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Welcome Message from the Chairs

Dear ISOEN 2017 participants: welcome to Montreal, Canada!

On behalf of the Organizing Committee, it is our great pleasure to welcome you to beautiful Montreal at a wonderful time of the year, with nature in full bloom. ISOEN will be held at the McGill New Residence Hall (formerly a Renaissance-Montreal hotel). The "New Rez" is situated in the heart of the Milton-Parc Community, and just steps away from the downtown business core, as well as numerous art galleries, museums, the metro system (subway), Montreal's world-famous underground shopping centers, and fabulous entertainment and restaurants.

In a major departure from previous years, ISOEN 2017 is being co-sponsored by ISOCS and IEEE, with the IEEE Sensors Council and the IEEE Montreal section. Also for the first time, all accepted papers will be published in the conference proceedings on IEEE Xplore, where they can be accessed by more than 400,000 IEEE members in over 160 countries, as well as millions more at academic institutions.

Also for the first time, ISOEN 2017 solicited 3-page Full Articles to ensure the highest quality of peer reviews. We received 126 submissions, of which 102 papers were accepted for presentation (80% rate), 31 of them as oral presentations (25%). Papers received an average of 2.5 reviews from external reviewers, plus an additional meta-review by a member of the Technical Program Committee (TPC). The review process was double-blind and identical for all submissions, regardless of whether the Full Paper had been submitted for consideration as an oral presentation or as a poster presentation. Submissions were mostly from academia (80%), with good participation from industry and government organizations (20%). Submitted papers came from 27 different countries from Europe, Middle East and Africa (50%), Asia/Pacific (32%), US/Canada (13%) and Latin America (5%).

ISOEN 2017 is organized as a single track on Days 1 and 2, and a parallel track on Day 3, for a total of 11 oral sessions, 3 poster sessions, a panel discussion and a student competition. The oral sessions cover topics that range from solid state sensors to instrumentation, and include special sessions on standards, robotics, distributed sensing, and breath analysis. Also part of the conference program are two extraordinary Keynotes from Stuart Firestein (Columbia University) on stimulus processing in the mammalian olfactory system and Dermot Diamond (Dublin City University) on wearable and implantable sensors.

ISOEN 2017 features a new selection process for Best Paper Awards. Namely, we carefully reviewed submissions that were highly rated and were also recommended for an award, and identified a selected few as candidates for Best Paper Award. These candidates have been invited to prepare an oral presentation, at which point they will receive a second round of scores to determine the Winner and Runner Up. The Awards will be announced at the closing ceremony on May 31, 2017.

ISOEN 2017 also introduces a new event: the Sniffest student competition. Sniffest seeks to attract new talent to the machine olfaction community and advance the field by promoting practical and original solutions to odor measurement problems. As part of Sniffest, we provided students with sensors, hardware and software tools to design and build their own instruments, and the opportunity to showcase them at a live event. Eight teams submitted applications to participate and received the sensor kit: five teams from Europe/Middle East, and three from the United States. In its first edition, Sniffest will honor a culinary tradition in Montreal: cheese. On Day 1 of the conference, the teams will be provided with free samples of cheeses that are local to Montreal. The teams will then have one and a half days (Day 1, and the morning of Day 2) to optimize their odor-sampling protocol and calibration models. The competition will take place in the afternoon of Day 2. The competition will consist of two rounds: a qualification round, and a final round. In the qualification round, the teams will be

provided with 9 samples: 6 of them from one type of cheese, and the other 3 samples being outliers (i.e., samples from one or several other types of cheese). The teams will have 20 minutes to identify which 3 of the 9 samples are outliers. Teams that correctly identify the 3 outliers will qualify for the final round. The final round will follow a similar format, but with a more challenging outlier-detection problem. In the event of ties, preference will be given to teams with the shortest sample-testing time and the most mobile design.

As part of ISOEN 2017, we have organized an exquisite social program with two events. The first event is a Welcome Reception on Sunday May 28 at Salon Urbain, an elegant space with bold and modern architecture located at the Place des Arts complex, the heart of Montreal's cultural center. The second event is a Banquet on Tuesday May 30 at Portus 360, a wonderful space that offers a revolving, panoramic view of Montreal and its surroundings, and the very best of Portugal's cuisine.

We want to thank all the volunteers who contributed to the peer-review process. Special thanks go to our TPC chair Santiago Marco (Universitat de Barcelona), who worked tirelessly with the TPC to secure timely external reviews for the paper submissions, and helped organize a technical program of the highest quality.

ISOEN 2017 would not have been possible without critical contributions from Troy Nagle (North Carolina State University) and Fabrice Labeau (McGill University). Thank you both for leading the process of securing IEEE sponsorship, for your tremendous help with local arrangements, and for your continued support and guidance.

The Sniffest student competition is the brainchild of Jan Mitrovics (JLM Innovation) and Troy Nagle. Thank you, Jan, for donating the awesome miniMOX sensor kit to the student teams, for providing technical support, and for your persistence in organizing the event. The ideas you shared in that conversation at ISOEN 2011 have finally come to fruition.

Last but not least, we thank the professional conference organizers Conference Catalysts, LLC, under the leadership of Chris Dyer. Special thanks go to Brianna Orr, who has proven invaluable in so many ways, including efficiency, organization, and budgeting. Chris and Brianna: Thank you for all that you have done!

Ricardo Gutierrez-Osuna, General Chair
Susan S. Schiffman, Honorary General Chair

ISOEN 2017 Organizing Committee

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Honorary General Chair
Susan S. Schiffman, North Carolina State University, USA

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Dominique Martinez, CNRS-LORIA, France
Javier Monroy, Universidad de Malaga, Spain
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Takamichi Nakamoto, Tokyo Institute of Technology, Japan
Krishna Persaud, Manchester University, UK
Barani Raman, Washington University at St. Louis, USA
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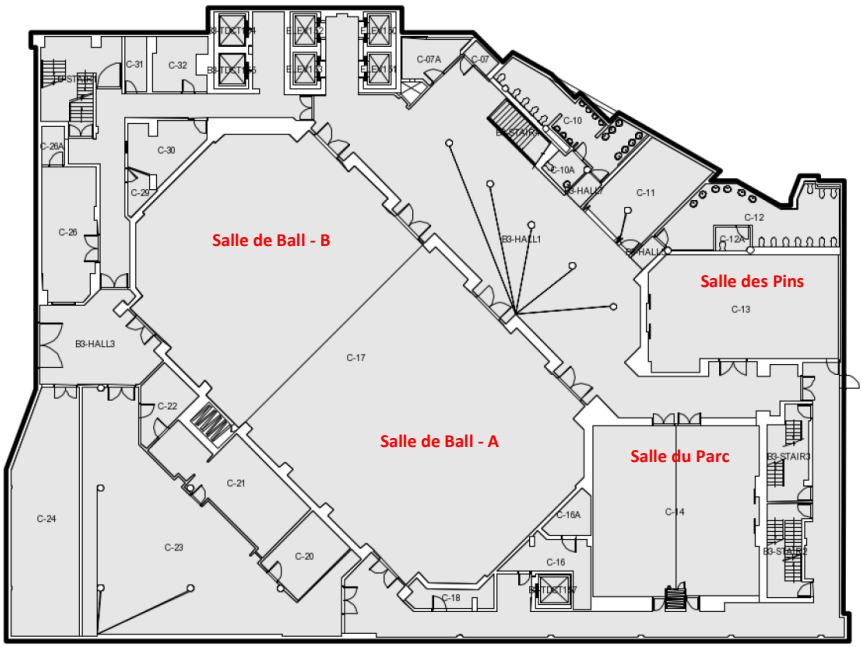
Susan Rose-Pehrsson, Naval Research Laboratory, USA
Alisa Rudnitskaya, University of Aveiro, Portugal
Michael Schmuker, University of Hertfordshire, UK
Andreas Schütze, Saarland University, Germany
Steve Semancik, NIST, USA
Ken Suslick, University of Illinois, USA
Jonathan E. Thompson, Texas Tech University, USA
Udo Weimar, Tübingen University, Germany

Conference Management:
Conference Catalysts, LLC

Conference Venue

Venue: McGill University
New Residence Hall
3625 Park Ave, Montreal,
QC H2X 3P8, Canada

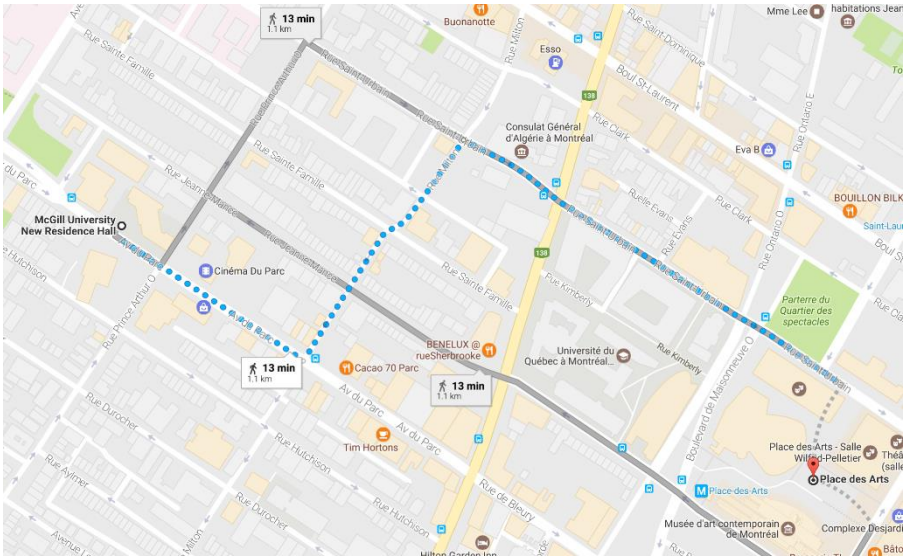
ISOEN 2017 will be held at the McGill New Residence Hall (formerly a Renaissance-Montreal hotel). The “New Rez” is situated in the heart of the Milton-Parc Community, and just steps away from the downtown business core, as well as numerous art galleries, museums, the metro system (subway), Montreal's world-famous underground shopping centers, and fabulous entertainment and restaurants. The New Rez is located on 3625 Park Avenue.



Social Events

Welcome Reception
Venue: Salon Urbain at Place des Arts
(Catering by Bernard et fils traiteur)
175 Saint-Catherine St, Montreal, QC H2X 1Y9, Canada
Sunday, May 28: 19:00 – 22:00

Directions from McGill New Residence Hall:

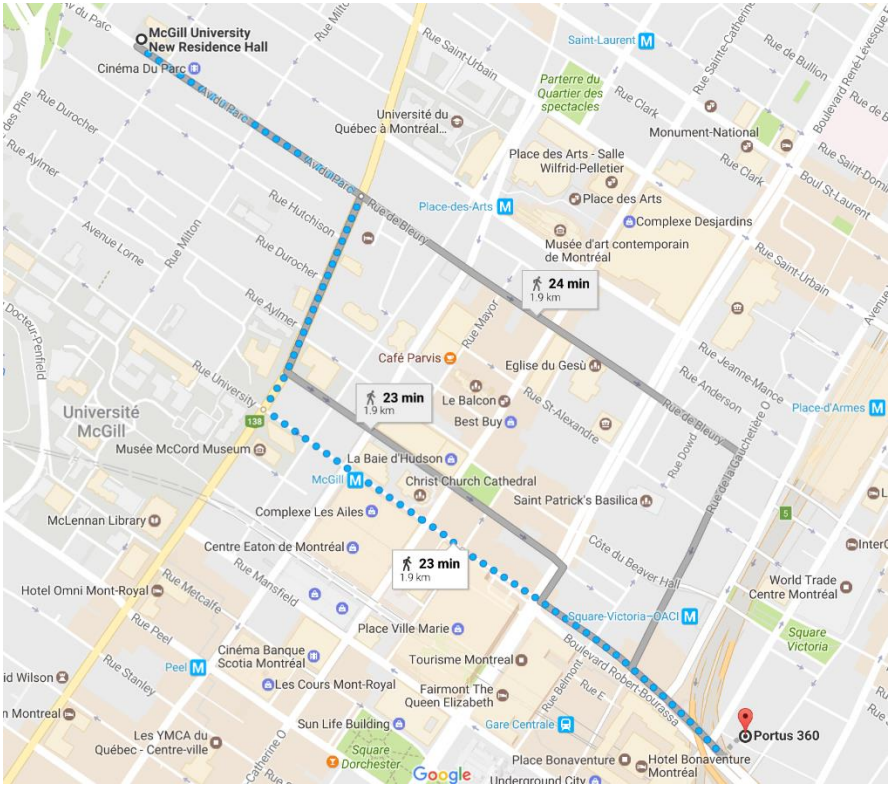


13 min (1.1 km)

1. Head southeast on Av du Parc toward Rue Prince Arthur O (250 m)
2. Turn left onto Rue Milton (300 m)
3. Turn right onto Rue Saint-Urbain

Gala Dinner
Venue: Portus 360
777 Boulevard Robert-Bourassa, Montreal, QC H3C 3Z7, Canada
Tuesday, May 30: 19:00 – 23:00
***One bus will be provided for those with more limited mobility (capacity of 56)**
We recommend Uber (phone app) as another method of transportation.
Fare Estimate: $7-9

Directions from McGill New Residence Hall:



23 min (1.9 km)

1. Head southeast on Av du Parc toward Rue Prince Arthur O (500 m)
2. Turn right onto Rue Sherbrooke Ouest/QC-138 O (400 m)
3. Turn left onto Boulevard Robert-Bourassa (450 m)
4. Slight left to stay on Boulevard Robert-Bourassa (600 m, destination will be on the left)

General Information

Registration
The registration desk will be open throughout the conference, in the foyer area. Main registration hours will be 08:30 – 9:00 each morning, May 28 – 31. You will pick up your badge and other conference materials here.

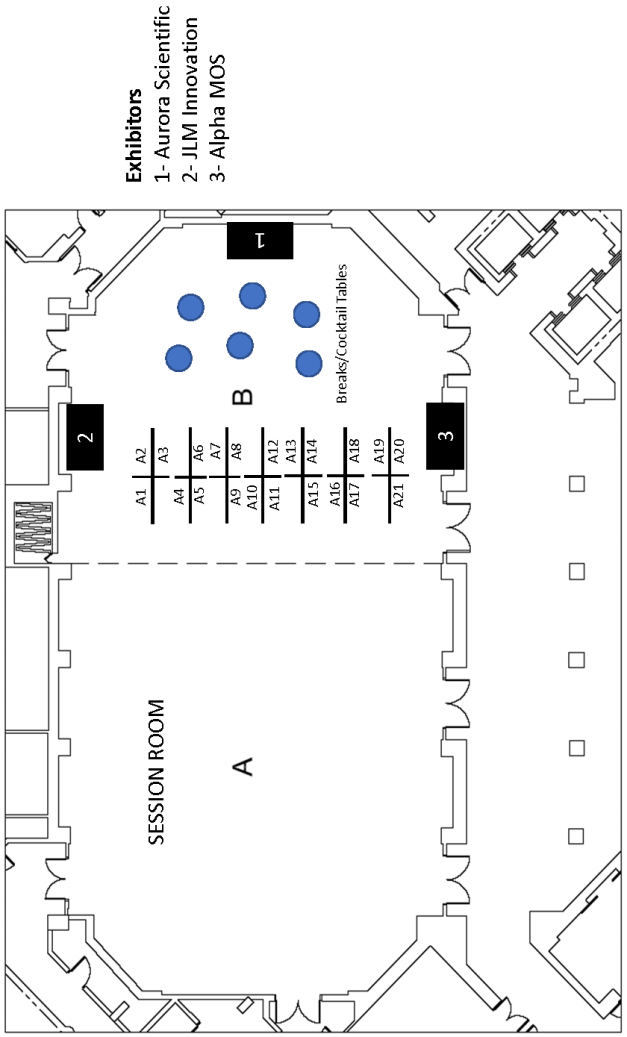
Onsite Payment
Onsite payment will be possible at the registration desk by credit card ONLY. Please note that cash payment will not be accepted.

Posters
Poster presenters should hang their poster the morning of their session, and take it down at the end of the day or it may be discarded. Pushpins will be provided at the registration desk.

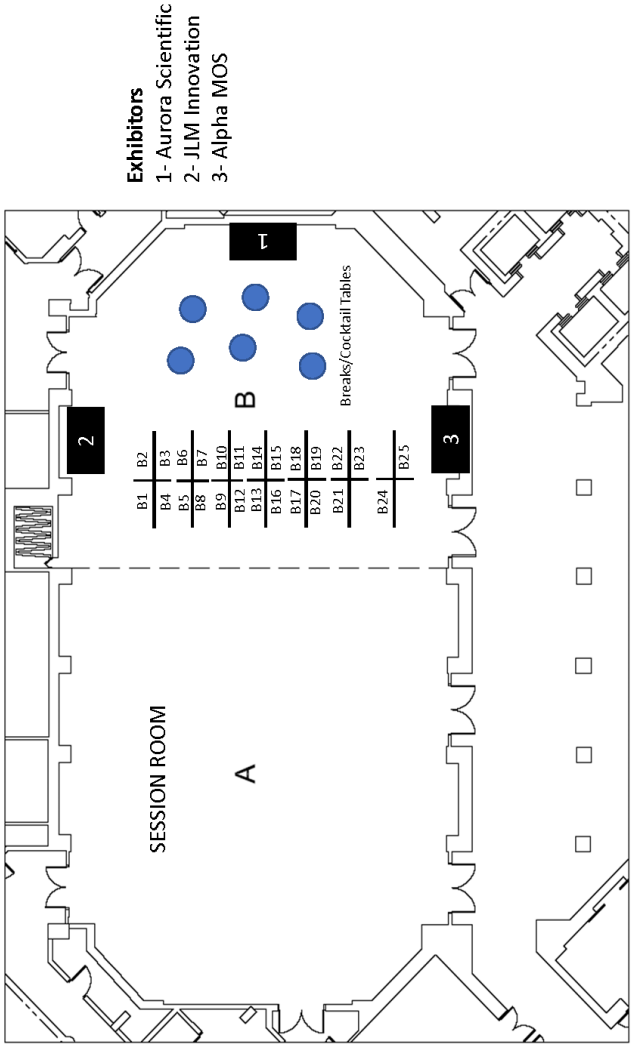
Mobile App
There is an ISOEN 2017 mobile app available, where you can connect with fellow attendees, view the Program, and more. Download “Whova” on your mobile device and search for ISOEN 2017.

Poster & Exhibit Layouts

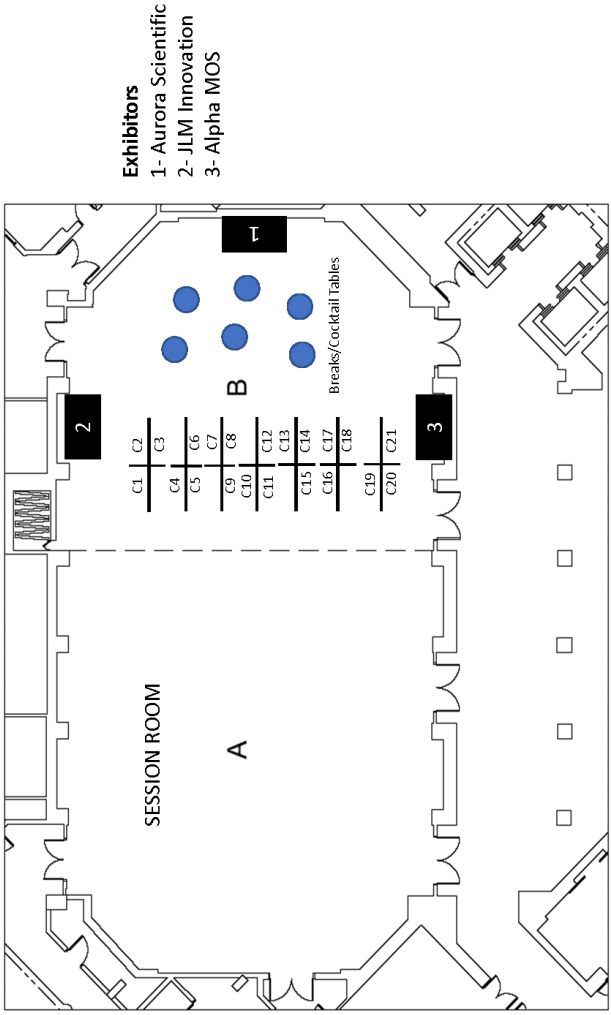
Poster Session #1: Monday, May 29



Poster Session #2: Tuesday, May 30



Poster Session #3: Wednesday, May 31



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Plenary Speakers

Stuart Firestein
Columbia University, USA

Topic:
How Biology Perceives Chemistry: Stimulus Processing in The Mammalian Olfactory System

Abstract:
The mammalian nose is arguably the best (current) chemical detector on the planet, able to detect and discriminate a large number and diverse array of molecules. This is accomplished in part by a large number of receptors (encoded by more than a thousand different genes in many species) and a very shallow central circuit, comprising only 2 synapses from the outside world to the primary olfactory cortex. While the discovery of the large family of receptors seemed to provide a molecular basis for understanding olfaction, this dream has been somewhat upended by recent findings in both the periphery and the CNS. In the periphery we must take into account antagonistic effects of many odors and a new classification of odors according to medicinal chemical principles versus pure organic chemistry. In the periphery we see a cortex that may be shaped more by output than input, as is the case in other sensory cortices. Here we will discuss how these findings are forcing us to adopt new strategies for understanding peripheral olfaction and for taking a new perspective on the central processing of odor information.

Speaker Biography:
Dr. Stuart Firestein is the former Chair of Columbia University's Department of Biological Sciences where his laboratory studies the vertebrate olfactory system, possibly the best chemical detector on the face of the planet. Aside from its molecular detection capabilities, the olfactory system serves as a model for investigating general principles and mechanisms of signaling and perception in the brain. The olfactory system represents a unique opportunity for these studies as it processes sensory information over a very short neural pathway – giving rise to striking perceptions and memories with much less processing than the visual system requires, thus making it a more tractable system to understand. The laboratory has published over 100 scientific articles on their research. His laboratory seeks to answer that fundamental human question: How do I smell?

Dedicated to promoting the accessibility of science to a public audience Firestein serves as an advisor for the Alfred P. Sloan Foundation's program for the Public Understanding of Science, where he reviews scripts for the Ensemble Studio Theatre/Sloan Science and Technology Program, and for the Tribeca and Hamptons International Film Festivals. Recently he was awarded the 2011 Lenfest Distinguished Columbia Faculty Award for excellence in scholarship and teaching. He is a Fellow of the AAAS, an Alfred Sloan Fellow and a Guggenheim Fellow. At Columbia he is on the Advisory boards of the Center for Science and Society (CSS) and the Presidential Scholars in Society and Neuroscience –both centers for interdisciplinary work between the sciences and the humanities. His book on the workings of science for a general audience called Ignorance, How it Drives Science was released by Oxford University Press in 2012. His new book, Failure: Why Science is So Successful, appeared in October 2015. They have been translated into 10 languages.

Dermot Diamond
Principal Investigator, Insight Centre for Data Analytics,
National Centre for Sensor Research, Dublin City University, Dublin 9, Ireland

Topic:
Wearable and Implantable Chemical Sensors – Opportunities and Challenges

Abstract:
Despite the wide range of applications and tremendous potential of implantable sensors targeting chemo/bio-markers, bringing actual practical devices fully to market continues to be inhibited by significant technological barriers associated with long-term reliability, which is a key requirement for implants. This is so, even with devices that appear to be well engineered, focused on apparently fairly solid markets, and based on well-established sensing principles. Wearable chem/bio-sensors offer an interesting alternative, intermediate between the long-term vision of implantable devices, and the single use-disposable devices that are the current dominant use model. For example, wearable patch-type devices employing micro-needles for minimally invasive sampling of interstitial fluid enables through-skin continuous monitoring of glucose for up to two weeks. However, despite this apparently promising breakthrough, large-scale adoption remains frustratingly elusive, and some users experience infection, allergic responses and issues related to adhesion. To bypass these issues, other body fluids have been targeted that allow non-invasive sampling. For example, wearable platforms for monitoring sweat chemistry in real-time have recently been reported. However, while there are important applications associated with sweat chemistry such as hydration status, sweat does not provide the rich diversity of diagnostic information accessible from blood. The move by Google into the biosensing space is another interesting development. In partnership with Novartis, Google is focusing on glucose monitoring through a contact lens with an integrated electrochemical sensor that can communicate wirelessly, function for 24 hours (lenses are changed daily), and is in contact with ocular fluid, which has a glucose composition related to that of blood. Similarly, the period up to the launch of the Apple iWatch witnessed a frenzy of speculation about whether it would have an integrated glucose monitoring capability. Clearly, however, wearable chem/bio-sensors are inherently more complex and less dependable than the well-established physical sensors, as reflected in the difficulties in bringing these devices to market. In this paper, I will examine the issues that currently limit the applicability of chemo/bio-sensors in wearable and implantable scenarios, and present ways through which the effective autonomous lifetime of these more complex sensors might be extended from the current norm of (at most) several days, towards much longer periods (ideally years), for example, through the development of 'sensing systems' based on bioinspired microfluidics.

Speaker Biography:
Dermot Diamond received his Ph.D. and D.Sc. from Queen's University Belfast and joined DCU in 1987. He was Vice-President for Research at Dublin City University (2002-2004) and was director (2007-2015) and founding member of the National Centre for Sensor Research (www.ncsr.ie) at DCU. In 2002, he was awarded the inaugural silver medal for Sensor Research by the Royal Society of Chemistry, London. He was awarded the DCU President's Award for Research Excellence (2006) and the DCU President's Award for Innovation (2015). In May 2014, in recognition of his academic contributions and achievements, he was admitted to Membership of the Royal Irish Academy. In April 2015, he was awarded the Boyle Higgins Gold Medal by the Institute of Chemistry of Ireland in recognition of his research achievements. He is currently a principal investigator in the SFI INSIGHT Centre (http://www.insight-centre.org) and a member of the EU Future and Emerging Technologies programme advisory group (FETAG). His research is focused on the fundamental science of stimuli responsive polymers, the development of futuristic autonomous chemical sensing platforms, and the use of analytical devices and sensors as information providers for wireless networked systems i.e. building a continuum between the digital and molecular worlds. Further details of his research can be found at http://adaptivesensors.com/.

Conference Grid: Sunday, May 28	
08:30 – 09:00	Registration *Foyer*
09:00 – 09:15	Coffee *Foyer*
09:15 – 10:00	Tutorial VOC-1 *Ballroom A*
10:00 – 10:15	Break
10:15 – 11:00	Tutorial VOC-2 *Ballroom A*
11:00 – 11:15	Break
11:15 – 12:00	Tutorial VOC-3 *Ballroom A*
12:00 – 13:30	Lunch *Salle du Parc*
13:30 – 14:15	Tutorial MIR-1 *Ballroom A*
14:15 – 14:30	Break
14:30 – 15:15	Tutorial MIR-2 *Ballroom A*
15:15 – 15:30	Buffer
15:30 – 16:00	Coffee *Foyer*
16:00 – 16:45	Tutorial BSS-1 *Ballroom A*
16:45 – 17:00	Break
17:00 – 17:45	Tutorial BSS-2 *Ballroom A*
19:00 – 22:00	Welcome Reception *Salon Urbain (Place des Arts)*

Conference Grid: Monday, May 29	
08:30 – 09:00	Registration *Foyer*
09:00 – 09:30	Opening Ceremony *Ballroom A*
09:30 – 10:30	Keynote: Stuart Firestein *Ballroom A*
10:30 – 11:00	Coffee *Foyer*
11:00 – 12:00	Oral 1: Gas Sensor Arrays *Ballroom A*
12:00 – 13:30	Lunch *On your own*
13:30 – 14:30	Oral 2: Instrumentation *Ballroom A*
14:30 – 15:30	Poster Session #1 *Ballroom B*
15:30 – 16:00	Coffee *Foyer*
16:00 – 17:00	Standards Workshop *Ballroom A*
17:00 – 18:00	ISOCS General Assembly *Ballroom A*

Conference Grid: Tuesday, May 30	
08:30 – 09:00	Registration *Foyer*
09:00 – 09:30	Announcements *Ballroom A*
09:30 – 10:30	Keynote: Dermot Diamond *Ballroom A*
10:30 – 11:00	Coffee *Foyer*
11:00 – 12:00	Oral 3: Data Processing *Ballroom A*
12:00 – 13:30	Lunch *On your own*
13:30 – 14:30	Oral 4: Applications *Ballroom A*
14:30 – 15:30	Poster Session #2 *Ballroom B*
15:30 – 16:00	Coffee *Foyer*
16:00 – 17:00	Panel Discussion *Ballroom A*
17:00 – 18:00	Sniffest Competition *Ballroom A*
19:00 – 23:00	Gala Dinner *Portus 360*

Conference Grid: Wednesday, May 31		
08:30 – 09:00	Registration *Foyer*	
09:00 – 09:30	Sniffest Presentations *Ballroom A*	
09:30 – 10:30	Oral 5: Robotics *Ballroom A*	Oral 6: Breath Analysis *Salle du Parc*
10:30 – 11:00	Coffee *Foyer*	
11:00 – 12:00	Oral 7: Distributed Sensing *Ballroom A*	Oral 8: Electronic Tongues *Salle du Parc*
12:00 – 13:30	Lunch *On your own*	
13:30 – 14:30	Oral 9: Bio-inspired Approaches *Ballroom A*	Oral 10: Solid State Sensors *Salle du Parc*
14:30 – 15:30	Poster Session #3 *Ballroom B*	
15:30 – 16:00	Coffee *Foyer*	
16:00 – 17:00	Closing and Awards Ceremony *Ballroom A*	

Detailed Program: Sunday, May 28

08:30 - 09:00
Registration
Foyer

09:00 - 09:15
Morning Coffee
Foyer

09:15 - 10:00
Tutorial #1: Highly Sensitive and Selective VOC Sensor Systems Based on Low-Cost Sensors
(Part 1)
Ballroom A

10:00 - 10:15
Break

10:15 - 11:00
Tutorial #1: Highly Sensitive and Selective VOC Sensor Systems Based on Low-Cost Sensors
(Part 2)
Ballroom A

11:00 - 11:15
Break

11:15 - 12:00
Tutorial #1: Highly Sensitive and Selective VOC Sensor Systems Based on Low-Cost Sensors
(Part 3)
Ballroom A

12:00 - 13:30
Tutorial Lunch
Salle du Parc

13:30 - 14:15
Tutorial #2: Mid-Infrared Integrated Chemical Sensors
(Part 1)
Ballroom A

14:15 - 14:30
Break

14:30 - 15:15
Tutorial #2: Mid-Infrared Integrated Chemical Sensors
(Part 2)
Ballroom A

Detailed Program: Sunday, May 28

15:30 - 16:00
Coffee Break
Foyer

16:00 - 16:45
Tutorial #3: Source Separation for Chemical-Physical Sensing
(Part 1)
Ballroom A

16:45 - 17:00
Break

17:00 - 17:45
Tutorial #3: Source Separation for Chemical-Physical Sensing
(Part 2)
Ballroom A

19:00 - 22:00
Welcome Reception
Venue: Salon Urbain (Place des Arts)

Detailed Program: Monday, May 29

08:30 - 09:00
Registration
Foyer

09:00 - 09:30
Opening Ceremony
Ballroom A

09:30 - 10:30
Keynote #1: HOW BIOLOGY PERCEIVES CHEMISTRY: STIMULUS PROCESSING IN THE MAMMALIAN OLFACTORY SYSTEM
Speaker: Stuart Firestein
Ballroom A

10:30 - 11:00
Coffee Break
Foyer

11:00 - 12:00
Oral Session #1: Gas Sensor Arrays
Chair: Troy Nagle (NC State University, USA)
Ballroom A

11:00 **SILICON NANOWIRE ARRAYS FOR THE PRECONCENTRATION AND JOULE HEATING-BASED DESORPTION OF TRACE VAPORS**
Pehr Pehrsson (U.S. Naval Research Laboratory, USA)
Braden Giordano (U.S. Naval Research Laboratory, USA)
Daniel Ratchford (U.S. Naval Research Laboratory, USA)
Kevin J Johnson (U.S. Naval Research Laboratory, USA)

11:20 **TOWARD HIGH-VALUE GAS SENSING IN WEARABLE AND DISTRIBUTED FORMATS: DISCRIMINATION OF COMPLEX PATTERNS OF VOLATILES USING MULTI-RESPONSE RFID SENSORS**
Radislav Potyrailo (General Electric, USA)
Jon Dieringer (General Electric, USA)

11:40 **DEVELOPMENT OF A NOVEL MULTIPLEXED OPTOELECTRONIC NOSE FOR ANALYSIS OF VOLATILE ORGANIC COMPOUNDS**
Sophie Brenet (CEA Grenoble & Université Grenoble Alpes, France)
Aurelian John-Herpin (CEA Grenoble & Université Grenoble Alpes, France)
François-Xavier Gallat (CEA Grenoble & Université Grenoble Alpes, France)
Arnaud Buhot (CEA Grenoble & Université Grenoble Alpes, France)
Thierry Livache (CEA Grenoble & Université Grenoble Alpes, France)
Cyril Herrier (Aryballe Technologies, France)
Tristan Rousselle (Aryballe Technologies, France)
Yanxia Hou (CEA Grenoble & Université Grenoble Alpes, France)

12:00 - 13:30
Lunch
On your own

13:30 - 14:30
Oral Session #2: Instrumentation
Chair: Susan L Rose-Pehrsson (U.S. Naval Research Laboratory, USA)
Ballroom A

13:30 **TUNABLE FILTER AND DETECTOR TECHNOLOGY FOR MINIATURE INFRARED GAS SENSORS**
Martin Ebermann (InfraTec GmbH, Germany)
Sebastian Lehmann (InfraTec GmbH, Germany)
Norbert Neumann (InfraTec GmbH, Germany)

13:50 **DISCONTINUOUSLY OPERATED MOX SENSORS FOR LOW POWER APPLICATIONS**
Javier Burgues (Univ. Barcelona & Inst. Bioengineering of Catalonia, Spain)
Jordi Fonollosa (Univ. Barcelona & Inst. Bioengineering of Catalonia, Spain)
Santiago Marco (Univ. Barcelona & Inst. Bioengineering of Catalonia, Spain)

14:10 **A SIMPLE, PORTABLE, COMPUTER-CONTROLLED ODOUR GENERATOR**
James Covington (University of Warwick, United Kingdom)
Samuel Agbroko (University of Warwick, United Kingdom)
Akira Tiele (University of Warwick, United Kingdom)

14:30 - 15:30
Poster Session #1: Gas sensor arrays, instrumentation and applications
Chair: Eugenio Martinelli (Roma Tor Vergata University, USA)
Ballroom B

A1: CONSIDERATIONS IN THE VAPOR ANALYSIS OF TRADITIONAL VS. HOMEMADE EXPLOSIVES
Lauryn DeGreeff (U.S. Naval Research Laboratory, USA)
Kevin J Johnson (U.S. Naval Research Laboratory, USA)

A2: TRANSIENT RESPONSE OF A MICROFIBROUS WEB ARRAY FOR THE DISCRIMINATION OF NITROAROMATIC EXPLOSIVE VAPORS
Nico Bolse (Karlsruhe Institute of Technology, Germany)
Martin Schend (Karlsruhe Institute of Technology, Germany)
Anne Habermehl (Karlsruhe Institute of Technology, Germany)
Carsten Eschenbaum (Karlsruhe Institute of Technology, Germany)
Uli Lemmer (Karlsruhe Institute of Technology, Germany)

A3: SENSORY CHARACTERIZATION OF OILS EXTRACTED FROM LACTO-FERMENTED OLIVES USING AN ELECTRONIC NOSE
Norihito Kishimoto (Shodoshima Healthyland Co., Ltd.)
Kana Iwata (Shodoshima Healthyland Co., Ltd.)
Atsuhiko Utsumi (Shodoshima Healthyland Co., Ltd.)
Toshiyuki Yajima (Alpha M. O. S. Japan K. K., Japan)

A4: HAM QUALITY EVALUATION ASSISTED BY GAS CHROMATOGRAPHY ION MOBILITY SPECTROMETRY
Luis Fernández (Inst. Bioengineering of Catalonia & Univ. Barcelona, Spain)
Andrés Martín-Gómez (University of Cordoba, Spain)
Maria del Mar Contreras (University of Cordoba, Spain)
Marta Padilla (Inst. Bioengineering of Catalonia & Univ. Barcelona, Spain)
Santiago Marco (Inst. Bioengineering of Catalonia & Univ. Barcelona, Spain)
Lourdes Arce (University of Cordoba, Spain)

A5: MSW ODOR QUANTIFICATION USING ELECTRONIC NOSE AND CHEMICAL ANALYZERS: RELATIVE EXPLORATION OF PREDICTION CAPABILITIES AND ROBUST MODEL DEVELOPMENT

Sharvari Deshmukh (University of Liège & CSIR-National Environmental Engr. Research Institute, India)
Hemant Purohit (CSIR-National Environmental Engr. Research Institute, India)
Atul Vaidya (CSIR-National Environmental Engr. Research Institute, India)
Anne-Claude Romain (University of Liège, Belgium)

A6: FIRST STEP TO BUILD ON INDEX TO DETECT MICROBIAL VOLATILE ORGANIC COMPOUNDS EMITTED BY MOULDS GROWING ON BUILDING MATERIALS

Claudia Falzone (University of Liège, Belgium)
Karla Dinne (Belgian Building Institute, Belgium)
Martyna Kuske (Sami-Lux, Belgium)
Anne-Claude Romain (University of Liège, Belgium)

A7: DEVELOPMENT OF DIGITAL LOCK-IN IMAGE DETECTION SYSTEM AND ITS APPLICATION TO ODOR DISCRIMINATION USING CELL-BASED SENSOR ARRAY

Yuji Sukekawa (Tokyo Institute of Technology, Japan)
Totok Mujiono (Tokyo Institute of Technology, Japan)
Takamichi Nakamoto (Tokyo Institute of Technology, Japan)

A8: DISCRIMINATION OF COMPLEX ODORS USING A POLYMER MODIFIED GRAPHENE RESISTOR ARRAY

Vincent Schnee (U.S. Army Night Vision & Electronic Sensors Directorate, USA)
Eric Nallon (U.S. Army Night Vision & Electronic Sensors Directorate, USA)
Colin Bright (CACI International Incorporated, USA)

A9: ELECTRONIC NOSE FOR EVALUATING WATER USE IN BEER PRODUCTION

Alessandro Quarto (myHermes Srl, Italy)
Domenico Soldo (myHermes Srl, Italy)
Francesco Di Lecce (myHermes Srl, Italy)
Antonella Giove (myHermes Srl, Italy)
Vincenzo Di Lecce (Politecnico di Bari – AeFLab, Italy)
Angelo Castronovo (H.P.S. Srl, Italy)

A10: ASSESSING PRODUCTION OF MEDICINAL LIQUEUR USING AN ELECTRONIC NOSE

Fengxian Zhu (Shodoshima Healthyland Co., Ltd., Japan)
Kana Iwata (Shodoshima Healthyland Co., Ltd., Japan)
Norihito Kishimoto (Shodoshima Healthyland Co., Ltd., Japan)

A11: AROMA CLASSIFICATION OF JASMINE CONCRETE USING ELECTRONIC NOSE

Nabarun Bhattacharyya (Centre for Development of Advanced Computing, India)
Hena Ray (Centre for Development of Advanced Computing, India)
Alokesh Ghosh (Centre for Development of Advanced Computing, India)
Sabyasachi Majumdar (Centre for Development of Advanced Computing, India)
Suparna Parua Biswas (Centre for Development of Advanced Computing, India)
Rajib Bandyopadhyay (Jadavpur University, India)

A12: IMPROVEMENT OF THE ELECTRONIC NOSE RESPONSE TO DETECT PRESENCE OF TRANSMITTERS OF CHAGAS DISEASE

J. Vorobioff (CNEA, Argentina)
Norberto Boggio (CONICET, & Universidad Nacional de San Martín Argentina)
A. Lamagna (CNEA, Argentina)
O. Salomón (CONICET & Instituto Nacional de Medicina Tropical, Argentina)
Carlos Rinaldi (CONICET, & Universidad Nacional de San Martín Argentina)

A13: SPECTROCOLORIMETRY AND NANOWIRE GAS SENSOR DEVICE S3 FOR THE ANALYSIS OF PARMIGIANO REGGIANO CHEESE RIPENING

Veronica Sberveglieri (CNR-IBBR, Italy)
Manohar Prasad Bhandari (University of Brescia, Brescia, Italy)
Estefania Nunez Carmona (University of Brescia, Brescia, Italy)
Giulia Betto (University of Brescia, Brescia, Italy)
Matteo Soprani (University of Brescia, Brescia, Italy)
Rajani Malla (Tribhuvan University, Kirtipur, Nepal)
Giorgio Sberveglieri (University of Brescia, Brescia, Italy)

A14: MONITORING ODOUR EMISSIONS FROM AN OIL & GAS PLANT: ELECTRONIC NOSE PERFORMANCE TESTING IN THE FIELD

Laura Capelli (Politecnico di Milano, Italy)
Selena Sironi (Politecnico di Milano, Italy)

A15: MOLECULARLY IMPRINTED SENSOR FOR ISOBORNEOL BASED ON MULTILAYERED THIN FILMS OF IMPRINTED TIO2 NANOPARTICLES

Guilherme de Souza Braga (University of São Paulo, Brazil)
Fernando Fonseca (University of São Paulo, Brazil)

A16: RAPID EVALUATION OF MICROBIAL COUNT IN RIVER WATER BASED ON HEADSPACE CONCENTRATION OF VOLATILE ORGANIC COMPOUNDS

Johnny Tang (Swinburne Univ. of Technology Sarawak Campus, Malaysia)
Phyllis Nishi (Swinburne Univ. of Technology Sarawak Campus, Malaysia)
Hong Siang Chua (Swinburne Univ. of Technology Sarawak Campus, Malaysia)
Krishna C Persaud (The University of Manchester, United Kingdom)
Sing Muk Ng (Swinburne University of Technology Sarawak Campus, Malaysia)

A17: A NOVEL ODOR DELIVERY DEVICE FOR HOMEMADE EXPLOSIVE ANALYSIS

Lauryn DeGreeff (U.S. Naval Research Laboratory, USA)
Susan L Rose-Pehrsson (U.S. Naval Research Laboratory, USA)
Michael Malito (Nova Research Inc., USA)

A18: SENSITIVE AND SELECTIVE GAS/VOC DETECTION USING MOS SENSOR ARRAY FOR WEARABLE AND MOBILE APPLICATIONS

Noureddine Tayebi (Intel Corp, USA)
Xing Su (Intel Corp, USA)

A19: A METHOD OF OLFACTORY DISPLAY: ODOR CHARACTERIZATION AND REPRODUCTION (Open Poster)

Yunlong Sun (Guangdong University of Technology, P.R. China)
Hui Li (Guangdong University of Technology, P.R. China)
Dehan Luo (Guangdong University of Technology, P.R. China)
Hamid GholamHosseini (Auckland University of Technology, New Zealand)

A20: CHEMICAL GAS SENSOR ARRAY FOR NON-INVASIVE HOME ACTIVITY MONITORING (Open Poster)

Jordi Fonollosa (Universitat de Barcelona & Institute for Bioengineering of Catalonia, Spain)

A21: ELECTRONIC NOSE S3: A VERSATILE SENSING TOOL (Open Poster)

Veronica Sberveglieri (CNR-IBBR, Italy)
Elisabetta Comini (University of Brescia, Italy)
Matteo Falasconi (University of Brescia, Italy)
Alessandro Dionisi (University of Brescia, Italy)
Manohar Prasad Bhandari (University of Brescia, Italy)
Giorgio Sberveglieri (Sensor Lab, CNR-INO, Via Valotti 9, Brescia, Italy)

15:30 - 16:00
Coffee Break
Foyer

16:00 - 17:00
Standards Workshop
Chair: Susan Schiffman (NC State University, USA)
Ballroom A

16:00 **HISTORY OF STANDARDIZATION EFFORTS FOR E-NOSES**
Jan Mitrovics (JLM Innovation, Germany)

16:15 **STANDARD ANALYTES FOR E-NOSES AND E-TONGUES**
Susan Schiffman (NC State University, USA)
Troy Nagle (NC State University, USA)

16:25 **INSTRUMENTAL ODOUR MONITORING: ACTIONS FOR A NEW EUROPEAN STANDARD**
Anne-Claude Romain (University of Liege, Belgium)
Laura Capelli (Politecnico di Milano, Italy)
Jean-Michel Guillot (Ecole des Mines d'Alès, LGEI-Odours and VOCs, France)

16:35 **OVERVIEW OF IEEE STANDARDS**
Sri Chandra (IEEE, USA)

16:45 **DISCUSSION**
Ricardo Gutierrez-Osuna (Texas A&M University, USA)
Santiago Marco (Institute for Bioengineering of Catalonia, Barcelona)

17:00 - 18:00
ISOCS General Assembly
Ballroom A

Detailed Program: Tuesday, May 30

08:30 - 09:00
Registration
Foyer

09:00 - 09:30
Announcements
Ballroom A

09:30 - 10:30
Keynote #2: WEARABLE AND IMPLANTABLE CHEMICAL SENSORS - OPPORTUNITIES AND CHALLENGES
Speaker: Dermot Diamond
Ballroom A

10:30 - 11:00
Coffee Break
Foyer

11:00 - 12:00
Oral Session #3: Data Processing
Chair: Santiago Marco (Institute for Bioengineering of Catalonia, Spain)
Ballroom A

11:00 **A NEUROMORPHIC TRANSFER LEARNING ALGORITHM FOR ORTHOGONALIZING HIGHLY OVERLAPPING SENSOR ARRAY RESPONSES**
Ayon Borthakur (Cornell University, USA)
Thomas Cleland (Cornell University, USA)

11:20 **A NOVEL BLIND SOURCE SEPARATION METHOD BASED ON MONOTONIC FUNCTIONS AND ITS APPLICATION TO ION-SELECTIVE ELECTRODE ARRAYS**
Leonardo Tomazeli Duarte (University of Campinas (UNICAMP), Brazil)
Ricardo Suyama (Federal University of ABC (UFABC), Brazil)
Romis Ribeiro Attux (University of Campinas (UNICAMP), Brazil)
João Romano (University of Campinas (UNICAMP), Brazil)
Christian Jutten (GIPSA-Lab, Université Grenoble Alpes (UGA), France)

11:40 **OPTICAL COMPUTATION OF CHEMOMETRICS PROJECTIONS USING A DIGITAL MICROMIRROR DEVICE**
Purvesh Karkamkar (Texas A&M University, USA)
Ricardo Gutierrez-Osuna (Texas A&M University, USA)

12:00 - 13:30
Lunch
On your own

13:30 - 14:30
Oral Session #4: Applications
Chair: Andrew Cowell (Alpha MOS, USA)
Ballroom A

13:30 **THE RESPIRATORY GAS ANALYSIS AS A PART OF A SPIROERGOMETRIC INVESTIGATION (INVITED)**
Andreas Günther (CORTEX Biophysik GmbH, Germany)

13:50 **HYDRAULIC OIL FINGERPRINT CONTAMINATION DETECTION FOR AIRCRAFT CFRP MAINTENANCE BY ELECTRONIC NOSE**
Maria Salvato (ENEA, Italy)
Saverio De Vito (ENEA, Italy)
Maria Miglietta (ENEA, Italy)
Ettore Massera (ENEA, Italy)
Elena Esposito (ENEA, Italy)
Fabrizio Formisano (ENEA, Italy)
Girolamo Di Francia (ENEA, Italy)

14:10 **UNIBIOSENS: A FIELD PORTABLE PESTICIDE SENSOR FOR TEA**
Nabarun Bhattacharyya (Centre for Development of Advanced Computing, India)
Subhankar Mukherjee (Centre for Development of Advanced Computing, India)
Souvik Pal (Centre for Development of Advanced Computing, India)
Abhra Pal (Centre for Development of Advanced Computing, India)
Devdulal Ghosh (Centre for Development of Advanced Computing, India)
Subrata Sarkar (Centre for Development of Advanced Computing, India)
Sunil Bhand (Biosensor Lab. Department of Chemistry, BITS, India)
Anoop Barooah (Tocklai Tea Research Institute, India)
Raktim Pal (Tocklai Tea Research Institute, India)
Nishant Maloo (Sir Dorabji Tata Trusts, WTC-1, India)
Jitendra Nayak (Sir Dorabji Tata Trust & Allied Trusts, WTC-1 India)

14:30 - 15:30
Poster Session #2: Robotics, data processing, and applications
Chair: Jordi Fonollosa (Universitat de Barcelona, Spain)
Ballroom B

B1: IMPROVING GAS DISPERSAL SIMULATION FOR MOBILE ROBOT OLFACTION: USING ROBOT-CREATED OCCUPANCY MAPS AND REMOTE GAS SENSORS IN THE SIMULATION LOOP
Han Fan (Örebro University, Sweden)
Muhammad Asif Arain (Örebro University)
Victor Hernandez Bennetts (Örebro University)
Erik Schaffernicht (Örebro University)
Achim Lilienthal (Örebro University)

B2: IN SILICO MODELLING TO PREDICT THE ODOR PROFILE OF FOOD FROM ITS MOLECULAR COMPOSITION USING EXPERTS' KNOWLEDGE, FUZZY LOGIC AND OPTIMIZATION: APPLICATION ON WINES

Alice Roche (Centre des Sciences du Goût et de l'Alimentation, INRA, CNRS, UBFC, France)
Nathalie Perrot (GMPA, AgroParisTech, INRA, Université Paris Saclay, France)
Thomas Chabin (GMPA, AgroParisTech, INRA, Université Paris Saclay, France)
Angélique Villière (ONIRIS, Groupe FLAVEUR, UMR GEPEA, CNRS, France)
Ronan Symoneaux (Unité de Recherche GRAPPE, Université Bretagne Loire, ESA, INRA, France)
Thierry Thomas-Danguin (Centre des Sciences du Goût et de l'Alimentation, INRA, CNRS, UBFC, France)

B3: MIXTURE QUANTIFICATION IN THE PRESENCE OF UNKNOWN INTERFERENCES

Zelun Wang (Texas A&M University, USA)
Tiening Jin (Texas A&M University, USA)
Paotai Lin (Texas A&M University, USA)
Ricardo Gutierrez-Osuna (Texas A&M University, USA)

B4: REAL-TIME CHEMICAL GAS SENSING OF PATHOGENIC MICROORGANISMS POLLUTION IN WASTEWATER

Matteo Soprani (University of Brescia & CNR-INO Sensor Lab, Italy)
Andrea Ponzoni (CNR-INO Sensor Lab,, Italy)
Veronica Sberveglieri (CNR-IBBR & NASYS S.r.l., Italy)
Estefania Nunez Carmona (University of Brescia & CNR-INO Sensor Lab, Italy)
Manohar Prasad Bhandari (University of Brescia & CNR-INO Sensor Lab, Italy)
Giulia Betto (University of Brescia & CNR-INO Sensor Lab, Italy)
Giorgio Sberveglieri (University of Brescia & CNR-INO Sensor Lab & NASYS S.r.l., Italy)

B5: AN EXPLORATORY STUDY OF QUADROTOR'S PROPELLERS IMPACT USING 3D GAS DISPERSION SIMULATOR

Kok Seng Eu (Sunway University, Malaysia)
Kian Meng Yap (Sunway University, Malaysia)

B6: SNIFFING SEVOFLURANE AND PROPOFOL IN EXHALATION FROM PATIENTS DURING BALANCED ANESTHESIA

Hao Dong (Zhejiang University, P.R. China)
Fengjiang Zhang (Zhejiang University School of Medicine, P.R. China)
Yingying Wang (Zhejiang University, P.R. China)
Fuyuan Wang (Zhejiang University, P.R. China)
Jing Chen (Zhejiang University, P.R. China)
Kanhar Ghulam Muhammad (Zhejiang University, P.R. China)
Xing Chen (Zhejiang University, P.R. China)

B7: VIRTUAL ELECTRONIC NOSE WITH DIAGNOSIS MODEL FOR THE DETECTION OF HYDROGEN AND METHANE IN BREATH FROM GASTROINTESTINAL BACTERIA

Fan Gao (Zhejiang University, P.R. China)
Xi Zhang (Zhejiang University, P.R. China)
Xusheng Zhang (Zhejiang University, P.R. China)
Min Wang (Zhejiang University, P.R. China)
Ping Wang (Zhejiang University, P.R. China)

B8: ABILITY OF DISCRIMINATION OF BREATH FROM SMOKER AND NON-SMOKER VOLUNTEERS BY USING AN ELECTRONIC NOSE BASED ON WO3 NANOWIRES AND SnO2 SENSORS

Tarik Saidi (Moulay Ismaïl University, Faculty of Sciences, Morocco)
Tesfalem Geremariam Welearegay (University Rovira y Virgili, Spain)
Omar Zaim (Moulay Ismaïl University, Faculty of Sciences, Morocco)
Oriol Gonzalez (University Rovira y Virgili, Spain)
Radu Ionescu (Rovira i Virgily University Tarragona, Spain)
Nezha El Bari (Moulay Ismaïl University, Faculty of Sciences, Morocco)
Benachir Bouchikhi (Moulay Ismaïl University, Faculty of Sciences, Morocco)

B9: CHEMICAL SAMPLING DEVICE FOR UNDERWATER ROBOT: JET DISCHARGE MIMICKING CRAYFISH

Hanako Ishida (Tokyo University of Agriculture and Technology, Japan)
Tatsuki Mitsuishi (Tokyo University of Agriculture and Technology, Japan)
Ryuichi Takemura (Tokyo University of Agriculture and Technology, Japan)
Haruka Matsukura (Tokyo University of Agriculture and Technology, Japan)
Hiroshi Ishida (Tokyo University of Agriculture and Technology, Japan)

B10: ONLINE ESTIMATION OF 2D WIND MAPS FOR OLFACTORY ROBOTS

Javier Monroy (Universidad de Málaga, Spain)
Mariano Jaimez (Universidad de Málaga, Spain & Technical University of Munich, Germany)
Javier Gonzalez-Jimenez (Universidad de Málaga, Spain)

B11: BAYESIAN GAS SOURCE LOCALIZATION AND EXPLORATION WITH A MULTI-ROBOT SYSTEM USING PARTIAL DIFFERENTIAL EQUATION BASED MODELING

Thomas Wiedemann (German Aerospace Center, Germany)
Dmitriy Shutin (German Aerospace Center, Germany)
Victor Hernandez Bennetts (Örebro University, Sweden)
Erik Schaffernicht (Örebro University, Sweden)
Achim Lilienthal (Örebro University, Sweden)

B12: A METHOD FOR SINGLE ODOR SOURCE DECLARATION IN THREE-DIMENSIONAL AIRFLOW ENVIRONMENTS

Yuan Tong (Tianjin University, P.R. China)
Qing-Hao Meng (Tianjin University, P.R. China)
Bing Luo (Tianjin University, P.R. China)
Ming Zeng (Tianjin University, P.R. China)
Ying Wang (Tianjin University, P.R. China)
Pei-Feng Qi (Tianjin University, P.R. China)

B13: DUAL-TEMPERATURE MODE FOR QUANTITATIVE ANALYSIS OF GAS MIXTURES WITH MOX SENSOR

Stéphanie Madrolle (Université Grenoble Alpes, CEA, LETI, MINATEC Campus, France)
Pierre Grangeat (Université Grenoble Alpes, CEA, LETI, MINATEC Campus, France)
Christian Jutten (Université Grenoble Alpes, GIPSA-Lab, France)

B14: A CNN-BASED SIMPLIFIED DATA PROCESSING METHOD FOR ELECTRONIC NOSE

Pei-Feng Qi (Tianjin University, P.R. China)
Qing-Hao Meng (Tianjin University, P.R. China)
Ming Zeng (Tianjin University, P.R. China)

B15: THE SPARSE STRUCTURE OF NATURAL CHEMICAL ENVIRONMENTS

Marlene Berke (Cornell University, USA)
David Field (Cornell University, USA)
Thomas Cleland (Cornell University, USA)

B16: FIRE DETECTION USING A GAS SENSOR ARRAY WITH SENSOR FUSION ALGORITHMS

Ana Solorzano (Univ. Barcelona & Inst. Bioengineering of Catalonia, Spain)
Jordi Fonollosa (Univ. Barcelona & Inst. Bioengineering of Catalonia, Spain)
Luis Fernández (Univ. Barcelona & Inst. Bioengineering of Catalonia, Spain)
Jens Eichmann (Minimax GmbH & Co., Germany)
Santiago Marco (Univ. Barcelona & Inst. Bioengineering of Catalonia, Spain)

B17: OPTIMIZING AN ARRAY OF SELF ADAPTED TEMPERATURE MODULATED METAL OXIDE SENSORS FOR BIOMEDICAL APPLICATION

Alexandro Catini (University of Rome Tor Vergata, Italy)
Rosamaria Capuano (University of Rome Tor Vergata, Italy)
Davide Di Giuseppe (University of Rome Tor Vergata, Italy)
Valerio Iebba (University of Rome Tor Vergata, Italy)
Eugenio Martinelli (University of Rome Tor Vergata, Italy)
Corrado Di Natale (University of Rome Tor Vergata, Italy)

B18: UNSUPERVISED ANALYSIS OF A CHROMATOGRAPHIC SIGNAL BASED ON AN INFINITE GAUSSIAN MIXTURE MODEL

Olivier Harant (Univ. Grenoble Alpes & CEA, LETI, MINATEC Campus, France)
François Bertholon (Univ. Grenoble Alpes & CEA, LETI, MINATEC Campus, France)
Louise Foan (Univ. Grenoble Alpes & CEA, LETI, MINATEC Campus, France)
Séverine Vignoud (Univ. Grenoble Alpes & CEA, LETI, MINATEC Campus, France)
Pierre Grangeat (Univ. Grenoble Alpes & CEA, LETI, MINATEC Campus, France)

B19: NO NANOSENSOR AND SINGLE EXHALE BREATHALYZER FOR ASTHMA MONITORING

Pelagia Gouma (University of Texas at Arlington, USA)
Milutin Stanacevic (Stony Brook University, USA)
Yasha Karimi (Stony Brook University, USA)
Jiahao Huang (Stony Brook University, USA)
Gagan Jodhani (University of Texas at Arlington Research Institute, USA)

B20: A METHOD OF OLFACTORY DISPLAY: ODOR CHARACTERIZATION AND REPRODUCTION

Hui Li (Guangdong University of Technology, P.R. China)
Yunlong Sun (Guangdong University of Technology, P.R. China)
Dehan Luo (Guangdong University of Technology, P.R. China)

B21: MIMICKING SNIFFING FOR IMPROVING MACHINE OLFACTION

Alexander Lee (Georgia Institute of Technology, USA)
Thomas Spencer (Georgia Institute of Technology, USA)
Jasmine Pillarisetti (Georgia Institute of Technology, USA)
Matthew Ersted (Georgia Institute of Technology, USA)
David Hu (Georgia Institute of Technology, USA)

B22: IMPROVING GAS TOMOGRAPHY WITH MOBILE ROBOTS: AN EVALUATION OF SENSING GEOMETRIES IN COMPLEX ENVIRONMENTS

Muhammad Asif Arain (Örebro University, Sweden)
Han Fan (Örebro University, Sweden)
Victor Hernandez Bennetts (Örebro University, Sweden)
Erik Schaffernicht (Örebro University, Sweden)
Achim Lilienthal (Örebro University, Sweden)

B23: ANALYSIS OF TIN OXIDE THIN FILMS FABRICATED VIA SOL-GEL AND DELAYED IGNITION OF COMBUSTION PROCESSES

Andrea Fasoli (IBM Almaden Research Center)
Krystelle Lionti (IBM Almaden Research Center)
Linda Sundberg (IBM Almaden Research Center)
Robert Miller (IBM Almaden Research Center)
Francesco Ceccarelli (Politecnico di Milano, Italy)
Luisa Bozano (IBM Almaden Research Center)

B24: IS YOUR E-NOSE RELEVANT? CAPABILITY VIA QUALITATIVE KNOWLEDGE WITH CHEMICAL NOISE AND (UN)KNOWNS (Open Poster)

Kevin J Johnson (U.S. Naval Research Laboratory, USA)
Adam C Knapp (National Research Council, USA)

B25: DIAGNOSTIC ACTIVITY IN INFLAMMATORY BOWEL. PRELIMINARY STUDY (Open Poster)

Enric Climent (Universitat Politecnica de Valencia, Spain)
Jose Pelegri-Sebastia (Universitat Politecnica de Valencia, Spain)
Juan B. Talens (Universitat Politecnica de Valencia, Spain)
Luis Tortosa (Hospital Universitari i Politècnic La Fe. Gundación IIS La Fe y CiberEHD, Spain)
Belen Beltran (Hospital Universitari i Politècnic La Fe. Gundación IIS La Fe y CiberEHD, Spain)
T. Sogorb (Universitat Politecnica de Valencia, Spain)
Pilar Nos (Hospital Universitari i Politècnic La Fe. Gundación IIS La Fe y CiberEHD, Spain)

15:30 - 16:00
Coffee Break
Foyer

16:00 - 17:00
Panel Discussion
Ballroom A

17:00 - 18:00
Sniffest
(Student competition for machine olfaction)
Ballroom A

19:00 - 23:00
Gala Dinner
Venue: Portus 360

Detailed Program: Wednesday, May 31

08:30 - 09:00
Registration
Foyer

09:00 - 09:30
Sniffest Presentations
Ballroom A

09:30 - 10:30
Oral Session #5: Robotics
Chair: Achim Lilienthal (Örebro University, Sweden)
Ballroom A

09:30 **FUGITIVE GAS EMISSION RATE ESTIMATION USING MULTIPLE HETEROGENEOUS MOBILE SENSORS**
Jake R Gemerek (Cornell University, USA)
Silvia Ferrari (Cornell University, USA)
John Albertson (Cornell University, USA)

09:50 **EXPLORATION AND LOCALIZATION OF A GAS SOURCE WITH MOX GAS SENSORS ON A MOBILE ROBOT - A GAUSSIAN REGRESSION BOUT AMPLITUDE APPROACH**
Mikel Vuka (Politecnico di Milano, Italy)
Erik Schaffernicht (Örebro University, Sweden)
Michael Schmuker (University of Hertfordshire, United Kingdom)
Victor Hernandez Bennetts (Örebro University, Sweden)
Francesco Amigoni (Politecnico di Milano, Italy)
Achim Lilienthal (Örebro University, Sweden)

10:10 **A ROBOTIC EXPERIMENT TOWARD UNDERSTANDING HUMAN GAS-SOURCE LOCALIZATION STRATEGIES**
Andres Gongora (Universidad de Málaga, Spain)
Javier Monroy (Universidad de Málaga, Spain)
Javier Gonzalez-Jimenez (Universidad de Málaga, Spain)

09:30 - 10:30
Oral Session #6: Breath Analysis
Chair: Pelagia Gouma (University of Texas at Arlington, USA)
Salle du Parc

09:30 **SENSING STRATEGIES FOR DEVELOPMENT OF ELECTROCHEMICAL SENSORS FOR BREATH-BASED MEDICAL APPLICATIONS (INVITED)**
Prabir Dutta (The Ohio State University, USA)

09:50 **TOWARDS POINT OF CARE HUMAN ENERGY EXPENDITURE MEASUREMENT ON A HAND-HELD BREATH ANALYSER**
Julian Gardner (University of Warwick, United Kingdom)
Timothy Vincent (University of Warwick, United Kingdom)

10:10 **ULTRA-PORTABLE, SELECTIVE AND DIFFUSION-BASED BREATHALYZER**
Brady Gallant (University of Prince Edward Island, Canada)
Alexander Gamble (University of Prince Edward Island, Canada)
Clayton Harding (University of Prince Edward Island, Canada)
Javon Mayhew (University of Prince Edward Island, Canada)
Anthony Parker (University of Prince Edward Island, Canada)
Andrew Simmons (University of Prince Edward Island, Canada)
Ali Ahmadi (University of Prince Edward Island, Canada)

10:30 - 11:00
Coffee Break
Foyer

11:00 - 12:00
Oral Session #7: Distributed Sensing
Chair: Saverio De Vito (ENEA, Italy)
Ballroom A

11:00 **CITIZENS NETWORK AS REFERENCE FOR ODOR IMPACT SENSORS - A CASE STUDY**
Wolfhard Reimringer (3S GmbH, Saarbrücken, Germany)
Thorsten Conrad (3S GmbH, Saarbrücken, Germany)
Andreas Schütze (Saarland University, Saarbrücken, Germany)

11:20 **IS ON FIELD CALIBRATION STRATEGY ROBUST TO RELOCATION?**
Elena Esposito (ENEA, Italy)
Saverio De Vito (ENEA, Italy)
Maria Salvato (ENEA, Italy)
Grazia Fattoruso (ENEA, Italy)
Nuria Castell (NILU, Norway)
Kostas Karatzas (Aristotle University, Greece)
Girolamo Di Francia (ENEA, Italy)

11:40 **UNSUPERVISED K-MEANS LEARNING APPLIED TO THE INVESTIGATION OF INDOOR AIR EVENTS WITH ELECTRONIC GAS SENSORS NETWORKS**
Alexandre Caron (University of Lille, France)
Nathalie Redon (University of Lille, France)
Benjamin Hanoune (University of Lille, France)
Patrice Coddeville (University of Lille, France)

11:00 - 12:00
Oral Session #8: Electronic Tongues
Chair: Alisa Rudnitskaya (University of Aveiro, Portugal)
Salle du Parc

11:00 **MONITORING THE PHENOLIC MATURITY OF RED GRAPES AN ARRAY OF SENSORS CHEMICALLY MODIFIED WITH METAL-OXIDE NANOPARTICLES**
Celia Garcia-Hernandez (Universidad de Valladolid, Spain)
Cristina Medina-Plaza (Universidad de Valladolid, Spain)
Rocio Gonzalez-Anton (Universidad de Valladolid, Spain)
Cristina Garcia-Cabezon (Universidad de Valladolid, Spain)
Jose Antonio Fernandez-Escudero (ITACYL, Spain)
Enrique Barajas-Tola (ITACYL, Spain)
German Medrano-Vazquez (Bodega Cooperativa Cigales, Spain)
Fernando Martin-Pedrosa (Universidad de Valladolid, Spain)
Jose Antonio de Saja-saez (Universidad de Valladolid, Spain)
Maria Luz Rodriguez-Mendez (Universidad de Valladolid, Spain)

11:20 **BORON DOPED DIAMOND/METAL NANOCATALYST HYBRID ELECTRODE ARRAYS FOR ANALYTICAL APPLICATIONS**
Emmanuel Scorsone (CEA, LIST, Diamond Sensors Laboratory, France)
Dounia Belghiti (CEA, LIST, Diamond Sensors Laboratory, France)
Massiel Habchi (CEA, LIST, Diamond Sensors Laboratory, France)
Philippe Bergonzo (CEA, LIST, Diamond Sensors Laboratory, France)

11:40 **DETERMINATION OF PARALYTIC SHELLFISH TOXINS USING POTENTIOMETRIC ELECTRONIC TONGUE**
Marco Cruz (University of Aveiro, Portugal)
Nádia Ferreira (University of Aveiro, Portugal)
Maria Tereza Gomes (University of Aveiro, Portugal)
Maria João Botelho (IPMA and CIIMAR, Portugal)
Sara Costa (IPMA, Portugal)
Carlos Vale (CIIMAR, Portugal)
Alisa Rudnitskaya (University of Aveiro, Portugal)

12:00 - 13:30
Lunch
On your own

13:30 - 14:30
Oral Session #9: Bio-inspired Approaches
Chair: Krishna C Persaud (The University of Manchester, United Kingdom)
Ballroom A

13:30 **BIOMIMETIC DIAMOND MEMS SENSORS BASED ON ODORANT-BINDING PROTEINS: SENSORS VALIDATION THROUGH AN AUTONOMOUS ELECTRONIC SYSTEM**
Maira Possas Abreu (ESIEE, France)
Lionel Rousseau (ESIEE, France)
Farbod Ghassemi (ESIEE, France)
Gaelle Lissorgues (ESIEE, France)
Massiel Habchi (CEA, LIST, Diamond Sensors Laboratory, France)
Emmanuel Scorsone (CEA, LIST, Diamond Sensors Laboratory, France)
Khasim Cali (The University of Manchester, United Kingdom)
Krishna C Persaud (The University of Manchester, United Kingdom)

13:50 **CONTROLLABLE OLFACTORY CELLULAR NETWORK FORMATION ON POLYANILINE CONDUCTING POLYMER MODIFIED MICROELECTRODE ARRAY**
Liping Du (Xi'an Jiaotong University, P.R. China)
Yu Li (Xi'an Jiaotong University, P.R. China)
Zhen Qin (Zhejiang University, P.R. China)
Chunsheng Wu (Xi'an Jiaotong University, P.R. China)
Ping Wang (Zhejiang University, P.R. China)

14:10 **SYNTHETIC MOTH ANTENNAE FABRICATED AS PRECONCENTRATOR FOR ODOR COLLECTION**
Thomas Spencer (Georgia Institute of Technology, USA)
Nickolay Lavrik (Oak Ridge National Laboratory, USA)
David Hu (Georgia Institute of Technology, USA)

13:30 - 14:30
Oral Session #10: Solid State Sensors
Chair: Julian Gardner (University of Warwick, United Kingdom)
Salle du Parc

13:30 **COMBINED PULSED UV AND TEMPERATURE ACTIVATION OF METAL OXIDE NANOMATERIALS IN BREATH ANALYSIS APPLICATIONS**
Oriol Gonzalez (Universitat Rovira y Virgili, Spain)
Carsten Jaeschke (JLM Innovation, Spain)
Tesfalemgeremariam Welearegay (Universitat Rovira y Virgili, Spain)
Sergio Roso (Universitat Rovira y Virgili & ICIQ, Spain)
Xavier Vilanova (Universitat Rovira y Virgili, Spain)
Eduard Llobet (Universitat Rovira y Virgili, Spain)

13:50 **ESTIMATION OF THE PARAMETERS OF SAW SENSOR'S FREQUENCY SHIFT: APPLICATION TO ODOUR RECOGNITION AND CONCENTRATION EVALUATION**
Olivier Hotel (CEA LIST, France)
Jean-Philippe Poli (CEA LIST, France)
Christine Mer-Calfati (CEA LIST, France)
Emmanuel Scorsone (CEA LIST, France)
Samuel Saada (CEA LIST, France)

14:10 **ULTRA-LOW-POWER CHEMIRESISTIVE MICROSENSOR ARRAY IN A BACK-END CMOS PROCESS TOWARDS SELECTIVE VOLATILE COMPOUNDS DETECTION AND IOT APPLICATIONS**
Nicolas Marchand (Université Catholique de Louvain, Belgium)
Thomas Walewyns (Université Catholique de Louvain, Belgium)
Driss Lahem (Materia Nova, Belgium)
Marc Debliquy (Université de Mons, Belgium)
Laurent A. Francis (Université Catholique de Louvain, Belgium)

14:30 - 15:30
Poster Session #3: Sensor technology, biosensors and electronic tongues
Chair: Saverio De Vito (ENEA, Italy)
Ballroom B

C1: HIGH-SENSITIVE DETECTION OF OKADAIC ACID USING HUMAN BRONCHIAL EPITHELIAL CELL-BASED IMPEDANCE BIOSENSOR
Tianxing Wang (Zhejiang University, P.R. China)
Zhen Qin (Zhejiang University, P.R. China)
Yuxiang Pan (Zhejiang University, P.R. China)
Ning Hu (Zhejiang University, P.R. China)
Ping Wang (Zhejiang University, P.R. China)

C2: IDENTIFICATION OF STEM CELLS DIFFERENTIATION STEPS
Rosamaria Capuano (University of Rome Tor Vergata, Italy)
Paola Spitalieri (University of Rome Tor Vergata, Italy)
Rosa Valentina Talarico (University of Rome Tor Vergata, Italy)
Ana Carolina Domakoski (University of Rome Tor Vergata, Italy)
Alexandro Catini (University of Roma Tor Vergata, Italy)
Roberto Paolesse (University of Rome Tor Vergata, Italy)
Eugenio Martinelli (University of Rome Tor Vergata, Italy)
Giuseppe Novelli (University of Rome Tor Vergata, Italy)
Federica Sangiuolo (University of Rome Tor Vergata, Italy)
Corrado diNatale (University of Rome Tor Vergata, Italy)

C3: ELECTRONIC TONGUE BASED ON PORPHYRINS FOR APULIAN RED WINES DEFECTS DETECTION

Larisa Lvova (University Tor Vergata, Italy)
Corrado Di Natale (University Tor Vergata, Italy)
Roberto Paolesse (University Tor Vergata, Italy)

C4: ODORANT BINDING PROTEINS BASED SNIFFING DEVICE FOR DETECTION OF TOBACCO

Khasim Cali (The University of Manchester, United Kingdom)
Emmanuel Scorsone (CEA LIST, Diamond Sensors Laboratory, France)
Krishna C Persaud (The University of Manchester, United Kingdom)

C5: AN ELECTROCHEMICAL BIOSENSOR BASED ON MOLECULARY IMPRINTED POLYMER FOR THE QUANTIFICATION OF CREATININE IN HUMAN URINE SAMPLES

Alassane Diouf (Moulay Ismaïl University, Morocco)
Soukaina Motia (Moulay Ismaïl University, Morocco)
Nadia El alami El Hassan (Moulay Ismaïl University, Morocco)
Nezha El Bari (Moulay Ismaïl University, Morocco)
Benachir Bouchikhi (Moulay Ismaïl University, Morocco)

C6: DUAL EXTRACELLULAR RECORDING USING A LIGHT-ADDRESSABLE POTENTIOMETRIC SENSOR FOR TASTE SIGNAL TRANSDUCTION

Chunsheng Wu (Xi'an Jiaotong University, P.R. China)
Liping Du (Xi'an Jiaotong University, P.R. China)
Zhen Qin (Zhejiang University, P.R. China)
Keqiang Gao (Zhejiang University, P.R. China)
Ping Wang (Zhejiang University, P.R. China)

C7: SIA HYBRID ELECTRONIC TONGUE FOR CELL CULTURE MONITORING

Marcin Zabadaj (Warsaw University of Technology, Poland)
Maja Haczyk (Warsaw University of Technology, Poland)
Zbigniew Brzózka (Warsaw University of Technology, Poland)
Patrycja Ciosek-Skibinska (Warsaw University of Technology, Poland)

C8: ELECTROCHEMICAL SENSOR FOR DISCRIMINATION OF CARBAMATES AND ORGANOPHOSPHORUS PESTICIDES

Thiago Selva (Instituto Federal de Pernambuco & Universidade de São Paulo, Brazil)
William Araujo (Instituto Federal de Pernambuco, Brazil)
Thiago Paixao (Instituto Federal de Pernambuco, Brazil)

C9: CHARACTERIZATION OF IN VIVO BIOELECTRONIC NOSE WITH COMBINED MANGANESE-ENHANCED MRI AND BRAIN-COMPUTER INTERFACE

Bin Zhang (Zhejiang University, P.R. China)
Zhen Qin (Zhejiang University, P.R. China)
Keqiang Gao (Zhejiang University, P.R. China)
Luijing Zhuang (Zhejiang University, P.R. China)
Yulan Tian (Zhejiang University, P.R. China)
Hongjian He (Zhejiang University, P.R. China)
Jianhui Zhong (Zhejiang University, P.R. China)
Ping Wang (Zhejiang University, P.R. China)

C10: IN VIVO BIOELECTRONIC NOSE USING TRANSGENIC MICE FOR SPECIFIC ODOR DETECTION

Keqiang Gao (Zhejiang University, P.R. China)
Songmin Li (Zhejiang University, P.R. China)
Luijing Zhuang (Zhejiang University, P.R. China)
Zhen Qin (Zhejiang University, P.R. China)
Bin Zhang (Zhejiang University, P.R. China)
Liquan Huang (Zhejiang University, P.R. China & Monell Chemical Senses Center, USA)
Ping Wang (Zhejiang University, P.R. China)

C11: DEVELOPMENT OF AN ELECTRONIC TONGUE TO DISTINGUISH CUTTING AGENTS IN COCAINE SAMPLES TO UNDERSTAND DRUG TRAFFICKING

Thalita Silva (University of Sao Paulo & Institute of Chemistry, Brazil)
Thiago Paixao (University of Sao Paulo & Institute of Chemistry, Brazil)

C12: OPTIMIZATION OF SMOX-MATERIALS FOR GAS SENSING APPLICATIONS BY NUMERICAL SIMULATIONS

Peter Bonanati (University of Tuebingen, Germany)
Nicolae Bârsan (University of Tuebingen, Germany)
Udo Weimar (University of Tuebingen, Germany)

C13: NOVEL VOLTAMMETRIC ELECTRONIC TONGUE APPROACH USING POLYELECTROLYTE MODIFIERS TO DETECT CHARGED SPECIES

Anna Herrera-Chacon (Universitat Autònoma de Barcelona, Spain)
Andreu Gonzalez-Calabuig (Universitat Autònoma de Barcelona, Spain)
Ferdia Bates (Universitat Autònoma de Barcelona, Spain)
Inmaculada Campos (Universitat Autònoma de Barcelona, Spain)
Manel del Valle (Universitat Autònoma de Barcelona, Spain)

C14: A PORTABLE COLORIMETRIC ARRAY READER FOR TOXIC GAS DETECTION

Dami Kim (Gachon University, Korea)
Sejin Kim (Gachon University, Korea)
Jeongho An (Sungkyunkwan University, Korea)
Sanghyo Kim (Gachon University, Korea)

C15: FULLY SOLUTION PROCESSED LOW VOLTAGE OFET PLATFORM FOR VAPOUR SENSING APPLICATIONS

Daniel Tate (University of Manchester, United Kingdom)
Ehsan Danesh (University of Manchester, United Kingdom)
Vanessa Tischler (University of Manchester, United Kingdom)
Sheida Faraji (University of Manchester, United Kingdom)
Leszek Majewski (University of Manchester, United Kingdom)
Michael Turner (University of Manchester, United Kingdom)
Krishna C Persaud (The University of Manchester, United Kingdom)

C16: AN EQUIVALENT ELECTRICAL NETWORK OF AN ELECTRONIC TONGUE: A CASE STUDY WITH TEA SAMPLES

Sanjeev Kumar (National Institute of Technology Patna, India)
Arunangshu Ghosh (National Institute of Technology Patna, India)
Bipan Tudu (Jadavpur University, India)
Rajib Bandyopadhyay (Jadavpur Univ., India & ITMO Univ., Russia)

C17: SELECTIVE CHEMICAL SENSOR BASED ON MOLECULARLY IMPRINTED POLYMER TO DETECT ISOBORNEOL IN AQUEOUS SAMPLES

Guilherme de Souza Braga (Univ. São Paulo, Brazil & Univ. Vienna, Austria)
Peter Lieberzeit (University of Vienna, Austria)
Fernando Fonseca (University of São Paulo, Brazil)

C18: DEVELOPMENT OF SWEETNESS SENSOR FOR HIGH-POTENCY SWEETENERS USING LIPID POLYMER MEMBRANE (Late News)

Yusuke Tahara (Kyushu University, Japan)
Tomohiro Hattori (Kyushu University, Japan)
Xiao Wu (Kyushu University, Japan)
Rui Yatabe (Kyushu University, Japan)
Hidekazu Ikezaki (Intelligent Sensor Technology, Inc., Japan)
Masaaki Habara (Intelligent Sensor Technology, Inc., Japan)
Kiyoshi Toko (Kyushu University, Japan)

C19: FLOATING ELECTRODE-BASED BIOELECTRONIC TONGUE MIMICKING INSECT TASTE SYSTEM (Open Poster)

Je Won Jung (Incheon National University, Korea)
Seunghun Hong (Seoul National University, Korea)
Hyung-Wook Kwon (Incheon National University, Korea)

C20: LAF3 NANOPARTICLES-DECORATED SINGLE-WALLED CARBON NANOTUBE SENSORS (Open Poster)

Young Tae Byun (Korea Institute of Science and Technology, Korea)

C21: BIOLOGICALLY INSPIRED CHEMICAL TRANSDUCTION WITH MOLECULAR IMPRINTED POLYMERS (Open Poster)

Raquel Obregón (Institute of Bioengineering of Catalonia, Spain)
Agustín Gutierrez-Galvez (University of Barcelona, Spain)

15:30 - 16:00
Coffee Break
Foyer

16:00 - 17:00
Closing and Awards Ceremony
Ballroom A