

# Digital Olfaction Society 2014

December 8-9, 2014 – Tokyo Institute of Technology, Japan

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## Scientific & Demonstrations Program

*Day 1 - December 8, 2014*

**Congress Chairmen: Pr Marvin Edeas & Pr Takamichi Nakamoto**

**08h00 Registration Opening**

**09h00 2nd DOS World Congress: Welcome Note by Chairmen**  
Pr Marvin Edeas & Pr Takamichi Nakamoto

**09h15 Digital Olfaction Society: News & Perspectives**  
Marvin Edeas, Founder & Chairman of the Digital Olfaction Society Committee, France

### Session 1: Recent Advances of Digital Olfaction Research & Development

**9h45 A metric approach to olfactory perceptual space**  
Noam Sobel, Weizman Institute of Sciences, Israel

*10h15 - Coffee Break & Posters Session*

**10h45 Odor Processing in Biological and Artificial Olfactory Systems**  
Baranidharan Raman, Washington University in St-Louis, United States

**11h15 Nanomechanical gas sensor: Recent Advances & Perspectives**  
Genki Yoshikawa, National Institute for Material Sciences, Japan

**11h45 Landscapes of Taste: Continuous evolution patterns for electronic-nose-based analysis**  
Yanxia Hou-Broutin, CEA-Grenoble, France

*12h15 - Lunch Break & Posters Session*

### Session 2: Translational Research in Digital Olfaction

*This session will focus on how sensors are tailor-made according to the application and how clinical studies would improve the understandings for developing new generation of digital olfaction. In other words, this session will discuss ways to marry the “electronics world” with the “clinical world” to get digital olfaction that work in real world conditions.*

**13h45 Digital Olfactory Nanoarrays for Disease Detection from Breath and Skin**  
Hossam Haick, Technion, Israel Institute of Technology, Israel

### Hot Topic: New Generation of Sensors & E-nose

*For digital olfaction to become a reality, where it can work precisely under real-world confounding factors, several advances in the knowledge of specific application and sensor development need to occur. Sensor matrices based on advanced (bio-)materials at the micro- or nano-scales are more likely to become a real-world detection tool, because they are significantly*

smaller, easier-to-use, and less expensive. An ideal sensor for digital olfaction analysis should be sensitive at very low analyze concentrations in the presence of water vapour, because headspace of samples is partially or fully humidified. Furthermore, it should respond rapidly and differently to small changes in concentration, and provide a consistent output that is specific to a given exposure, mainly, and most importantly, in the presence of counteracting conditions (e.g., contaminants, fluctuations in temperature and humidity, etc.). When not in contact with the analyze, the sensor should return to its baseline state rapidly, or be simple and inexpensive enough to manufacture large numbers of disposable units.

#### 14h45 Short Oral Presentations upon Abstracts Submission (Part I - Odor sensing)

##### **Odor classification by using neural network**

Sigeru Omatu, Osaka Institute of Technology, Japan

##### **A low cost smart gas sensing system for handheld anti-drunk**

Jia-Yin Jhang, National Tsing Hua University, Republic of China

##### **Highly selective nanoporous sensor for human health care management**

Seimei Shiratori, Keio University, Japan

##### **Qcm sensors with lipopolymers and olfactory receptor-expressing cells for odor sensing in gas/vapor phase**

Bartosz Pawel Wyszynski, Tokyo Institute of Technology, Japan

*15h30 - Coffee Break & Posters Session*

#### 16h00 Study of the transient response for the prediction of the steady-state for gas sensors based on quartz crystal microbalance

Severino Muñoz-Aguirre, Benemérita Universidad Autónoma de Puebla, Mexico

##### **Development of a small, replaceable sensory chip based on the carbon black-polymer composite materials**

Ting-I Chou, National Tsing Hua University, Republic of China

##### **Active airflow generation to aid robotic gas source localization**

Ayano Murai, Tokyo University of Agriculture and Technology, Japan

##### **Simulation of sensor network for odor source localization using optimization approach**

Yossiri Ariyakul, King Mongkut's Institute of Technology, Thailand

##### **Development of an electronic nose system based on non-continuous surface acoustic wave sensor array**

Cheng-Chun Wu, National Tsing Hua University, Taiwan

##### **Development of novel cell-based odorant sensor elements based on insect odorant receptors**

Hidefumi Mitsuno, University of Tokyo, Japan

##### **Bioelectronic nose with human-like performance using human olfactory receptors and nanomaterials**

Hwi Jin Ko, Seoul National University, Korea, Republic of South Korea

##### **Response prediction of an insect's olfactory receptor neuron by using structural parameters of odorant and self-organizing map**

Yuki Harada, Tokyo Institute of Technology, Japan

#### 17h45 End of First Day

#### 18h30 DOS Speakers Dinner

*If you are interested to participate, please register online.*

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*Day 2 - December 9, 2014*

#### 09h00 Introduction of DOS Second Day

#### 09h05 Chemical sensing mechanisms for olfactory receptors

Kazushige Touhara, University of Tokyo, Japan

**09h35 Short Oral Presentations upon Abstracts Submission (Part II - Odor Sensing and Odor Visualization)**

**Development of molecular recognition materials for bioinspired odor cluster sensing**

Chuanjun Liu, Kyushu University, Japan

**Bio-sniffer (biochemical gas sensor) with fiber-optic fluorometry for odorless formaldehyde vapor in residential atmosphere**

Po Jen Chien, Tokyo medical and dental university, Japan

**Odor visualization by multispectral fluorescence imaging and odor feature value analysis**

Hiroataka Yoshioka, Kyushu University, Japan

**“Scent camera” for real-time imaging of breath (body) ethanol after alcohol drinking**

Takahiro Arakawa, Tokyo Medical and Dental University, Japan

*10h25 - Coffee Break & Posters Session*

**10h50 Short Oral Presentations upon Abstracts Submission (Part III - Olfactory Display)**

**A novel powder based olfactory display**

Heng-Chung, Chang, Tokyo Institute of Technology, Japan

**A programmable, wearable, multi-fragrance olfactory display**

Monica Bordegoni, Politecnico di Milano, Italy

**Study of wearable olfactory display using surface acoustic wave device**

Kazuki Hashimoto, Tokyo Institute of Technology, Japan

**Application of starbons on olfactory display**

Keisuke Tomono, University of York, United Kingdom

**Reducing the trailing tail of vortex rings by partial scent filling to improve localization performance of scent delivery**

Daisuke Oishi, Meijo University, Japan

*11h50 – Lunch Break & Posters Session*

**13h20 Short Oral Presentations upon Abstracts Submission (Part IV - Olfactory Display and its Applications)**

**Relationship between scent effects and video content with emotional properties**

Sang-Kyun Kim, Myongji University, Republic of South Korea

**A proposal of file format on jpeg for olfactory interaction**

Jeong-Do Kim, Hoseo University, Republic of South Korea

**A study on the influence of odors on the users' evaluation of industrial products in a VR multisensory environment**

Marina Caruli, Politecnico di Milano, Italy

**Difference of olfactory detection threshold between measuring methods by olfactory display using pulse ejection**

Shutaro Homma, Keio University, Japan

**Session 3: Digital Olfaction Displaying & Demonstrations**

**14h10 Introduction of DOS Demonstrations 2014**

Takamichi Nakamoto, Tokyo Institute of Technology, Japan

**14h20 General Presentation of Each Demonstrations**

*Before the practical demonstration, we invite each team to present orally their technology and the process of demonstration (10-15 minutes by team).*

*Among Demonstrations selected:*

**Smelling Screen: Generating Spatial Odor Distribution as if an Odor Source Had Been Placed onto an LCD Monitor Screen**

**Haruka Matsukura & Hiroshi Ishida**, Tokyo University of Agriculture and Technology, Japan

**Cross Modal effect on scent and music**

**Masaaki Iseki & Takamichi Nakamoto**, Precision and Intelligence Laboratory, Tokyo Institute of Technology, Japan

**Digital Olfaction with Computer Controlled Odor Blender**

**Naohiko Maruyama**, ONO-DENKI CO., LTD.

**Yuji Nozaki**, Tokyo Institute of Technology, Japan

**Aroma Shooter - Instantaneous Scent-Switching Aroma Ejector**

**Dong Wook Kim & Yasui Aiko**, Aromajoin Corporation, Japan

**Quantitative measurement of detection threshold and discrimination threshold and furthermore the quantitative measurement of masking effect**

**Junichi Kita**, Motoo Kinoshita Shimadzu Corporation, Japan

**Scent Projector: a method of delivering scented air locally using vortex rings**

**Daisuke Oishi, Tomoki Kamiya Takuya Nakano & Yasuyuki Yanagida**, Meijo University, Japan

*15h20 – Coffee Break & Posters Session*  
**Opening Demonstrations Session**

*During Demonstrations Session, each team will have a dedicated space to show, demonstrate, explain and discuss about his project.*

*The Demonstrations Session will be opened from 11h00 to 16h00.*

**17h15 Discussion - Questions / Answers about Digital Olfaction**

- What is most crucial for progressing the field of digital olfaction forward and to keep it as innovative as possible: new advanced materials? New transducers? Algorithms? Product design? Applications?
- How lab results in digital olfaction could be translated to commercial production, while passing through all regulatory (tough) roles. An example could be given for the case of the use of digital olfaction as a diagnostic tool for diseases.

**17h45 Final Discussion & Concluding Remarks**

- *Perspectives & Opportunities*
- *Next strategic step for Digital Olfaction Society*
- *Publication about DOS proceedings in scientific journal or DOS book*

**18h00 End of DOS 2014**



**Program, Registration & Practical Information available on**

**[www.olfaction-site.com](http://www.olfaction-site.com)**