

# ***Program***

## **International Symposium on Olfaction and Electronic Nose (ISOEN)**



**May 2-5, 2011**

**Rockefeller University**  
1230 York Avenue, New York, NY 10065

### **Chair**

**Perena Gouma**  
SUNY at Stony Brook, USA



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## **Monday, May 2, 2011**

17:30 – 19:30

Check-in & Welcome Reception (Rockefeller University – Weiss Café-East Room)

### **Notes**

- Conference locations will be as follows:
  - **Tuesday, May 3**
    - Sessions Caspary Auditorium
    - Lunch/Poster Session Abby Lounge and Dinning Room
  - **Wednesday, May 4**
    - Concurrent Sessions Weiss Research Building
      - Session A Room 301
      - Session B Room 305
      - Session C Room 302
    - **Conference Banquet and Awards**  
Dinner Cruise on the Spirit of New York  
Participants must arrange their own transportation to the banquet – The address is 61 Chelsea Pier and West Side Highway.  
(arrive at 61 Chelsea Pier at 18:30 for boarding, departing promptly at 19:00)
  - **Thursday, May 5**
    - Sessions Caspary Auditorium
    - Lunch/Poster Session Abby Lounge and Dinning Room
- Audiotaping, videotaping and photography of presentations are prohibited.
- Speakers – Please leave at least 3-5 minutes for questions and discussion.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Be sure to make any corrections to your name/contact information on the Master Participant List or confirm (with your initials) that the listing is correct. A corrected copy will be sent to all participants after the conference.

**Tuesday, May 3, 2011 (all sessions to be held at Caspary Auditorium)**

Breakfast on your own

08:30 – 16:00 Conference Check-in / ECI conference information desk open

09:00 – 09:15 Welcome Introductions  
Professor Perena Gouma, Conference Chair  
Professor Julian Gardner, President of ISOCS

09:15 – 10:15 **Session 1: Keynote Lecture**

09:15 – 09:25 Introduction by Alan Gelperin

09:25 – 10:15 **Sensors and sensation: The molecular neurobiology of smell**  
Dr. Leslie B. Vosshall  
Robin Chemers Neustein Professor, Rockefeller University, USA

10:15 – 10:30 Coffee break

10:30 – 12:45 **Session 2: Focused Session - Optical nose**

Session Chair: Troy Nagle

10:30 – 11:00 Plenary Talk – **A colorimetric sensor array for determination and identification of toxic industrial chemicals**  
Kenneth Suslick  
University of Illinois at Urbana-Champaign, USA

11:00 – 11:30 Invited Talk - **Optical detection for chemical sensing on ubiquitous devices**  
Daniel Filippini  
Linköping University, Sweden

11:30 – 12:00 Invited Talk - **Colors and odors: Porphyrinoids based artificial olfaction systems**  
Roberto Paolesse  
University of Rome, Italy

12:00 – 12:30 Invited Talk - **Gold nanoparticles: Effective receptors for 'chemical nose' sensing of proteins, bacteria, and mammalian cells**  
Vincent Rotello  
University of Massachusetts Amherst, USA

12:30 – 14:00 **Lunch and Poster Session I**

**Tuesday, May 3, 2011 (continued)**

- 14:00 – 15:30                    **Session 3: Focused Session - Live cell-based sensors**  
Session Chair: Krishna Persaud
- 14:00 – 14:30                    Plenary Talk - **Live cell-based sensor cells for nano-biomaterials evaluation**  
Akiyoshi Taniguchi  
Waseda University-NIMS, Japan
- 14:30 – 15:00                    Invited Talk - **Cultured cell based biosensor for qualified analysis as HTA**  
Tetsuya Haruyama  
Kyushu Institute of Technology, Japan
- 15:00 – 15:30                    Invited Talk - **Biological-switch-gate semiconductor-based biosensing technique for bio-functional analysis**  
Toshiya Sakata  
The University of Tokyo, Japan
- 15:30 – 15:45                    Coffee break
- 15:45 – 16:45                    **Session 4: Focused Session - Sensor data processing**  
Session Chair: Santiago Marco
- 15:45 – 16:15                    Plenary Talk - **Experiences in pattern recognition for machine olfaction**  
Conrad Bessant  
Cranfield University, United Kingdom
- 16:15 – 16:45                    Invited Talk - **Advances in active and adaptive chemical sensing**  
Ricardo Gutierrez-Osuna  
Texas A&M University, USA
- 17:00 – 19:00                    Dinner on your own and free evening
- 17:00 – 19:00                    ISOCS general assembly meeting (Caspary Auditorium)
- 19:00 – 21:00                    ISOCS executive committee dinner meeting (invitation only)

**Wednesday, May 4, 2011 (Session A in room 301)**

Breakfast on your own

08:30 – 16:00 ECI conference information desk open

**SESSION A**

08:15 – 10:30 **Session 5: Electronic olfaction for breath analysis diagnostics**

Session Chair: Steve Semancik

08:15 – 08:30 **Identification of relevant olfactory receptors to be used as sensing elements of a bioelectronic odorant detection nanoplatform**

Aurelie Dewaele  
INRA, France

08:30 – 09:00 **Invited Talk - A nanoscale artificial nose (NA-NOSE) for detecting volatile biomarkers of cancer**

Hossam Haick  
Technion, Israel

09:00 – 09:15 **The role of spike temporal latencies in artificial olfaction**

Eugenio Martinelli  
University of Rome Tor Vergata, Italy

09:15 – 09:30 **An electronic nose (cyranose-320) can distinguish between patients with obstructive sleep apnoea syndrome and healthy controls**

Timm Greulich  
University Hospital of Giessen and Marburg, Germany

09:30 – 09:45 **Portable device for real-time breath acetone detection**

Lisheng Wang  
University of British Columbia, Canada

09:45 – 10:00 **On line real-time odours dispersion modeling systems using electronic noses**

Louis Vivola  
ALPHA MOS, France

10:00 – 10:15 **COPD identification by the analysis of breath with an electronic nose**

Marco Santonico  
University of Rome Tor Vergata, Italy

10:15 – 10:30 **Semi-supervised learning techniques in artificial olfaction applications: a novel approach to drift counteraction**

Saverio De Vito  
ENEA, Italy

10:30 – 10:45 Coffee break

10:45 – 13:00 **Session 6: Data processing on combined organoleptic system data**

Session Chair: Ricardo Gutierrez-Osuna

10:45 – 11:00 **Quantification of gas mixtures with active recursive estimation**

Rakesh Gosangi  
Texas A&M University, USA

**Wednesday, May 4, 2011 (Session A in room 301) (continued)**

- 11:00 – 11:15                    **Covariance matrix adaptation evolutionary strategy for drift correction of electronic nose data**  
Matteo Falasconi  
CNR-IDASC & University of Brescia, Italy
- 11:15 – 11:45                    **Invited Talk - Joining e-nose and vision characterizations for the fine quantification of olive oil adulteration**  
Matteo Pardo  
Institute of Applied Mathematics and Information Technology, CNR, Italy
- 11:45 – 12:00                    **Artificial odor map and discrimination of odorants using the odor separating system**  
Masahiro Imahashi  
Kyushu University, Japan
- 12:00 – 12:15                    **Study of odor approximation by using mass spectrometer**  
Takamichi Nakamoto  
Tokyo Institute of Technology, Japan
- 12:15 – 12:30                    **Active sensing with Fabry-Perot infrared interferometers**  
Jin Huang  
Texas A&M University
- 12:30 – 12:45                    **Gas sensors array applied to the monitoring of biogas process**  
Gilles Adam  
University of Liege, Belgium
- 12:45 – 13:00                    **Array of Love-wave sensors to detect CWA low-levels**  
Daniel Matatagui  
CSIC, Spain
- 13:00 – 14:00                    **Boxed lunch**
- 14:00 – 16:45                    **Session 7: Novel Sensor/E-nose Concepts**  
Session Chair: Baranidharan Raman
- 14:00 – 14:30                    **Invited Talk - Possibility of SPR application as an electronic nose**  
Ken Watanabe  
NIMS, Japan
- 14:30 – 14:45                    **Biomimetic chemical sensors using nanoelectronic read out of olfactory Receptor Proteins**  
A.T. Charlie Johnson  
University of Pennsylvania, USA
- 14:45 – 15:00                    **Selective vapor monitoring using individual multivariable RFID sensors**  
Cheryl Surman  
GE-Global Research, USA
- 15:00 – 15:15                    **H<sup>+</sup> activated polyaniline sensors**  
Aisha Haynes  
US Army ARDEC, USA

**Wednesday, May 4, 2011 (Session A in room 301) (continued)**

- 15:15 – 15:30                    **Lignin-based nanocomposite polymeric materials for liquid sensing**  
Alisa Rudnitskaya  
University of Aveiro, Portugal
- 15:30 – 15:45                    Coffee break
- 15:45 – 16:00                    **DNA-decorated carbon nanotube-based FETs as ultrasensitive chemical sensors**  
A.T. Charlie Johnson  
University of Pennsylvania, USA
- 16:00 – 16:30                    Invited Talk – **The photonic nose: smelling chemicals with structural color**  
Leonardo Bonifacio  
Opalux, Inc, Canada
- 16:30 – 16:45                    **Solid-state nanostructured thin-film RuO<sub>2</sub>-based pH sensors: Influence of film thickness**  
Serge Zhuiykov  
CSIRO, Australia
- 16:45 – 17:00                    **Improving MOS virtual multisensor systems by combining temperature cycled operation with impedance spectroscopy**  
Andreas Schuetze  
Saarland University, Germany
- 17:00                                Participants must arrange their own transportation to the banquet – The address is 61 Chelsea Pier and West Side Highway
- 18:30 – 22:00                    **Conference Banquet and Awards**  
**Dinner Cruise on the Hudson River**  
**(arrive at 61 Chelsea Pier at 18:30 for boarding, departing promptly at 19:00)**

**Wednesday, May 4, 2011 (Session B in room 305)**

**SESSION B**

- 08:15 – 12:45      **Session 8: Novel materials for sensors and advanced sensing systems**  
Session Chair: Tetsuya Haruyama
- 08:15 – 08:30      **Kinetic and statistical analysis of the conductance transient to address the selectivity issue of the wet chemically synthesized tailored nano-structured ferrite gas sensors**  
Kalisadhan Mukherjee  
Indian Institute of Technology, India
- 08:30 – 09:00      Invited Talk - **Applications of metal oxides nanowires in safety and security**  
Elisabetta Comini  
University of Brescia, Italy
- 09:00 – 09:15      **Hybrid polymer 1D nanostructure-based sensor arrays for detection of explosives**  
Christopher Field  
U.S. Naval Research Laboratory, USA
- 09:15 – 9:30      **Controlled synthesis of ZnO nanostructures for ppb-level VOC detection**  
Shaolin Zhang  
Kyungpook National University, Korea
- 09:30 – 09:45      **Preparation and sensor properties of conducting molecular sieve ceramics based on potassium and silver hollandite**  
Marco Mugnaini  
Universita di Siena, Italy
- 09:45 – 10:00      **An analog low-power frequency readout ASIC for a SAW array**  
Shih-Wen Chiu  
National Tsing Hua University, Taiwan
- 10:00 – 10:15      Coffee break
- 10:15 – 10:30      **Measurement of food texture by an acoustic vibration method**  
Naoki Sakurai  
Hiroshima University, Japan
- 10:30 – 10:45      **Evaluating zeolite-modified sensors: towards a faster set of chemical sensors**  
Alexander Vergara  
University of California, San Diego, USA
- 10:45 – 11:00      **A high temperature SOI CMOS NO<sub>2</sub> sensor**  
Julian Gardner  
The University of Warwick, United Kingdom
- 11:00 – 11:15      **Development and characterization of YCoO<sub>3</sub> based CO gas sensors**  
Marco Mugnaini  
Universita di Siena, Italy

**Wednesday, May 4, 2011 (Session B in room 305) (continued)**

- 11:15 – 11:30                    **Phthalocyanines as sensitive coatings for QCM sensors-experimental results and computational approaches**  
Dilek Erbahar  
TUBITAK Marmara Research Center, Turkey
- 11:30 – 12:00                    **Invited Talk - Voltammetric sensors and biosensors based on phthalocyanines for an electronic tongue**  
Maria Luz Rodriguez-Mendez  
University of Valladolid, Spain
- 12:00 – 12:15                    **Classification and concentration estimation of explosive precursors using nanowires sensor array and decision tree learning**  
Junghwan Cho  
University of Massachusetts Lowell, USA
- 12:15 – 12:30                    **Development of ultra-low power metal oxide sensors and arrays for embedded applications**  
Brent Lutz  
Synkera Technologies Inc., USA
- 12:30 – 12:45                    **Electronic nose sensor array optimization using rough set theory**  
Rajib Bandyopadhyay,  
Jadavpur University, India
- 12:45 – 14:00                    **Boxed Lunch**
- 14:00 – 16:45                    **Session 9: Artificial olfaction in quality control**  
Session Chair: Sandrine Isz
- 14:00 – 14:30                    **Invited Talk - Odor recognition vs. classification in artificial olfaction**  
Barani Raman  
Washington University, USA
- 14:30 – 14:45                    **Sensing basic tastes by electronic tongue sensors**  
Zoltan Kovacs  
Corvinus University of Budapest, Hungary
- 14:45 – 15:00                    **Application of combined electronic nose and tongue technology in petfood flavor development and quality control**  
Omobola Oladipupo  
AFB International, USA
- 15:00 – 15:15                    **Detection of hexanal in rotten milk using a cell-derived olfactory nano-vesicle-based bioelectronic nose**  
Jong Hyun Lim  
Seoul National University, Korea
- 15:15 – 15:30                    **Coffee break**
- 15:30 – 15:45                    **Ratiometric chemical blend processing with a neuromorphic model of the insect macroglomerular complex**  
Tim Pearce  
University of Leicester

**Wednesday, May 4, 2011 (Session B in room 305) (continued)**

- 15:45 – 16:00                    **Humidity compensation of bad-smell sensing system using a detector tube and a built-in camera**  
Takamichi Nakamoto  
Tokyo Institute of Technology, Japan
- 16:00 – 16:15                    **Quality control of spices by multigas sensors**  
Thomas Huebert  
BAM Federal Institute for Materials Research & Testing, Germany
- 16:15 – 16:30                    **Kinetics of dry roasting as related to peanut quality**  
Jack Davis  
USDA ARS Market Quality, USA
- 16:30 – 16:45                    **An application of specific sensors for the monitoring of NaCl in soft cheeses**  
Patrick Mielle  
INRA, UMR CSGA, France
- 16:45 – 17:00                    **Identification of geographical origin of coffee before and after roasting by electronic nose**  
Veronica Sberveglieri paper 128  
University of Modena e Reggio Emilia, Italy
- 17:00                                Personal transit to banquet – location 61 Chelsea Pier and West Side Highway
- 18:30 – 22:00                    Conference Banquet and Awards  
Dinner Cruise on the Hudson River.  
(arrive at 61 Chelsea Pier at 18:30 for boarding, departing promptly at 19:00)

**Wednesday, May 4, 2011 (Session C in room 302)**

**SESSION C**

- 08:15 – 10:30      **Session 10: E-tongues**  
Session Chair: Milutin Stanacevic
- 08:15 – 08:30      **Temperature cycled operation of SiC field effect gas sensors: Increasing the selectivity for improved sensor systems**  
Andreas Schutze  
Saarland University, Germany
- 08:30 – 09:00      **Invited Talk - Electronic Tongue on a way towards the universal bitterness scale**  
Andrey Legin  
St. Petersburg University, Russia
- 09:00 – 09:15      **Bioelectronic tongue employing enzyme-modified sensors for the resolution of phenolic antioxidant mixtures**  
Xavier Ceto  
Universitat Autònoma de Barcelona, Spain
- 09:15 – 09:30      **Electronic tongue-FIA system for the monitoring of heavy metals biosorption processes**  
Manel del Valle  
Universitat Autònoma de Barcelona, Spain
- 09:30 – 09:45      **A PKD channel-based biosensor for taste transduction**  
Ping Wang  
Zhejiang University, China
- 09:45 – 10:00      **Food saltiness optimization using in-mouth sensors**  
Patrick Mielle  
INRA, UMR CSGA, France
- 10:00 – 10:15      **Development of electronic tongue system for quantification of rare earth metals in spent nuclear fuel reprocessing**  
Dmitry Kirsanov  
St. Petersburg State University, Russia
- 10:15 – 10:30      Coffee break
- 10:30 – 12:45      **Session 11: Applications of sensor arrays in safety and defense**  
Session Chair: Corrado Di Natale
- 10:30 – 10:45      **Electronic noses as flexible tools for evaluating food quality and safety: can we trust them?**  
Isabella Concina  
CNR-IDASC & Brescia University, Italy
- 10:45 – 11:00      **Sensing materials with a concurrent sensitivity: design, synthesis and application in multisensory systems**  
Larisa Lvova  
University of Rome Tor Vergata, Italy

**Wednesday, May 4, 2011 (Session C in room 302) (continued)**

- 11:00 – 11:15                    **Portable electronic nose system for identification of synthesized gasoline using single metal oxide gas sensor and pattern recognition**  
Young Wung Kim  
Kyungpook National University, Korea
- 11:15-11:30                    **TD kernel DM+V: Time-dependent statistical gas distribution modelling on simulated measurements**  
Achim Lilienthal  
Orebro University, Sweden
- 11:30 – 12:00                    Invited Talk - **Advances toward practical detection of trace chemical hazards with solid state microarray devices**  
Steve Semancik  
NIST, USA
- 12:00 – 12:15                    **Early detection of fungal contamination on green coffee by a MOX sensors based electronic nose**  
Veronica Sberveglieri paper 95  
CNR-IDASC & Brescia University, Italy
- 12:15 – 12:30                    **An analog multilayer perceptron neural network with on-chip learning for a portable electronic nose**  
Chih-Heng Pan  
National Tsing Hua University, Taiwan
- 12:30 – 12: 45                    **Electronic nose characterization of the quality parameters of freeze-dried bacteria**  
Eugenio Martinelli  
University of Rome Tor Vergata, Italy
- 12:45 – 14:00                    Boxed Lunch
- 14:00 – 16:45                    **Session 12: Medical applications of sensors and sensor systems**  
Session Chair: Jan Mitrovits
- 14:00 – 14:30                    Invited Talk - **A review of rhinological applications of electronic nose technology**  
Erica Thaler  
University of Pennsylvania, USA
- 14:30 – 14:45                    **Detection and identification of inflammatory bowel disease by electronic nose**  
Nathalie Ouaret, University of Warwick, United Kingdom
- 14:45 – 15:00                    **Mammalian odor information recognition by implanted microsensor array in vivo**  
Jun Zhou  
Zhejiang Unviersity, China
- 15:00 – 15:15                    **Towards a multi-centre approach for breath metabolomics; viability of discriminative potential after adsorption, storage and desorption of exhaled air samples**  
Lieuwe Bos  
Amsterdam Academic Medical Center, The Netherlands

**Wednesday, May 4, 2011 (Session C in room 302) (continued)**

- 15:15 – 15:30                    **Effects of self-generated heat on gas sensing in mobile robots and olfactory sensing in humans**  
Hiroshi Ishida  
Tokyo University of Agriculture and Technology, Japan
- 15:30 – 15:45                    Coffee break
- 16:00 – 16:15                    **Chemical sensitivity of porphyrinoid-functionalized cotton yarns**  
Corrado Di Natale  
University of Rome Tor Vergata, Italy
- 16:15 – 16:30                    **Identification of the different sources responsible for the olfactory annoyance, using an e-nose**  
Kevin Clarke  
Universite de Liege, Belgium
- 16:30 – 16:45                    **Data-driven modeling of metal-oxide sensors with dynamic bayesian networks**  
Rakesh Gosangi  
Texas A&M University, USA
- 16:45 – 17:00                    Concluding Remarks  
by session chairs
- 17:00                                Personal transit to banquet – location 61 Chelsea Pier and West Side Highway
- 18:30 – 22:00                    Conference Banquet and Awards  
Dinner Cruise on the Hudson River.  
(arrive at 61 Chelsea Pier at 18:30 for boarding, departing promptly at 19:00)

**Thursday, May 5, 2011 (Caspary Auditorium)**

- Breakfast on your own
- 08:30 – 12:00 ECI conference information desk open
- 08:30 – 11:30 **Session 13: Novel sensor materials and device platforms for artificial noses**  
Session Chair: Giorgio Sberveglieri
- 08:30 – 09:00 Plenary Talk - **Nano-structured oxides by surface modification: platforms for chemical sensing and beyond**  
Sheikh A. Akbar  
The Ohio State University, USA
- 09:00 – 09:30 Invited Talk - **Research into use of non woven fibers as food biosensor platforms**  
Kris Senecal  
US Army RDECOM, NSRDEC, USA
- 09:30 – 10:00 Invited Talk - **A 166-dB dynamic range and low power interface circuit for gas-sensing System**  
Milutin Stanacevic  
SUNY Stony Brook, USA
- 10:00 – 10:15 Coffee break
- 10:15 – 15:00 **Session 14: Biologically inspired computation for chemical sensing**  
Session Chair: Julian Gardner
- 10:15 – 10:45 Invited Talk - **Signal processing for chemical sensing: statistics or biological inspiration**  
Santiago Marco  
University of Barcelona, Spain
- 10:45 – 11:00 **Study of sensory diversity and redundancy to encode for chemical mixtures**  
Agustin Gutierrez-Galvez  
IBEC, Spain
- 11:00– 11:30 **Chemical plume source localization with multiple mobile sensors using bayesian inference under background signals**  
Santiago Marco  
University of Barcelona, Spain
- 11:30 – 11:45 **A large scale chemical sensor array testing biological olfaction concepts**  
Krishna Persaud  
CNR-IMM, Italy
- 11:45 – 12:00 **A large scale virtual gas sensor array**  
Alexandre Perera Lluna  
Universitat Politecnica de Catalunya, Spain
- 12:00 – 14:00 Lunch and poster session II
- 14:00 – 15:00 **Closing session**, ISOCS new president announcement, next ISOCS meeting location announcement, poster awards

# Poster List

Tuesday, May 3, 2011

## **A. Breath Analysis**

1. **Exhaled breath analysis for the monitoring of elderly COPD patients health-state**  
Giorgio Pennazza  
University of Rome, Italy
2. **Monitoring the halitosis with an electronic nose**  
Giorgio Pennazza  
University of Rome, Italy
3. **Hand held numeric prototype for breath analyzing**  
Aditya Shyam Ambre  
State University of New York at Stony Brook, USA
4. **An electronic nose distinguishes the exhaled breath condensates obtained by two different devices and two different breath patterns**  
Andreas Rembert Koczulla  
Philipps-Universitat Marburg, Germany
5. **An electronic nose based on hybrid MOS-SAW sensors for detection of different biomarkers of lung cancer**  
Ping Wang  
Zhejiang University, China
6. **Multi-model diagnosis method for lung cancer based on MOS-SAW breath detecting e-nose**  
Ping Wang  
Zhejiang University, China
7. **Portable gas sensor for breath analysis**  
Marco Righettoni  
ETH Zurich, Switzerland
8. **Continuous exhaled breath analysis on the ICU: Feasibility study**  
Lieuwe DJ Bos  
Academic Medical Center, The Netherlands
9. **Nanosensor array-based breath analyzer for disease diagnosis**  
Perena Gouma  
Stony Brook University, USA

Tuesday, May 3, 2011 (continued)

**B. Quality Control**

10. **A supervised feature extraction method for GCMS data based on PLS: Application to the detection of adulterated olive oil**  
Eugenio Martinelli  
University of Rome, Italy
11. **Portable electronic nose to discriminate artificial aged wine from barrel-aged wine**  
Jose Pedro Santos  
CSIC, Spaing
12. **Using a multi-way analysis for the application of an electronic noses in wine quality control**  
N. Prieto  
University of Valladolid, Spain
13. **Aroma analysis by GC/MS and electronic nose dedicated to negroamaro and primitivo typical apulian wines**  
Simonetta Capone  
IMM-CNR, Italy
14. **Olive oil headspace characterization by a gas sensor array**  
Corrado Di Natale  
University of Rome, Italy
15. **Detection of acetic acid in wine by means of an electronic nose**  
Jose Pedro Santos  
Universidad de Extremadura, Spain
16. **An 'olfactory fatigue' measurement method for chinese liquors classification with a metal oxide gas sensor array**  
Shunping Zhang  
Huazhong University of Science and Technology, China
17. **A combined gas and liquid chemical sensors array for fuel adulteration detection**  
Corrado Di Natale  
University of Rome Tor Vergata

Tuesday, May 3, 2011 (continued)

**C. Electronic Tongue**

**18. Novel sensors for the artificial mouth**

Patrick Mielle  
INRA, UMR CSGA, France

**19. Use of an electronic tongue to detect geosmin in distilled water**

Guilherme de Souza Braga  
University of Sao Paulo, Brazil

**20. Assessment of volatile sulfur compounds production by select oral bacteria with cysteine and methione as substrates measured by OralChroma™**

Nathanael Salako  
Kuwait University, Kuwait

**21. Fusion of potentiometric & voltammetric electronic tongue for classification of black tea taste based on theaflavins (TF) content**

Nabarun Bhattacharyya  
CDAC, Kolkata, India

**22. Portable e-Tongue based on multi-channel LAPS array with PVC membrane for rapid environment detection**

Ping Wang  
Zhejiang University, China

**23. Data fusion from voltammetric and potentiometric sensors to build a hybrid electronic tongue applied in classification of beers**

Manel del Valle  
University of Barcelona, Spain

**24. Discrimination of soils and assessment of some soil fertility parameters using an electronic tongue**

Manel del Valle  
University of Barcelona, Spain

**25. An impedancemetric electronic tongue for discrimination of adulteration process of ethanol fuel with water**

Thiago Paixao  
University of Sao Paulo, Brazil

**26. Sensory evaluation and electronic tongue analysis for sweetener recognition in coke drinks**

Daniel Szollosi  
Corvinus University of Budapest, Hungary

**27. Development of taste sensing system using inorganic membrane**

Yohichiro Kojima  
Tomakomai National College of Technology, Japan

**D. Sensor Nanomaterials**

**28. Sensing characteristic of polyaniline/TiO<sub>2</sub> nanocomposites**

Jeung Soo Huh  
Kyungpook National University, Korea

**29. A novel method for synthesis of 3-D WO<sub>3</sub>-CuO nanogrids**

Jusand Lee  
SUNY at Stony Brook, USA

**30. Tunneling through surface barrier and oxygen in-diffusion in nanostructured SnO<sub>2</sub> gas sensors**

Cesare Malagu  
University of Ferrara, Italy

**31. TiO<sub>2</sub> nanostructures for gas sensing room temperature**

Daniel Rodriguez  
Commission Nacional de Energia Atomica

**32. Headspace analysis of Philippine civet coffee beans using gas chromatography mass spectrometry and electronic nose**

Matteo Falasconi  
CNR-IDASC Sensor, Italy

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**E. Environmental Monitoring**

33. **A gas sensor array for environmental air monitoring: A study case of application of artificial neural networks**  
Marco Alvisi  
ENEA, Italy
34. **Development of an electronic nose for environmental monitoring: detection of specific environmentally important gases at their odor detection threshold concentration**  
Licina Dentoni  
Politecnico di Milano, Italy
35. **Cumulative measurement principle for the detection of small amounts of gaseous species**  
Andrea Geupel  
University of Bayreuth, Germany
36. **Electronic nose system combined with membrane interface probe for detection of VOCs in water**  
Junghwan Cho  
University of Massachusetts Lowell, USA
37. **Electronic noses implementation on landfill site**  
Genevieve Carayon  
ALPHA MOS, France
38. **Hand-held device for monitoring dissolved organics in fresh and recycled water on ppb levels**  
Serge Zhuiykov  
Commonwealth Scientific Industrial Research Org., Australia
39. **Pursuing contamination detection on aircraft CFRP surfaces by artificial olfaction techniques**  
Saverio De Vito  
ENEA UTTP/MDB, Italy
40. **Tin oxide nanowire sensors and their potential for selective detection of the toxic gases SO<sub>2</sub> and H<sub>2</sub>S**  
Anton Koeck  
AIT, Austria
41. **Microwave-hydrothermal synthesis and vibrational spectroscopy of nanostructured (Ni,Mn,Co)SB<sub>2</sub>O<sub>6</sub> compounds for chemical sensing**  
Anderson Dias  
Federal University of Ouro Preto, Brazil

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**F. Sensing Complex Odors**

42. **Discrimination of body odor using odor sieving sensor system**  
Tadashi Takamizawa  
U.S.E. Co., Ltd., Japan
43. **Towards an analogue neuromorphic VLSI instrument for the sensing of complex odours**  
Julian Gardner  
University of Warwick, United Kingdom
44. **Optimizing the operating temperature for an array of MOX sensors on an open sampling system**  
Marco Trincavelli  
Orebro University, Sweden
45. **Portable e-Nose and multivariate data analysis to identify different kinds of drugs**  
Benachir Bouchikhi  
Moulay Ismail University, Morocco
46. **Development of odor gas sensor using TiO<sub>2</sub> nanostructures**  
Jeung Soo Huh  
Kyungpook National University, Korea
47. **Odour profile of different varieties of extra-virgin olive oil during deep-frying using an electronic nose and SPME-GC-FID**  
Valeria Messina  
CINSO, Argentina
48. **Odour profile and colour characteristics of waxy brakedown paralysis process in garlic assessed by instrumental methods**  
Valeria Messina  
CINSO, Argentina
49. **Odors discrimination by olfactory epithelium biosensor**  
Ping Wang  
Zhejiang University, China
50. **Odour mapping under strong backgrounds with a metal oxide sensor array**  
Andrey Ziyatdinov  
ESAIL, Spain
51. **A portable gas sensor system for environmental monitoring and malodours control: Data assessment of an experimental campaign**  
Marco Alvisi  
ENEA, Italy

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**52. Temperature centric evaluation of sensor transients**

Alexander Vergara  
University of California, San Diego, USA

**53. Gas identification by dynamic measurements of SnO<sub>2</sub> sensors**

Daniel Rodriguez  
Commission Nacional de Energia Atomica, Argentina

**54. Ensemble classifier strategy based on transient feature fusion in electronic nose**

Mohammad Ali Bagheri  
Tarbiat Modares University, Tehran

**G. Sensor Systems**

**55. A flexible gas sensor for the integration into smart textiles**

Thomas Kinkeldei  
ETH Zurich, Switzerland

**56. An on-chip multi-class support vector machine applied to portable electronic nose data classification**

Yao-Sheng Liang  
National Tsing Hua University, Taiwan

**57. Towards a low-power miniaturized micromechanical electronic nose**

Sywert H. Brongersma  
Holst Centre / IMEC, Holland

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**H. Biosensors & Bio-inspired Systems**

58. **Biosensor based on olfactory receptors immobilization for the detection of odorant compounds**  
Marta Sanmarti  
IBEC, Spain
  
59. **Cystic fibrosis sweat patch**  
Gagan Jodhani  
Stony Brook University, USA
  
60. **Molecularly imprinted polymer based sensor for the detection of theophylline**  
Guilherme de Souza Braga  
University of Sao Paulo, Brazil
  
61. **Metal ion binding motifs in vertebrate olfactory receptors**  
Ken Suslick  
University of Illinois at Urbana-Champaign, USA
  
62. **VLSI implementation of a bio-inspired olfactory spiking neural network**  
Hung-Yi Hsieh  
National Tsing Hua University, Taiwan
  
63. **Estimation of theaflavins (TF) and thearubigins (TR) ratio in black tea liquor using electronic vision system**  
Abhra Pal  
C-DAC (K), India
  
64. **Classification of optical-sensor response cues with a bi-dimensional wavelet-transform approach**  
Jose Murguia  
Bio Circuits Institute, USA
  
65. **Biomimetic transducing support for enhanced explosive detection thresholds**  
Nelly Piazzon  
ISL, France