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Welcome Message from the Chair

Dear ISOEN 2019 Participants: Welcome to Fukuoka, Japan!

On behalf of the Organizing Committee, it is our great pleasure to welcome you to beautiful Fukuoka in the Japanese new era “REIWA” when the season's good. This place ISOEN will be the first held in Japan. The “REIWA” is adopted from a traditional Japanese poem in Manyōshū, Japan's oldest anthology. This poem was written about 1200 years ago in the place, Dazaifu, remarkably in Fukuoka Prefecture, about 45-min train trip from this venue. Fukuoka City has the No. 1 population growth rate, the No. 1 ratio of young residents and also the top-level number of Int'l meetings held in Japan. Everything is provided in the 2.5 km area, and hence you can experience wonderful sightseeing and local foods, which make your memories beyond expectation. The Sacred Island Okinoshima and Associated site in the Munakata Region, which have been registered on the UNESCO World Heritage in 2016, are located at about 35 km distance from this venue.

ISOEN 2019 will be held at the ACROS Fukuoka, located in the middle of Fukuoka City, which plays the role of a center of international, cultural and information exchange. The name ACROS is an acronym for Asian CrossRoad Over the Sea – Fukuoka (ACROS Fukuoka). As a pioneer of ecological architecture, it has become a new landmark of Fukuoka, enchanting many with its green step garden exterior – standing like a lush green mountain. The interior features a huge exhilarating atrium, as well as a number of attractive facilities including the Fukuoka Symphony Hall, International Conference Hall, the Cultural Information Center, and the Takumi Gallery. The large-scale facilities at ACROS will make it worthy of becoming a new center of exchange.

Following ISOEN 2017 at Montreal, ISOEN 2019 is also co-sponsored by ISOCs and IEEE, and all accepted papers will be published in the conference proceedings on IEEE Xplore, which enables many researchers to access them anytime and anywhere.

We received 133 submissions of 3-page full paper via EDAS, and made peer reviews to ensure the highest quality. The review process was double-blind and identical for all submissions with the aid of external reviewers and a member of the Technical Program Committee (TPC). As a result, 102 papers were accepted for presentation (77% rate), 45 and 57 of which were assigned as oral papers and posters, respectively. Accepted papers came from 23 different countries from Asia/Pacific (59%), Europe (33%), North/south America (7%), and Africa (1%). There were submissions of 5 late news and 14 open posters, among which 4 and 11 submissions were accepted, respectively.

ISOEN 2019 is organized as a parallel track for a total of 8 oral sessions including two special sessions, poster sessions and a student competition. These sessions cover topics of wide range: chemical sensors (gas, biosensors, ion-selective, optical), odor sampling (headsapce analysis, dynamic sampling, pre-concentration and storage), sensor systems (electronic noses, electronic tongues, micro-spectrometers, IoT), data analysis (signal processing, pattern recognition, chemometrics, AI, deep learning), industrial applications (quality control, food safety, medical diagnostics, environmental monitoring), robotic system (robots with chemical senses, drone), scent presentation (olfactometry, olfactory displays, human interface, virtual reality), odor/gustatory perception (evaluation of odor intensity/impression, cross-modal effect, sensory test), and bio-engineering (cell-based olfactory sensors, receptor-based sensors, bio-inspired algorithms). Two extraordinary Keynotes will be made by Dr. Pablo Meyer Rojas (IBM) on olfaction, the forgotten sense and Dr. Tai Hyun Park (Seoul National University) on human olfactory receptor-based bioelectronic nose. We have two special sessions: Medical & healthcare, and Emerging technologies in olfactory display. One luncheon seminar is made from noon on Tuesday May 28.

The tutorial session on Sunday May 26 is composed of six themes: Multivariable sensors for selective and stable gas monitoring, Quantification of odors and the role of electronic noses,

Principle of gas phase biosensors: biosniffer & sniff-cam for medical and healthcare applications, Challenges of breath sampling in medical applications, Introduction to deep learning applications in robotic olfaction, and Development & validation of machine learning predictive models.

We have organized two social events. The first event is a Welcome Reception on Sunday May 26 at Large Conf. Room, 7F of ACROS Fukuoka venue, and the second event is a Banquet on Tuesday May 28 at Granada Suite, 3 min walk from ACROS Fukuoka, with view overlooking at Fukuoka, a sky chapel, a courtyard, and reception halls equipped with wine cellar and open kitchen. Some of the drinks will be served by Taste & Aroma Strategic Research Institute Co. Ltd.

We want to thank all the volunteers who contributed to the peer-review process. We make special thanks to our TPC chairs, Dr. Takamichi Nakamoto (Tokyo Institute of Technology) and Dr. Santiago Marco (Institute Bioengr. Catalonia), who worked hard to select high-quality papers and organized a technical program within a limited time. I appreciate many valuable comments from ISOCS members and long-term big cooperation made by the local committee members.

We would like to express our gratitude to patrons, Intelligent Sensor Technology, Inc., Shimadzu Corp., and GL Science, Inc. We appreciate many Societies and Associations who support ISOEN 2019: The Japanese Association for the Study of Taste and Smell (JASTS), Japan Association of Odor Environment (JAOE), Japan Society for Atmospheric Environment (JSAE), Japan Society of Next Generation Sensor Technology (JASST), Society of Indoor Environment, Japan (SIEJ), The Virtual Reality Society of Japan.

We should thank the organization, Meeting Place Fukuoka, for providing grants and local support services continuing from preparation of this conference. We would like to give sincere thanks to the professional conference organizers, Conference Catalysts, LLC and Semiconductor Portal, Inc. Special thanks go to Ms. Brianna Angelakis and Ms. Naoko Tani, who have largely supported us in all respects.

Kiyoshi Toko, General Chair

ISOEN 2019 Organizing Committee

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Technical Program Co-Chair

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Takamichi Nakamoto, Tokyo Institute of Technology, Japan

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Corrado diNatale, Roma Tor Vergata University, Italy
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Perena Gouma, The Ohio State University, USA
Agustin Gutierrez-Galvez, Universitat de Barcelona, Spain
Sandrine Isz, Alpha-MOS, France
Peter Lieberzeit, University of Vienna, Austria
Achim J. Lilienthal, Örebro University, Sweden
Eduard Llobet, URV, Spain
Qing-Hao Meng, Tianjin University, China
Patrick Mielle, INRA (Previously), France
Severino Munoz-Aguirre, Benemerita Universidad Autònoma de Puebla, Mexico
Nosang Myung, University of California Riverside
Nitikarn Nimsuk, Thammasat University, Thailand
Barani Raman, Washington Univ. at St. Louis, USA
Anne-Claude Romain, Liège University, Belgium
Susan Rose-Pehrsson, NRL, USA
Alisa Rudnitskaya, University of Aveiro, Portugal
Andreas Schutze, University Saarland, Germany
Fortunato Sevilla III, University of Santo Tomas, Philippines
Kengo Shimano, Kyushu University, Japan
Kea-Tiong Tang, National Tsing Hua University, Taiwan
Udo Weimar, Tübingen University, Germany
Shin Woosuck, AIST, Japan
Jia Yan, Southwest University, China
Genki Yoshikawa, National Institute for Material Science, Japan

Conference Management

Chris Dyer, Conference Catalysts, LLC
Naoko Tani, Semiconductor Portal, Japan

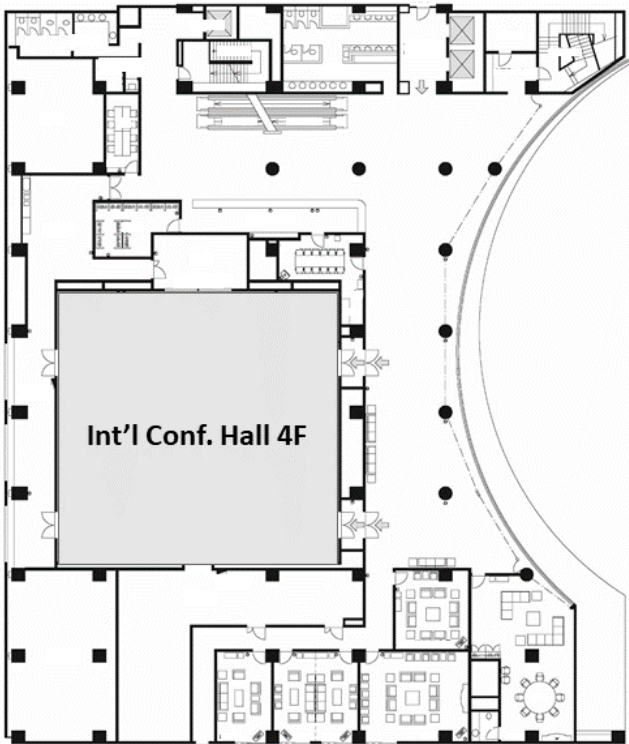
Conference Venue

Venue: ACROS Fukuoka
1 Chome-1-1 Tenjin, Chuo Ward
Fukuoka, 810-0001, Japan

ACROS Fukuoka is located in Tenjin district, the middle of Fukuoka City. The name ACROS is an acronym for Asian Cross Road Over the Sea - Fukuoka (ACROS Fukuoka). The conference venue is an 11-minute ride from Fukuoka Airport to Tenjin Station by the Kuko (airport) Subway Line.

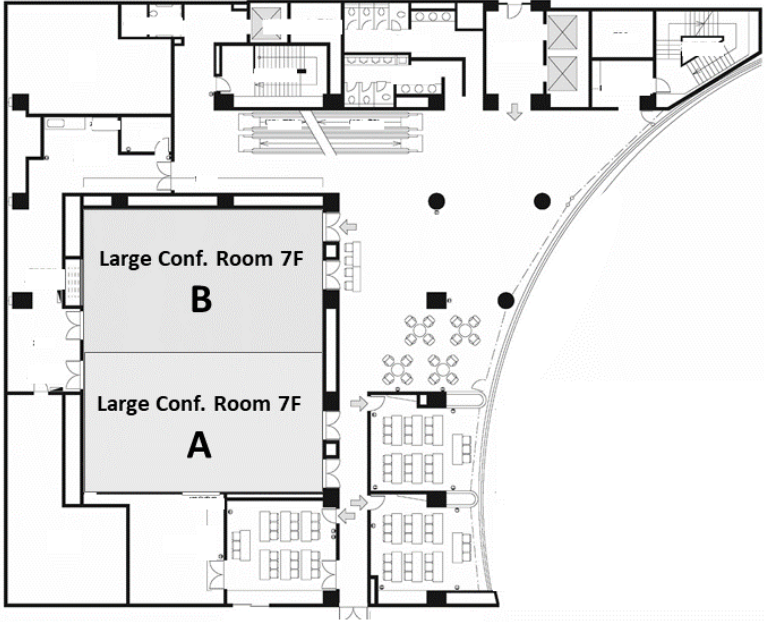
The Center introduces a variety of information mainly on culture, tourism and leisure in Fukuoka. A variety of pamphlets in foreign languages are available. Also, staff at the information counter will gladly answer your questions and provide suggestions regarding information on culture and tourism in Fukuoka Prefecture.

International Conference Hall (4F)



Conference Venue (continued)

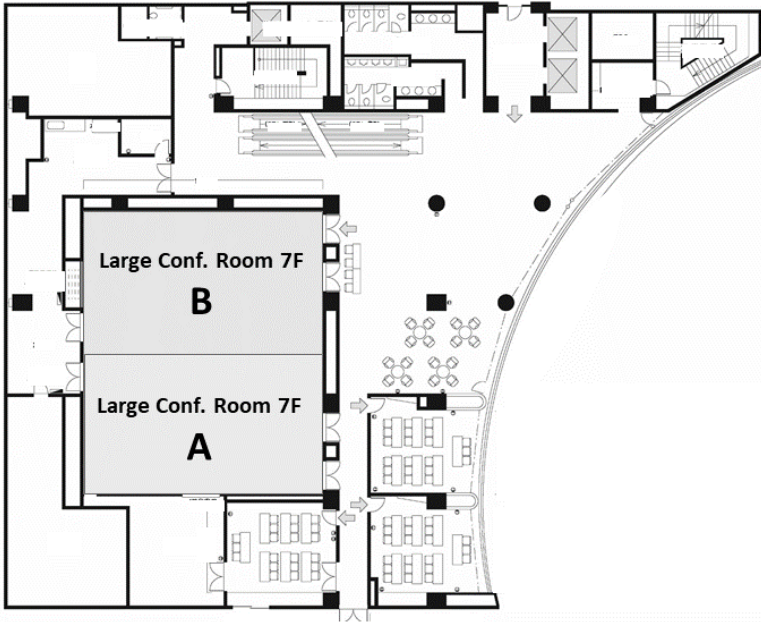
Large Conference Room (7F)



Social Events

Welcome Reception

Venue: ACROS Fukuoka – Large Conference Room (7F) B
1 Chome-1-1 Tenjin, Chuo Ward, Fukuoka, 810-0001, Japan
Sunday, May 26: 17:30 – 19:30



Social Events (continued)

Gala Dinner

Venue: Granada Suite Fukuoka

5-8-3 Nakasu Nakasu Hakata-ku, Fukuoka-shi, Fukuoka, 810-0801, Japan

Tuesday, May 28: 19:00 – 22:00

Directions from ACROS Fukuoka:



4 min (290 m)

1. Head east on Meiji Dori toward Red Brick Street / Prefectural Road 554.
2. Turn left at Nishi Ohashi (intersection) onto Nakagawa-dori.
3. Destination will be on the right.

General Information

Registration

The registration desk will be open throughout the conference, in the foyer area. Main registration hours will be 8:50-16:30 on Sunday, May 26; 8:50-17:00 on Monday, May 27, 9:00-17:00 on Tuesday, May 28, and 9:00-16:30 on Wednesday, May 29. 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

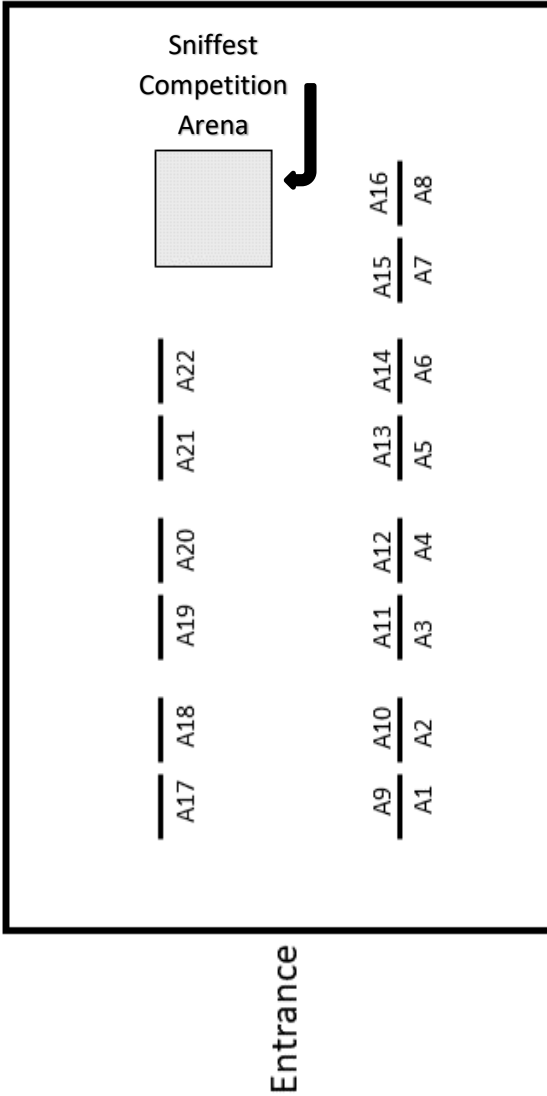
Poster presenters should hang their poster the morning of their session, and take it down at the end of the day or it may be discarded. Pushpins will be provided at the registration desk.

Wifi

Free WiFi is listed under "ACROS Fukuoka Free Wi-Fi" at the conference venue.

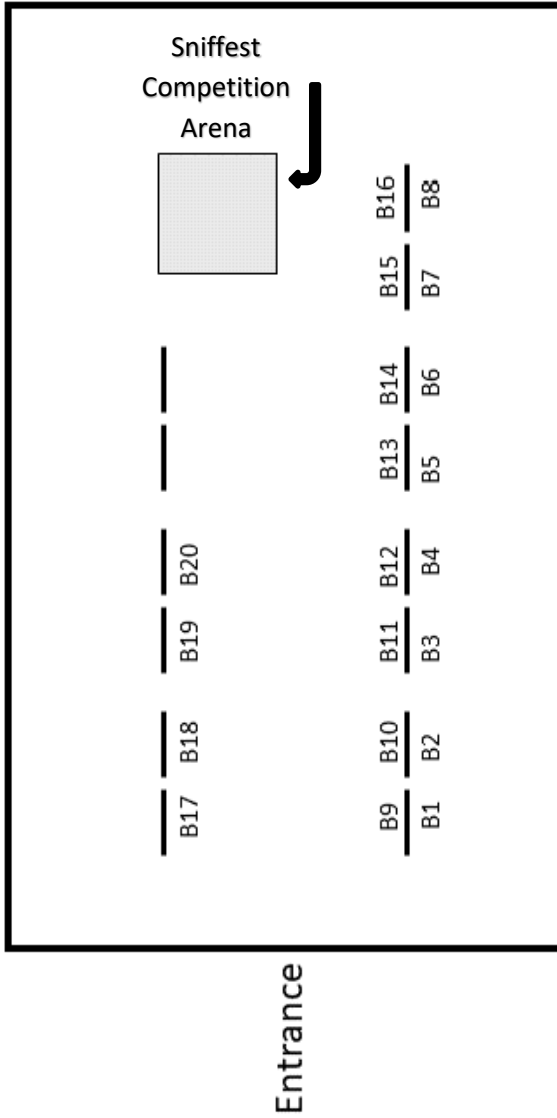
Poster & Exhibit Layouts

Poster Session #1: Monday, May 27



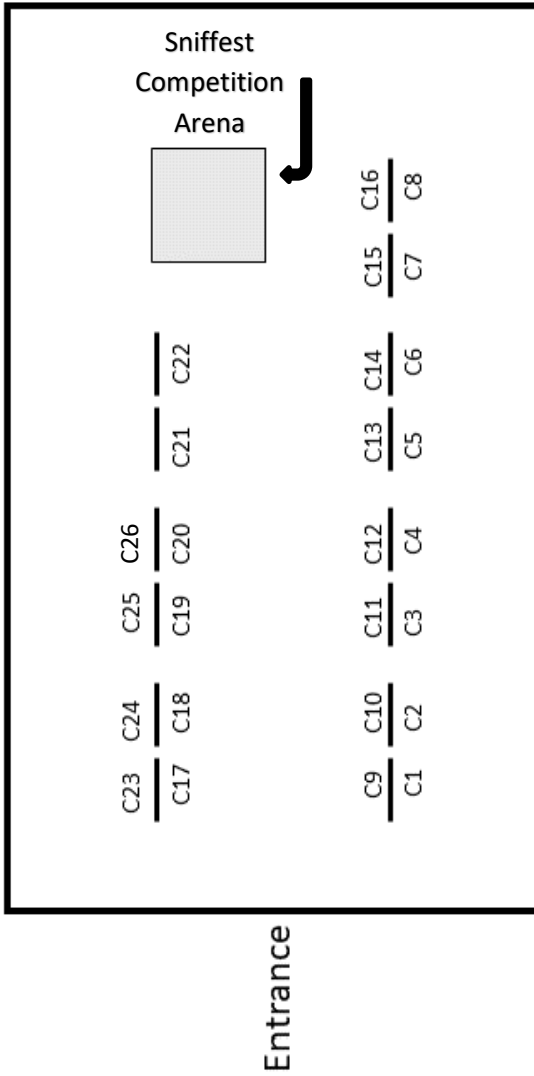
Poster & Exhibit Layouts (continued)

Poster Session #2: Tuesday, May 28



Poster & Exhibit Layouts (continued)

Poster Session #3: Wednesday, May 29



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Silver Patrons



Exhibitors



KONICA MINOLTA



Exhibitors (continued)



T&A

Taste & Aroma
Strategic Research
Institute



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specialty gases manufacturer
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KOBAYASHI PHARMACEUTICAL CO., LTD.

Sponsors



ISOCS

International Society for
Olfaction and Chemical Sensing

Plenary Speakers



Pablo Meyer Rojas

IBM Computational Biology Center, USA

Topic:

Olfaction, the forgotten sense

Abstract:

The sense of smell has been ignored and even misbegotten since the positivist revolution of the XIX century. Indeed, studies of comparative neuroanatomy of the famous french neurophysiologist Paul Broca lead him to conjecture that in comparison with that of other animals, the human sense of smell was widely considered weak and underdeveloped. This is based in part on the fact that compared to the rest of the brain the human olfactory bulb is small. A modern look at the human olfactory bulb shows that it is quite large compared to those of rats and mice, which are supposed to possess a superior sense of smell. In fact, the number of olfactory bulb neurons across 24 mammalian species is comparatively similar to that of humans and our sense of smell is similar to that of other mammals. The last 20 years have brought remarkable advances in the science of olfaction, from the discovery of olfactory receptors to the characterization of olfactory circuits, the development of smell detectors or eNoses and the recent breakthrough regarding the predictability of odors from the structure of molecules. Still the prevailing view is that humans' capacity to identify or characterize odors by name is poor. Paradoxically, I will discuss here that applying natural-language semantic representations allows for the accurate inference, using state-of-the-art machine learning methods and the two largest olfactory psychophysical data sets, of perceptual ratings for mono-molecular odorants over a large and potentially arbitrary set of olfactory descriptors. Combined with a molecule-to-ratings model using chemoinformatic features, our approach allows for the zero-shot learning inference of perceptual ratings for arbitrary molecules. I will further discuss how to expand these results to molecular mixtures and real-world applications.

Speaker Biography:

Pablo is a Team leader in the Translational Systems Biology and Nanobiotechnology group and Research Staff member in the IBM Computational Biology Center. He joined IBM research in 2010 and received his Undergraduate degree in Physics from the University of Mexico UNAM (2000) and a Master's degree from the University of Paris VII/XI his Ph.D. in Genetics from the Rockefeller University (2005). He was awarded a Helen Hay Whitney fellowship as a postdoctoral fellow in Columbia university.

Plenary Speakers (continued)



Tai Hyun Park

Principal Investigator, Insight Centre for Data Analytics, School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea

Topic:

Human Olfactory Receptor-Based Bioelectronic Nose

Abstract:

Human has major five senses. Three of them are physical senses, which are senses of vision, hearing, and touch. The other two senses are chemical senses, which are senses of smell and taste. Science and technology for the physical senses have been advanced enormously, and electronic devices have been developed for these senses. Camera can capture the sight which we see. Audio recorder can capture the sound which we hear. Tablet PC can feel our touch. These three kinds of devices are in our smart phone. However, we do not have any device which can capture the information of smell or taste. The sense of smell has been the most mysterious sense; however, now we understand the smell sensing mechanism at the molecular level. In order to mimic the human olfactory function, we can use human olfactory receptors, which are expressed in heterologous systems such as *E. coli*, insect cell, and mammalian cell systems. The olfactory receptors can be combined with nanomaterials such as carbon nanotube, conducting polymer nanotube, and graphene to develop bioelectronic nose. I will present various methods for the development of bioelectronic nose using human olfactory receptors. In addition, applications and current issues of bioelectronic nose will be discussed.

Speaker Biography:

Tai Hyun Park is Professor and Head at the School of Chemical and Biological Engineering, Seoul National University, and also Director of Institute of Chemical Processes. He received his B.S. degree (Seoul National University), M.S. degree (KAIST), and Ph.D. degree (Purdue University) all in Chemical Engineering, and was a postdoctoral fellow at the University of California at Irvine. He is a member of The Korean Academy of Science and Technology (KAST) and also a member of The National Academy of Engineering of Korea (NAEK). He is a Fellow of the University of Tokyo, Japan. He is serving as Editor of "Biotechnology Journal (Wiley)" and "Enzyme and Microbial Technology (Elsevier)". He served as Appointed Director of National Research Council of Science & Technology. He is Secretary General of Asian Federation of Biotechnology (AFOB) and was President of The Korean Society for Biotechnology and Bioengineering (KSBB), President of Advanced Institutes of Convergence Technology (AICT), President of Bio-MAX Institute, and President of KOFAC (Korea Foundation for the Advancement of Science and Creativity). His research area is bioelectronic nose and tongue, cellular engineering, and nanobiotechnology.

ISOEN 2019 Preceding day			
Conference Grid: Sunday, May 26			
	Int'l Conference Hall (4F)	Large Conference Room A (7F)	Large Conference Room B (7F)
08:50-16:30		Registration	
09:20-10:20		Tutorial A: Radislav A. Potyrailo (GE Global Research) Multivariable sensors for selective and stable gas monitoring	
10:20-10:30		Break	
10:30-11:30		Tutorial B: Jinichi Kita (Shimadzu Corporation) Quantification of odors and the role of electronic noses	
11:30-11:40		Break	
11:40-12:40		Tutorial C: Kohji Mitsubayashi and Takahiro Arakawa (Tokyo Medical and Dental University) Principle of Gas phase biosensors: Biosniffer & Sniff-cam for medical and healthcare applications	
12:40-13:40		Lunch (Box lunch will be provided to attendees.)	
13:40-14:40		Tutorial D: Jan Mitrovics (JLM Innovation GmbH) Challenges of breath sampling in medical applications.	
14:40-14:50		Break	
14:50-15:50		Tutorial E: Emily Stark (Florida Atlantic University) Introduction to deep learning applications in robotic olfaction	
15:50-16:00		Break	
16:00-17:00		Tutorial F: Santiago Marco (University of Barcelona) Development & validation of machine learning predictive models	
17:00-17:30		Break	
17:30-19:30			Welcome Reception

ISOEN 2019 First day				
Conference Grid: Monday, May 27				
		Int'l Conference Hall (4F)	Large Conference Room A (7F)	Large Conference Room B (7F)
AM	08:50-17:00	Registration		
	09:20-09:40	Opening Ceremony		
	09:40-10:40	Keynote A Human Olfactory Receptor-Based Bioelectronic Nose Tai Hyun Park, School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea		
	10:40-11:00	Coffee break/Exhibit Hour		
	11:00-12:00	Rob-1(Oral:Robot)		
PM	12:00-13:30	Lunch on your own		
	13:30-14:30	BE-1 (Oral:Bioengineering)		
	14:30-15:30			Poster Session #1
	15:30-16:00		Coffee break	
	16:00-17:00	BE-2 (Oral*Bioengineering)	SS-1 (Oral: Sensor system)	
	17:00-17:10	Break		
	17:10-17:40	ISOCS General Assembly		

ISOEN 2019 Second day					
Conference Grid: Tuesday, May 28					
		Int'l Conference Hall (4F)	Large Conference Room A (7F)	Large Conference Room B (7F)	Granada Suite
AM	09:00-17:00	Registration			
	09:30-10:30	Keynote B Olfaction, the forgotten sense Pablo Meyer Rojas, IBM			
	10:30-11:00	Coffee break/Exhibit Hour			
	11:00-12:00	SenDev-1 (Oral:Sensors)	SS-OD-1 (Special: Olfactory displays)		
PM	12:00-13:30	Sponsor Luncheon Intelligent Sensor Technology			
	13:30-14:30	SenDev-3 (Oral:Sensors)	SS-OD-2 (Special: Olfactory displays)		
	14:30-15:30			Poster Session #2	
	15:30-16:00	Coffee break		Coffee break	
	16:00-17:00	ET-1 (Oral Electronic Tongue)		Sniffest Competition	
	-18:00				
	19:00-22:00				Gala Dinner

ISOEN 2019 Third day				
Conference Grid: Wednesday, May 29				
		Int'l Conference Hall (4F)	Large Conference Room A (7F)	Large Conference Room B (7F)
AM	09:00-16:30	Registration		
	09:30-10:30	Data-1 (Oral: Data analysis)	SS-M-1 (Special: Medical)	
	10:30-11:00		Coffee break	
	11:00-12:00	Data-2 (Oral: Data analysis)	SS-M-2 (Special: Medical)	
	12:00-13:30	Lunch on your own		
PM	13:30-14:30	SenDev-2 (Oral: Sensors)	SenDev-4 (Oral: Sensors)	
	14:30-15:30			Poster Session #3
	15:30-16:00	Coffee break		Coffee break
	16:00-17:00	Closing and Awards Ceremony		

Detailed Program: Sunday, May 26

08:50 – 17:00

Registration

4F

09:20 - 10:20

Tutorial A: Multivariable sensors for selective and stable gas monitoring

Large Conf. Room A (7F)

10:20 - 10:30

Break

10:30 - 11:30

Tutorial B: Quantification of odors and the role of electronic noses

Large Conf. Room A (7F)

11:30 - 11:40

Break

11:40 - 12:40

Tutorial C: Principle of Gas phase biosensors: Biosniffer & Sniff-cam for medical and healthcare applications

Large Conf. Room A (7F)

12:40 - 13:40

Tutorial Lunch

13:30 - 14:30

Tutorial D: Challenges of breath sampling in medical applications.

Large Conf. Room A (7F)

14:40 - 14:50

Break

14:50 - 15:50

Tutorial E: Introduction to deep learning applications in robotic olfaction

Large Conf. Room A (7F)

15:50 - 16:00

Break

16:00 – 17:00

Tutorial F: Development & validation of machine learning predictive models

Large Conf. Room A (7F)

17:00 - 17:30

Break

17:30 - 19:30

Welcome Reception

Large Conf. Room B (7F)

Detailed Program: Monday, May 27

08:50 - 17:00

Registration

4F

09:20 - 09:40

Opening Ceremony

Int'l Conf. Hall (4F)

09:40 - 10:40

Keynote A: Human Olfactory Receptor-Based Bioelectronic Nose

Speaker: Tai Hyun Park

Int'l Conf Hall (4F)

10:40 - 11:00

Coffee Break/Exhibition

4F

11:00 - 12:00

Rob-1 Oral Session: Robot

Chair: Achim J. Lilienthal (Örebro University, Sweden)

Int'l Conf. Hall (4F)

11:00 Indoor Air Quality Monitoring using flying Nanobots: Design and Experimental Study

Patrick P. Neumann (BAM, Germany)

Paul Hirschberger (BAM, Germany)

Zhandos Baurzhan (BAM, Germany)

Carlo Tiebe (BAM, Germany)

Michael Hofmann (BAM, Germany)

Dino Hüllmann (BAM, Germany)

Matthias Bartholmai (BAM, Germany)

11:20 Olfactive robot for gas discrimination over several months using a new optoelectronic nose

Pierre Maho (Gipsa-Lab/CNRS, France)

Pierre Comon (CNRS, University Grenoble Alpes, France)

Carlos Leonardo Dolcinotti (Gipsa-Lab/CNRS, France)

Thierry Livache (Aryballe Technologies, France)

Cyril Herrier (Aryballe Technologies, France)

Anton Andreev (Gipsa-lab/CNRS, France)

Simon Barthelme (GIPSA-lab/CNRS, France)

11:40 A Realistic Remote Gas Sensor Model for Three-Dimensional Olfaction Simulations

Dino Hüllmann (BAM, Germany)

Patrick P. Neumann (BAM, Germany)

Javier Monroy (Universidad de Malaga, Spain)

Achim J. Lilienthal (Örebro University, Sweden)

12:00 - 13:30

Lunch

On your own

Detailed Program: Monday, May 27

13:30 - 14:30

BE-1 Oral Session: Bioengineering

Chair: Krishna C Persaud (The University of Manchester, United Kingdom (Great Britain))

Int'l Conf. Hall (4F)

13:30 Odorant-binding protein-based optoelectronic tongue and nose for sensing volatile organic compounds

Charlotte Hurot (CEA Grenoble, CNRS, Université Grenoble Alpes, France)

13:50 An in vivo bioelectronic tongue for sweetness detection using rat gustatory perception based on brain-computer interface

Chunlian Qin (Zhejiang University, P.R. China)

Zhen Qin (Zhejiang University, P.R. China)

Liuqing Zhuang (Zhejiang University, P.R. China)

Yuxiang Pan (Zhejiang University, P.R. China)

Qunchen Yuan (Zhejiang University, P.R. China)

Bin Zhang (Zhejiang University, P.R. China)

Hao Wan (Zhejiang University, P.R. China & Michigan State University, USA)

Ping Wang (Zhejiang University, P.R. China)

14:10 Multifunctional SH-SY5Y-based biomimetic sensor for integrated detection of olfaction, gustation and toxicity

Fan Gao (Zhejiang University, P.R. China)

Keqiang Gao (Zhejiang University, P.R. China)

Liping Du (Xi'an Jiaotong University, P.R. China)

Chuanjiang He (Zhejiang University, P.R. China)

Hao Wan (Zhejiang University, P.R. China & Michigan State University, USA)

Ping Wang (Zhejiang University, P.R. China)

14:30 - 15:30

Poster Session #1: Bioengineering, robots, and sensor systems

Large Conf. Room B (7F)

A1: Whole animal-based biosensor for odor detection using in vivo extracellular recording in rat lateral olfactory tract

Liuqing Zhuang (Zhejiang University, P.R. China)

Bin Zhang (Zhejiang University, P.R. China)

Qunchen Yuan (Zhejiang University, P.R. China)

Chunlian Qin (Zhejiang University, P.R. China)

Yuxiang Pan (Zhejiang University, P.R. China)

Xinwei Wei (Zhejiang University, P.R. China)

Ping Wang (Zhejiang University, P.R. China)

A2: Pheromone Detection Using Odorant Binding Protein Sensors

Krishna C Persaud (The University of Manchester, United Kingdom (Great Britain))

Elena Tuccori (Pall Corporation, United Kingdom (Great Britain))

A3: Artificial cell membrane system for odorant sensor: development of solution exchange driven by superabsorbent polymer for repeatable detection

Tetsuya Yamada (Kanagawa Institute of Industrial Science and Technology, Japan)

Detailed Program: Monday, May 27

A4: Experimental Observation of Olfactory Search Behavior of Crayfish in Seven Arm Maze

Hanako Ishida (Tokyo University of Agriculture and Technology, Japan)

Ryuichi Takemura (Tokyo University of Agriculture and Technology, Japan)

Haruka Matsukura (Osaka University, Japan)

Hiroshi Ishida (Tokyo University of Agriculture and Technology, Japan)

A5: Improvement of Response Repeatability for Fluorescent Measurement of Cell-based Odor Sensor (Open Poster)

Yuji Sukekawa (Tokyo Institute of Technology, Japan)

Hidefumi Mitsuno (University of Tokyo, Japan)

Ryohei Kanzaki (The University of Tokyo, Japan)

Takamichi Nakamoto (Tokyo Institute of Technology, Japan)

A6: An Evaluation of Plume Tracking as a Strategy for Gas Source Localization in Turbulent Wind Flows

Javier Monroy (Universidad de Malaga, Spain)

Raul Ruiz-Sarmiento (Universidad de Málaga, Spain)

Javier Gonzalez-Jimenez (Universidad de Málaga, Spain)

A7: The research and design of hexapod bionic robot system based on active olfaction

Qin Liu (Wuhan University of Science and Technology, P.R. China)

Lei Cheng (Wuhan University of Science and Technology, P.R. China)

Chaonan Shen (Wuhan University of Science and Technology, P.R. China)

Qiuxuan Wu (Hangzhou Dianzi University, P.R. China)

A8: Assessment and prediction of fishery water quality using electrochemical sensor array carried by UAV

Dong Yao (Wuhan University of Science and Technology, P.R. China)

Lei Cheng (Wuhan University of Science and Technology, P.R. China)

Qiuxuan Wu (Hangzhou Dianzi University, P.R. China)

Gong Zhang (Wuhan University of Science and Technology, P.R. China)

Bei Wu (Wuhan University of Science and Technology, P.R. China)

YuQing He (Wuhan University of Science and Technology, P.R. China)

A9: Multi-uav gas concentration map fusion using the image repair algorithm based on clustered directed diffusion model

Pengxiang Bao (Wuhan University of Science and Technology, P.R. China)

Lei Cheng (Wuhan University of Science and Technology, P.R. China)

Qiuxuan Wu (Hangzhou Dianzi University, P.R. China)

Qiuyue Yu (Wuhan University of Science and Technology, P.R. China)

Xin Wang (Wuhan University of Science and Technology, P.R. China)

Dong Yao (Wuhan University of Science and Technology, P.R. China)

A10: Application of Sequence Input and Output Long Short-Term Memory Neural Networks for Autonomous Gas Source Localization in an Outdoor Environment

Akifumi Yamamoto (Tokyo University of Agriculture and Technology, Japan)

Christian Bilgera (Tokyo University of Agriculture and Technology, Japan)

Maki Sawano (Tokyo University of Agriculture and Technology, Japan)

Haruka Matsukura (Osaka University, Japan)

Naoki Sawada (University of Yamanashi, Japan)

Chee Siang Leow (University of Yamanashi, Japan)

Hiroimitsu Nishizaki (University of Yamanashi, Japan)

Hiroshi Ishida (Tokyo University of Agriculture and Technology, Japan)

Detailed Program: Monday, May 27

A11: Development of 3D gas source localization using multi-copter with gas sensor array

Yoshinori Takei (Kanazawa Institute of Technology, Japan)
Yukitaka Kanazawa (Kanazawa Institute of Technology, Japan)
Kazuki Hirasawa (Kanazawa Institute of Technology)
Hidehito Nanto (Kanazawa Institute of Technology, Japan)

A12: Aerial- and ground-based Gas Tomography for increasing environmental safety in chemical industry (AGATO) (Open Poster)

Patrick P. Neumann (BAM, Germany)
Dino Hüllmann (BAM, Germany)
Harald Kohlhoff (BAM, Germany)

A13: Wind Vector Estimation on Multirotor Aircraft (Open Poster)

Dino Hüllmann (BAM, Germany)
Patrick P. Neumann (BAM, Germany)

A14: Development of a colorimetric array to discriminate cutting agents in seized cocaine samples

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

A15: Two dimensional LSPR gas sensor with Au/Ag core-shell structure

Takaaki Soeda (Kyushu University, Japan)
Zhongyuan Yang (Kyushu University, Japan)
Fumihiko Sassa (Kyushu University, Japan)
Kenshi Hayashi (Kyushu University, Japan)

A16: Opto-electronic nose - temperature and VOC concentration effects on the equilibrium response

Jonathan S. Weerakkody (CEA & CEA Grenoble, France)

A17: Probe gas sensing system based on reflected light detection from localized surface plasmon resonance

Hao Guo (Kyushu University, Japan)
Takaaki Soeda (Kyushu University, Japan)
Zhongyuan Yang (Kyushu University, Japan)
Fumihiko Sassa (Kyushu University, Japan)
Kenshi Hayashi (Kyushu University, Japan)

A18: Simultaneous measurements with proton transfer reaction - time of flight and gas sensor array

Corrado diNatale (Roma Tor Vergata University, Italy)

Detailed Program: Monday, May 27

A19: Parameter Estimation of Randles Model of Electronic Tongue Using System Identification

Sanjeev Kumar (National Institute of Technology Patna, India)
Arunangshu Ghosh (National Institute of Technology Patna, India)
Rajib Bandyopadhyay (Jadavpur University, India)

A20: Virtual sensors for electronic nose devices

Julia Burlachenko (V. Lashkaryov Institute of Semiconductor Physics NAS of Ukraine, Ukraine)
Ivanna Kruglenko (V. Lashkaryov Institute of Semiconductor Physics NAS of Ukraine, Ukraine)
Eduard Manoylov (V. Lashkaryov Institute of Semiconductor Physics NAS of Ukraine, Ukraine)
Serhiy Kravchenko (V. Lashkaryov Institute of Semiconductor Physics NAS of Ukraine, Ukraine)
Iryna Krishchenko (V. Lashkaryov Institute of Semiconductor Physics NAS of Ukraine, Ukraine)
Boris Snopok (V. Lashkaryov Institute of Semiconductor Physics NAS of Ukraine, Ukraine)

A21 : Modular electronic nose for food quality assessment (Open Poster)

Wojciech Wojnowski (Gdańsk University of Technology, Poland)
Tomasz Majchrzak (Gdańsk University of Technology, Poland)
Tomasz Dymerski (Gdańsk University of Technology, Poland)
Jacek Gębicki (Gdańsk University of Technology, Poland)
Jacek Namiesnik (Gdańsk University of Technology, Poland)

A22: Detection and recognition of food aromas using an electronic nose (Open Poster)

Eva Valenčič (Jožef Stefan Institute, Slovenia)
Lidija Strojnik (Jožef Stefan Institute, Slovenia)
Nlves Ogrnic (Jožef Stefan Institute, Slovenia)
Mojca Korošec (Biotechnical Faculty, University of Ljubljana, Slovenia)
Tamara Bucher (Faculty of Science, University of Newcastle, Australia)
Barbara Koroušič Seljak (Jožef Stefan Institute, Slovenia)

15:30 - 16:00

Coffee Break/Exhibition

4F and 7F

Detailed Program: Monday, May 27

16:00 - 17:00

BE-2 Oral Session: Bioengineering

Chair: Kohji Mitsubayashi (Tokyo Medical and Dental University, Japan)

Int'l Conf. Hall (4F)

- 16:00 A sperm cell-based biosensor using fluorescence probe for responsive signal readout towards bitter detection**
Yulan Tian (Xi'an Jiaotong University, P.R. China)
Ping Zhu (Xi'an Jiaotong University, P.R. China)
Liping Du (Xi'an Jiaotong University, P.R. China)
Chunsheng Wu (Xi'an Jiaotong University, P.R. China)
Ping Wang (Zhejiang University, P.R. China)
- 16:20 An in-vivo bioelectronic nose using bioengineered olfactory system of rat as sensitive elements towards explosive detection**
Ping Zhu (Xi'an Jiaotong University, P.R. China)
Liping Du (Xi'an Jiaotong University, P.R. China)
Yulan Tian (Xi'an Jiaotong University, P.R. China)
Wei Chen (Xi'an Jiaotong University, P.R. China)
Chunsheng Wu (Xi'an Jiaotong University, P.R. China)
Ping Wang (Zhejiang University, P.R. China)
- 16:40 A bionic in vitro bioelectronics tongue based on cardiomyocytes for high-specificity detection of bitter and umami compounds**
Xinwei Wei (Zhejiang University, P.R. China)
Chunlian Qin (Zhejiang University, P.R. China)
Bin Zhang (Zhejiang University, P.R. China)
Qunchen Yua (Zhejiang University, P.R. China)
Chuanjiang He (Zhejiang University, P.R. China)
Liuqing Zhuang (Zhejiang University, P.R. China)
Hao Wan (Zhejiang University, P.R. China & Michigan State University, USA)
Ping Wang (Zhejiang University, P.R. China)

16:00 - 17:00

SS-1 Oral Session: Sensor System

Chair: James Covington (University of Warwick, United Kingdom (Great Britain))

Large Conf. Room A (7F)

- 16:00 Nondestructive Prediction of Oil Yield through Direct Near Infrared Spectroscopy Measurements of Fresh Olives**
Ayako Kashiwagi (Shodoshima Healthyland Co., Ltd., Japan)
Norihito Kishimoto (Central Institute of Olive and Health Sciences & Shodoshima Healthyland Co., Ltd., Japan)
Ryota Kominami and Shun Nakayama (BL TEC K. K., Japan)
- 16:20 Evaluation of Filtration on Volatile Compounds in Virgin Olive Oils using an Electronic Nose**
Norihito Kishimoto (Central Institute of Olive and Health Sciences & Shodoshima Healthyland Co., Ltd., Japan)
Ayako Kashiwagi (Shodoshima Healthyland Co., Ltd., Japan)
- 16:40 Development of Odor Visualization System with Two-Dimensional LSPR Gas Sensor for Mobile Robot**
Zhongyuan Yang (Kyushu University, Japan)
Takaaki Soeda (Kyushu University, Japan)
Fumihito Sassa (Kyushu University, Japan)
Kenshi Hayashi (Kyushu University, Japan)

Detailed Program: Monday, May 27

17:00 - 17:10

Break

17:10 - 17:40

ISOCS General Assembly

Int'l Conf. Hall (4F)

Detailed Program: Tuesday, May 28

09:00 - 17:00

Registration

4F

09:30 - 10:30

Keynote B: Olfaction, the forgotten sense

Speaker: Pablo Meyer Rojas

Int'l Conf. Hall (4F)

10:30 - 11:00

Coffee Break/Exhibition

4F

11:00 - 12:00

SenDev-1 Oral Session: Sensors

Chair: Corrado diNatale (Roma Tor Vergata University, Italy)

Int'l Conf. Hall (4F)

- 11:00** **Compact, versatile and cost-effective colorimetric cas sensors**
Cristian Fabrega (University of Barcelona, Spain)
Christian Driau (University of Barcelona, Spain)
Olga Casals Guillen (University of Barcelona, Spain)
Ismael Benito (University of Barcelona, Spain)
Joan Daniel Prades (Universitat Barcelona, Spain)
- 11:20** **Piezoresistive Membrane-type Surface-stress Sensor and Signal Readout Module to Support Research on Odor/Gas Sensing**
Terunobu Akiyama (NanoWorld AG, Switzerland)
Genki Yoshikawa (National Institute for Materials Science & University of Tsukuba, Japan)
- 11:40** **Enhanced gas sensing with soft functional materials**
Susana Palma (UCIBIO, NOVA, Portugal)
Carina Esteves (UCIBIO, NOVA, Portugal)
Ana Pádua (UCIBIO, NOVA, Portugal)
Cláudia Alves (UCIBIO, NOVA, Portugal)
Gonçalo Santos (UCIBIO, NOVA, Portugal)
Henrique Costa (UCIBIO, NOVA, Portugal)
Madalena Dionísio (LAQV - NOVA, Portugal)
Hugo Gamboa (LIBPhys - NOVA, Portugal)
Jonas Gruber (USP, Brazil)
Ana Roque (UCIBIO, NOVA, Portugal)

Detailed Program: Tuesday, May 28

11:00 - 12:00

SS-OD-1 Special Session: Olfactory Displays

Chair: Monica Bordegoni (Politecnico di Milano, Italy)

Large Conf. Room A (7F)

11:00 Towards precise spatio-temporal control of scents and air for olfactory augmented reality

Yasuyuki Yanagida (Meijo University, Japan)

Takuya Nakano (Meijo University, Japan)

Kyuma Watanabe (Meijo University, Japan)

11:20 Wearable Olfactory Display with Less Residual Odor

Shingo Kato (Tokyo Institute of Technology, Japan)

Takamichi Nakamoto (Tokyo Institute of Technology, Japan)

11:40 A Handheld Olfactory Display For Smell-Enabled VR Games

Simon Niedenthal (Malmö University, Sweden)

Peter Lundén (Stockholm University, Sweden)

Marie Ehrndal (Stockholm University, Sweden)

Jonas Olofsson (Stockholm University, Sweden)

12:00 - 13:30

Lunch (Sponsored Luncheon by Intelligent Sensor Technology)

Int'l Conference Hall (4F)

Detailed Program: Tuesday, May 28

13:30 - 14:30

SenDev-3 Oral Session: Sensors

Chair: Rajib Bandyopadhyay (Jadavpur University, India)

Int'l Conf. Hall (4F)

13:30 A Microwatt Gas Sensor for NO₂ Detection in the Parts per Billion Range

Olga Casals Guillen (University of Barcelona, Spain)

Nicolai Markiewicz (TU Braunschweig, Germany)

Cristian Fabrega (University of Barcelona, Spain)

Isabel Gracia (IMB-CNM (CSIC), Spain)

Carles Cane (IMB-CNM-CSIC, Spain)

Hutomo Suryo Wasisto (Technische Universität Braunschweig, Germany)

Andreas Waag (TU Braunschweig, Germany)

Joan Daniel Prades (Universitat Barcelona, Spain)

13:50 Ultra-High Sensitive Gas Detection Using Pulse-Driven MEMS Sensor Based on Tin Dioxide

Koichi Suematsu (Kyushu University, Japan)

Wataru Harano (Kyushu University, Japan)

Tokiharu Oyama (Kyushu University, Japan)

Nan Ma (Kyushu University, Japan)

Ken Watanabe (Kyushu University, Japan)

Kengo Shimano (Kyushu University, Japan)

14:10 Development of quartz crystal microbalance based sensor for real-time ozone monitoring

Marianne Guillemot (INRS, France)

Christel Ravera (INRS, France)

Blandine Castel (INRS, France)

Christelle Ghazaly (INRS - LCPME, France)

Eddy Langlois (INRS, France)

13:30 - 14:30

SS-OD-2 Special Session: Olfactory displays

Chair: Takamichi Nakamoto (Tokyo Institute of Technology, Japan)

Large Conf. Room A (7F)

13:30 Wine Aroma Sensory Training Game Employing a Thermal Based Olfactory Display

Akira Tiele (University of Warwick, United Kingdom (Great Britain))

Siddharth Menon (University of Warwick, United Kingdom (Great Britain))

James Covington (University of Warwick, United Kingdom (Great Britain))

13:50 Smelling Screen: Application to a Museum Exhibition and a Challenge for Scaling Up

Ryoji Shinogi (Tokyo University of Agriculture and Technology, Japan)

Haruka Matsukura (Osaka University, Japan)

Hiroshi Ishida (Tokyo University of Agriculture and Technology, Japan)

14:10 Wearable Olfactory Display for Museum Exhibitions

Marina Carulli (Politecnico di Milano, Italy)

Monica Bordegoni (Politecnico di Milano, Italy)

Stefano Bader (Oikos srl, Italy)

Detailed Program: Tuesday, May 28

14:30 - 15:30

Poster Session #2: Odor sampling and sensors,
Large Conf. Room B (7F)

B1: An innovative technology to identify key odorants from mixtures of volatile compounds

Masao Miyazaki (*Iwate University, Japan*)
Mayuki Toisawa (*Iwate University, Japan*)
Jun-ichi Kita (*Shimadzu Corporation, Japan*)
Motoo Kinoshita (*Shimadzu Corporation, Japan*)
Tetsuro Yamashita (*Iwate University, Japan*)

B2: High-Speed Volatile Odorant Molecule Dissolving Strategy for Cell-Based Odorant Sensors

Daigo Terutsuki (*The University of Tokyo, Japan*)
Hidefumi Mitsuno (*University of Tokyo, Japan*)
Yuki Nishin (*Shizuoka University, Japan*)
Takuya Iio (*Shizuoka University, Japan*)
Takeshi Sakurai (*Tokyo University of Agriculture, Japan*)
Kohei Sato and Nobuyuki Mase (*Shizuoka University, Japan*)
Ryohei Kanzaki (*The University of Tokyo, Japan*)

B3: Construction and Simple Application of Primary Electronic Nose System

Long Li (*Huazhong University of Science and Technology, P.R. China*)
Hua-Yao Li (*Huazhong University of Sciences and Technology, P.R. China*)
Zhixiang Hu (*Huazhong University of Science and Technology, P.R. China*)
Jingyao Liu (*Huazhong University of Science and Technology, P.R. China*)
Licheng Zhou (*Huazhong University of Science and Technology, P.R. China*)
Zhilai Tian (*Huazhong University of Science and Technology, P.R. China*)
Huan Liu (*Huazhong University of Sciences and Technology, P.R. China*)

B4: A smartphone sensing system for solid-contact ion-selective electrodes

Sheng-Feng Huan (*National Taiwan University, Taiwan*)
Lin-CHI Chen (*National Taiwan University, Taiwan*)

B5: Imaging detection of ethanol vapor by scanning photo-induced impedance microscopy with suspended-gate structure

Mengyun Wang (*Tohoku University, Japan*)
Hoang Anh Truong (*Tohoku University, Japan*)
Carl Frederik Werner (*Tohoku University, Japan*)
Ko-ichiro Miyamoto (*Tohoku University, Japan*)
Tatsuo Yoshinobu (*Tohoku University, Japan*)

B6: Development of a Potentiometric CO₂ Sensor Chip Based on the Solid-Contact Ion-Selective Electrodes

Li-Cheng Ho (*National Taiwan University, Taiwan*)
Lin-CHI Chen (*National Taiwan University, Taiwan*)

B7: A molecularly imprinted polymer conjugated cobalt oxide nanoparticle based screen printed sensor for enhanced sensing of chlorpyrifos

Trisita Nandy Chatterjee (*Jadavpur University, India*)
Subhankar Mukherjee (*Centre for Development of Advanced Computing, India*)
Souvik Pal (*Centre for Development of Advanced Computing, India*)
Subrata Sarkar (*CDAC Kolkata, India*)
Runu Banerjee Roy (*Jadavpur University, India*)
Rajib Bandyopadhyay (*Jadavpur University, India*)
Nabarun Bhattacharyya (*Centre for Development of Advanced Computing, India*)

Detailed Program: Tuesday, May 28

B8: Selective and Sensitive Detection of Limonene in Mango using Molecularly Imprinted Polymer Based Quartz Crystal Microbalance Sensor

Barnali Ghatak (Computational Intelligence Lab & Jadavpur University, India)
Sk Babar Ali (Ph. D, India)
Hemanta Naskar (Jadavpur University, Salt Lake Campus, Kolkata, India)
Bipan Tudu (Jadavpur University, Kolkata, India)
Panchanan Pramanik (GLA University, India)
Soumyo Mukherji (Indian Institute of Technology Bombay, India)
Rajib Bandyopadhyay (Jadavpur University, India)

B9: Development of a highly selective nickel cobalt oxide nanoparticles modified molecular imprinted polymer based sensor for detection of gallic acid in green tea

Debangana Das (Jadavpur University, India)
Trisita Nandy Chatterjee (Jadavpur University, India)
Ajanto Kumar Hazarika (TRA Tocklai, Assam, India)
Santanu Sabhapondit (TRA Tocklai, Assam, India)
Runu Banerjee Roy (Jadavpur University, India)
Bipan Tudu (Jadavpur University, Kolkata, India)
Rajib Bandyopadhyay (Jadavpur University, India)

B10: Development of Furaneol Imprinted Polymer Based QCM sensor for Discrimination of Artificially and Naturally Ripened Mango

Barnali Ghatak (Computational Intelligence Lab & Jadavpur University, India)
Hemanta Naskar (Jadavpur University, Salt Lake Campus, Kolkata, India)
Sk Babar Ali (Ph. D, India)
Bipan Tudu (Jadavpur University, Kolkata, India)
Panchanan Pramanik (GLA University, India)
Soumyo Mukherji (Indian Institute of Technology Bombay, India)
Rajib Bandyopadhyay (Jadavpur University, India)

B11: Efficient Self-Heating in Gallium Nitride Nanopillars for Ultra-Low-Power Mass-Productible Gas Sensors

Joan Daniel Prades (Universitat Barcelona, Spain)
Nicolai Markiewicz (TU Braunschweig, Germany)
Olga Casals Guillen (University of Barcelona, Spain)
Hutomo Suryo Wasisto (Technische Universität Braunschweig, Germany)
Andreas Waag (TU Braunschweig, Germany)

B12: Room Temperature Ionic Liquids as Sensing Coatings of QCM Gas Sensors to Detect Different Organic Gases

Kaoru Nakazawa (Tokyo Institute of Technology, Japan)
Manuel Aleixandre (Tokyo Institute of Technology, Japan)
Takamichi Nakamoto (Tokyo Institute of Technology, Japan)

B13: Atomic gold decorated polyaniline sensor for gaseous detection

Parthojit Chakraborty (Tokyo Institute of Technology, Japan)
Yu-An Chien (Tokyo Institute of Technology, Japan)
Wan-Ting Chiu (University of Tokyo, Japan)
Tso-Fu Mark Chang (Tokyo Institute of Technology, Japan)
Masato Sone (Tokyo Institute of Technology, Japan)
Takamichi Nakamoto (Tokyo Institute of Technology, Japan)

B14: Multiplexed LSPR gas sensor with an arrayed molecularly imprinted Sol-Gel filter

Shota Shimizu (Kyushu University, Japan)
Liang Shang (Kyushu University, Japan)
Fumihito Sassa (Kyushu University, Japan)
Kenshi Hayashi (Kyushu University, Japan)

Detailed Program: Tuesday, May 28

B15: Colorimetric determination of adenosine in urine using biotin modified aptamer and gold nanoparticles

Shuqi Zhou (Zhejiang University, P.R. China)

Ying Gan (Zhejiang University, P.R. China)

Jiadi Sun (Zhejiang University, P.R. China)

Tao Liang (Zhejiang University, P.R. China)

Xinyi Wang (Zhejiang University, P.R. China)

Liubing Kong (Zhejiang University, P.R. China)

Hao Wan (Zhejiang University, P.R. China & Michigan State University, USA)

Ping Wang (Zhejiang University, P.R. China)

B16: Detection of volatile organic compounds with a polymeric sensing film deposited on a long period fiber grating

Georgina Beltrán-Pérez (Benemérita Universidad Autónoma de Puebla, Mexico)

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

Juan Castillo-Mixcoátl (Benemérita Universidad Autónoma de Puebla, Mexico)

B17: Sensing device for breathing biomarker detection

Pelagia Irene Goum (The Ohio State University, USA)

Fateh Mikaeili (The Ohio State University, USA)

Jusang Lee (Stonybrook University, USA)

Yasha Karimi (Stony Brook University, USA)

Milutin Stanacevic (SUNY Stony Brook, USA)

B18: Optical sensor array based on P(V) corroles for fluorometric detection of nitrite (Late News)

Larisa Lvova (University Tor Vergata, Rome, Italy)

Fabrizio Caroleo (University Tor Vergata, Rome, Italy)

Alexandro Catini (University of Roma Tor Vergata, Italy)

Giovanni Diedenhofen (University Tor Vergata, Rome, Italy)

Roberto Paolesse (University Tor Vergata, Italy)

Corrado Di Natale (Università di Roma Tor Vergata, Italy)

B19: Development of Inverse Opal Photonic Crystals Modified with Aggregation-Induced Emission (AIE) Substance for Sensitive and Selective Detection of Ammonia Gas (Open Poster)

Takeshi Onodera (Kyushu University, Japan)

Hiroaki Murakami (Kyushu University, Japan)

Taiki Kimura (Kyushu University, Japan)

B20: Low cost, Solution Processed OFETs for Chemical sensing (Open Poster)

Krishna C Persaud (The University of Manchester, United Kingdom (Great Britain))

15:30 - 16:00

Coffee Break/Exhibition

4F and 7F

Detailed Program: Tuesday, May 28

15:30 - 18:00

Sniffest

(Student competition for machine olfaction)

Coordinators: Oriol Gonzalez (JLM Innovation, Germany), Haruka Matsukura (Osaka University, Japan), Hanako Ishida (Tokyo University of Agriculture Technology, Japan), Akifumi Yamamoto (Tokyo University of Agriculture Technology, Japan), Sara Beeken (JLM Innovation, Germany), Hiroshi Ishida (Tokyo University of Agriculture and Technology, Japan)

Large Conf. Room B (7F)

Sniffest Accepted Teams

MinoS

Senior Researcher: *Jose Luís Ramírez Falo (Universitat Rovira i Virgili)*

Team Roster: *Eric Navarrete Gatell (Universitat Rovira i Virgili), Ernesto González Fernández (Universitat Rovira i Virgili), Juan, Casanova Chafer (Universitat Rovira i Virgili), Miriam Alvarado Pérez (Universitat Rovira i Virgili), Oussama El Azizi, Xavier Blanch Martínez (Universitat Rovira i Virgili)*

Call of Justice

Senior Researcher: *Kenshi Hayashi (Kyushu University, Japan)*

Team Roster: *Yasuhiro Kusuda (Kyushu University, Japan), Zhongyuan Yang (Kyushu University, Japan), Takaaki Soed (Kyushu University, Japan)*

ANTT (Active Nose Trail Tracker)

Senior Researcher: *Hiroshi Ishida (Tokyo University of Agriculture and Technology, Japan)*

Team Roster: *Tomoki Uno (Tokyo University of Agriculture and Technology, Japan), Maki Sawano (Tokyo University of Agriculture and Technology, Japan)*

DoggyBot

Senior Researcher: *Jan Mitrovics (JLM Innovation, Germany)*

Team Roster: *Sara Beeken (JLM Innovation, Germany), Carsten Jaeschke (JLM Innovation, Germany), Kaylen Richardson (JLM Innovation, Germany), Marta Padilla (JLM Innovation, Germany), Oriol Gonzalez (JLM Innovation, Germany)*

Detailed Program: Tuesday, May 28

16:00 - 17:00

ET-1 Oral Session: Electronic Tongue

Chair: Ping Wang (Zhejiang University, China)

Int'l Conf. Hall (4F)

16:00 A portable potentiometric electronic tongue leveraging smartphone and cloud platforms

Patrick Ruch (IBM Research - Zurich, Switzerland)

Rui Hu (IBM Research Zurich, Switzerland)

Luca Capua (IBM Research, Switzerland)

Yuksel Temiz (IBM Research - Zurich, Switzerland)

Stephan Paredes (IBM Research Zurich, Switzerland)

Antonio López Marín (IBM Research, USA)

Jorge Barroso (IBM Research, USA)

Aaron Cox (IBM Research, USA)

Eiji Nakamura (IBM Research, Japan)

Keiji Matsumoto (IBM-Japan, Japan)

16:20 The Pt-Ni composite electrode as a part of electronic tongue sensor array

Klaudia Głowacz (Warsaw University of Technology, Poland)

Marcin Zabadał (Warsaw University of Technology, Poland)

Urszula Wawrzyniak (Warsaw University of Technology, Poland)

Patrycja Ciosek-Skibińska (Warsaw University of Technology, Poland)

16:40 Light Addressable Potentiometric Sensor (LAPS) Integrated Microfluidic System for Real-time Cell Acidification Detection

Tao Liang (Zhejiang University, P.R. China)

Qian Wu (Zhejiang University, P.R. China)

Chenlei Gu (Zhejiang University, P.R. China)

Ying Gan (Zhejiang University, P.R. China)

Jiawei Tu (Zhejiang University, P.R. China)

Qiongwen Hu (Zhejiang University, P.R. China)

Hao Wan (Zhejiang University, P.R. China & Michigan State University, USA)

Ping Wang (Zhejiang University, P.R. China)

19:00 - 22:00

Gala Dinner

Venue: Granada Suite Fukuoka

Detailed Program: Wednesday, May 29

09:00 - 015:00

Registration

4F

09:30 - 10:30

Data-1 Oral Session: Data analysis

Chair: Saverio De Vito (ENEA, Italy)

Int'l Conf. Hall (4F)

09:30 A Real time classification model for chemical sensor array based on bioinspired olfactory signal processing

Eugenio Martinelli (Roma Tor Vergata University, USA)

Corrado Di Natale (Università di Roma Tor Vergata, Italy)

Gabriele Magna (University of Rome Tor Vergata, Italy)

09:50 High-bandwidth e-nose for rapid tracking of turbulent plumes

Javier Burgues (Institute for Bioengineering of Catalonia / University of Barcelona, Spain)

Luis Valdez (Cinvestav, Mexico)

Santiago Marco (Institute for Bioengineering of Catalonia & University of Barcelona, Spain)

10:10 Co-occurrence-based clustering of odor descriptors for predicting structure-odor relationship

Chuanjun Liu (USE Co., LTD & Kyushu University, Japan)

Liang Shang (Kyushu University, Japan)

Kenshi Hayashi (Kyushu University, Japan)

09:30 - 10:30

SS-M-1 Special Session: Medical

Chair: Takahiro Arakawa (Tokyo Medical and Dental University, Japan)

Large Conf. Room A (7F)

09:30 Membrane-type Surface Stress Sensor (MSS) for Artificial Olfaction

Huynh Ngo (National Institute for Materials Science (NIMS), Japan)

Kosuke Minami (National Institute for Materials Science (NIMS), Japan)

Gaku Imamura (National Institute for Materials Science (NIMS), Japan)

Kota Shiba (National Institute for Materials Science (NIMS), Japan)

Genki Yoshikawa (National Institute for Materials Science & University of Tsukuba, Japan)

09:50 Human body odor visualization with 2-dimensional sensing

Kenshi Hayashi (Kyushu University, Japan)

10:10 Application of Insect Odorant Receptors for the Detection of Human-Derived Odorants

Hidefumi Mitsuno (University of Tokyo, Japan)

Sawako Niki (The University of Tokyo, Japan)

Ryohei Kanzaki (The University of Tokyo, Japan)

Eri Kuroda (The University of Tokyo, Japan)

Shogo Araki (The University of Tokyo, Japan)

Daigo Terutsuki (The University of Tokyo, Japan)

Takeshi Sakurai (Tokyo University of Agriculture, Japan)

10:30 - 11:00

Coffee Break/Exhibition

7F

Detailed Program: Wednesday, May 29

11:00 - 12:00

SS-M-2 Special Session: Medical

Chair: Chair: Kenshi Hayashi (Kyushu University, Japan)

Large Conf. Room A (7F)

11:00 Assessment Of "Breath Print" In Patients With Chronic Kidney Disease During Dialysis By Non-Invasive Breath Screening Of Exhaled Volatile Compounds Using An Electronic Nose

Omar Zaim (Moulay Ismail University, Faculty of Science, Morocco)

Tarik Saidi (Moulay Ismail University, Faculty of Sciences, Morocco)

Nezha El Bari (Moulay Ismail University, Faculty of Sciences, Morocco)

Benachir Bouchikhi (Moulay Ismail University & Faculty of Sciences, Morocco)

11:20 Bio-fluorometric realtime gas-imaging system (sniff-cam) for skin ethanol vapor

Kenta Iitani (Tokyo Medical and Dental University & Japan Society for Promotion of Science, Japan)

Toshiyuki Sato (Tokyo Medical and Dental University, Japan)

Koji Toma (Tokyo Medical and Dental University, Japan)

Takahiro Arakawa (Tokyo Medical and Dental University, Japan)

Kohji Mitsubayashi (Tokyo Medical and Dental University, Japan)

11:40 Multichannel Odor Sensor System using Chemosensitive Resistors and Machine Learning

Atsushi Shunori (Panasonic Corporation, Japan)

Rui Yatabe (Kyushu University, Japan)

Bartosz Wyszynski (Kyushu University, Japan)

Yosuke Hanai (Panasonic Corporation, Japan)

Atsuo Nakao (Panasonic Corporation, Japan)

Masaya Nakatani (Panasonic Corporation, Japan)

Akio Oki (Panasonic Corporation, Japan)

Hiroaki Oka (Panasonic Corporation, Japan)

Takashi Washio (Osaka University, Japan)

Kiyoshi Toko (Kyushu University, Japan)

Detailed Program: Wednesday, May 29

11:00 - 12:00

Data-2 Oral Session: Data analysis

Chair: Santiago Marco (Institute for Bioengineering of Catalonia & University of Barcelona, Spain)

Int'l Conf. Hall (4F)

- 11:00 Prediction of Odor Descriptor Group of Essential Oils from Mass Spectra using Machine Learning**
Tanoy Debnath (Tokyo Institute of Technology, Japan)
Dani Prasetyawan (Tokyo Institute of Technology, Japan)
Takamichi Nakamoto (Tokyo Institute of Technology, Japan)
- 11:20 A Minimum Distance Inliers Probability (MDIP) Feature Selection Method To Enhance Gas Classification For An Electronic Nose System**
Yen Tung Liu (National Tsing Hua University, Taiwan)
Kea Tiong Tang (Taiwan, Taiwan)
- 11:40 Semi-supervised Gas Detection Using an Ensemble of One-class Classifiers**
Han Fan (Örebro University, Sweden)
Victor Hernandez Bennetts (Örebro University, Sweden)
Erik Schaffernicht (Örebro University, Sweden)
Achim J. Lilienthal (Örebro University, Sweden)

12:00 - 13:30

Lunch

On your own

13:30 - 14:30

SenDev-2 Oral Session: Sensors

Chair: Takeshi Onodera (Kyushu University, Japan)

Int'l Conf. Hall (4F)

- 13:30 Fabrication of a PVC-based solid-state Ag/AgCl reference electrode**
Yi-Min Wu (Taiwan National University, Taiwan)
Lin-Chi Chen (National Taiwan University, Taiwan)
- 13:50 Surfactant cleaning of lipid polymer membranes of bitterness sensor**
Xiao Wu (Kyushu University, Japan)
Yapeng Yuan (Kyushu University, Japan)
Yusuke Tahara (Kyushu University, Japan)
Rui Yatabe (Kyushu University, Japan)
Hidekazu Ikezaki (Intelligent Sensor Technology, Inc., Japan)
Kiyoshi Toko (Kyushu University, Japan)
- 14:10 Electrochemical Detection of Capsaicin Using Yttrium Oxide Nanoparticles Modified Graphite Paste Electrode (Y2O3/GPE)**
Hemanta Naskar (Jadavpur University, Salt Lake Campus, Kolkata, India)
Barnali Ghatak (Computational Intelligence Lab & Jadavpur University, India)
Sudip Biswas (SRF, India)
Bipan Tudu (Jadavpur University, Kolkata, India)
Rajib Bandyopadhyay (Jadavpur University, India)
Panchanan Pramanik (GLA University, India)

Detailed Program: Wednesday, May 29

13:30 - 14:30

SenDev-4 Oral Session: Sensors

Chair: Troy Nagle (NC State University, USA)

Large Conf. Room A (7F)

13:30 Sputtering of Metal Oxide Semiconductor n-p Stacks

Andrea Fasoli (IBM, USA)

Lisa Thornquist (San Jose State University, USA)

Krystelle Lionti (IBM, USA)

Linda Sundberg (IBM, USA)

Luisa Bozano (IBM, USA)

13:50 Understanding the Sensing Mechanism of WO₃ based Gas Sensors

Anna Staerz (University of Tuebingen, Germany)

Tamara Russ (University of Tuebingen, Germany)

Udo Weimar (Institut für Physikalische Chemie, Germany)

Nicolae Bârsan (Institut für Physikalische Chemie, Germany)

14:10 Programmable electrohydrodynamic jet printed gas sensor on MEMS micro-hot plate platforms

Zhixiang Hu (Huazhong University of Science and Technology, P.R. China)

Hua-Yao Li (Huazhong University of Sciences and Technology, P.R. China)

Long Li (Huazhong University of Science and Technology, P.R. China)

Jingyao Liu (Huazhong University of Science and Technology, P.R. China)

Licheng Zhou (Huazhong University of Science and Technology, P.R. China)

Zhilai Tian (Huazhong University of Science and Technology, P.R. China)

Yongang Huang (Huazhong University of Science and Technology, P.R. China)

Huan Liu (Huazhong University of Sciences and Technology, P.R. China)

14:30 - 15:30

Poster Session #3: Applications and data analysis

Large Conf. Room B (7F)

C1: Prediction of Specific Odor Markers in Oil from Olive Fruit Infested with Olive Scale using an Electronic Nose

Tianxing Wang (Zhejiang University, P.R. China)

Norihito Kishimoto (Central Institute of Olive and Health Sciences & Shodoshima

Healthyland Co., Ltd., Japan)

Ayako Kashiwagi (Shodoshima Healthyland Co., Ltd., Japan)

C2: Urban Monitoring of Unpleasant Odors with a Handheld Electronic Nose

Andres Gongora (University of Malaga & Machine Perception and Intelligent

Robotics (MAPIR), and Biomedical Research Institute of Malaga (IBIMA), Spain)

Alberto Jaenal (University of Malaga, Spain)

David Fernandez chavez (UMA, Spain)

Javier Monroy (Universidad de Malaga, Spain)

Javier Gonzalez-Jimenez (Universidad de Málaga, Spain)

C3: Early detection of fish degradation by electronic nose

Giulia Zambotti (National Research Council (CNR) - National Institute of Optics (INO) & University of Brescia, Italy)

Matteo Soprani (University of Brescia, Italy)

Rosamaria Capuano (University of Rome Tor Vergata, Italy)

Emanuela Gobbi (University of Brescia, Italy)

Corrado Di Natale (Università di Roma Tor Vergata, Italy)

Andrea Ponzoni (National Institute of Optics, CNR, Italy)

Detailed Program: Wednesday, May 29

C4: A Novel Lateral Flow Strip Based on DNA-functionalized Gold Nanoparticles for On-site Detection of Mercury (II) Ions

Jiadi Sun (Zhejiang University, P.R. China)
Ying Gan (Zhejiang University, P.R. China)
Liubing Kong (Zhejiang University, P.R. China)
Shuqi Zhou (Zhejiang University, P.R. China)
Tao Liang (Zhejiang University, P.R. China)
Xinyi Wang (Zhejiang University, P.R. China)
Hao Wan (Zhejiang University, P.R. China & Michigan State University, USA)
Ping Wang (Zhejiang University, P.R. China)

C5: Authentication of geographical growing origin of black pepper (*piper nigrum* L.) based on volatile organic compounds profile: A case study for Malaysia and India black peppers

Zehnder Jarroop Augustine Mercer (Malaysian Pepper Board, Malaysia)
Hong Siang Chua (Swinburne University of Technology, Sarawak, Malaysia)
Peter Mahon (Swinburne University of Technology, Australia)
Siaw San Hwang (Swinburne University of Technology Sarawak Campus, Malaysia)
Sing Muk Ng (Swinburne University of Technology Sarawak Campus, Malaysia)

C6: Characteristics of a simple detection logging system for mercury using quartz crystal microbalance

Kazutoshi Noda (National Institute of Advanced Industrial Science and Technology, Japan)

C7: Overview of IoT MOX Chemical Sensors Arrays for Agri-Food Applications

Marco Abbatangelo
Estefania Nunez Carmona (University of Brescia, Italy)
Veronica Sberveglieri (CNR-IBBR, Italy)
Elisabetta Comini (University of Brescia, Italy)
Giorgio Sberveglieri (Sensor Lab, CNR-INO, Via Valotti 9, Brescia, Italy)

C8: Identification and Classification of Sudan Dye I Adulterants in Turmeric Powder by NIR Spectroscopy and Support Vector Machine

Saumita Kar (Jadavpur University, India)
Bipan Tudu (Jadavpur University, Kolkata, India)
Rajib Bandyopadhyay (Jadavpur University, India)

C9: Application of an E-tongue and E-nose for a rapid E.coli detection in a drinking water treatment plant

Cristhian Manuel Durán Acevedo (University of Pamplona, Colombia)
Ramon Ovidio García (University of Pamplona, Colombia)
Jeniffer Katherine Carrillo Gomez (University of Pamplona, Colombia)

C10: A Kit for Colorimetric VC Detection Combining with Bionic E-eye

Ying Gan (Zhejiang University, P.R. China)
Jiadi Sun (Zhejiang University, P.R. China)
Tao Liang (Zhejiang University, P.R. China)
Shuqi Zhou (Zhejiang University, P.R. China)
Xinyi Wang (Zhejiang University, P.R. China)
Hao Wan (Zhejiang University, P.R. China & Michigan State University, USA)
Ping Wang (Zhejiang University, P.R. China)
Chunlian Qin (Zhejiang University, P.R. China)

Detailed Program: Wednesday, May 29

C11: Large cohort study of respiratory tract infection patients by breath analysis: Early Results (Late News)

James Covington (University of Warwick, United Kingdom (Great Britain))

C12: Overview on SNIFFPHONE: a portable device for disease diagnosis (Late News)

Carsten Jaeschke (JLM Innovation GmbH)

Marta Padilla (JLM Innovation GmbH, Germany)

Emmi Turppa (VTT Technical Research Centre of Finland Ltd, Finland)

Inese Polaka (Riga Technical University, Latvia)

Oriol Gonzalez (JLM Innovation GmbH)

Kaylen Richardson (JLM Innovation GmbH)

Janne Pajukanta (VTT Technical Research Centre of Finland Ltd, Finland)

Juha Kortelainen (VTT Technical Research Centre of Finland, Finland)

Gidi Shani (Technion - Israel Institute of Technology)

Gregory Shuster (NanoVation-GS Ltd., Israel)

Pawel Mochalski (University of Innsbruck, Austria)

Marcis Leja (University of Latvia, Latvia)

Jan Mitrovics (JLM, Germany)

Hossam Haick (Technion - Israel Institute of Technology, Israel)

C13: Discrimination of the maturity stages of Indian mango using QCM based electronic nose (Late News)

Nilava Debabhuti (Jadavpur University, India)

Prolay Sharma (Jadavpur University, India)

Sk Babar Ali (Ph. D, India)

Bipan Tudu (Jadavpur University, Kolkata, India)

Rajib Bandyopadhyay (Jadavpur University, India)

Mousumi Poddar Sarkar (University Of Calcutta, India)

Nabarun Bhattacharyya (Centre for Development of Advanced Computing, India)

C14: IEEE P2520: Standard for Testing Machine Olfaction Devices & Systems (Open Poster)

Troy Nagle (NC State University, USA)

Susan Schiffman (NC State University, USA)

C15: Prediction of Glycogen and Moisture Content in Japanese Wagyu Beef by FT-NIR Spectroscopy for Taste Quality (Open Poster)

Xiao Ye (Kyushu University, Japan)

Kiyoshi Toko (Kyushu University, Japan)

Takeshi Onodera (Kyushu University, Japan)

Rui Yatabe (Kyushu University, Japan)

Yusuke Tahara (Kyushu University, Japan)

Zhifeng Yao (Kyushu University, Japan)

Toshiaki Oe (Tottori Prefectural Animal Husbandry Experiment Station, Japan)

Masami Nishimura (Tottori Prefectural Animal Husbandry Experiment Station,

Japan)

Ken Iwao (Tottori Prefectural Animal Husbandry Experiment Station, Japan)

Naruhiko Tanaka (Tottori Prefectural Animal Husbandry Experiment Station, Japan)

C16: Quantification method for scent intensity (Open Poster)

Toshifumi Ezaki (KOBAYASHI Pharmaceutical Co., Ltd., Japan)

Ryota Asano (KOBAYASHI Pharmaceutical Co., Ltd., Japan)

Norihiko Matsumune ((KOBAYASHI Pharmaceutical Co., Ltd., Japan)

Jun-ichi Kita (Shimadzu Corporation, Japan)

Takashi Higuchi (Ritsumeikan University, Japan)

Detailed Program: Wednesday, May 29

C17: MOS sensors array for methane monitoring with UAS

Eric Taguem (University of liege, Belgium)

Anne-Claude Romain (Liège University, Belgium)

C18: Accurate identification of gas type and concentration using DNN reflecting the sensing properties of MOSFET-type gas sensor

Gyuweon Jung (Seoul National University, Korea)

Hyeongsu Kim (Seoul National University, Korea)

Yujeong Jeong (Seoul National University, Korea)

Yoonki Hong (Seoul National University, Korea)

Meile Wu (Seoul National University, Korea)

Seongbin Hong (Seoul National University, Korea)

Dongkyu Jang (Seoul National University, Korea)

Wonjun Shin (Seoul National University, Korea)

Jongho Lee (Seoul National University, Korea)

C19: Comparison of NMF with Kullback-Leibler Divergence and Itakura-Saito Divergence for Odor Approximation

Dani Prasetyawan (Tokyo Institute of Technology, Japan)

Takamichi Nakamoto (Tokyo Institute of Technology, Japan)

C20: Comparison of Two Methods To Reduce Time Measurement of Quartz Crystal Microbalance Gas Sensors

José Lorenzo Muñoz-Mata (Universidad Tecnológica de Puebla, Mexico)

Diana Lizeth Osorio-Arrieta (Benemerita Universidad Autonoma de Puebla, Mexico)

Juan Jesus Jimenez-Arellano (Benemerita Universidad Autonoma de Puebla, Mexico)

Georgina Beltrán-Pérez (Benemérita Universidad Autónoma de Puebla, Mexico)

Juan Castillo-Mixcóatl (Benemérita Universidad Autónoma de Puebla, Mexico)

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

C21: Feature extraction of gas sensor signals for gas source localization

Javier Burgues (Institute for Bioengineering of Catalonia / University of Barcelona, Spain)

Santiago Marco (Institute for Bioengineering of Catalonia & University of Barcelona, Spain)

C22: Deep Learning Investigation of Mass Spectrometry Analysis from Melanoma Samples

Emily Stark (Florida Atlantic University, USA)

James Covington (University of Warwick, United Kingdom (Great Britain))

Samuel Agbroko (University of Warwick, United Kingdom (Great Britain))

Chenjing Peng (University Hospitals Coventry and Warwickshire NHS Trust, United Kingdom (Great Britain))

William Hahn (Florida Atlantic University & MPCR Lab, USA)

Elan Barenholtz (Florida Atlantic University, USA)

C23: Adaptive Machine learning for Backup Air Quality Multisensor Systems continuous calibration

Saverio De Vito (ENEA, Italy)

Elena Esposito (ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Italy)

Fabrizio Formisano (ENEA, Italy)

Girolamo Di Francia (ENEA, Italy)

Paolo D' Auria (ARPAC, Italy)

Ettore Massera (ENEA, Italy)

Detailed Program: Wednesday, May 29

C24: Gas Mixture Analysis Based on Metal-Oxide Semiconductor gas sensors with Temperature Modulated Method

Wei-Chih Wen (National Tsing Hua University, Taiwan)

Yen Tung Liu (National Tsing Hua University, Taiwan)

Kea Tiong Tang (Taiwan, Taiwan)

C25: Extracting knowledge from hybrid instrumental environmental odour monitoring systems: self organizing maps, data fusion and supervised Kohonen networks for prediction

Pierluigi Barbieri (University of Trieste, Italy)

Sergio Cozzutto (ARCO SolutionS srl, Italy)

Aleksander Astel (Akademia Pomorska w Slupsku, Italy)

Sabina Licen (University of Trieste, Italy)

Gianpiero Adami (University of Trieste, Italy)

C26: An improved evaluation method of high-potency sweeteners using taste sensor (Open Poster)

Yuanchang Liu (Kyushu University, Japan)

Xiao Wu (Kyushu University, Japan)

Yusuke Tahara (Kyushu University, Japan)

Kiyoshi Toko (Kyushu University, Japan)

15:30 - 16:00

Coffee Break

4F and 7F

16:00 - 17:00

Closing and Awards Ceremony

Int'l Conf. Hall (4F)

Testing Taste by Numbers

- Key Tool for Product Development Paradigm Shift -



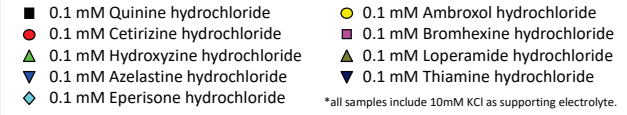
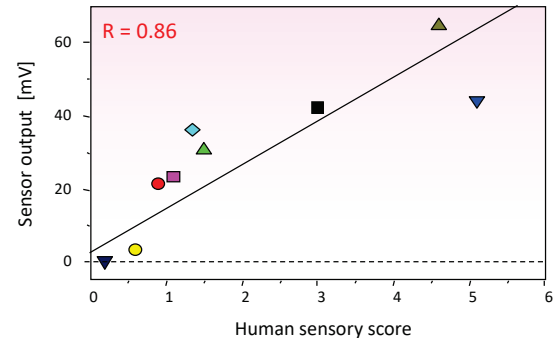
Taste Sensing System TS-5000Z

Winner of Best New Product - Technology – Specialty Coffee Expo 2017 in Seattle

The Taste Sensing System TS-5000Z mimics the human taste receptor mechanism to empirically quantify the “taste” of various foods and medical drugs.

It is a key sensory test tool both supporting objective taste evaluation at all product development stages, especially marketing, and helping reduce aftercare follow-up uncertainties.

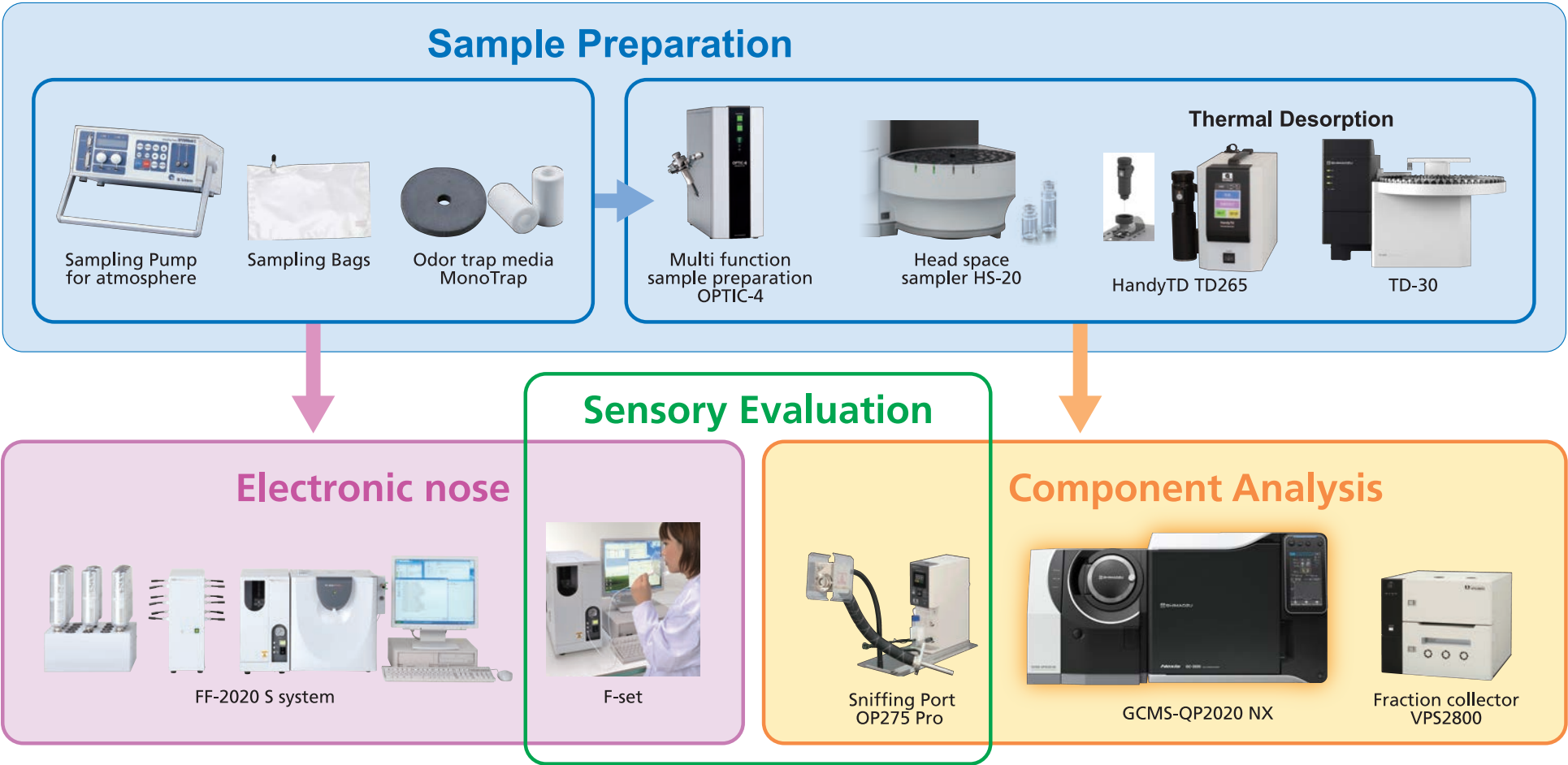
High correlation with human sensory evaluation
- Pharmaceutical examples -



Intelligent Sensor Technology, Inc.

5-1-1 Onna, Atsugi, Kanagawa 243-0032 Japan
TEL:046-296-6609 E-mail: taste.sensor@insent.co.jp
URL: <http://www.insent.co.jp/en>

Odor Quantification by Shimadzu and GL Sciences



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 1 Nishinokyo Kuwabara-cho, Nakagyo-ku, Kyoto 604-8511, Japan
 TEL: +81-75-823-1111
 URL: <http://www.shimadzu.com>

GL Sciences, Inc. Japan
 22-1 Nishishinjuku 6-chome Shinjuku, Tokyo, 163-1130, Japan
 TEL: +81-3-5323-6620 Fax: +81-3-5323-6621
 URL: www.glsciences.com email: world@glsc.co.jp

