Agency**, San Francisco, CA 94122, Phone: 415.309.5662 <http://abcbayareachildcare.com>
- **American Childcare Services**, 580 California Street, Suite 1600, San Francisco, CA 94104, Phone: 415.285.2300, [americanchildcare.com](http://americanchildcare.com) <http://americanchildcare.com>

### Urgent Message Line

An urgent message line is available during registration hours:  
415.978.3700

### Airline Check-In and Boarding Pass Kiosk

Room 102 (Exhibition Level)  
Saturday through Thursday

Use this complimentary service to check in for your flight and print your boarding pass.



## Author / Presenter Information \_\_\_\_\_

### Speaker Check-In and Preview Station

Esplanade

Saturday through Thursday . . . . . 7:30 am to 5:00 pm

All conference rooms have a computer workstation, projector, screen, lapel microphone, and laser pointer. All presenters are requested to come to Speaker Check-In with their memory devices or laptops to confirm their presentation display settings.

### Poster Setup Instructions

- Paper numbers will be placed on the poster boards in numerical order; please find your paper number and put up your poster in the designated space.
- A poster author is required to stand by the poster during the scheduled poster session to answer questions from attendees.
- Presenters who have not placed their poster(s) on their assigned board by 60 minutes prior to the session on the day of their presentation will be considered a “no show” and their manuscript will not be published.
- Presenters must remove their posters immediately after the poster session, or by the time listed in the individual conference program. Any posters that are not removed will be considered unwanted and will be discarded. SPIE assumes no responsibility for posters left up after the end of each poster session.

### South Hall A (with BIOS EXPO)

#### Poster Sessions:

- Saturday and Sunday 3:00 to 4:00 pm: select BIOS conferences
- IMPORTANT: Setup instructions for these sessions vary.  
Please see the individual conference programs for details.

### Room 103 (Exhibit Level)

#### Poster Sessions:

- Sunday 5:30 to 7:30 pm: select BIOS conferences
- Monday 5:30 to 7:30 pm: select BIOS conferences
- Tuesday 6:00 to 8:00 pm: all LASE and MOEMS-MEMS conferences
- Wednesday 6:00 to 8:00 pm: all OPTO conferences and select BIOS Conferences

Poster presenters must set up their posters between 10:00 am and 60 minutes prior to the session start time, on the day of their assigned presentation.

## Car Rental \_\_\_\_\_



Hertz Car Rental is the official car rental agency for this Symposium. To reserve a car, identify yourself as a Photonics West Conference attendee using the Hertz Meeting Code CV# 029B0018.

- In the United States call 1-800-654-2240

## Food & Beverage Services \_\_\_\_\_

### Coffee Breaks

Complimentary coffee will be served twice daily, at 10:00 am and 3:00 pm. Check individual conference listings for exact times and locations.

### Coffee Breaks

Complimentary coffee will be served twice daily, at 10:00 am and 3:00 pm. Check individual conference listings for exact times and locations.

Saturday AM . . . . . Esplanade

Saturday PM . . . . . BIOS Expo (South Hall A)

Sunday AM & PM . . . . . BIOS Expo (South Hall A)

Monday AM & PM . . . . . Esplanade Foyer  
North Lower Lobby (Exhibition Level)

Tuesday through Thursday . . North and South Exhibition Halls

### Food & Refreshments for Purchase

Saturday through Thursday

A variety of food outlets will serve hot and cold snacks, espresso, beverages, hot entrees, deli sandwiches, salads, and pastries are available for purchase. Cash and credit cards accepted.

### Food Outlets Open in the Exhibition Halls

South Exhibition Hall

Saturday . . . . . Noon to 3:00 pm

Sunday . . . . . 11:00 am to 3:00 pm

North and South Exhibition Halls

Tuesday through Thursday . . . . . 10:00 am to 4:00 pm

### Desserts

Saturday and Sunday  
BIOS Expo, South Hall A

Tuesday through Thursday  
North and South Exhibition Halls

Complimentary tickets for dessert snacks are included in course and conference attendee registration packets.

## Parking During Photonics West

For parking information please check the SPIE website  
[www.spie.org/x24985.xml](http://www.spie.org/x24985.xml)

# General Information

## Policies

### Granting Attendee Registration and Admission

SPIE, or their officially designated event management, in their sole discretion, reserves the right to accept or decline an individual's registration for an event. Further, SPIE, or event management, reserves the right to prohibit entry or remove any individual whether registered or not, be they attendees, exhibitors, representatives, or vendors, who in their sole opinion are not, or whose conduct is not, in keeping with the character and purpose of the event. Without limiting the foregoing, SPIE and event management reserve the right to remove or refuse entry to any attendee, exhibitor, representative, or vendor who has registered or gained access under false pretenses, provided false information, or for any other reason whatsoever that they deem is cause under the circumstances.

### Misconduct Policy

SPIE is a professional, not-for-profit society committed to providing valuable conference and exhibition experiences. SPIE is dedicated to equal opportunity and treatment for all its members and meeting attendees. Attendees are expected to be respectful to other attendees, SPIE staff, and contractors. Harassment and other misconduct will not be tolerated; violators will be asked to leave the event.

### Identification

To verify registered participants and provide a measure of security, SPIE will ask attendees to present a government-issued Photo ID at registration to collect registration materials.

Individuals are not allowed to pick up badges for attendees other than themselves. Further, attendees may not have some other person participate in their place at any conference-related activity. Such other individuals will be required to register on their own behalf to participate.

### Capture and Use of a Person's Image

By registering for this event, I grant full permission to SPIE to capture, store, use, and/or reproduce my image or likeness by any audio and/or visual recording technique (including electronic/digital photographs or videos), and create derivative works of these images and recordings in any SPIE media now known or later developed, for any legitimate SPIE marketing or promotional purpose.

By registering for this event, I waive any right to inspect or approve the use of the images or recordings or of any written copy. I also waive any right to royalties or other compensation arising from or related to the use of the images, recordings, or materials. By registering, I release, defend, indemnify and hold harmless SPIE from and against any claims, damages or liability arising from or related to the use of the images, recordings or materials, including but not limited to claims of defamation, invasion of privacy, or rights of publicity or copyright infringement, or any misuse, distortion, blurring, alteration, optical illusion or use in composite form that may occur or be produced in taking, processing, reduction or production of the finished product, its publication or distribution.

### Payment Method

Registrants for paid elements of the event, who do not provide a method of payment, will not be able to complete their registration. Individuals with incomplete registrations will not be able to attend the conference until payment has been made. SPIE accepts VISA, MasterCard, American Express, Discover, Diner's Club, checks and wire transfers. Onsite registrations can also pay with Cash.

### Authors/Coauthors

By submitting an abstract, you agree to the following conditions:

- An author or coauthor (including keynote, invited, and solicited speakers) will register at the author registration rate, attend the meeting, and make the presentation as scheduled.
- A full-length manuscript (8-12 pages) for any accepted oral or poster presentation will be submitted for publication in the SPIE Digital Library, printed conference Proceedings, and CD. (Some SPIE events have other requirements that the author is made aware of at the time of submission.)
- Only papers presented at the conference and received according to publication guidelines and timelines will be published in the conference Proceedings and SPIE Digital Library (or via the requirements of that event).

### Audio, Video, Digital Recording Policy

**Conferences, courses, and poster sessions:** For copyright reasons, recordings of any kind are prohibited without prior written consent of the presenter. Attendees may not capture nor use the materials presented in any meeting room without written permission. Consent forms are available at Speaker Check-In. Individuals not complying with this policy will be asked to leave a given session and asked to surrender their recording media.

**Exhibition Hall:** For security and courtesy reasons, recordings of any kind are prohibited unless one has explicit permission from on-site company representatives. Individuals not complying with this policy will be asked to surrender their recording media and to leave the exhibition hall.

Your registration signifies your agreement to be photographed or videotaped by SPIE in the course of normal business. Such photos and video may be used in SPIE marketing materials or other SPIE promotional items.

### Laser Pointer Safety Information/Policy

SPIE supplies tested and safety-approved laser pointers for all conference meeting rooms. For safety reasons, SPIE requests that presenters use provided laser pointers.

Use of a personal laser pointer represents user's acceptance of liability for use of a non-SPIE-supplied laser pointer. If you choose to use your own laser pointer, it must be tested to ensure <5 mW power output. Laser pointers in Class II and IIIa (<5 mW) are eye safe if power output is correct, but output must be verified because manufacturer labeling may not match actual output. Come to Speaker Check-In and test your laser pointer on our power meter. You are required to sign a waiver releasing SPIE of any liability for use of potentially non-safe, personal laser pointers. Misuse of any laser pointer can lead to eye damage.

### Underage Persons on Exhibition Floor Policy

For safety and insurance reasons, no one under the age of 16 will be allowed in the exhibition area during move-in and move-out. During open exhibition hours, only children over the age of 12 accompanied by an adult will be allowed in the exhibition area.

### Unauthorized Solicitation Policy

Unauthorized solicitation in the Exhibition Hall is prohibited. Any non-exhibiting manufacturer or supplier observed to be distributing information or soliciting business in the aisles, or in another company's booth, will be asked to leave immediately.

## Travel/Transportation

### Unsecured Items Policy

Personal belongings should not be left unattended in meeting rooms or public areas. Unattended items are subject to removal by security. SPIE is not responsible for items left unattended.

### Wireless Internet Service Policy

At SPIE events where wireless is included with your registration, SPIE provides wireless access for attendees during the conference and exhibition but cannot guarantee full coverage in all locations, all of the time. Please be respectful of your time and usage so that all attendees are able to access the internet.

Excessive usage (e.g., streaming video, gaming, multiple devices) reduces bandwidth and increases cost for all attendees. No routers may be attached to the network. Properly secure your computer before accessing the public wireless network. Failure to do so may allow unauthorized access to your laptop as well as potentially introduce viruses to your computer and/or presentation. SPIE is not responsible for computer viruses or other computer damage.

### Mobile Phones and Related Devices Policy

Mobile phones, tablets, laptops, pagers, and any similar electronic devices should be silenced during conference sessions. Please exit the conference room before answering or beginning a phone conversation.

### Smoking

For the health and consideration of all attendees, smoking is not permitted at any event elements, such as but not limited to: plenaries, conferences, workshops, courses, poster sessions, hosted meal functions, receptions, and in the exhibit hall. Most facilities also prohibit smoking in all or specific areas. Attendees should obey any signs preventing or authorizing smoking in specified locations.

### Hold Harmless

Attendee agrees to release and hold harmless SPIE from any and all claims, demands, and causes of action arising out of or relating to your participation in the event you are registering to participate in and use of any associated facilities or hotels.

### Event Cancellation

If for some unforeseen reason SPIE should have to cancel the event, registration fees processed will be refunded to registrants. Registrants will be responsible for cancellation of travel arrangements or housing reservations and the applicable fees.

### SPIE Photonics West 2013

The Moscone Center

747 Howard Street

San Francisco, California 94103, USA

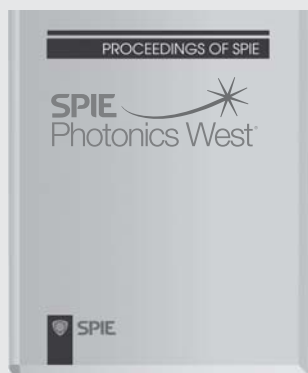
San Francisco is a unique and breathtaking metropolis. From the famous icon of the Golden Gate Bridge to the exquisite art galleries at SFMOMA, the city takes pride in its unrivaled attractions, renowned museums, and its unique neighborhoods which are treasures of its own. Discover the variety of sites, shops, and restaurants that reflect the city's great ethnic and cultural diversity.

San Francisco is serviced by two international airports. San Francisco International Airport (SFO) and Oakland International Airport (OAK). San Francisco International Airport is located approximately 15 miles from downtown hotels. Oakland International Airport is approximately 20 miles from SFO downtown hotels (30-55 minute drive).

For complete travel and transportation information (taxi, rapid transit, shuttle, driving directions, parking, and car rental), go to the website travel page: <http://www.moscone.com/directions/driving.shtml>



## 2013 Photonics West



### Printed Proceedings Volumes.

If you are only interested in editor-reviewed papers from a single conference or want an archive of the conference that includes your paper, choose the printed book. Available 6 weeks after the meeting.



### Searchable CDs with Multiple Conferences.

If you are interested in editor-reviewed papers from multiple conferences and a broad topical area, choose the searchable CDs. Available within 8 weeks of the meeting; PC, Macintosh, and Unix compatible.

\*\* Indicates volumes that will be available at the meeting. Other Proceedings will be available an average of 6 weeks after the meeting.

## BIOS

Vol#	Title/Editor	Prepublication Price	Vol#	Title/Editor	Prepublication Price
8565	<b>Photonic Therapeutics and Diagnostics IX</b> ..... (Kollias, Choi, Zeng, Kang, Knudsen, Wong, Ilgner, Suter, Lam, Brenner, Gregory, Tearney, Marcu, Hirschberg, Madsen, Mahadevan-Jansen, Jansen, Mandelis)	\$220	8584	<b>Energy-based Treatment of Tissue and Assessment VII</b> ..... (Ryan)	\$60
8566	<b>Lasers in Dentistry XIX</b> ..... (Rechmann, Fried)	\$53	8585	<b>Terahertz and Ultrashort Electromagnetic Pulses for Biomedical Applications</b> ..... (Wilmlink, Ibey)	\$60
8567	<b>Ophthalmic Technologies XXIII</b> .. (Manns, Söderberg, Ho)	\$105	8586	<b>Optogenetics: Optical Methods for Cellular Control</b> ..... (Mohanty, Thakor)	\$60
8568	<b>Optical Methods for Tumor Treatment and Detection: Mechanisms and Techniques in Photodynamic Therapy XXII</b> ..... (Kessel, Hasan)	\$70	8587	<b>Imaging, Manipulation, and Analysis of Biomolecules, Cells, and Tissues XI</b> ..... (Farkas, Nicolau, Leif)	\$100
8569	<b>Mechanisms for Low-Light Therapy VIII</b> ..... (Hamblin, Anders, Carroll)	\$60	8588	<b>Multiphoton Microscopy in the Biomedical Sciences XIII</b> ..... (Periasamy, König, So)	\$130
8570	<b>Frontiers in Biological Detection: From Nanosensors to Systems V</b> .. (Miller, Fauchet)	\$53	8589	<b>Three-Dimensional and Multidimensional Microscopy: Image Acquisition and Processing XX</b> ..... (Cogswell, Brown, Conchello, Wilson)	\$90
8571	<b>Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XVII</b> ..... (Fujimoto, Izatt, Tuchin)	\$145	8590	<b>Single Molecule Spectroscopy and Superresolution Imaging VI</b> ..... (Enderlein, Gregor, Gryczynski, Erdmann, Koberling)	\$70
8572	<b>Advanced Biomedical and Clinical Diagnostic Systems XI</b> ..... (Mahadevan-Jansen, Vo-Dinh, Grundfest)	\$80	8591	<b>Optical Diagnostics and Sensing XIII: Toward Point-of-Care Diagnostics</b> ..... (Coté)	\$60
8573	<b>Design and Quality for Biomedical Technologies VI</b> ..... (Raghavachari, Liang, Pfefer)	\$53	8592	<b>Biomedical Applications of Light Scattering VII</b> ..... (Wax, Backman)	\$80
8574	<b>Multimodal Biomedical Imaging VIII</b> ..... (Azar, Intes)	\$53	8593	<b>Optical Methods in Developmental Biology</b> ..... (Rollins, Lo, Fraser)	\$53
8575	<b>Endoscopic Microscopy VIII</b> ..... (Tearney, Wang)	\$60	8594	<b>Nanoscale Imaging, Sensing, and Actuation for Biomedical Applications X</b> ..... (Cartwright, Nicolau)	\$53
8576	<b>Optical Fibers and Sensors for Medical Diagnostics and Treatment Applications XIII</b> ..... (Gannot)	\$60	8595	<b>Colloidal Nanocrystals for Biomedical Applications VIII</b> ..... (Parak, Osinski, Yamamoto)	\$90
8577	<b>Optical Biopsy XI</b> ..... (Alfano, Demos)	\$60	8596	<b>Reporters, Markers, Dyes, Nanoparticles, and Molecular Probes for Biomedical Applications V</b> .... (Achilefu, Raghavachari)	\$70
8578	<b>Optical Tomography and Spectroscopy of Tissue X</b> ..... (Tromberg, Yodh, Sevick-Muraca)	\$130	8597	<b>Plasmonics in Biology and Medicine X</b> ..... (Vo-Dinh, Lakowicz)	\$70
8579	<b>Optical Interactions with Tissue and Cells XXIV</b> ..... (Jansen, Thomas)	\$60	8598	<b>Bioinspired, Biointegrated, Bioengineered Photonic Devices</b> .. (Lee, Rogers, Yun)	\$53
8580	<b>Dynamics and Fluctuations in Biomedical Photonics IX</b> ..... (Tuchin, Duncan, Larin, Leahy, Wang)	\$80			
8581	<b>Photons Plus Ultrasound: Imaging and Sensing 2013</b> ..... (Oravsky, Wang)	\$185			
8582	<b>Biophotonics and Immune Responses VIII</b> ..... (Chen)	\$60			
8583	<b>Design and Performance Validation of Phantoms Used in Conjunction with Optical Measurement of Tissue V</b> ..... (Nordstrom)	\$53			

### BIOS CD

(Includes Vols. 8565-8598)

Order No. **CDS499**

Est. pub. April 2013

Meeting attendee: \$135

Nonattendee member price: \$1,920

Nonattendee nonmember price: \$2,510

# LASE

Vol#	Title/Editor	Prepublication Price	Vol#	Title/Editor	Prepublication Price
8599	<b>Solid State Lasers XXII: Technology and Devices</b> . . . . .	\$105 (Clarkson, Shori)	8607	<b>Laser Applications in Microelectronic and Optoelectronic Manufacturing (LAMOM) XVIII</b> . . . . .	\$90 (Xu, Hennig, Nakata, Roth)
8600	<b>Laser Resonators, Microresonators, and Beam Control XV</b> . . . . .	\$100 (Kudryashov, Paxton, Ilchenko)	8608	<b>Laser-based Micro- and Nanopackaging and Assembly VII</b> . . . . .	\$60 (Klotzbach, Lu, Washio)
8601	<b>Fiber Lasers X: Technology, Systems, and Applications</b> . . . . .	\$135 (Hendow)	8609	<b>Synthesis and Photonics of Nanoscale Materials X</b> . . . . .	\$53 (Dubowski, Geohegan, Träger)
8602	<b>High Power Lasers for Fusion Research II</b> . . . . .	\$45 (Awwal)	8610	<b>Free-Space Laser Communication and Atmospheric Propagation XXV</b> . . . . .	\$60 (Hemmati, Boroson)
8603	<b>High-Power Laser Materials Processing: Lasers, Beam Delivery, Diagnostics, and Applications II</b> . . . . .	\$60 (Dorsch)	8611	<b>Frontiers in Ultrafast Optics: Biomedical, Scientific, and Industrial Applications XIII</b> . . . . .	\$80 (Heisterkamp, Herman, Meunier, Nolte)
8604	<b>Nonlinear Frequency Generation and Conversion: Materials, Devices, and Applications XII</b> . . . . .	\$80 (Vodopyanov)	<b>LASE CD</b>		
8605	<b>High-Power Diode Laser Technology and Applications XI</b> . . . . .	\$60 (Zediker)	<i>(Includes Vols. 8599-8611)</i>		
8606	<b>Vertical External Cavity Surface Emitting Lasers (VECSELs) III</b> . . . . .	\$53 (Hastie)	Order No. <b>CDS500</b>		
			Est. pub. April 2013		
			Meeting attendee: \$135		
			Nonattendee member price: \$690		
			Nonattendee nonmember price: \$910		

# MOEMS-MEMS

Vol#	Title/Editor	Prepublication Price
8612	<b>Micromachining and Microfabrication Process Technology XVIII</b> . . . . .	\$53 (Maher, Resnick)
8613	<b>Advanced Fabrication Technologies for Micro/Nano Optics and Photonics VI</b> . . . . .	\$80 (von Freymann, Schoenfeld, Rumpf)
8614	<b>Reliability, Packaging, Testing, and Characterization of MOEMS/MEMS and Nanodevices XII</b> . . . . .	\$53 (Ramesham, Shea, Shea)
8615	<b>Microfluidics, BioMEMS, and Medical Microsystems XI</b> . . . . .	\$80 (Becker)
8616	<b>MOEMS and Miniaturized Systems XII</b> . . . . .	\$70 (Piyawattanametha, Park)
8617	<b>MEMS Adaptive Optics VII</b> . . . . .	\$45 (Olivier, Bifano, Kubby)
8618	<b>Emerging Digital Micromirror Device Based Systems and Applications V</b> \$53 (Douglass, Oden)	

## MOEMS-MEMS CD

*(Includes Vols. 8612-8618)*

Order No. **CDS501**

Est. pub. April 2013

Meeting attendee: \$135

Nonattendee member price: \$305

Nonattendee nonmember price: \$400

# OPTO

Vol#	Title/Editor	Prepublication Price	Vol#	Title/Editor	Prepublication Price	Vol#	Title/Editor	Prepublication Price
8619	<b>Physics and Simulation of Optoelectronic Devices XXI</b> . . . . .	\$105 (Witzigmann, Osinski, Henneberger, Arakawa)	8630	<b>Optoelectronic Interconnects XIII</b> . . . . .	\$70 (Glebov, Chen)	8641	<b>Light-Emitting Diodes: Materials, Devices, and Applications for Solid State Lighting XVII</b> . . . . .	\$100 (Streubel, Jeon, Tu)
8620	<b>Physics, Simulation, and Photonic Engineering of Photovoltaic Devices II</b> . . . . .	\$100 (Freundlich, Guillemoles)	8631**	<b>Quantum Sensing and Nanophotonic Devices X</b> . . . . .	\$120 (Razeghi)	8642	<b>Emerging Liquid Crystal Technologies VIII</b> . . . . .	\$60 (Chien)
8621	<b>Optical Components and Materials X</b> . . . . .	\$90 (Digonnet, Jiang, Dries)	8632	<b>Photonic and Phononic Properties of Engineered Nanostructures III</b> . . . . .	\$105 (Adibi, Lin, Scherer)	8643	<b>Advances in Display Technologies III</b> . . . . .	\$53 (Chien, Lee, Wu)
8622	<b>Organic Photonic Materials and Devices XV</b> . . . . .	\$90 (Tabor, Kajzar, Kaino, Koike)	8633	<b>High Contrast Metastructures II</b> . . . . .	\$60 (Chang-Hasnain, Koyama, Willner, Zhou)	8644	<b>Practical Holography XXVII: Materials and Applications</b> . . . . .	\$70 (Bjellkragen, Bove)
8623	<b>Ultrafast Phenomena and Nanophotonics XVII</b> . . . . .	\$90 (Betz, Elezzabi, Song, Tsen)	8634	<b>Quantum Dots and Nanostructures: Synthesis, Characterization, and Modeling X</b> . . . . .	\$53 (Eyink, Huffaker, Szmulowicz)	8645**	<b>Broadband Access Communication Technologies VII</b> . . . . .	\$60 (Dingel, Jain, Tsukamoto)
8624	<b>Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Applications VI</b> . . . . .	\$70 (Sadwick, O'Sullivan)	8635	<b>Advances in Photonics of Quantum Computing, Memory, and Communication VI</b> . . . . .	\$70 (Hasan, Hemmer, Lee, Santori)	8646**	<b>Optical Metro Networks and Short-Haul Systems V</b> . . . . .	\$53 (Weiershausen, Dingel, Dutta, Srivastava)
8625	<b>Gallium Nitride Materials and Devices VIII</b> . . . . .	\$105 (Chyi, Nanishi, Morkoç)	8636	<b>Advances in Slow and Fast Light VI</b> . . . . .	\$80 (Shahriar, Narducci)	8647**	<b>Next-Generation Optical Communication: Components, Sub-Systems, and Systems</b> . . . . .	\$53 II (Li)
8626	<b>Oxide-based Materials and Devices IV</b> . . . . .	\$100 (Teherani, Look, Rogers)	8637	<b>Complex Light and Optical Forces VII</b> . . . . .	\$70 (Glückstad, Andrews, Galvez)			
8627	<b>Integrated Optics: Devices, Materials, and Technologies XVII</b> . . . . .	\$80 (Broquin, Nunzi Conti)	8638	<b>Laser Refrigeration of Solids VI</b> . . . . .	\$45 (Epstein, Seletskiy, Sheik-Bahae)			
8628	<b>Optoelectronic Integrated Circuits XV</b> . . . . .	\$53 (Eldada, Lee)	8639	<b>Vertical-Cavity Surface-Emitting Lasers XVII</b> . . . . .	\$60 (Choquette, Guenter)			
8629	<b>Silicon Photonics VIII</b> . . . . .	\$80 (Kubby, Reed)	8640	<b>Novel In-Plane Semiconductor Lasers XII</b> . . . . .	\$90 (Belyanin, Smowton)			

## OPTO CD

*(Includes Vols. 8619-8647)*

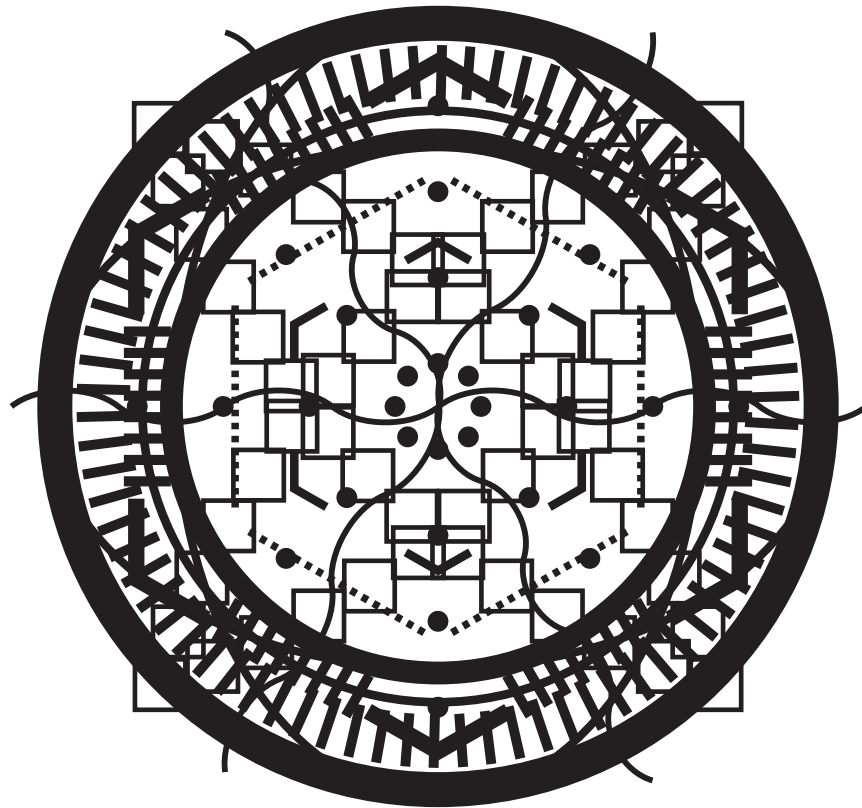
Order No. **CDS502**

Est. pub. April 2013

Meeting attendee: \$135

Nonattendee member price: \$1565

Nonattendee nonmember price: \$2,065



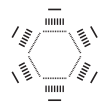
Helping engineers and  
scientists stay current  
and competitive



Optics &  
Astronomy



Biomedical  
Optics



Optoelectronics &  
Communications



Defense  
& Security



Energy



Lasers



Nano/Micro  
Technologies



Sensors

**SPIE**  
**Digital**  
**Library**

*Find the answer*  
SPIEDigitalLibrary.org



# POLARIZED FIBER LASERS NEAR INFRARED & VISIBLE

exceptional beam quality, reliability, wavelength and power stability



## illuminating.

continuous wavelength • pulsed • near infrared • visible • single-frequency

**MPB**

Communications Inc.

[www.mpbcommunications.com](http://www.mpbcommunications.com)

phone: 514-694-8751

BIOS - #8431

PHOTONICS WEST - #1133

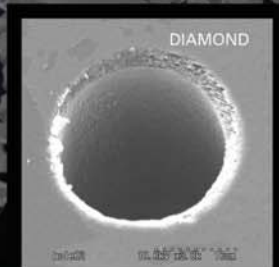
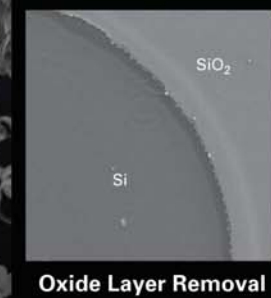
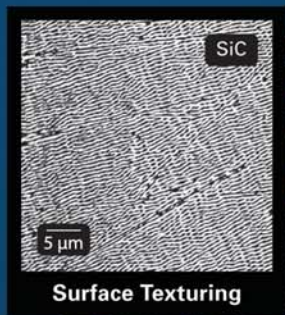


The Femtosecond Fiber Laser Company

FCPA  $\mu$ Jewel

# Applications Made Possible by Femtosecond Laser Pulses

DELIVERED BY RELIABLE FCPA  $\mu$ JEWEL LASERS WITH PROVEN INDUSTRIAL CAPABILITY



Background:  
Artist's illustration  
of conjugated gold  
nanoparticle generated  
by IMRA's FCPA  
femtosecond fiber laser.

1044 Woodridge Avenue | Ann Arbor, MI 48105 | 734.930.2560 | lasers@imra.com

[www.imra.com](http://www.imra.com)

Photonics West Booth #504 | BiOS Booth #8504