# 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 - | Registration & Morning Coffee and Pastry (3F Lobby) |

08:15 – 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[1,2,†], S. Guney[3], A. Gutierrez-Galvez[1,2], S. Marco[1,2]

*[1]Institute of Bioengineering of Catalonia, Spain, [2]University of Barcelona, Spain, [3]Karadeniz Technical University, Turkey*

8:30 - 8:45

Colorimetric sensor arrays for screening control of rapeseed quality

A. Kubiak[1]

*[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. Dirani[1,2†], M. F. P. daSilva[1,], M. R. Cavallari[2], G. S. Braga[2,3], L. G. Paterno[4], F. J. Fonseca[2]

*[1] Pontifícia Universidade Católica de São Paulo, Brazil, [2]Escola Politécnica da Universidade de São Paulo, Brazil, [3]EMBRAPA Instrumentação Agropecuária, Brazil, [4]Universidade de Brasília, Brazil*

9:00 - 9:15

Odor detection vs. classification based on early sensor-array responses

P.-A. Hsu, C.-M. Wang, H. -K. Hao, T.-W. Liu, K-T.Liu+, K.-T.Tang, and J.-M. Shyu

*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. Zou[1,2], X.Zhang, D.Wang, P.Wang[1,2,†]

*[1]Zhejiang University, China, [2]StateKey Laboratory of Transducer Technology, China*

9:30 - 9:45

Monitoring human activity using polymer-based gas sensor arrays

J. Fonollosa[1†], A. Vergara[2], M. L. Homer[3], A. V. Shevade[3], M. A. Ryan[3], and R. Huerta[1]

*[1]University of California, US , [2] National Institute of Standards Technology, US, [3]California Institute of Technology, USA*

## 08:15 – 10:15 (Rm.322)

## Chemical and Biochemical Sensors

Session Chair: J. -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. Ziyatdinov[1,3,†], Luis Fernández[2,4], Jordi Fonollosa[2,4], Agustin Guitierrez-Gálvez[2,4], Santiago Marco[2,4], A. Perera[1,3]

*[1]Universitat Politécncica de Catalunya, Spain, [2]Institut de Bioenginyeria de Catalunya, Spain,*

*[3]Bioengineering, Biomaterials and Nanomedicine(CIBER-BBN), Spain, [4]Universitat 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. Du[1], C.S. Wu[1], L. Zou[1], Y. Li[2], L. Hu[1], L.Q. Huang[3], P. Wang[1]

*[1] [2]Zhejiang University, China, [3]Monell 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 Hwang[1], Soo Chool Lee[1], Seong Yeol Kim[1], Suk Yong Jung[1],

Byeong Hwang Park[2], Ju Hyun Kim[2], In Sung Son[3], Duk Dong Lee[4], Jae Chang Kim[1,†]

*[1]Kyungpook National University, Korea, [2]Agency for Defense Development, Korea, [3]HKC, Korea, [4]Kyungpook 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. OH[1], S.H. Lee[2], and T.H. Park[1,2,†]
*[1,2]Seoul 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 Kim[1], E Kim[1], V Matarazzo[2], G.V. Ronnett[1,2], C Moon[1,†]
*[1]DGIST, Korea, [2]Johns Hopkins University, U.S.A.*

09:10 – 09:25

Detecting tastants and nutrients in the gastrointestinal tract

K. Iwatsuki[1,†] M. Nomura[2]
*[1]Ajinomoto Co., Japan, [2]Kyushu University, Japan*

09:25 – 09:40

The perception of saltiness: food-born molecules on salt taste

M.R. Rhyu[1,†] and V. Lyall[2]
*[1]Korea Food Research Institute, Korea, [2]Virginia Commonwealth University, U.S.A.*

09:40 – 09:55

Sensory discrimination of polymodal TrpA1 in *Drosophila*

KJ Kang[1,2], V Panzano[2], EC Chang[2], L Ni2, P Garrity[2]

*[1]Sungkyunkwan University, Korea, [2]Brandeis 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. Kirsanov[1,†], M.M. Khaydukova[1], Yu. N. Blinova[1], X. Ceto[2], M. del Valle[2], A.V.Legin[1]

[1]*St.Petersburg State University, Russia,* [2]*Universidad Autonoma de Barcelona, Spain*

13:15 - 13:30

Human Body Odor Differentiation Using GC-MS Combined with Chemometric Analysis

S.K. Jha[1,†], T. Takamizawa[2], M. Imahashi[1], K. Hayashi[1]

[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[1], 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*

*Científicas y Técnicas, Argentina, [3]UNSAM-Buenos Aires Argentina ,[4]UBA- Buenos Aires, Argentina ,[5]UTN- Buenos Aires*

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

[1]A Ponzoni, [1]E Comini, [1]D Zappa, [1]C Cerqui, ,[1,2]V Sberveglieri, [1]G Sberveglieri

*[1]SENSOR, Department of Information Engineering, Italy, [2]University of Modena and Reggio Emilia, 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[1], N. Jongkon[1,2], P.A. Lieberzeit[1,†]

*[1]University of Vienna, Austria, [2]King Mongkut's University of Technology, Thailand*

13:30 – 13:45

Electronic Nose Network For Detection Of TATP Precursors

J.P. Santos[1,†], J. Lozano[2], J.I. Suárez[2] and M. Aleixandre[1]

*[1]GRIDSEN (ISI-CSIC), Spain, [2]University of Extremadura, 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. Itoh[1,†], T. Nakashima[1], T. Akamatsu[1], N, Izu[1], W. Shin[1], T. Hida[2], Y. Setoguchi[3]

*[1]National Institute of Advanced Industrial Science and Technology (AIST), Japan, [2]Aichi Cancer Center, Japan, [3]Figaro Engineering Inc., Japan*

14:15 – 14:30

Machine olfaction for odorant and odor intensity monitoring of gaseous emissions emitted from paper manufacturing industries

N. Bhattacharyya[2], S.C. Deshmukh[1,3], A. Jana[2], R.A.Pandey[1], R. Bandyopadhyay [3], K. Kamde[1] , A. Das [2], R. Sankar [2]

*[1]CSIR- National Environmental Engineering and Research Institute, India, [2] Center for Development of Advance Computing, India, [3]Jadavpur 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. Achanta [1], C-S. Kim [2,†]

*[1,2]Missouri University of Science and Technology, USA*

14:15 – 14:30

Breath gas sensing for a potential diagnostic method of neurodegenerative disease

P.W. Ko[1], K.H. Kang[1] J.B Yu[2] H.W. Lee[1] J.O. Lim[3†]

*[1]Kyungpook National University Hospital, Korea, [2]Kyungpook National University, Korea, [3]Kyungpool 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[1†], A. Vergara[2], R. Huerta[1], S. Marco[3]

*[1]University of California, US, [2]National Institute of Standards Technology, US, [3]Institute for Bioengineering of Catalonia, Spain*

P1-2

Recursive PCA of e-nose data for anaerobic digestion reactor state monitoring

G. Adam[1†], S. Lemaigre[2], A.C. Romain[1], P. Delfosse[2], J. Nicolas[1]

*[1] University of Liège, Belgium, [2]Centre de Recherche Public-Gabriel Lippmann, Luxembourg*

P1-3

Classification of agarwood oils using k-NN k-fold

S. Lias[1*], N.A. Mohamad Ali[1], M. Jamil[1], M.H. Zainal[1], A. M. Jalil[1] & N. Ismail[2]

*[1]Forest Research Institute Malaysia, Malaysia, [2]Universiti Teknologi MARA, Malaysia*

P1-4

The characterization of agarwood using Gaharu Sense technology

N.A. Mohamad Ali[1], S. Lias[1], M. Jamil[1], S.H. Saidin[1], M. N. Mat Arip[2], A. M. Jalil[1], Z. Muhd Hafizi[1], M.F. Zolpatah[1] , and M.S. Najib[3]
*[1]Herbal Product Development Programme, Natural Products Division, [2]Forest Products Division, Forest Research Institute Malaysia (FRIM), Malaysia, [3]University 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 Palma[1,2,†], S. De Vito[1], M. Miglietta[1], E. Massera[1], G. Fattoruso[1], B. Mastroianni[1], G. Di Francia[1]
*[1]UTTP-MDB, ENEA, Italy, [2]University of Cassino and Southern Lazio, Italy*

P1-6

Chemo-resistive transduction: claming the driving seat for solving real-world chemo-sensing tasks

A. Vergara[1,2,†], J. Fonollosa[1], M. Trincavelli[3], N. Rulkov[1], R. Huerta[1]
*[1]University of California, US, [2]National Institute of Standards Technology, US, [3]AASS Research Centre, Örebro University, Sweden*

P1-7

The reduction algorithm of gas measurement time for wireless sensor network applications with limited power

Nak-Jin Choi[1,†], Hyung-Kun Lee[1], Seung Eon Moon[1], Woo Seok Yang[1] , Jong-Kee Kwon[1]
*[1]Electronics and Telecommunications Research Institute, Korea*

P1-8

Monitoring geosmin and 2-methylisoborneol in water reservoir using an electronic tongue system

G.S. Braga[1,2 †], F.J. Fonseca[2], L.H.C. Mattoso [1]
*[1]EMBRAPAInstrumentação, Brazil, [2]Escola 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 $SnO_2$-based gas sensor promoted with ZnO and $MoO_3$ for the detection of $H_2S$

Seong Yeol Kim[1], Soo Chool Lee[1], Byung Wook Hwang[1], Suk Yong Jung[1],
Byeong Hwang Park[2], Ju Hyun Kim[2], In Sung Son[3], Duk Dong Lee[4], Jae Chang Kim[1,†]
*[1]Kyungpook National University, Korea, [2]Agency for Defense Development, Korea, [3]HKC, Korea, [4]Kyungpook 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 Lee[1], Won-Ju Cho[1,†]
*[1]Kwangwoon University, Korea*

P1-13

Detection and discrimination of noxious gases using MOS gas sensor arrays with pattern recognition techniques

W. S. Choi[1, 2,†], B. J. Kim[3], J. S. Kim[3], H. G Byun[4], N. K. Min[1]
*[1]Korea University, Korea, [2]Auto Industrial Co. Ltd., Korea, [3]University of Seoul, Korea, [4]Kangwon National University, Korea*

P1-14

The analysis for COPD patient's exhaled breath using metal oxide sensor

Joon-Boo Yu[1], Jin-Young Jeon[2], Hyung-Gi Byun[2], Shin-Yeop Lee[1], and Jeong-Ok Lim[1,†]
*[1]Kyungpook National University, Korea, [2]Kangwon 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. Balsa[1], T. Palleja[1], M. Tresanchez[1], M. Teixido[1], J. Moreno[1], D. Font[1], S. Marco[2], V. Pomareda[2], and J.Palacin[1,†]

[1]*University of Lleida, Spain,* [2]*University of Barcelona, Spain*

P1-16

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*

P1-17

Development of a graphene oxide/CeO2 composite based sensor for acetone vapors

M. F. P. da Silva[1,†], H.B. Campos[1], M. R. Cavallari[2], G. S. Braga[2,3], L. G. Paterno[4], F. J. Fonseca[2], E. A. T. Dirani[1,2]

[1]*Pontifícia Universidade Católica de São Paulo, Brazil,* [2]*Escola Politécnica da Universidade de São Paulo, Brazil,* [3]*EMBRAPA Instrumentação Agropecuária, Brazil,* [4]*Universidade de Brasília, Brazil*

P1-18

The gas sensitivity of oligopeptides coated gold nanoparticles

D. Compagnone[1], M. Del Carlo[1], P. Pittia1, E. Martinelli[2], R. Paolesse[3], C. Di Natale[1†]

[1]*University of Teramo, Italy,* [2]*University 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)

15:50 - 16:05

Development of A Sensing Film for Odor Clustering

X. Sun , K. Nakano, M. Imahasi, B. Chen, C. Liu, K. Hayashi

*Kyushu University, Japan*

16:05 - 16:20

Identification of floral origin of honey based on cyclic voltammetric electronic tongue and correlation with physiochemical parameters

K. Tiwari[1], B. Tudu[1], N. Bhattacharyya[2], R. Bandyopadhyay[1], A. Chatterjee[1]

[1]*Jadavpur University, India,* [2]*C-DAC, India*

16:20 - 16:35

Improved Classification of Black Tea Employing Fuzzy Fusion of Electronic Nose and Tongue Responses

Runu Banerjee[1], Angiras Modak[1], Bipan Tudu[1], Rajib Bandyopadhyay[1] , Nabarun Bhattacharyya[2]

*[1]Jadavpur University, India, [2]Centre for Development of Advanced Computing, India*

16:35 - 16:50

Landscapes of Taste by a Novel Electronic Tongue

L. A. Garçon[1], M.Genua[1], Y.J.Hou[1], A.Buhot[1], R.Calemczuk[1], D.Bonnaffé[2], T.Livache[1], Y.Hou,[1,†]

*[1]Institut Nanosciences et Cryogénie, France, [2]Université Paris-Sud 11, France*

16:50 - 17:05

Quantification Of The Bitterness Level Of Olive Oils With An Electronic Tongue

Mrs M.L. Vicenty[1], DrS.Isz[1†], DrJ. C. Mifsud[1]

*[1]AlphaMOS, 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. Persaud[†]

*Manchester University, UK*

16:05 – 16:20

Photo-Micrographic Image Analysis Solution for Detection of Pebrine Disease in Silk Moth

Amitava Akuli, Abhra Pal, Tamal Dey, Nabarun Bhattacharyya
*Centre for Development of Advanced Computing, India*

16:20 – 16:35
Wine measurement with electronic tongue with respect to the taste
Amitava Z. Kovács[1,†], J. Soós[1], E. Várvölgyi[1], D. Szöllősi[1], A. Fekete[1], S. Isz[2]
*[1]Corvinus University of Budapest, Hungary, [2]Alpha M.O.S., France*

16:35 – 16:50
Ibuprofen encapsulation for taste masking purposes studied by potentiometric electronic tongue
P.Ciosek[1], M. Wesoły[1], K. Sołłohub[2], K. Cal[2]
*[1]Warsaw University of Technology, Poland, [2]Medical University of Gdansk, Poland*

16:50 – 17:05
SiC-FET BASED SO2 SENSORS FOR DESULPHURIZATION UNITS IN POWER GENERATION APPLICATIONS
Z. Darmastuti[1,†], P. Möller[1], C. Bur[1,3], R. Rahlin[2], N. Lindqvist[2], M. Andersson[1], A. Schütze[3], A. Lloyd Spetz[1]
*[1]Linköping University, Linköping, Sweden, [2]Alstom Power AB, Sweden, [3]Saarland University, Germany*

17:05 – 17:20
Proposal for a power supply line-free mass sensor using separate excitation for saliva samples
M. Yamaguchi[†] and Y Kimura
*Iwate University, Japan*

17:20 – 17:35
Intelligent Mobile Healthcare by Wearable Health Shirt with Wireless Sensors
J.H. Kim[1], B.G. Lee[2], S.J. Jung[1], W.-Y. Chung[1,†]
*[1]Pukyong National University, Korea, [2]ChangSung Ace Industrial Co. Ltd, Korea*

17:35 – 17:50
Non-Contact SAW Temperature Monitoring System
W.-Y. Chung[1,†], T.W. Lee[2], J.G. Oh[3]

[1,2]*Pukyong National University, Korea,* [3]*Corechips Co. Ltd, Korea*

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-Jimenez[1], J.G. Monroy[1†], J.L Blanco[2]

[1]*University of Málaga, Spain,* [2] *University of Almeria, Spain.*

16:05 - 16:20

A trend filtering approach for change point detection in MOX gas sensors

S. Pashami†, A. J. Lilienthal and M. Trincavelli

*Örebro University, Sweden*

16:20 - 16:35

Online Parameter Selection for Gas Distribution Mapping

V. Hernandez Bennetts[†1,] M. Trincavelli[1], E. Schaffernicht[1], V. Pomareda[2], A.J. Lilienthal[1]

[1]*Örebro University, Sweden,* [2]*University 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. Lilienthal[†], M. Trincavelli, E. Schaffernicht

[1]*Örebro 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. Ishida[†]

*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. Pomareda[1,†], V. Hernández[2], A.A. Khaliq[2], M. Trincavelli[2], A.J. Lilienthal[2], S. Marco[1]

*[1]University of Barcelona, Spain, [2]Örebro University, Sweden*

17:35 - 17:50

A Probabilistic Gas Patch Prediction Approach for Airborne Gas Source Localization in Non-Uniform Wind Fields

Patrick P. Neumann[1†], Michael Schnürmacher[2], Victor Hernandez Bennetts[3], Achim J. Lilienthal[3], Matthias Bartholmai[1], and Jochen H. Schiller[2]

*[1]Federal Institute for Materials Research and Testing, Germany, [2] FU University, Germany, [3]Örebro 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)

## Day 3 Thursday, July 4, 2013

08:00 – Registration & Morning Coffee and Pastry (3F Lobby)

08:15 – 10:00 (Rm.321)

## 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. Granado[1], M. Gutiérrez-Capitán[2], C. Fernández-Sánchez[2], C. Jimenez-Jorquera[2], J.A.B.P. Oliveira[1], M.T.S.R. Gomes[1], A. Rudnitskaya[1†]

*[1] University 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 Woo[1], Chan Woong Na[1], Il-Doo Kim[2] and Jong-Heun Lee[1]

*[1]Korea University, Korea, [2]Korea Advanced Institute of Science and Technology, Korea*

9:10 - 9:25

Stable and sensitive gas sensor based on monodisperse Cu2O Nanocubes

Hyung Ju Park[1], Nak-Jin Choi[2], Hyuntae Kang[3], Moon Youn Jung[1], Kang Hyun Park[3†], Dae-Sik Lee[1†]

*[1]Electronics and Telecommunications Research Institute, Korea, [2]Electronics and Telecommunications Research Institute, Korea, [3]Pusan 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. Choi[1] and I. D. Kim [1,†]

*[1]Korea 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 Kim[1], Alexander Haensch[2], Kwon-Il Choi[1], Il-Doo Kim[3], Nicolae Barsan[2,†], Udo Weimar[2] and Jong-Heun Lee[1,†]

*[1]Korea University, Korea, [2]Tübingen University, Germany, [3]Korea Advanced Institute of Science and Technology, Korea*

9:55 - 10:10

Characterizing the Sensory Differences of Processed Cheese with E-Sensing Instruments

Mr. P. Dubosclard[1], Dr H. Lechat[1], Mrs F. Ayouni[1], Mrs V. Vabre[1], Mrs M. Bonnefille[1, Dr]S. Isz[1†], Dr J.C. Mifsud[1]

*[1]Alpha 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. Matsukura[1,2], J. Ohmi[1], and H. Ishida[1,†]

*[1]Tokyo University of Agriculture and Technology, Japan, [2]Research 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 Kim[1], Jung-Ju Kim[1], Hyung-Gi Byun[2],. Ji-Hoon Choi[3], Chung-Hyun Ahn[3]

*[1]Hoseo University, Korea, [2]Kangwon National University, Korea, [3]ETRI, Korea*

09:25 - 09:40

An Open Source Framework for Simulating Mobile Robotics Olfaction

J.G. Monroy[1,†], J.L Blanco[2], J. González-Jimenez[3]

*[1,3]University of Málaga, Spain, [2]University of Almeria, Spain*

09:40 - 09:55

Progress for Olfactory Function Standardization for MPEG -V

H-G Byun[1], H. Lee[2,†], and J-D Kim[3]

*[1]Kangwon National University, Korea, [2]ETRI, Korea, [3]Hoseo 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. Weimar[1], U. Altenberend[1], A. Oprea[1], D. Briand[2], N. Bârsan[1]

*[1]University of Tuebingen, Germany, [2]Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland*

08:40 - 08:55

Printed micro-hotplate based gas sensors on flexible foil

M. Camara[1], E. Danesh[2], F. Molina-Lopez[1], G. Mattana[1], A. Vasquez Quintero[1],

K. Persaud[2], D. Briand[1], N.F. de Rooij[1]

*[1]Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland, [2]University of Manchester, UK*

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[1], E. Danesh[1], C. Gaspar[2] and K.C. Persaud[1,†]

*[1]University of Manchester, UK, [2] VTT, Espoo, Finland.*

09:25 - 09:40

OBPs grafted diamond MEMS as olfactory sensors for trace level detection of explosives

R. Manai[1,†], L. Rousseau[2], E. Scorsone[1], F. Ghassemi[2], S.Nazeer[2],G. Lissorgues[2], N. Tremillon[4], H. Ginistry[4], E. Tuccori[3], M. Bernabei[3], K. Cali[3], K. Persaud[3], P.Bergonzo[1]

*[1]CEA LIST, FRANCE, [2]ESYCOM University Paris-EST, France, [3]University of Manchester, UK, [4]GTP Technology, FRANCE*

09:40 - 09:55

Polyelectrolyte-Gated Organic Field-Effect Transistors (OFETs) as platform for biosensors

L.M. Dumitru[1], K. Manoli[1], M. Magliulo[1] and L. Torsi[1,†]

*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

*Johns Hopkins University School of Medicine, U.S.A.*

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. Wu[1], L. Zou[1], L.P. Du[1], L.Q. Huang[2], A. Legin[3], P. Wang[1]†

*[1]Zhejiang University, China, [2]Monell Chemical Senses Center, USA, [3]St. 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 Sharma[1], Arunangshu Ghosh[1], Bipan Tudu[1], Rajib Bandyopadhyay [1], Nabarun Bhattacharyya[2]

*[1]Jadavpur University, India, [2]Centre for Development of Advanced Computing, India.*

13:45 - 14:00

Modification/Characterization of multiwalled carbon nanotubes exploitable as electrode platform for biosensor construction

A. Cipri[1†], M. Del Valle[1]

*[1]Universitat 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. Kladsomboon[1,2], P. A. Lieberzeit[2], T. Kerdcharoen[3,†]

*[1,3]Mahidol University, Thailand, [2] University 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. Yaroshenko[1], D.O. Kirsanov[1,†], A.A. Kartsova[1], N. Bhattacharyya[2], J. Kumar Roy[2], A.V. Legin[1]

*[1]St.Petersburg State University, Russia*

*[2]C-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. Kirsanov[1,2], E. Legin[2], V.Tonkopii[3], A. Zagrebin[3], N. Ignatieva[3], V. Rybakin[3],

A. Legin[1,2,†]

*[1]St. Petersburg University, Russia, [2]Sensor Systems LLC, Russia, [3]Russian 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. Lvova[1,2,†], C. Di Natale[3], I. Lundstrom[4], R. Paolesse[1]

*[1]University "Tor Vergata", Rome, Italy, [2]St. Petersburg State University, Russia [3]Department of Electronic Eng. University "Tor Vergata", Rome, Italy, [4]IFM, 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. Falasconi[1,3], I. Concina[1,3], V. Sberveglieri[2,3], G. Zambotti[3], E. Gobbi[4,3]

*[1]Università di Brescia, Italy, [2]University of Modena and Reggio Emilia, Italy, [3]CNR-IDASC, Italy, [4]Università di Brescia, Italy*

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. Gobbi[1,2†], G. Zambotti[2], V. Sberveglieri[2,3], M. Falasconi[2,4]

*[1]Università di Brescia, Italy, [2]CNR-IDASC, Italy, [3]University of Modena and Reggio Emilia, Italy [4]Università 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. Vorobioff[1], D.F. Rodríguez[1], N.Boggio[1,2], C. Rinaldi[1,2,†]

*[1]Comisión Nacional de Energía Atómica, Argentina, [2]Consejo Nacional de Investigaciones Científicas (CONICET), Argentina*

14:10 - 14:25

Fast identification of different kind of coffee by electronic nose

V. Sberveglieri[2,3] , M. Falasconi[1,3], I. Concina[1,3], A. Pulvirenti[2,3]

*[1]Università di Brescia, Italy, [2]University of Modena and Reggio Emilia, Italy, [3]CNR-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,†]

*[1]Korea University, Korea, [2]Korea 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. Fong[1], S.F. Chin[2], S.M. Ng[1,†]

*[1]Swinburne University of Technology Sarawak Campus, Malaysia, [2]Universiti Malaysia Sarawak, Malaysia*

P2-4

Chemically functionalized passive UHF-RFID array for volatile compounds detection

S. Manzari[1], A. Catini[1], R. Paolesse[1], G. Marrocco[1], C. di Natale[1,†]

*[1] University of Rome Tor Vergata, ITALY*

P2-5

The application of a novel biosensor based on gustatory neuronal networks in central gustatory neurotransmission

L. Hu[1], C. Wu[1], L. Du[1], L. Zhuang[1], R. Li, L.Q. Huang[2], P. Wang[1,†]

*[1] Zhejiang University, China, [2]Monell Chemical Senses Center, USA*

P2-6

A portable electronic nose based on gas sensor temperature modulation

G.F. Wei[1†], S.T. Wei[1], J.W. Zhou[1]

*[1]Shandong Institute of Business and Technology, China*

P2-7

Detection of CRP using EDC-NHS activated protein A in a SPR sensor

Y. K. Lee[1], J. –O. Lim[2], and Y. –S. Sohn [1,†]

*[1]Catholic University of Daegu, Korea, [2]Kyungpook 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 Romain[1], V. Hutsemekers[1], J. Delva[2], Ph. Ledent[3], B. Stevenot[6], W. Kunz[4], U. Uhrner[5], Y. Arnaud[3], A. De Groof[3], G. Grosso[5], Ph. Valoggia[7], L. Johannsen[7]

*[1]ULg, Belgium, [2]Odometric, Belgium, [3]Spacebel, Belgium, [4]KTT-IMA, France, [5]Tecnhische universitaet Graz, Austria, [6]APS Technology, Belgium , [7]CRP 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. Jeong[1], Y. Sohn[1†,] J. Bae[2]

*[1]Yeungnam University, KOREA, [2]ETRI, KOREA*

P2-15

Integrated Sensor Module Simulator for Increasing the Driver's Convenience

J-Y Jeon[1], J-S Shin[1], J-B Yoo[2], and H-G Byun[1,†]

*[1]Kangwon National University, Korea, [2]Kyungpook 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

H.C. Lau1, T.E. Bae2, I.K. Lee2, H.J. Jang2, J.Y. Kwon3, W.J. Cho2, J.O. Lim1†

*1 Biomedical Research Institute, Kyungpook National University, Daegu, Korea*

*2 Departments of Electronic Materials Engineering, Kwangwoon University, Seoul, Korea*

*3 Department of Biological Science, Sungkyunwan University, Suwon, Korea*

P2-18

Volatile emissions from the skin of compressed tissues

F. Dini[1], R. Capuano[1], T. Strand[2], A.-C. Ek[2], M. Lindgren[2], R. Paolesse[3], C. Di Natale[1] and I. Lundström[3]

*[1]University of Rome Tor Vergata, Italy, [2,3]Linköping University, Sweden, [4]University 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[1], Eun Hae Oh[1], Juhun Park[2], Seunghun Hong[2,3], and Tai Hyun Park[1,†]

*[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[†]

*Zhejiang University, China*

16:20 – 16:35

Development of an electronic nose for indoor odour monitoring: laboratory and field tests

L. Dentoni[1,†], L. Capelli[1], S. Sironi[1], R. Del Rosso[1], M. Remondini[2]

*[1]Politecnico di Milano, Italy, [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[1], T.E. Bae[2], I.K. Lee[2], H.J. Jang[2], J.B. Yu[3], J.Y. Kwon[4], W.J. Cho[2], J.O. Lim[1,†]

*[1,3]Kyungpook National University, Korea, [2] Kwangwoon University, Korea, [4]Sungkyunwan University, Korea*

17:20 – 17:35

An Electronic Tongue Using Cell-based Biosensor for Rapid Toxicity Detection in the Shellfish

N. Hu[1,3], L. Zou[1], J. Zhou[1], K. Su[1], T. Wang[1,2], P. Wang[1,3,†]

*[1]Zhejiang University, China, [2]ACEA 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. Chiu[1,†], C.-K. Chang[2], H.-L. Kuo[2], C.-H. Shih[3], and K.-T. Tang[1]

*[1]National Tsing Hua University, Taiwan, [2]Industrial Technology Research Institute, Taiwan [3]Taipei Medical University, Taiwan*

16:20 – 16:35

Analysis of SnO2/ZnO Nanostructures Prepared for Gas Sensing

E. E. Bassey[1,†], K. Prasad[2] and P. Sallis[1]

*[1,2]Auckland 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. Ha[1], N. Hu[1], C.X. Wu[1], Dmitry Kirsanov[2], Andrey Legin[2], Maria Khaydukova[2] and

P.Wang[1,†]

*[1]Zhejiang University, China, [2]Saint-Petersburg State University, Russia*

16:50 – 17:05

Comparison of a bimetallic chip sensitivity using a miniaturized surface plasmon resonance sensor

Y. K. Lee[1], D. H. Jang[2], K.-S. Lee[3], W. M. Kim[3], J.-O. Lim[4], and Y.-S. Sohn[1,†]

*[1]Catholic University of Daegu, Korea, [2]Sungkyunkwan University, Korea, [3]KIST, Korea, [4] Kyungpook 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. Chang[†], 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 Fattoruso[1,†], S. De Vito[1], A. Buonanno[1], P. Di Palma[1,2,] Girolamo Di Francia[1]

*[1]UTTP-MDB, ENEA R.C. Portici, Italy, [2]University of Cassino and Southern Lazio, Italy*

16:30 - 16:45

Indoor Channel Equalization for Sensor Networks in Smart Buidings

Namyong Kim, Hyung-Gi Byun

*Kangwon National University, Korea*

16:45 - 17:00

Analysis on Energy Method by Digital Dimming Sensor Control

N. E. Lee[1] , H. S. Han[2], C. Y. Jang[1,†]

*[1]Korea Institute of Energy Research, Korea, [2]Chungnam 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. Moon[1], M.S. Choi[1,†]

*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