ISOEN 2013 Program

Day 1 Tuesday, July 2, 2013

Time
15:00 – 19:00  Registration (3F Lobby)
17:30 – 20:00  Welcome reception (Rm.324)

Day 2 Wednesday, July 3, 2013

08:00 – 10:15 (Rm. 321)

Sensor Arrays and Data Analysis 1
Session Chairs: Chang-Soo Kim (Missouri University of Science and Technology, USA), Ki-Bong Song (ETRI, Korea)

8:15 - 8:30
Calibration transfer in temperature modulated gas sensor arrays
L. Fernandez\textsuperscript{1,2}, S. Guney\textsuperscript{3}, A. Gutierrez-Galvez\textsuperscript{1,2}, S. Marco\textsuperscript{1,2}
\textsuperscript{1}Institute of Bioengineering of Catalonia, Spain, \textsuperscript{2}University of Barcelona, Spain, \textsuperscript{3}Karadeniz Technical University, Turkey

8:30 - 8:45
Colorimetric sensor arrays for screening control of rapeseed quality
A. Kubiak\textsuperscript{1}
\textsuperscript{1}University of Warmia and Mazury, Poland

8:45 - 9:00
Sensor array based on graphene composite and conducting polymer films for acetone detection
E. A. T. Dirani1,2†, M. F. P. da Silva1, M. R. Cavallari2, G. S. Braga2,3, L. G. Paterno4, F. J. Fonseca2
1 Pontifícia Universidade Católica de São Paulo, Brazil, 2Escola Politécnica da Universidade de São Paulo, Brazil, 3EMBRAPA Instrumentação Agropecuária, Brazil, 4Universidade de Brasília, Brazil

9:00 - 9:15
Odor detection vs. classification based on early sensor-array responses
National Tsing Hua University, Taiwan

9:15 - 9:30
A New Analysis Method for Electronic Nose Based on Hybrid MOS-SAW Devices for Detection of Lung Cancer
Y. Zou1,2, X. Zhang, D. Wang, P. Wang1,2†
1Zhejiang University, China, 2StateKey Laboratory of Transducer Technology, China

9:30 - 9:45
Monitoring human activity using polymer-based gas sensor arrays
J. Fonollosa1†, A. Vergara2, M. L. Homer3, A. V. Shevade3, M. A. Ryan3, and R. Huerta1
1University of California, US, 2National Institute of Standards Technology, US, 3California Institute of Technology, USA

08:15 – 10:15 (Rm.322)
Chemical and Biochemical Sensors
Session Chair: J. Delaunay (The University of Tokyo, Japan)

08:15 – 08:30
A qualitative study of a bioinspired sensor system based on gas flow modulation by an artificial lung apparatus
A. Ziyatdinov1,3, Luis Fernández2,4, Jordi Fonollosa2,4, Agustin Guitierrez-Gálvez2,4, Santiago Marco2,4, A. Perera1,3
1Universitat Politècnica de Catalunya, Spain, 2Institut de Bioenginyeria de Catalunya, Spain,
Bioengineering, Biomaterials and Nanomedicine (CIBER-BBN), Spain, 4Universitat de Barcelona, Spain

08:30 – 08:45
Localized surface plasmons coupled to B6U-shaped cavity for high sensitivity bio-sensing applications
Y.-L. Ho, Y. Lee, E. Maeda, J.-J. Delaunay†
The University of Tokyo, Japan

08:45 – 09:00
Development of the Olfactory Neuronal Network-based Biosensor for the Odorant Discrimination
L.P. Du1, C.S. Wu1, L. Zou1, Y. Li2, L. Hu1, L.Q. Huang3, P. Wang1
1 Zhejiang University, China, 2Monell Chemical Senses Center, USA

09:00 – 09:15
Influence of dispersion of NiO on DPGME gas sensing properties of SnO2-based gas sensor
Byung Wook Hwang1, Soo Chool Lee1, Seong Yeol Kim1, Suk Yong Jung1,
Byeong Hwang Park2, Ju Hyun Kim2, In Sung Son3, Duk Dong Lee4, Jae Chang Kim1†
1Kyungpook National University, Korea, 2Agency for Defense Development, Korea, 3HKC, Korea,
4Kyungpook National University, Korea

09:15 – 09:30
Analysis of oxygen adsorption species on SnO2 surface by measuring reliable electric resistance
K. Suematsu, M. Yuasa, T. Kida, N. Yamazoe, K. Shimanoe
Kyushu University, Japan

09:30 – 09:45
A method for natural odorants detection using implanted electrodes in rat olfactory bulb
L.J. Zhuang, Q. Dong, N. Hu, P. Wang†
Zhejiang University, China

09:45 – 10:00
Cell-based odorant detection system using visualization techniques
E.H. OH¹, S.H. Lee², and T.H. Park¹,²†
¹,²Seoul National University, Korea

08:15 – 10:15 (Rm.323)
Symposia: Understanding molecular mechanisms underlying odor/taste perception and processing
Chair: Cheil Moon (DGIST, Korea)

08:15 – 08:40
Invited Talk: Physiological significance of taste and expression of taste receptors in exocrine glands
Kyung-Nyun Kim
Gangneung-Wonju National University, Korea

08:40 – 08:55
The molecular steps of the perception of smell. Insight through a computational microscope
Jerome Golebiowski
University of Nice Sophia Antipolis, France

08:55 – 09:10
Odorant stimulation promotes survival of olfactory receptor neurons via PI3K activation and Bcl-2 expression
S Kim¹, E Kim¹, V Matarazzo², G.V. Ronnett¹,², C Moon¹†
¹DGIST, Korea, ²Johns Hopkins University, U.S.A.

09:10 – 09:25
Detecting tastants and nutrients in the gastrointestinal tract
K. Iwatsuki¹†, M. Nomura²
¹Ajinomoto Co., Japan, ²Kyushu University, Japan

09:25 – 09:40
The perception of saltiness: food-born molecules on salt taste
M.R. Rhyu¹†, and V. Lyall²
¹Korea Food Research Institute, Korea, ²Virginia Commonwealth University, U.S.A.
Sensory discrimination of polymodal TrpA1 in *Drosophila*
KJ Kang¹,², V Panzano², EC Chang², L Ni², P Garrity²
¹Sungkyunkwan University, Korea, ²Brandeis University, USA

10:15 – 10:35
Coffee Break (3F Lobby)

10:35 – 11:00
Opening Ceremony (Rm. 325)
Chair: Prof. J. Lim (Kyungpook National University, Korea)

11:00 – 11:40
Plenary Talk 1 (Rm. 325)
Chair: Prof. Santiago Marco (University of Barcelona, Spain)

“A biomimetic olfactory system: insect-based info-chemical communication”
Prof. Julian Gardner
*School of Engineering, University of Warwick, U.K.*

11:40 – 13:00
Lunch (Palgong Hall : B1)

13:00 – 15:00 (Rm. 321)
Sensor Arrays and Data Analysis 2
Session Chairs: Eugenio Martinelli (University of Rome Tor Vergata, Italy), Takamichi Nakamoto (Tokyo Institute of Technology, Japan)

13:00 - 13:15
Resolving the double mixtures of chemically similar analytes by potentiometric multisensor system: focus on data processing
D.O. Kirsanov¹,², M.M. Khaydukova¹, Yu. N. Blinova¹, X. Ceto², M. del Valle², A.V.Legin¹
13:15 - 13:30
Human Body Odor Differentiation Using GC-MS Combined with Chemometric Analysis
S.K. Jha\(^1\), T. Takamizawa\(^2\), M. Imahashi\(^3\), K. Hayashi\(^3\)
\(^1\)Kyushu University, Japan \(^2\)Research Laboratory, U.S.E Co., Ltd., Japan

13:30 - 13:45
Study of Robust Odor Recognition Module Using Short Time Fourier Transform Circuit
K. K. Nagao\(^1\), T. Nakamoto Nakamoto\(^1\)
\(^1\)Tokyo Institute of Technology, Japan

13:45 - 14:00
Analysis of insect’s olfactory receptor neuron response by using NMF method for odor approximation
Y. Harada\(^1\), T. Nakamoto\(^1\)
\(^1\)Tokyo institute of technology, Japan

14:00 - 14:15
Classification in drifting and faulty scenarios
G. Magna\(^1\), E. Martinelli\(^1\), A. Vergara\(^2\), C. Di Natale\(^1\)
\(^1\)University of Rome Tor Vergata, Italy, \(^2\)National Institute of Standards Technology, USA

14:15 - 14:30
An electronic nose network for the air quality monitoring of the International Space Station: the DAMA mission experience
E. Martinelli\(^1\), A. Catini\(^1\), F. Dini\(^1\), R. Capuano\(^1\), G. Pomarico\(^1\), R. Paolesse\(^1\), G. Mascetti\(^2\), S. Pignataro\(^2\), A. D’Amico\(^1\), C. Di Natale\(^1\)
\(^1\)University of Rome Tor Vergata, Italy, \(^2\)Italian Space Agency, Italy

14:30 - 14:45
Development of an ion-focusing IMS with corona discharge ionization source for the detection of ethane and pure methane
N. G. Boggio\(^1,2,4\), K. Pierpauli\(^1,5\), S. Ortiz\(^1\), D. Rodriguez\(^2\), J. Vorobioff\(^1\), A. Lamagna\(^1,3\) and C. A. Rinaldi\(^1,2,3\)
\(^1\)Comisión Nacional de Energía Atómica, Argentina, \(^2\)Consejo Nacional de Investigaciones
13:00 – 15:00 (Rm.322)

Smart Sensing for Food, Health, Safety and Security 1
Session Chairs: Krishna Persaud (Manchester University, UK), Wan-Young Chung (Pukyong National University)

13:00 – 13:15
Array of metal oxide quasi 1D nanostructures for security application
A Ponzoni, E Comini, D Zappa, C Cerqui, V Sberveglieri, G Sberveglieri
SENSOR, Department of Information Engineering, Italy

13:15 – 13:30
Molecularly Imprinted Polymers on Two- and Three-Channel QCM Sensor Arrays on the Way to On-line Measurements in a Bioreactor
R. Samardzic, N. Jongkon, P.A. Lieberzeit
University of Vienna, Austria

13:30 – 13:45
Electronic Nose Network For Detection Of TATP Precursors
J.P. Santos, J. Lozano, J.I. Suárez and M. Aleixandre
GRIDSEN (ISI-CSIC), Spain

13:45 – 14:00
Relationship between Taste Sensor Response and Amount of Astringent Substance Adsorbed on Lipid/polymer Membrane
D. Hara, T. Fukagawa, Y. Tahara, M. Yasuura, K. Toko
Kyushu University, Japan

14:00 – 14:15
Exhaled Breath Air Analysis System with Noble Metal Added Tin Oxide VOC Sensor for
Diagnosis of Lung Cancer
T. Itoh¹, T. Nakashima¹, T. Akamatsu¹, N. Izu¹, W. Shin¹, T. Hida², Y. Setoguchi³
¹National Institute of Advanced Industrial Science and Technology (AIST), Japan, ²Aichi Cancer Center, Japan, ³Figaro Engineering Inc., Japan

14:15 – 14:30
Machine olfaction for odorant and odor intensity monitoring of gaseous emissions emitted from paper manufacturing industries
N. Bhattacharyya², S.C. Deshmukh¹,³, A. Jana², R.A.Pandey¹, R. Bandyopadhyay³, K. Kamde¹, A. Das², R. Sankar²
¹CSIR- National Environmental Engineering and Research Institute, India, ²Center for Development of Advance Computing, India, ³Jadavpur University, India

13:00 – 15:00 (Rm.323)
Symposia: Olfactory cell/receptor protein based sensor for biomedical application
Chair: Jeong Ok Lim (Kyungpook National University, Korea), Tai Hyun Park (Seoul National University, Korea)

13:00 – 13:25
Invited Talk: Olfactory receptor-based biosensor for diagnosis
Tai Hyun Park
Seoul National University, Korea

13:25 – 13:50
Invited talk: Bioinspired nose devices and their potential application for non-invasive olfactory detection of pathologies
Edith Pajot-Augy
INRA, France

13:50 – 14:15
Invited Talk: Feasibility study of using plant roots as sensing elements
S. G. Achanta¹, C-S. Kim²,³
¹,²Missouri University of Science and Technology, USA
14:15 – 14:30
Breath gas sensing for a potential diagnostic method of neurodegenerative disease
P.W. Ko1, K.H. Kang1 J.B Yu2 H.W. Lee1 J.O. Lim3†
1Kyungpook National University Hospital, Korea, 2Kyungpook National University, Korea,
3Kyungpool National University School of Medicine, Korea

15:00 – 15:50 Coffee Break and Poster Session 1 (3F Lobby),
General Assembly (Rm. 323)

15:00 – 15:50 (3F Lobby)
Poster Session 1
Session Chair: Young-Soo Sohn (Catholic University of Daegu, Korea)

P1-1
Information-theory for the estimation of the limit of detection of chemosensory systems
J. Fonollosa†, A. Vergara2, R. Huerta1, S. Marco3
1University of California, US, 2National Institute of Standards Technology, US, 3Institute for
Bioengineering of Catalonia, Spain

P1-2
Recursive PCA of e-nose data for anaerobic digestion reactor state monitoring
G. Adam†, S. Lemaigre2, A.C. Romain1, P. Delfosse2, J. Nicolas1
1 University of Liège, Belgium, 2Centre de Recherche Public-Gabriel Lippmann, Luxembourg

P1-3
Classification of agarwood oils using k-NN k-fold
S. Lias†, N.A. Mohamad Ali1, M. Jamil1, M.H. Zainal1, A. M. Jalil1 & N. Ismail2
1Forest Research Institute Malaysia, Malaysia, 2Universiti Teknologi MARA, Malaysia

P1-4
The characterization of agarwood using Gaharu Sense technology
N.A. Mohamad Ali¹, S. Lias¹, M. Jamil¹, S.H. Saidin¹, M. N. Mat Arip², A. M. Jalil¹, Z. Muhd Hafizi¹, M.F. Zolpatah¹, and M.S. Najib³
¹Herbal Product Development Programme, Natural Products Division, ²Forest Products Division, Forest Research Institute Malaysia (FRIM), Malaysia, ³University Malaysia Pahang, Malaysia

P1-5
Calibration of a quantitative electronic nose as a suitable technology to detect CFRP surface contamination in adhesive bonding quality assurance
Paola Di Palma¹²,†, S. De Vito¹, M. Miglietta¹, E. Massera¹, G. Fattoruso¹, B. Mastroianni¹, G. Di Francia¹
¹UTTP-MDB, ENEA, Italy, ²University of Cassino and Southern Lazio, Italy

P1-6
Chemo-resistive transduction: claming the driving seat for solving real-world chemo-sensing tasks
A. Vergara¹²,†, J. Fonollosa¹, M. Trincavelli³, N. Rulkov¹, R. Huerta¹
¹University of California, US, ²National Institute of Standards Technology, US, ³AASS Research Centre, Örebro University, Sweden

P1-7
The reduction algorithm of gas measurement time for wireless sensor network applications with limited power
Nak-Jin Choi¹,†, Hyung-Kun Lee³, Seung Eon Moon¹, Woo Seok Yang¹, Jong-Kee Kwon¹
¹Electronics and Telecommunications Research Institute, Korea

P1-8
Monitoring geosmin and 2-methylisoborneol in water reservoir using an electronic tongue system
G.S. Braga¹²,†, F.J. Fonseca², L.H.C. Mattoso ¹
¹EMBRAPAInstrumentação, Brazil, ²Escola Politécnica da Universidade, Brazil

P1-9
CeO2 nanoparticles functionalized ZnO nanorods for gas sensor applications
P. Rai, S. Raj, K.-K. Park, K.-J. Ko, Y.-T. Yu†
Chonbuk National University, Korea
P1-10
New SnO2-based gas sensor promoted with ZnO and MoO3 for the detection of H2S
Seong Yeol Kim1, Soo Chool Lee1, Byung Wook Hwang1, Suk Yong Jung1, Byeong Hwang Park2, Ju Hyun Kim2, In Sung Son3, Duk Dong Lee4, Jae Chang Kim1,†
1Kyungpook National University, Korea, 2Agency for Defense Development, Korea, 3HKC, Korea, 4Kyungpook National University, Korea

P1-11
Estimation of coffee using a human taste panel and taste sensing system
Yohichiro Kojima and Tsuyoshi Mikami
Tomakomai National College of Technology, Japan

P1-12
Annealing effect of pH sensing ability in extended-gate field-effect-transistors(EGFETs) with Ti and TiO2 sensing membrane
In-Kyu Lee1, Won-Ju Cho1,†
1Kwangwoon University, Korea

P1-13
Detection and discrimination of noxious gases using MOS gas sensor arrays with pattern recognition techniques
W. S. Choi1, 2,†, B. J. Kim3, J. S. Kim3, H. G Byun4, N. K. Min1
1Korea University, Korea, 2Auto Industrial Co. Ltd., Korea, 3University of Seoul, Korea, 4Kangwon National University, Korea

P1-14
The analysis for COPD patient’s exhaled breath using metal oxide sensor
Joon-Boo Yu1, Jin-Young Jeon2, Hyung-Gi Byun2, Shin-Yeop Lee1, and Jeong-Ok Lim1,†
1Kyungpook National University, Korea, 2Kangwon national university, Korea

P1-15
First Results on Indoor Corridor Acetone Gas Leak Detection with a Mobile Robot equipped with an Anemometer and a Photo Ionization Detector
R. Balsa1, T. Palleja1, M. Tresanchez1, M. Teixido1, J. Moreno1, D. Font1, S. Marco2, V. Pomareda2, and J. Palacin1,†
Effect of shape of Au/SnO2 composite nanoparticles on CO gas sensing property
K.-K. Park, B.-S. Chon, P. Rai, Y.-T. Yu
Chonbuk National University, Korea

Development of a graphene oxide/CeO2 composite based sensor for acetone vapors
1Pontifícia Universidade Católica de São Paulo, Brazil, 2Escola Politécnica da Universidade de São Paulo, Brazil, 3EMBRAPA Instrumentação Agropecuária, Brazil, 4Universidade de Brasília, Brazil

The gas sensitivity of oligopeptides coated gold nanoparticles
D. Compagnone, M. Del Carlo, P. Pittia, E. Martinelli, R. Paolesse, C. Di Natale
1University of Teramo, Italy, 2University of Rome Tor Vergata, Italy

15:50 – 17:50 (Rm. 321)
Sensor Arrays and Data Analysis 3
Session Chairs: Takamichi Nakamoto (Tokyo Institute of Technology, Japan), Yanxia Hou (Institut Nanosciences et Cryogénie, France)

Development of A Sensing Film for Odor Clustering
X. Sun, K. Nakano, M. Imahasi, B. Chen, C. Liu, K. Hayashi
Kyushu University, Japan

Identification of floral origin of honey based on cyclic voltammetric electronic tongue and correlation with physiochemical parameters
K. Tiwari, B. Tudu, N. Bhattacharyya, R. Bandyopadhyay, A. Chatterjee
1Jadavpur University, India, 2C-DAC, India
16:20 - 16:35  
Improved Classification of Black Tea Employing Fuzzy Fusion of Electronic Nose and Tongue Responses  
Runu Banerjee¹, Angiras Modak¹, Bipan Tudu¹, Rajib Bandyopadhyay¹, Nabarun Bhattacharyya²  
¹Jadavpur University, India, ²Centre for Development of Advanced Computing, India

16:35 - 16:50  
Landscapes of Taste by a Novel Electronic Tongue  
L. A. Garçon¹, M. Genua¹, Y.J. Hou¹, A. Buhot¹, R. Calemuczuk¹, D. Bonnaffé², T. Livache¹, Y. Hou¹  
¹Institut Nanosciences et Cryogénie, France, ²Université Paris-Sud 11, France

16:50 - 17:05  
Quantification Of The Bitterness Level Of Olive Oils With An Electronic Tongue  
Mrs M.L. Vicenty¹, Dr. S. Isz¹, Dr. J. C. Mifsud¹  
¹AlphaMOS, France

15:50 – 17:50 (Rm.322)  
Smart Sensing for Food, Health, Safety and Security 2  
Session Chairs: Kiyoshi Toko (Kyushu University, Japan)

15:50 – 16:05  
Development of Flexible Organic Field-Effect Transistor Sensors integrating Odor Binding proteins  
M. D. Angione and K. C. Persaud¹  
Manchester University, UK

16:05 – 16:20  
Photo-Micrographic Image Analysis Solution for Detection of Pebrine Disease in Silk Moth
Wine measurement with electronic tongue with respect to the taste

Amitava Z. Kovács¹, J. Soós¹, E. Várvölgyi¹, D. Szöllősi¹, A. Fekete¹, S. Isz²
¹Corvinus University of Budapest, Hungary, ²Alpha M.O.S., France

Ibuprofen encapsulation for taste masking purposes studied by potentiometric electronic tongue

P. Ciósek¹, M. Wesołoy¹, K. Solsłohub², K. Cal²
¹Warsaw University of Technology, Poland, ²Medical University of Gdansk, Poland

SiC-FET BASED SO₂ SENSORS FOR DESULPHURIZATION UNITS IN POWER GENERATION APPLICATIONS

Z. Darmastuti¹, P. Möller¹, C. Bur¹,³, R. Rahlin², N. Lindqvist², M. Andersson¹, A. Schütze³, A. Lloyd Spetz¹
¹Linköping University, Linköping, Sweden, ²Alstom Power AB, Sweden, ³Saarland University, Germany

Proposal for a power supply line-free mass sensor using separate excitation for saliva samples

M. Yamaguchi¹ and Y Kimura
Iwate University, Japan

Intelligent Mobile Healthcare by Wearable Health Shirt with Wireless Sensors

J.H. Kim¹, B.G. Lee², S.J. Jung¹, W.-Y. Chung¹,³
¹Pukyong National University, Korea, ²ChangSung Ace Industrial Co. Ltd, Korea

Non-Contact SAW Temperature Monitoring System

W.-Y. Chung¹,³, T.W. Lee², J.G. Oh³
15:50 – 17:50 (Rm.323)
Symposia: Applications of remote and local gas sensing in mobile robotics and sensor network - Can we already solve real world tasks
Chairs: Achim Lilienthal (Orebro University, Sweden), Marco Trincavelli (Orebro University, Sweden)

15:50 - 16:05
Robots that can smell: motivation and problems
J. González-Jimenez¹, J.G. Monroy¹, J.L Blanco²
¹University of Málaga, Spain, ²University of Almeria, Spain.

16:05 - 16:20
A trend filtering approach for change point detection in MOX gas sensors
S. Pashami², A. J. Lilienthal and M. Trincavelli
Örebro University, Sweden

16:20 - 16:35
Online Parameter Selection for Gas Distribution Mapping
V. Hernandez Bennetts¹, M. Trincavelli¹, E. Schaaffernicht¹, V. Pomareda², A.J. Lilienthal¹
¹Örebro University, Sweden, ²University of Barcelona, Spain

16:35 - 16:50
It's always smelly around here! Modeling the Spatial Distribution of Gas Detection Events with BASED Grid Maps
A.J. Lilienthal¹, M. Trincavelli, E. Schaaffernicht
¹Örebro University, Sweden

16:50 - 17:05
Determining Gas Leakage from a Room into a Corridor Using Active Stereo Nose and a Robotic Arm
T. Kusunoki, I. Miyatani, Y. Wada, and H. Ishida¹
Tokyo University of Agriculture and Technology, Japan
17:05 - 17:20
Odor source searching with a mobile robot in outdoor open areas
Q. H. Meng†, J. G. Li, Y. Wang, M. Zeng
Tianjin University, China

17:20 - 17:35
Chemical source localization in real environments integrating chemical concentrations in a probabilistic plume mapping approach
V. Pomareda1,†, V. Hernández2, A.A. Khaliq2, M. Trincavelli2, A.J. Lilienthal2, S. Marco1
1University of Barcelona, Spain, 2Örebro University, Sweden

17:35 - 17:50
A Probabilistic Gas Patch Prediction Approach for Airborne Gas Source Localization in Non-Uniform Wind Fields
Patrick P. Neumann1, Michael Schnürmacher2, Victor Hernandez Bennetts3, Achim J. Lilienthal3, Matthias Bartholmai1, and Jochen H. Schiller2
1Federal Institute for Materials Research and Testing, Germany, 2 FU University, Germany, 3Örebro University, Sweden

17:50 - 18:05
On Range Extension of Tunable Diode Laser Absorption Spectroscopy (TDLAS) Based Devices in Remote Gas Sensing Applications
A. Ordoñez Müller, A. Kroll
University of Kassel, Germany

19:00 – International steering Committee Meeting)
Emerging Sensing Materials and Technologies 1
Session Chairs: Hyung-Gi Byun (Kangwon National University, Korea), Jong-Heun Lee (Korea University, Korea)

8:15 - 8:40
Invited Talk: Design of gas selectivity in oxide semiconductors by loading additives
Jong-Heun Lee
Korea University, Korea

8:40 - 8:55
Electrochemical sensing with electrodes modified by molecularly imprinted polymers.
V.L.V. Granado¹, M. Gutiérrez-Capitán², C. Fernández-Sánchez², C. Jimenez-Jorquera², J.A.B.P. Oliveira¹, M.T.S.R. Gomes¹, A. Rudnitskaya³*
¹University of Aveiro, Portugal ², The National Microelectronics Center (IBM-CNM), Spain

8:55 - 9:10
Selective detection of trimethylamine using Cr2O3-deocrated ZnO nanowires
Hyung-Sik Woo¹, Chan Woong Na¹, Il-Doo Kim² and Jong-Heun Lee¹
¹Korea University, Korea, ²Korea Advanced Institute of Science and Technology, Korea

9:10 - 9:25
Stable and sensitive gas sensor based on monodisperse Cu2O Nanocubes
Hyung Ju Park¹, Nak-Jin Choi², Hyuntae Kang³, Moon Youn Jung¹, Kang Hyun Park³*, Dae-Sik Lee¹*
¹Electronics and Telecommunications Research Institute, Korea, ²Electronics and Telecommunications Research Institute, Korea, ³Pusan National University, Korea

9:25 - 9:40
Exhaled Breath Sensors for Selective Diagnosis of Diabetes Using Pt-Functionalized WO3 Hemitube Networks As a Sensing Layer of Acetone
S. J. Choi¹ and I. D. Kim ¹*¹
¹Korea Advanced Institute of Science and Technology, Korea
9:40 - 9:55
The effect of NiO doping in reducing humidity dependence on the performance of SnO2 based gas sensors
Hae-Ryong Kim¹, Alexander Haensch², Kwon-Il Choi³, Il-Doo Kim³, Nicolae Barsan²†, Udo Weimar² and Jong-Heun Lee¹†
¹Korea University, Korea, ²Tübingen University, Germany, ³Korea Advanced Institute of Science and Technology, Korea

9:55 - 10:10
Characterizing the Sensory Differences of Processed Cheese with E-Sensing Instruments
Mr. P. Dubosclard¹, Dr H. Lechat¹, Mrs F. Ayouni¹, Mrs V. Vabre¹, Mrs M. Bonnefille¹, DrS. Isz¹†, Dr J.C. Mifsud¹
¹Alpha MOS, Toulouse, France

08:15 – 10:00 (Rm.322)
Symposia: Olfactory Interactions and Its Standardization
Chair: Jeong-Do Kim (Hoseo University, Korea)

08:15 – 08:40
Invited Talk: Recent Trend of Olfactory Display
Takamichi Nakamoto
Tokyo Institute of Technology, Japan

08:40 – 08:55
Olfactory Assist Mask: Addition of Sensitivity Adjustment Function
H. Matsukura¹², J. Ohmi¹, and H. Ishida¹²
¹Tokyo University of Agriculture and Technology, Japan, ²Research Fellow of the Japan Society for the Promotion of Science

08:55 - 09:10
Movie with Scents Generated by Olfactory Display Using SAW Device and EO Pumps
Yossiri Ariyakul, Takamichi Nakamoto
Tokyo Institute of Technology, Japan
09:10 - 09:25
Olfactory Data Structure for Converged Multimedia Services
Jeong-Do Kim¹, Jung-Ju Kim¹, Hyung-Gi Byun², Ji-Hoon Choi³, Chung-Hyun Ahn³
¹Hoseo University, Korea, ²Kangwon National University, Korea, ³ETRI, Korea

09:25 - 09:40
An Open Source Framework for Simulating Mobile Robotics Olfaction
J.G. Monroy¹, J.L Blanco², J. González-Jimenez³
¹University of Málaga, Spain, ²University of Almeria, Spain

09:40 - 09:55
Progress for Olfactory Function Standardization for MPEG -V
H-G Byun¹, H. Lee², and J-D Kim³
¹Kangwon National University, Korea, ²ETRI, Korea, ³Hoseo University, Korea

09:55 – 10:10
Schema for Describing Visual Objects Based on MPEG-UD
Jiwon Lee, Jae-Sook Cheong, Sanghyun Joo†
Visual Content Research Department, Content Research Division, Electronics and Telecommunications Research Institute (ETRI), Daejeon, Republic of Korea

08:15 – 10:00 (Rm.323)
Symposia: Olfactory Sensors on Flexible Substrates
Chair: Krishna Persaud (Manchester University, U.K.)

08:15 – 08:40
Invited Talk: The ability of polymeric capacitive gas sensor arrays on flexible substrates for quantitative evaluations: potential and limitations
U. Weimar¹, U. Altenberend¹, A. Oprea¹, D. Briand², N. Bârsan¹
¹University of Tuebingen, Germany, ²École Polytechnique Fédérale de Lausanne (EPFL), Switzerland

08:40 - 08:55
Printed micro-hotplate based gas sensors on flexible foil
M. Camara³, E. Danesh², F. Molina-Lopez³, G. Mattana¹, A. Vasquez Quintero¹,
08:55 - 09:10
Facile fabrication of a highly sensitive nanoporous polyaniline-based ammonia sensor on flexible substrate by vapour deposition polymerization
E. Danesh, K. C. Persaud
*University of Manchester, UK*

09:10 - 09:25
Odorant binding proteins as active layer of biosensors for detection of organic compounds in vapor and liquid phase
E. Tuccori, E. Danesh, C. Gaspar and K.C. Persaud
*University of Manchester, UK, VTT, Espoo, Finland.*

09:25 - 09:40
OBPs grafted diamond MEMS as olfactory sensors for trace level detection of explosives
*CEA LIST, FRANCE, ESYCOM University Paris-EST, France, University of Manchester, UK, GTP Technology, FRANCE*

09:40 - 09:55
Polyelectrolyte-Gated Organic Field-Effect Transistors (OFETs) as platform for biosensors
L.M. Dumitru, K. Manoli, M. Magliulo and L. Torsi
*Università degli Studi di Bari, Italy*

10:00 – 10:20
Coffee Break

10:20 – 11:00
Plenary Talk 2 (Rm.325)
Chair: Prof. Cheil Moon (DGIST, Korea)

"The olfactory system as a "sensor" for brain diseases"
Prof. Gabriele V. Ronnett
11:00 – 11:40
Plenary Talk 3 (Rm. 325)
Chair: Prof. Jong-Heun Lee (Korea University, Korea)

“New material designs for MEMS-type gas sensors”
Prof. K. Shimanoe
Kyushu University, Japan

11:40 – 13:00
Lunch (Palgong Hall : B1)

13:00 – 15:00 (Rm.321)
Emerging Sensing Materials and Technologies 2
Session Chairs: Jong-Heun Lee (Korea University, Korea), Ping Wang (Zhejiang University, China)

13:00 - 13:15
Functional expression of taste receptors as molecular sensors for the detection of bitter substances
C.S. Wu¹, L. Zou¹, L.P. Du¹, L.Q. Huang², A. Legin³, P. Wang¹†
¹Zhejiang University, China, ²Monell Chemical Senses Center, USA, ³St. Petersburg University, Russia

13:15 - 13:30
Bioinspired Electronic Nose and Electronic Tongue Combined of Electronics with Biology in vitro and in vivo
Ping Wang
Zhejiang University, China

13:30 - 13:45
Development of QCM sensors for tea aroma chemicals
Prolay Sharma¹, Arunangshu Ghosh³, Bipan Tudu¹, Rajib Bandyopadhyay ¹, Nabarun Bhattacharyya²
¹Jadavpur University, India, ²Centre for Development of Advanced Computing, India.

13:45 - 14:00
Modification/Characterization of multiwalled carbon nanotubes exploitable as electrode platform for biosensor construction
A. Cipri¹†, M. Del Valle¹
¹Universitat Autonoma de Barcelona, Spain

14:00 - 14:15
A Portable Gas Sensor Temperature Modulation Module Based on DSP
G.F. Wei†, J.W. Zhou, S.T. Wei
Shandong Institute of Business and Technology, China

14:15 - 14:30
Molecularly imprinted polymers for optical electronic nose gas sensors
S. Kladsomboon¹², P. A. Lieberzeit², T. Kerdcharoen³†
¹,²Mahidol University, Thailand, ³University of Vienna, Austria

13:00 – 15:00 (Rm.322)
Symposia: Electronic tongues: New transduction schemes and data processing techniques
Chairs: Manel del Valle (Autonomous University of Barcelona, Spain), Andrey Legin (St. Petersburg State University, Russia)

13:00 - 13:25
Invited Talk: Exploring the opportunities of simple processing techniques for Electronic Tongue data
I.S. Yaroshenko¹, D.O. Kirsanov¹, A.A. Kartsova¹, N. Bhattacharyya², J. Kumar Roy², A.V. Legin¹
¹St.Petersburg State University, Russia
²C-DAC, India

13:25 - 13:40
Different Methods for Voltammetric Electronic Tongue Data Processing
X. Cetó and M. del Valle
Universitat Autònoma de Barcelona, SPAIN

13:40 - 13:55
Development of a Portable Taste Sensor
Y. Tahara†, K. Toko
Kyushu University, Fukuoka, Japan

13:55 - 14:10
Fast evaluation of water toxicity by an artificial sensory system
D. Kirsanov1,2, E. Legin2, V. Tonkopii3, A. Zagrebin3, N. Ignatieva3, V. Rybakin3, A. Legin1,2,†
1St. Petersburg University, Russia, 2Sensor Systems LLC, Russia, 3Russian Academy Of Science, Russia

14:10 - 14:25
Application of a voltammetric BioElectronic Tongue in the qualitative and quantitative analysis of wines
X. Cetó and M. del Valle
Universitat Autònoma de Barcelona, SPAIN

14:25 - 14:40
Multi-transduction sensing materials for electronic tongue applications
L. Lvova1,2,†, C. Di Natale3, I. Lundstrom4, R. Paolesse1
1University “Tor Vergata”, Rome, Italy, 2St. Petersburg State University, Russia 3Department of Electronic Eng. University “Tor Vergata”, Rome, Italy, 4FM, Linköping University, Sweden

13:00 – 15:00 (Rm.323)
Symposia: Applications of electronic noses and sensor technology in the food field
Chair: Isabella Concina (CNR-IDASC, Italy)

13:00 - 13:25
Invited Talk: Application of chemical gas sensors and data analysis to food analysis
M. Falasconi1,3, I. Concina1,3, V. Sberveglieri2,3, G. Zambotti3, E. Gobbi4,3
13:25 - 13:40
Assessing cocoa beans quality with an electronic nose
J.C. Mifsud, H. Lechat, F. Ayouni, V. Vabre, M. Bonnefille
Alpha MOS, France

13:40 - 13:55
Electronic nose for detection of microbial spoilage in various packed foods
E. Gobbi1,2†, G. Zambotti2, V. Sbervegliere1,2,3, M. Falasconi1,2
1Università di Brescia, Italy, 2CNR-IDASC, Italy, 3University of Modena and Reggio Emilia, Italy
4Università di Brescia, Italy

13:55 - 14:10
Development of an electronic nose for determining the freshness of fish by the desorption constants of sensors
J. Vorobioff1, D.F. Rodríguez1, N. Boggio1,2, C. Rinaldi1,2†
1Comisión Nacional de Energía Atómica, Argentina, 2Consejo Nacional de Investigaciones Científicas (CONICET), Argentina

14:10 - 14:25
Fast identification of different kind of coffee by electronic nose
V. Sbervegliere1,2, M. Falasconi1,1, I. Concina1,3, A. Pulvirenti2,3
1Università di Brescia, Italy, 2University of Modena and Reggio Emilia, Italy, 3CNR-IDASC, Italy

15:00 – 15:50 Coffee Break and Poster Session 2 (3F Lobby)

15:00 – 15:50 (3F Lobby)
Poster Session 2
Session Chair: Young-Soo Sohn (Catholic University of Daegu, Korea)

P2-1
ZnO-In2O3 composite nanofibers for selective detection of trimethylamine
Chul-Soon Lee 1, Il-Doo Kim 2, Jong-Heun Lee 1,†
1Korea University, Korea, 2Korea Advanced Institute of Science and Technology, Korea

P2-2
Gas sensing properties of ZnO hollow fibers
A. Katoch, S.-W. Choi, G.-J. Sun, S. S. Kim†
Inha University, Korea

P2-3
Facile synthesis of fluorescent carbon nanodots for ammonia sensing
J. Fong1, S.F. Chin2, S.M. Ng1,†
1Swinburne University of Technology Sarawak Campus, Malaysia, 2Universiti Malaysia Sarawak, Malaysia

P2-4
Chemically functionalized passive UHF-RFID array for volatile compounds detection
S. Manzari1, A. Catini1, R. Paolesse1, G. Marrocco1, C. di Natale1,†
1University of Rome Tor Vergata, ITALY

P2-5
The application of a novel biosensor based on gustatory neuronal networks in central gustatory neurotransmission
L. Hu1, C. Wu1, L. Du1, L. Zhuang1, R. Li, L.Q. Huang2, P. Wang1,†
1Zhejiang University, China, 2Monell Chemical Senses Center, USA

P2-6
A portable electronic nose based on gas sensor temperature modulation
G.F. Wei†, S.T. Wei1, J.W. Zhou1
1Shandong Institute of Business and Technology, China

P2-7
Detection of CRP using EDC-NHS activated protein A in a SPR sensor
Y. K. Lee1, J. –O. Lim2, and Y. –S. Sohn 1,†
1Catholic University of Daegu, Korea, 2Kyungpook National University School of Medicine, Korea
P2-8
Monitoring of lead and copper based on wireless sensor network integrated with a novel nanoband electrode
H. Wan, W. Zhang, H.X. Zhao, Y. Zhao, Q. Y. Sun, D. Ha, P. Wang†
Zhejiang University, China

P2-9
Health monitoring PC mouse with PPG sensor
Y. Y. Tan, S.- J. Jung, and W.- Y. Chung†
Pukyong National University, Korea

P2-10
Electronic tongue system based on molecularly imprinted polymer sensors
F. Bates†, X. Ceto, M. del Vall
Department of Chemistry – Universitat Autònoma de Barcelona, Spain

P2-11
Environmental information system and odour monitoring based on citizen and technology innovative sensors : first investigation
A-C Romain1, V. Hutsemekers1, J. Delva2, Ph. Ledent3, B. Stevenot6, W. Kunz4, U. Uhrner5, Y. Arnaud3, A. De Groof4, G. Grosso5, Ph. Valloggia7, L. Johannsen7
1ULg, Belgium, 2Odometric, Belgium, 3Spacebel, Belgium, 4KTT-IMA, France, 5Tecnhische universitaet Graz, Austria, 6APS Technology, Belgium, 7CRP HTudor, Luxembourg

P2-12
Novel metering method using pressure sensitivity adhesive membrane on lab on a disc
Min-seong Choi, Dae-ho Jang, Jae-chern Yoo†
Sungkyunkwan University, Korea

P2-13
Real-time molecular diagnostic system using miniaturized fluorometer based on total internal reflector
W.H. Na, D.H. Jang, J.C. Yoo†
Sungkyunkwan University, Korea

P2-14
New scheme of effective P2P network communication for wireless sensor networks
W. Jeong¹, Y. Sohn¹†, J. Bae²
¹Yeungnam University, KOREA, ²ETRI, KOREA

P2-15
Integrated Sensor Module Simulator for Increasing the Driver’s Convenience
J-Y Jeon¹, J-S Shin¹, J-B Yoo¹, and H-G Byun¹†
¹Kangwon National University, Korea, ²Kyungpook National University, Korea

P2-16
Measurement of beta amyloid peptide in specific cells using photo thin film transistor
Chang-Beom Kim, Ki-Bong Song
ETRI, Korea

P2-17
Non-invasive screening for Alzheimer’s Disease using cell-based ISFETs
¹Biomedical Research Institute, Kyungpook National University, Daegu, Korea
²Departments of Electronic Materials Engineering, Kwangwoon University, Seoul, Korea
³Department of Biological Science, Sungkyunwan University, Suwon, Korea

P2-18
Volatile emissions from the skin of compressed tissues
F. Dini¹, R. Capuano¹, T. Strand², A.-C. Ek², M. Lindgren², R. Paolese³, C. Di Natale¹ and I. Lundström³
¹University of Rome Tor Vergata, Italy, ²Linköping University, Sweden, ³University of Rome Tor Vergata, Italy

15:50 – 17:35 (Rm.321)

SYIS 1
Session Chair: Cheil Moon (DGIST, Korea)
15:50 – 16:05
A Bioelectronic Nose Based on Ion-channel-coupled Olfactory Receptors
Jong Hyun Lim\textsuperscript{1}, Eun Hae Oh\textsuperscript{1}, Juhun Park\textsuperscript{2}, Seunghun Hong\textsuperscript{2,3}, and Tai Hyun Park\textsuperscript{1,†}
\textsuperscript{1,2,3}Seoul National University, Korea

16:05 – 16:20
Odor discrimination by a novel bioelectronic nose based on brain machine interface and olfactory decoding
Q. Dong, L.J. Zhuang, L. P. Du, R. Li, Q.J. Liu, P. Wang\textsuperscript{†}
Zhejiang University, China

16:20 – 16:35
Development of an electronic nose for indoor odour monitoring: laboratory and field tests
L. Dentoni\textsuperscript{1,†}, L. Capelli\textsuperscript{1}, S. Sironi\textsuperscript{1}, R. Del Rosso\textsuperscript{1}, M. Remondini\textsuperscript{2}
\textsuperscript{1}Politecnico di Milano, Italy, \textsuperscript{2}Sacmi s.c., Imola, Italy

16:35 – 16:50
Odor clustering system-embedded adsorbents covered by reconfigurable molecular filter
M. Imahashi, K. Nakano, K. Hayashi
Kyushu University, Japan

16:50 – 17:05
Nanostructure composed of nanogap electrodes and gold nanoparticles and its application for gas sensors
M. Watanabe, K. Hayashi
Kyushu University, Japan

17:05 – 17:20
Odorant specific biosensor via LUSH-based ISFETs
H.C. Lau\textsuperscript{1}, T.E. Bae\textsuperscript{2}, I.K. Lee\textsuperscript{2}, H.J. Jang\textsuperscript{2}, J.B. Yu\textsuperscript{3}, J.Y. Kwon\textsuperscript{4}, W.J. Cho\textsuperscript{2}, J.O. Lim\textsuperscript{1,†}
\textsuperscript{1,3}Kyungpook National University, Korea, \textsuperscript{2}Kwangwoon University, Korea, \textsuperscript{4}Sungkyunwan University, Korea

17:20 – 17:35
An Electronic Tongue Using Cell-based Biosensor for Rapid Toxicity Detection in the Shellfish
N. Hu1,3, L. Zou1, J. Zhou1, K. Su1, T. Wang1,2, P. Wang1,3†
1Zhejiang University, China, 2ACEA Bio (Hangzhou) Co., China, 3 State Key Laboratory of Transducer Technology, China

15:50 – 17:35 (Rm.322)

SYIS 2
Session Chair: Jeong-Ok Lim (Kyungpook National University, Korea)

15:50 – 16:05
Highly selective acetone sensors using cobalt-doped tungsten oxide nanofiber prepared by electrospinning technique
Ying Zhang, Huiming Ji†, Qianqian Jia, Dahao Wang, Peng Gao, Xue Bai
Tianjin University, China

16:05 – 16:20
Organic vapor detection based on cholesteric liquid crystals thin film
S.-W. Chiu1†, C.-K. Chang2, H.-L. Kuo2, C.-H. Shih3, and K.-T. Tang1
1National Tsing Hua University, Taiwan, 2Industrial Technology Research Institute, Taiwan 3Taipei Medical University, Taiwan

16:20 – 16:35
Analysis of SnO2/ZnO Nanostructures Prepared for Gas Sensing
E. E. Bassey1†, K. Prasad2 and P. Sallis1
1,2Auckland University of Technology, New Zealand

16:35 – 16:50
An Organic/Inorganic Hybrid LAPS Device for Trace Metal Detection and Its Application in Seawater Monitoring
D. Ha1, N. Hu1, C.X. Wu1, Dmitry Kirsanov2, Andrey Legin2, Maria Khaydukova2 and
16:50 – 17:05
Comparison of a bimetallic chip sensitivity using a miniaturized surface plasmon resonance sensor
Y. K. Lee¹, D. H. Jang², K.-S. Lee³, W. M. Kim³, J.-O. Lim⁴, and Y.-S. Sohn¹
¹Catholic University of Daegu, Korea, ²Sungkyunkwan University, Korea, ³KIST, Korea, ⁴Kyungpook National University School of Medicine, Korea

17:05 – 17:20
A Multi-Channel Interface Circuit with Low Substrate Noise for Surface Acoustic Wave Sensor Array
Szu-Chieh Liu, Kea-Tiong Tang
National Tsing Hua University, Taiwan

17:20 – 17:35
A 4-channel Adaptive Interface Circuit of a Resistive Sensor Array for a Portable Electronic Nose
C.L. Chang¹, S.W. Chiu, and K.T. Tang
National Tsing Hua University, Taiwan

15:50 – 17:20 (Rm.323)

Symposia: Energy Efficient Buildings Based on Sensor Technologies
Chair: Hyung-Gi Byun (Kangwon National University, Korea)

15:50 - 16:15
Invited Talk: Clean and Resource Efficient Building for Real Life using New Materials and Technologies
Udo Weimar
Eberhard Karls University, Tuebingen, Germany

16:15 - 16:30
A Distributed Sensing System for Monitoring Energy Consumptions and Air Quality in Buildings
Grazia Fattoruso¹,†, S. De Vito¹, A. Buonanno¹, P. Di Palma¹,², Girolamo Di Francia¹
¹UTTP-MDB, ENEA R.C. Portici, Italy, ²University of Cassino and Southern Lazio, Italy

16:30 - 16:45
Indoor Channel Equalization for Sensor Networks in Smart Buildings
Namyoung Kim, Hyung-Gi Byun
Kangwon National University, Korea

16:45 - 17:00
Analysis on Energy Method by Digital Dimming Sensor Control
N. E. Lee¹, H. S. Han², C. Y. Jang¹,†
¹Korea Institute of Energy Research, Korea, ²Chungnam National University, Korea

17:00 - 17:15
The effect of weather data in an integrated real-time building simulation connected to an energy monitoring system
H.J. Moon¹, M.S. Choi¹,†
Dankook University, Korea

19:00 – Banquet (Novotel)

*Transportation (Bus) will depart from the main entrance of EXCO at 18:00 for Novotel.
It will take about 15-20 minutes.

Day 4 Friday, July 5, 2013

09:00 – 12:00 Technical Tour