TABLE OF CONTENTS

MESSAGE FROM THE CHAIRPERSONS

Dear IEEE SENSORS 2014 Participants,

On behalf of the Organising Committee of the 13th IEEE SENSORS Conference, it is a great honour and pleasure to welcome you to Spain and to Valencia, one of the most beautiful Mediterranean cities. For the venue of the conference, we have selected the Valencia Conference Center, awarded as the World's Best Convention Center in 2010 by the International Association of Congress Centres.

This annual international Conference, established (in 2002) and sponsored by the IEEE Sensors Council, offers the perfect podium for the presentation, discussion, and exchange of information regarding the latest research and developments in the area of sensors and related fields. The inaugural conference was held in Orlando (Florida, USA) in June 2002 and has since been held in Toronto (Canada, 2003), Vienna (Austria, 2004), Irvine (USA, 2005), Daegu (South Korea, 2006), Atlanta (Georgia, USA, 2007), Lecce (Italy, 2008), Christchurch (New Zealand, 2009), Hawaii (USA, 2010), Limerick (Ireland, 2011), Taipei (Taiwan, 2012), Baltimore (USA, 2013). Next year's event will take us to Busan, South Korea.

Consistent with the broad and multidisciplinary technical scope that the IEEE Sensors Council fosters, the IEEE SENSORS Conference strives to offer attendees a wide array of technical subjects covering nine topical areas: (1) Phenomena, Modelling and Evaluation, (2) Chemical and Gas Sensors, (3) Biosensors, (4) Optical Sensors, (5) Mechanical, Magnetic, and Physical Sensors, (6) Sensor/Actuator Systems, (7) Sensor Networks, (8) Applications, and (9) Materials, Processes, Circuits, Signals, and Interfaces.

This year we are more than happy to report that the attendance will be in excess of 650 delegates from 50 different countries representing a balanced mix of participants from all the IEEE regions. The conference attracted 994 submissions from 59 countries, from which 603 abstracts (326 Oral and 277 Posters, including 53 late news and 28 open posters) were accepted for presentation. It is important to note that the poster and oral paper submissions have undergone identical peer reviews. We sincerely thank all authors for submitting their latest work, thus contributing to the excellent technical programme of the Conference. This outstanding quality has allowed achieving an acceptance ratio of 61%.

To accommodate the broad range of topics, the conference sessions have been organised into six parallel oral sessions and three poster sessions, running from Monday 3rd November through Wednesday 5th November. They will be held entirely on site at Valencia Conference Centre. In addition to these regular sessions, nine special sessions, with cutting edge selected topics have been organized. Tutorials, as in previous editions, have been allocated on Sunday 2nd November.

The plenary talks will be given by Dr. Carlo Ratti, Director of the MIT Senseable City Lab (Massachusetts, USA), Prof. Herre van der Zant, from the Delft University of Technology (Delft, The Netherlands), and Prof. Jun Ohta, from the Nara Institute of Science and Technology (Nara, Japan).

The highlights of this year's social program will be the welcome reception and the banquet. The reception will be held on Sunday 2nd November at the 'Veles e Vents' emblematic building, with an excellent view of the Valencia Harbour. The Gala Dinner will be held on Tuesday 4th November at the 'Masia Xamandreu', a wonderful traditional farmhouse, surrounded by palms, orange trees and flowers.

The success of this year's Conference is largely due to volunteer commitment from all members of the Organising Committee. The technical programme chair, Ignacio R. Matías, and the 27 members of the Technical Programme Committee, provided rigorous reviews of all submitted abstracts. The Local Organising Committee as coordinated by Javier Calpe, worked tirelessly in securing local support and participation. As Special Sessions Chair, Alex Fish has coordinated unique and engaging sessions, comprised of invited speakers who are internationally recognised leaders in their fields. The Tutorial Chair, Arnaldo D'Amico identified attractive and relevant topics and selected excellent speakers for the Tutorials.

We would like to express our thanks for the support of the following local institutions: Valencian Regional Government, Valencia City Hall (through InnDEA Foundation and Tourism office), University of Valencia and Superior Technical School of Engineering, for their continuous support.

We wish you a fruitful conference and an enjoyable time in Valencia.

Càndid Reig
General Co-Chair

Lina Sarro
General Co-Chair

Ignacio R. Matías
Technical Program Chair

GENERAL INFORMATION

Registration & Information Desk
The Registration and Information Desk will be open during the following times:

Sunday, November 2	8:00 - 18:00
Monday, November 3	7:30 - 18:00
Tuesday, November 4	8:00 - 18:00
Wednesday, November 5	8:00 - 18:00

Meeting Room Locations
Concurrent Sessions A: Auditorium 1
Concurrent Sessions B: Auditorium 2
Concurrent Sessions C: Auditorium 3A
Concurrent Sessions D: Auditorium 3B
Concurrent Sessions E: Rooms 1 & 2
Concurrent Sessions F: Rooms 3 & 4
Concurrent Sessions G: Rooms 6 & 7
Poster Sessions: Foyer

Name Badges
All attendees must wear their name badges at all times to gain admission to all Conference events.

Electronic Proceedings
One copy of the Electronic Proceedings will be provided to you on a flash drive. Additional copies may be purchased at the Conference Registration Desk. The purchase price of the Electronic Proceedings will increase after the Conference, so be sure to order your additional copies in advance.

Additional Electronic Proceedings: $85 USD IEEE Member
Additional Electronic Proceedings: $100 USD Non Member

Message and Job Market Board
The Message and Job Market Board will be located near the Conference Registration Desk. Posting is allowed by job seekers. Recruiters are not allowed to post.

Conference Attire
Attire during the duration of the Conference is business casual.

Smoking
All meeting rooms and seated functions are smoke free. Please adhere to the smoking policy of the Valencia Congress Centre.

Cellular Phones
As a courtesy to your fellow attendees, please turn off your cell phone ringer during the Conference.

SOCIAL PROGRAM

Sunday, November 2

Event: Tutorial Lunch
Time: 12:30 - 14:00
Location: Multipurpose Room 1

Event: Welcome Reception
Time: 18:30 - 20:00 – buses leave at 18:00
Location: Veles e Vents *(transportation will be provided to the venue and will return to the Valencia Congress Centre)*

Join us for the Welcome Reception on Sunday, November 2, 2014 at Veles e Vents, America's Cup Building. Attendees will enjoy an informative bus tour through Valencia en route to Veles e Vents. Cocktails and hors d'oeuvres will be served beginning at 18:30.

Monday, November 3

Event: Conference Lunch
Time: 13:30 - 15:00
Location: Multipurpose Rooms 1 & 2

Tuesday, November 4

Event: Conference Lunch
Time: 13:30 – 15:00
Location: Multipurpose Rooms 1 & 2

Event: Gala Dinner
Time: 19:00 - 22:00 – buses leave at 18:30
Location: Masia Xamandreu de Godella *(transportation will be provided to the venue and will return to the Valencia Congress Centre)*

The SENSORS 2014 Gala Dinner will be at the Masia Xamandreu de Godella. The Masia Xamandreu located in Godella, was built in the nineteenth century, and belonged to the Jaumeandreu family. It was the banker Jaumeandreu, a man with a special sensitivity to art and a client of the well-known Valencian painter Ignacio Camarlench Pinazo, who invited the painter to settle in the farmhouse. The building is surrounded by orange groves, giving it a strong Valencian feeling. There will be pre-dinner cocktails served as you have the chance to explore the Masia's gardens. Hors d'oeuvres will be served at 19:00, dinner will begin at 20:00, and a flamenco show will follow.

Your paid registration fee includes one banquet ticket. Guest tickets can be purchased for $75.00 USD each at the Registration Desk.

Wednesday, November 5

Event: Conference Lunch
Time: 13:30 - 15:00
Location: Multipurpose Rooms 1 & 2

IEEE SENSORS 2014 COMMITTEE

General Co-Chairs
Càndid Reig, *University of Valencia, Spain*
Lina Sarro, *TUDelft, The Netherlands*

Technical Program Chair
Ignacio R. Matías, *Public University of Navarra, Spain*

Tutorial Chair
Arnaldo D'Amico, *URome, Italy*

Special Sessions Chair
Alexander Fish, *Bar-Ilan University, Israel*

Publicity Chair
Eddie Grant, *North Carolina State University, USA*

Proceedings Editor
Francisco J. Arregui, *Public University of Navarra, Spain*

Liaison with Industry and Administration Chair
Javier Calpe, *Analog Devices, Spain*

Local Chair
Jaime Lloret, *Polytechnic University of Valencia, Spain*

Treasurer
Mike McShane, *Texas A&M University, USA*

IEEE SENSORS 2014 TRACK CHAIRS

Track 1 – Phenomena, Modeling and Evaluation
Srinivas Tadigadapa, *Penn State University, USA*
Zhihong Li, *Pekin University, China*
Bernhard Jakoby, *Vienna University of Technology, Austria*

Track 2 – Chemical and Gas Sensors
Massood Atashbar, *Western Michigan University, USA*
Eduard Llobet, *Universitat Rovira I Virgili, Spain*
Kourosh Kalantar Zadeh, *RMIT University, Australia*

Track 3 – Biosensors
Julian Chi Chui Chan, *Nanyang Technological University*
Cristina Davis, *UC Davis, USA*
Andreu Llobera, *CSIC, Spain*

Track 4 – Optical Sensors
Francisco J. Arregui, *Universidad Publica De Navarra, Spain*
Daniel A. May-Arrioja, *Universidad Autónoma de Tamaulipas, Mexico*
Rihito Kuroda, *Tohoku University, Sendai, Japan*

Track 5 – Mechanical, Magnetic, and Physical Sensors
Seong Ho Kong, *Kyungpook National University, South Korea*
P. P. Freitas*, INESC, Portugal*
Siavash Pourkamali, *University of Texas, Dallas, USA*

Track 6 – Sensor/Actuator Systems
Gijs Krijnen, *University of Twente, Netherlands*
Oliver Paul, *University of Freiburg, Germany*
Masayoshi Esashi, *Tohoku University, Japan*

Track 7 – Sensor Networks
Jiming Chen, *Zhejiang University, China*
Aggelos Bletsas, *Technical University of Crete, Chania, Greece*
Jason Gu, *University of Illinois, USA*

Track 8 – Applications
Andrea Cusano, *University of Sannio, Italy*
Alper Bozkurt, *North Carolina State University, USA*
Jürgen Kosel, *King Abdullah University of Science and Technology, Saudi Arabia*

Track 9 – Other Sensor Topics – Materials, Processes, Circuits, Signals & Interfaces, etc
Michele Penza, *Technical Unit for Materials Technologies, Brindisi Research Center, Italy*
Amine Bermak, *Hong Kong University of Science and Technology, China*
Cicero Martelli, *Federal University of Technology – Parana, Brazil*

Mohamed Abdelmoneum
Reza Abdolvand
Takashi Abe
Moaaz Ahmed
Ana Alejos
Panos Alevizos
Ahmed Alfadhel
Bassam Alfeeli
Emmanouil Alimpertis
Pedro Alpuim
Marco Alvisi
Abbes Amira
Francisco J. Arregui
Maher Assaad
Stelios Assimonis
Mohammed Awad
Gaurav Bahl
Jose Baptista
Giuseppe Barillaro
Rajashree Baskaran
Gabor Battistig
Roman Beigelbeck
Mustafa Beyaz
Aggelos Bletsas
Jeong Bong Lee
Farid Boussaid
Marcel Bouvet
Salim Bouzerdoum
David Boyle
Alper Bozkurt
Oliver Brand
Michael Breedon
Jong-Uk Bu
Susana Cardoso
Felipe Cardoso
Bo Chai
Chia-Tai Chan
Hengky Chandrahalim
Xu Chen
Denis Chen
Xing Chen
Long Cheng
Yuting Cheng
Zicheng Chi
Wei Chit Tan
Venkata Chivukula
Young-Ho Cho
Virginia Chu
Nicola Cioffi
Victor Cionca
Marina Cole
Olga M. Conde
Marco Consales
Geoffrey Cranch
Jerome Crocco
Shawn Cunningham
Andrea Cusano
Marco José Da Silva
Haipeng Dai
Vaishno Dasika
Andrea De Marcellis
Saverio De Vito
Girolamo Di Francia
Zheng Dong
Isabelle Dufour
David Elata

Mauro Epifani
Golla Eranna
Jens Eriksson
Masayoshi Esashi
Guido Faglia
Francisco Falcone
Zhiyong Fan
Nikos Fasarakis-Hilliard
Vittorio Ferrari
Ricardo Ferreira
Giuseppe Ferri
Mohamed Foysol Chowdhury
Paulo Freitas
Lingkun Fu
Joao Gaspar
Elena Gaura
Mikael Gidlund
Chinthaka Gooneratne
Hans Goosen
Anna Grazia Mignani
Jianping He
Liang He
Shibo He
Luc Hebrard
Hua Huang
I-Yu Huang
Qing-An Huang
Muhammad Hussain
Eugene Hwang
Shah Ikramullah
Sam Ippolito
Bernhard Jakoby
Adul-Halim Jallad
Stephen James
Wenchao Jiang
Junghyun Jun
Kourosh Kalantar-Zadeh
Eleftherios Kampianakis
Eugenijus Kaniusas
Nikos Kargas
Abdelkrim Khelif
Majed Khodr
Butrus Khuri-Yakub
John Kimionis
Goutam Koley
Rajanna Konandur
Linghe Kong
Jing Kong
Chistos Konstantopoulos
Jurgen Kosel
Christos Koulamas
Michael Kraft
Martin Kraft
Gijs Krijnen
Haluk Kulah
Rihito Kuroda
Senenxtu Lanceros
Yi-Kuen Lee
Jung-Ho Lee
Dae-Sik Lee
Diana Leitao
Chao Li
Bodong Li
Sheng-Shian Li
Zhihong Li
Tao Li

IEEE SENSORS 2014 TPC, *CONTINUED*

Xinxin Li
Cai Liang
Jilong Liao
Ximeng Liu
Anfeng Liu
Siyu Liu
Anita Lloyd Spetz
Joost Lotters
Maria Lucia Curri
Michel Maharbiz
Mathew Man Kay Law
Cicero Martelli
Ettore Massera
Ignacio Matias
Shamus McNamara
Leng Mei
Christopher Meyer
Meyya Meyyappan
Jose Mireles Jr
Vishram Mishra
Kohji Mitsubayashi
Lei Mo
Saqib Mohamad
Mohamed Sultan Mohamed Ali
Anisur Molla
Hassan Muhammad
Tamal Mukherjee
Yuji Murakami
Troy Nagle
Binu Narakathu
Tom Newe
Patricia Nieva
Yutaka Nonomura
Boon Ooi
Jian Ou
Xiaofang Pan
Gregory Pandraud
Archana Parashar
Oliver Paul
Joao Pedro Conde
Asier Perallos
Francesc Perez-Murano
Michiel Pertijs
Marco Petrovich
Lam Phung
Joao Piteira
Patrick Pons
Siavash Pourkamali
Marcel Pruessner
Donatella Puglisi
Yifei Qi
Long Que
François Quitin
Mina Rais-Zadeh
Jose Luis Ramirez
Diego Ramirez
Ioannis Raptis
Roberto Rella
Ju Ren
Diego Reyes Romero

IEEE SENSORS 2014 TPC, *CONTINUED*

Matteo Rinaldi
Luis Rocha
Albert Romano-Rodriguez
Libor Rufer
Stefan Rupitsch
Patrick Ruther
Abu Sadek
Christopher Salthouse
José Luís Santos
Bilge Saruhan
Cornie Scheffer
Ulrich Schmid
Andreas Schuetze
Atif Shamim
Huajie Shao
Yiran Shen
Wen-Pin Shih
Mitsuhiro Shikida
Yuanchao Shu
Agusti Solanas
Jean M. Suisse
Daoheng Sun
Hiroaki Suzuki
Srinivas Tadigadapa
Hidekuni Takao
Rui Tan
Frank Tang
Harrie Tilmans
Deepak Uttamchandani
Rob van Schaijk
Alexei A. Vasiliev
Luis Guillermo Villanueva
Leon-Salas Walter
Zhibo Wang
Ruiqi Wang
Bo Wang
Yuelin Wang
Zheyao Wang
Wei Wei
Qiao Xiang
Zhong Xiaopeng
Mande Xie
Huikai Xie
Qiliang Xu
Yong Xu
Zhidong Yang
Yanyun Yao
Keita Yasutomi
Eric Yeatman
Shaodong Ying
Levent Yobas
Hongyu Yu
Weizheng Yuan
Mona Zaghloul
Heng Zhang
Chongwei Zhu
Ahmad Zoolfakar
Christian Zorman

IEEE SENSORS COUNCIL OFFICIALS

ExCOM & AdCOM

President (2014-2015)
H. Troy Nagle, *Electrical and Computer Engineering – NC State University, USA*

President Elect (2014-2015)
Mike McShane, *Texas A&M University College Station, USA*

Past-President (Immediate)
Vladimir Lumelsky, *NASA – University of Wisconsin - Madison, USA*

Past-Past-President
Christina M. Schober, *Honeywell, Inc., USA*

Vice President - Finances (2014)
Michael Shields, *MIT Lincoln Labs, USA*

Vice President - Publications (2013-2014)
John Vig, *Consultant, USA*

Vice President - Conferences (2014-2015)
Yu-Cheng Lin, *National Cheng Kung University, Taiwan*

Vice President - Technical Operations (2014-2015)
Hulya Kirkici, *Auburn University, USA*

Secretary - Treasurer (2014-2015)
Edward Grant, *North Carolina State University of California, USA*

IEEE Sensors Journal Editor-In-Chief (2014-2015)
Krikor B. Ozanyan, *University of Manchester, UK*

Member-at-Large (2014)
Elfed Lewis, *University of Limerick, Ireland*

Member-at-Large (2014-2015)
Anna Grazia Mignani, *CNR-Institute of Applied Physics, Italy*

Member-at-Large (2014-2015)
Andrei Shkel, *University of California, USA*

Member-at-Large (2013-2014)
Anil K. Roy, *DA-IICT, India*

Publicity Chair (2014-2015)
Edward Grant, *North Carolina State University, USA*

Web EIC (2014-2015)
John Vig, *Consultant, USA*

Web Based Newsletter Editor-in-Chief (2014-2015)
M. Nurul Abedin, *NASA – Langley Research Center, USA*

IEEE SENSORS COUNCIL OFFICIALS

IEEE Fellows Committee Chair (2014-2015)
Gianluca Lazzi, *University of Utah, USA*

Distinguished Lecturer Program Chair (2014-2015)
Hulya Kirkici, *Auburn University, USA*

Awards Chair (2014-2015)
Mike McShane, *Texas A&M University, USA*

Nominations Committee Chair (2014-2015)
Vladimir Lumelsky, *University of Wisconsin, USA*

IEEE Young Professionals Program Committee Chair (2014-2015)
Sinead O'Keefe, *University of Limerick, Ireland*

Past Presidents

Past-President (2012-2013)
Vladimir Lumelsky, *University of Wisconsin, USA*

Past-President (2010-2011)
Christina M. Schober, *Honeywell, Inc., USA*

Past-President (2008-2009)
Mona E. Zaghloul, *George Washington University, USA*

Past-President (2006-2007)
Robert T. Bannon, *Bannon International Consulting LLC, USA*

Past President (2004-2005)
Tom Wiener, *The Forté Consultancy, USA*

Past President (2002-2003)
Franco Maloberti, *University of Texas, Dallas, USA*

Founding President (2000-2001)
John Vig, *Consultant, USA*

Member Societies and their AdCom Appointees

Aerospace and Electronic Systems
Michael C. Wicks, *University of Dayton, USA*

Antennas and Propagation
Christian Pichot, *University of Nice, France*

Broadcast Technology
Jin Zhang, *Mitsubishi Electric Research Laboratories, USA*

Circuit and Systems
Sandro Carrara, *ÉPFL, Switzerland*

Communications
Kiseon Kim, *GIST, Korea*

IEEE SENSORS COUNCIL OFFICIALS

Computer
Jill Gostin, *Georgia Institute of Technology, USA*

Components, Packaging and Manufacturing Technology
Tolga Tekin*, Technical University of Berlin, Germany*

Dielectrics and Electrical Insulation
Greg Stone, *IRIS Power, Canada*

Electromagnetic Compatibility
John Norgard*, NASA/JSC, USA*

Electron Devices
Zeynep Celik-Butler, *University of Texas, USA*

Engineering in Medicine and Biology
Pedram Mohseni, *Case Western Reserve University, USA*

Industrial Electronics
Thilo Sauter, *Austrian Academy of Sciences, Austria*

Industry Applications
Robert D. Lorenz, *University of Wisconsin-Madison, USA*

Instrumentation and Measurement
Georg Brasseur, *Graz University of Technology, Austria*

Magnetics
Pavel Ripka, *Czech Technical University in Prague, Czech Republic*

Microwave Theory and Techniques
Reynold S. Kagiwada, *Northrop Grumman, USA*

Nuclear and Plasma Sciences
Vacant

Oceanic Engineering
Robert T. Bannon, *Bannon International Consulting, USA*

Photonics
Robert Dahlgren, *The SETI Institute, USA*

Power and Energy
Arun G. Phadke, *Virginia Tech, USA*

Robotics and Automation
Ravinder Dahiya, *University of Glasgow, UK*

Signal Processing
Randolph Moses, *Ohio State University, USA*

Solid State Circuits
Darrin Young, *University of Utah, USA*

Ultrasonics, Ferroelectrics, and Frequency Control
Venkat R. Bhethanabotla, *University of South Florida, USA*

Vehicular Technology
Fabrice Labeau, *McGill University, Canada*

Council Support

Executive Assistant
Judy Scharmann, *Conference Catalysts, LLC, USA*

Conference Management Company
Conference Catalysts, LLC, USA

Webmaster
Anil K. Roy, *DA-IICT, India*

Technical Program Papers Support
Tom Wehner, *Alliance Management, USA*

IEEE SENSORS 2015 Conference Chairs

General Chair
Kukjin Chun, *Seoul National University, South Korea*

General Co-Chair
Christina M. Schober, *Honeywell, USA*

Technical Program Co-Chair
Sung Ho Kong, *Kyungpook National University, South Korea*

Technical Program Co-Chair
Suntae Jung, *Samsung, South Korea*

EXHIBITORS

Advanced Wave Sensors S.L.

AWSensors designs, develops and commercializes instrumentation for characterization of acoustic resonators used as sensors in bio-technological and electrochemical monitoring applications. These designs are based on their different patented systems. AWSensors markets QCM, HFF-QCM and SAW-LOVE sensors in specially designed supports adapted to specific flow cells for different applications in both liquid and gas. Different categories of instruments are available depending on the user needs. AWSensors develops as well customized cells and sensors according to user needs. Custom developments or integrations with other scientific platforms for third parties are available, including both mechanic and electronic design and implementation.

Bartington Instruments

We design and manufacture high performance fluxgate magnetometers and magnetic susceptibility measuring instruments. Our products are used in defence, aerospace, environmental sciences, geophysics and the medical physics sector worldwide. We have many years' experience of supplying customers throughout the world, either directly or via our network of agents and distributors.

IEEE Sensors Council

The IEEE Sensors Council focuses on the theory, design, fabrication, manufacturing and application of devices for sensing and transducing physical, chemical, and biological phenomena. With an emphasis on the electronics, physics, and reliability aspects of sensors and integrated sensor-actuators, the Council sponsors well-recognized, international conferences and publications.

IOP Publishing

IOP Publishing is a wholly owned subsidiary of the Institute of Physics. The Institute is a leading scientific society promoting physics and bringing physicists together for the benefit of all. It has a worldwide membership of around 50,000 comprising physicists from all sectors. It works to advance physics research, application and education, and engages with policy makers and the public to develop awareness and understanding of physics. Any profits generated by the publishing company are used by the Institute to support science and scientists in both the developed and developing world. IOP Publishing provides a range of journals, ebooks, magazines, conference proceedings and websites for the scientific community. These products and services enable researchers and research organisations to reach the widest possible audience for their research. We combine the culture of a learned society with global reach and highly efficient and effective publishing systems and processes. With offices in the UK, US, China and Japan, and staff in many other locations including Mexico and Russia, we serve researchers in the physical and related sciences in all parts of the world.

Sensirion

Sensirion is the leading manufacturer of high-quality sensors and sensor solutions for the measurement and control of humidity, and of gas and liquid flows.

The Internet of Things Initiative

The Internet of Things (IoT) is one of the most important areas of a Future Internet with high potential to positively impact European economy and society. The IoT initiative (IoT-i), a EU Framework Programme 7 project, started in September 2010, brings together key actors from all relevant but currently fragmented IoT communities in Europe to work jointly towards a common vision of the Internet of Things. It represents the first serious attempt in building a unified IoT community in Europe, going across boundaries of disparate technology sectors, in order to create a joint European strategic vision of the Internet of Things and aligning this vision with the current developments on the Future Internet.

Würth Elektronik

Würth Elektronik Circuit Board Technology has specialized the manufacturing of circuit boards in small to medium-sized orders in all prevalent surfaces and has over 1,000 employees, the vast majority of employees work in the three German production plants. Every day, more than 120 new circuit board designs go through our production line. This is an impressive demonstration of the high degree of our flexibility.

TECHNICAL PROGRAM INFORMATION

The technical program consists of three Keynote Sessions, six parallel Lecture/Special Sessions of contributed papers, and three Poster Sessions.

Guide to Understanding Session Numbering
Each session in the technical program is assigned a unique number, which clearly indicates when and where the session is presented. The number of each session is shown before the session title. A typical number is shown below:

Typical Session Number*: **B2L-A**

The first character (i.e., B) indicates the day of the Conference:

A = Monday; **B** = Tuesday; **C** = Wednesday

The second character (i.e., 2) indicates the session time:

1 = morning; **2** = mid-morning; **3** = afternoon; **4** = late-afternoon

The third character (i.e., L) indicates what type of paper the session is:

L = Lecture Session **P** = Poster Session

The fourth character (i.e., A) indicates which room the session is held in:

A= Auditorium 1
B= Auditorium 2
C= Auditorium 3A
D= Auditorium 3B
E= Rooms 1 & 2
F= Rooms 3 & 4
G= Rooms 6 & 7

Please see the session grids, starting on page 19

TECHNICAL PROGRAM - POSTER INFORMATION

Poster Sessions
Three poster sessions will be held in the foyer from 15:00 - 16:20 on Monday, Tuesday, and Wednesday. Posters will be on display and authors will be available for questions during their appointed time. All poster papers are listed in this program on the day that they are on display.

Guide to Understanding Poster Numbering
Each poster in the technical program is assigned a unique number, which clearly indicates when and where the poster is presented. The number of each poster is shown on the left-hand side, before the title. A typical number is shown below:

Typical Poster Number*: **B3P-K**

The first character (i.e., B) indicates the day of the Conference that the poster will be on display:

A = Monday; **B** = Tuesday; **C** = Wednesday

The second character (i.e., 3) indicates the time of the day the session is held:

1 = morning; **2** = mid-morning; **3** = afternoon; **4** = late-afternoon

The third character (i.e., P) indicates that the paper is a poster.

The fourth character (i.e. K) indicates the category of the poster for that day.

MONDAY
H= Chemical and Gas Sensors
J= Biosensors
K= Optical Sensors
L= Mechanical, Magnetic, and Physical Sensors
M= Sensor/Actuator Systems
N= Sensor Networks
P= Applications
Q= Other Sensor Topics - Materials, Processes, Circuits, Signals & Interfaces, etc.
R= Open Posters

TUESDAY
H= Chemical and Gas Sensors
J= Biosensors
K= Optical Sensors
L= Mechanical, Magnetic, and Physical Sensors
M= Sensor/Actuator Systems
N= Sensor Networks
P= Applications
Q= Other Sensor Topics - Materials, Processes, Circuits, Signals & Interfaces, etc.
R= Open Posters

WEDNESDAY
H= Chemical and Gas Sensors
J= Biosensors
K= Optical Sensors
L= Mechanical, Magnetic, and Physical Sensors
M= Sensor/Actuator Systems
N= Sensor Networks
P= Applications
Q= Other Sensor Topics - Materials, Processes, Circuits, Signals & Interfaces, etc.

SESSION GRID - SUNDAY, NOVEMBER 2ND

	Rooms 1 & 2	Rooms 3 & 4
8:00-18:00	REGISTRATION - *Foyer*	
	Sensors and Data Analysis	**Technology and Industrial Aspects**
9:00-10:40	Matteo Rinaldi Piezoelectric resonant MEMS/NEMS devices for sensing applications	Giuseppe Barillaro Advanced silicon microstructuring in any lab for biosensing applications
10:40-10:50	BREAK - *Outside Session Rooms*	
10:50-12:30	Corrado Di Natale Selected issues in multivariate data analysis	Fabio Santagata 3D Integration and packaging
12:30-14:00	LUNCH *Multipurpose Room 1*	
14:00-15:40	Michael S. Shur Terahertz sensing technology	Lorenzo Lo Monte and Michael Wicks Distributed sensing and RF tomography
15:40-15:50	BREAK - *Outside Session Rooms*	
15:50-17:30	Kirill V.Larin Optical sensing using optical coherence tomography	Heinz Wilhelm Siesler Vibrational spectroscopy(Raman,Mid and Near infrared) in the palm of your hands. Has the performance of handheld instrument reached market maturity?
Evening	WELCOME RECEPTION 18:30 - 20:00 Veles e Vents *(Transportation provided to and from the VCC. Buses leave at 18:00)*	

***Please note that all presentations are 90 minutes + 10 minutes discussion; therefore, you are able to switch between sessions.**

SESSION GRID - MONDAY, NOVEMBER 3RD

	Auditorium 1	Auditorium 2	Auditorium 3A	Auditorium 3B	Rooms 1 & 2	Rooms 3 & 4
7:30-18:00	REGISTRATION - *Foyer*					
8:45-9:00	Opening Remarks & Technical Achievement Award					
9:00-9:50	A0L-A KEYNOTE - Carlo Ratti					
10:00-11:15	A1L-A SPECIAL SESSION: Smart Cities Sensors	A1L-B Optical Fiber Sensors I	A1L-C Advanced Materials or Architectures for Chemical Sensing	A1L-D Circuits and Devices	A1L-E Acoustic Transducers	A1L-F Agriculture & Water
11:15-11:30						
11:30-11:45						
11:30-12:00	BREAK - *Foyer*					
12:00-13:30	A2L-A SPECIAL SESSION: Distributed Fiber-Optic Sensors Using Brillouin Scattering	A2L-B Actuation & Energy Harvesting	A2L-C MEMS Chemical Sensors I	A2L-D Devices and Interfaces	A2L-E Fluidic Sensors	A2L-F Enabling Technologies
13:30-13:45						
13:30-15:00	LUNCH *Multipurpose Rooms 1 & 2*					
15:00-16:20	POSTER SESSION - A3 *Foyer*					
16:30-18:00	A4L-A SPECIAL SESSION: Time of Flight Imaging, Sensors & Algorithms	A4L-B Spectroscopy	A4L-C MEMS Chemical Sensors II	A4L-D Medical Applications II	A4L-E Magnetic Sensors	A4L-F Low Power Solutions
18:00 - 18:15						

SESSION GRID - TUESDAY, NOVEMBER 4TH

	Auditorium 1	Auditorium 2	Auditorium 3A	Auditorium 3B	Rooms 1 & 2	Rooms 3 & 4	Rooms 6 & 7
8:00-18:00	REGISTRATION - *Foyer*						
8:45 - 9:00	SENSORS 2015 Invitation Best Sensors Journal Paper Awards & Meritorious Service Award						
9:00-9:50	B0L-A KEYNOTE - Herre van der Zant						
10:00-11:15	B1L-A SPECIAL SESSION: Laser Self-Mixing Sensors	B1L-B Sensors & Sensing Systems I	B1L-C Metal Oxide Gas Sensors	B1L-D Novel Sensors - Phenomena and Evaluation	B1L-E Medical Force Sensors	B1L-F Nanobiosensors	
11:15-11:30							
11:30-11:45							

SESSION GRID – TUESDAY, NOVEMBER 4TH

	Auditorium 1	Auditorium 2	Auditorium 3A	Auditorium 3B	Rooms 1 & 2	Rooms 3 & 4	Rooms 6 & 7
11:30-12:00	BREAK – *Foyer*						
12:00-13:15	B2L-A SPECIAL SESSION: Photonic & Phononic Crystal Sensors	B2L-B Interfacing & Resonant Sensors	B2L-C Optical Chemical Sensor Systems	B2L-D Sensor Modeling and Optimization	B2L-E MEMS Resonant Transducers	B2L-F Electrochemical Biosensors and Applications	B2L-G LATE NEWS: Other Sensing Applications
13:15-13:30							
13:30-13:45							
13:30-15:00	LUNCH *Multipurpose Rooms 1 & 2*						
15:00-16:20	POSTER SESSION - B3 *Foyer*						
16:30-17:45	B4L-A SPECIAL SESSION: Electronic Noses	B4L-B Photonic Crystals and Nanostructures	B4L-C Trace Detection in Security and Medical Applications	B4L-D Safety and Security Applications I	B4L-E Monolithic and CMOS Sensors	B4L-F Photonic and Acoustic Biosensors	
17:45-18:00							
Evening	GALA DINNER - 19:00 - 22:00 - Masia Xamandreu de Godella *(Transportation provided to and from the VCC. Buses leave at 18:30)*						

SESSION GRID - WEDNESDAY, NOVEMBER 5TH

	Auditorium 1	Auditorium 2	Auditorium 3A	Auditorium 3B	Rooms 1 & 2	Rooms 3 & 4	Rooms 6 & 7
8:00-18:00	REGISTRATION - *Foyer*						
9:00-9:50	C0L-A KEYNOTE - Jun Ohta						
10:00-11:15	C1L-A SPECIAL SESSION: Battery-less RF-Enabled Sensors for Wireless Sensor Networks	C1L-B Optical Fiber Sensors II	C1L-C Devices and Signals	C1L-D Sensing Platforms	C1L-E Positioning and Inertial Sensors	C1L-F Mechanical Biosensors	
11:15-11:30							
11:30-12:00	BREAK REGISTRATION - *Foyer*						
12:00-13:30	C2L-A SPECIAL SESSION: Analytical & Semi-Numerical Sensor Modeling	C2L-B Photodetectors I	C2L-C Materials and Processes	C2L-D Automation Applications	C2L-E Tactile/Force Sensors	C2L-F Biosensors for Cell Analysis I	C2L-G LATE NEWS: Other Physical, Chemical and Optical Sensors
13:30-15:00	LUNCH *Multipurpose Rooms 1 & 2* *Conference Best Student Paper Awards Announced at Lunch*						
15:00-16:20	POSTER SESSION - C3 *Foyer*						
16:30-17:45	C4L-A SPECIAL SESSION: Electronic Tongues	C4L-B Photodetectors II	C4L-C Materials and Devices	C4L-D Bio-Applications	C4L-E Temperature and Humidity Sensors	C4L-F Wearables	
17:45-18:00							

PROMOTIONAL PARTNERS

GENERALITAT VALENCIANA

VNIVERSITAT DE VALÈNCIA

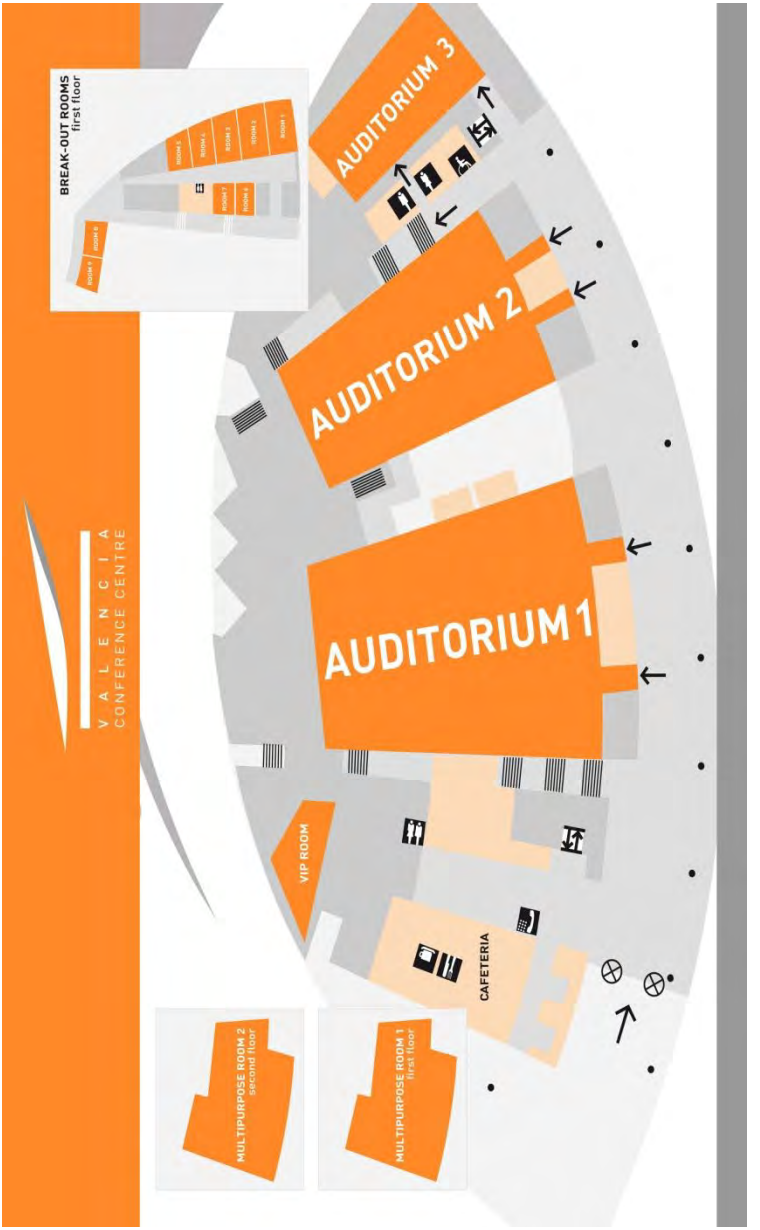
Escola Tècnica Superior d'Enginyeria ETSE

InnDEA VALENCIA

AJUNTAMENT DE VALÈNCIA

ANALOG DEVICES

VALENCIA CONGRESS CENTRE FLOOR PLAN



KEYNOTE SPEAKERS

Monday, November 3rd - Carlo Ratti

"The Senseable City"

The increasing deployment of sensors and hand-held electronics in recent years is allowing a new approach to the study of the built environment. The way we describe and understand cities is being radically transformed - alongside the tools we use to design them and impact on their physical structure. The contribution from Prof. Carlo Ratti will address these issues from a critical point of view through projects by the Senseable City Laboratory, a research initiative at the Massachusetts Institute of Technology, and the design Carlo Ratti Associati office.

An architect and engineer by training, Carlo Ratti practices in Italy and teaches at the MIT, where he directs the Senseable City Lab. Ratti has co-authored over 250 publications and holds several patents. His work has been exhibited in several venues worldwide, including the Venice Biennale, MoMA in New York City and MAXXI in Rome. At the 2008 World Expo, his 'Digital Water Pavilion' was hailed by Time Magazine as one of the 'Best Inventions of the Year'. He has been included in Blueprint Magazine's '25 People who will Change the World of Design' and in Wired Magazine's 'Smart List 2012: 50 people who will change the world'. He is curator for the 'Future Food District' at Expo Milano 2015.

Tuesday, November 4th - Herre van der Zant

"Graphene Sensors in the European Graphene Flagship"

The mission of the Graphene Flagship is to take the new material graphene and related layered materials from academic laboratories to society, revolutionize multiple industries and create economic growth in Europe. One its work packages concerns graphene-based sensors, whichaims at exploring different approaches to demonstrate proof-of-principle sensing schemes for a variety of applications: pressure sensors and microphones, mass (including gas) and force sensing, electrical sensors for microwaves and biosensors. Suspended graphene membranes, atomically thin, are the central theme and focus of the work at Delft. In these free-hanging membranes electrical and mechanical degrees of freedom are strongly coupled. This coupling offers unique opportunities for implementing of graphene sensors based on mechanical properties. Of particular current interest are the readout of the graphene displacement and the exploitation of the intrinsic nonlinearities in graphene resonators. Several measurement schemes will be discussed and results on resonators built of related atomically thin materials such as MoS_2 will be presented as well.

Herre van der Zant finished his Ph.D in 1991 at the Delft University of Technology on measurements of classical and quantum phase transitions in Josephson junction arrays. After his Ph.D, he went to the Massachusetts Institute of Technology to work on superconducting electronics. After three years, Herre van der Zant returned to Delft to start a new direction in mesoscopic charge density waves. On this subject he received a five year fellowship from the Royal Academy for

Sciences. In 2005, he cofounded the Molecular Electronics and Devices group in the Kavli Institute for Nanoscience at the Delft University of Technology. As a professor in this group, his research focuses on transport through single molecules and carbon-based nano-electromechanical systems (NEMS). He is currently head of the Quantum Nanoscience department at Delft and leader of the sensor work package within the graphene flagship.

Wednesday, November 5th - Jun Ohta

"Communication with cells by electricity and light – Implantable microelectronics devices"

This talk presents a recent development of implantable devices based on microelectronics with electrical or optical method. Electrical stimulation and potential measurement are effective to communication with cells and widely used in medical applications such as retinal prosthesis, deep brain stimulation and brain machine interface. Optogenetics, which rapidly grows as optical method with genetic engineering, makes it possible to specifically communicate with neurons through light and to provide powerful tools in biological science and engineering. Some examples of implantable microelectronics devices are demonstrated in detail, and finally, issues and future direction are addressed.

Jun Ohta received the B.E., M.E., and Dr. Eng. degrees in applied physics, all from the University of Tokyo, Japan, in 1981, 1983, and 1992, respectively. In 1983, he joined Mitsubishi Electric Corporation, Hyogo, Japan. From 1992 to 1993, he was a visiting scientist in Optoelectronics Computing Systems Center, University of Colorado at Boulder. In 1998, he joined Graduate School of Materials Science, Nara Institute of Science and Technology (NAIST), Nara, Japan as Associate Professor. He was appointed as Professor in 2004.

His current research interests are smart CMOS image sensors for biomedical applications and retinal prosthetic devices. His lab group has developed a CMOS-based miniaturized devices for biomedical applications, for example, a brain-implantable ultra-micro imaging devices for freely-moving mice, a CMOS sensor-based optical analysis device for microchemistry system, a CMOS based microchip for retinal prosthesis, lensless imaging device for digital ELISA.

He serves as an Editorial Board of Journal of Engineering, IET, an International Liaison of IEEE BioCAS 2014, a Program Chair of Biomedical Devices Session in Int'l Conf. Solid-State Devices and Materials (SSDM). He is a member of the Japan Society of Applied Physics (Fellow), IEICE Japan, ITE Japan (Fellow), IEEE, and OSA.

SUNDAY, NOVEMBER 2ND - TUTORIALS

8:00 – 18:00
REGISTRATION
Foyer

TRACK A: SENSORS AND DATA ANALYSIS
Rooms 1 & 2

9:00 - 10:40
PIEZOELECTRIC RESONANT MEMS/NEMS DEVICES FOR SENSING APPLICATIONS
Matteo Rinaldi, *Northeastern University, USA*

10:40 - 10:50
BREAK
Outside Rooms 1-4

10:50 - 12:30
SELECTED ISSUES IN MULTIVARIATE DATA ANALYSIS
Corrado Di Natale, *University of Rome Tor Vergata, Italy*

12:30 - 14:00
LUNCH
Multipurpose Room 1

14:00 - 15:40
TERAHERTZ SENSING TECHNOLOGY
Michael S. Shur, *Rensselaer Polytechnic Institute, USA*

15:40 - 15:50
BREAK
Outside Rooms 1-4

15:50 - 17:30
OPTICAL SENSING USING OPTICAL COHERENCE TOMOGRAPHY
Kirill V. Larin, *University of Houston, USA*

TRACK B: TECHNOLOGY AND INDUSTRIAL ASPECTS
Rooms 3 & 4

9:00 - 10:40
ADVANCED SILICON MICROSTRUCTURING IN ANY LAB FOR BIOSENSING APPLICATIONS
Giuseppe Barillaro, *University of Pisa, Italy*

10:40 - 10:50
BREAK
Outside Rooms 1-4

10:50 - 12:30
3D INTEGRATION AND PACKAGING
Fabio Santagata, *Technische Universiteit Delft, Netherlands*

12:30 - 14:00
LUNCH
Multipurpose Room 1

14:00 - 15:40
DISTRIBUTED SENSING AND RF TOMOGRAPHY
Lorenzo Lo Monte, *University of Dayton, USA*
Michael Wicks, *University of Dayton, USA*

15:40 - 15:50
BREAK
Outside Rooms 1-4

15:50 - 17:30
VIBRATIONAL SPECTROSCOPY (RAMAN,MID AND NEAR INFRARED) IN THE PALM OF YOUR HANDS. HAS THE PERFORMANCE OF HANDHELD INSTRUMENT REACHED MARKET MATURITY?
Heinz Wilhelm Siesler, *University of Duisburg-Essen, Germany*

18:30 – 20:00
WELCOME RECEPTION
Veles e Vents
Buses depart the Valencia Congress Centre at 18:00

MONDAY, NOVEMBER 3RD

7:30 – 18:00
REGISTRATION
Foyer

8:45 – 9:00
OPENING REMARKS & TECHNICAL ACHIEVEMENT AWARD
Auditorium 1

9:00 - 9:50
KEYNOTE – CARLO RATTI
Auditorium 1
Session Chair: Càndid Reig (University of Valencia, Spain)

THE SENSEABLE CITY
Carlo Ratti
MIT Senseable City Lab and Carlo Ratti Association, USA

10:00 - 11:30
A1L-A: SPECIAL SESSION: SMART CITIES SENSORS
Auditorium 1
Session Chair: Michele Penza (ENEA, Italy)

10:00
INVITED TALK: COST ACTION TD1105: NEW SENSING TECHNOLOGIES FOR ENVIRONMENTAL SUSTAINABILITY IN SMART CITIES
Michele Penza
ENEA, Italy

10:30
ANALYSIS OF EFFICIENT DENSE WIRELESS SENSOR NETWORK DEPLOYMENT IN SMART CITY ENVIRONMENTS
Peio López-Iturri, Erik Aguirre, Leire Azpilicueta, Carlos Fernández-Valdivielso, Ignacio Raúl Matías, Francisco Falcone
Universidad Pública de Navarra, Spain

10:45
A MAKER FRIENDLY MOBILE AND SOCIAL SENSING APPROACH TO URBAN AIR QUALITY MONITORING
Luca Capezzuto[2], Luigi Abbamonte[2], Saverio De Vito[1], Ettore Massera[1], Fabrizio Formisano[1], Grazia Fattoruso[1], Girolamo Di Francia[1]
[1]Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Italy; [2]Università degli Studi di Napoli Federico II, Italy

11:00
vCITY MAP: CROWDSENSING TOWARDS VISIBLE CITIES
Yoshito Tobe[1], Itaru Usami[1], Yusuke Kobana[1], Junji Takahashi[1], Guillaume Lopez[1], Niwat Thepvilojanapong[2]
[1]Aoyama Gakuin University, Japan; [2]Mie University, Japan

11:15
CALIBRATION OF A CLUSTER OF LOW-COST SENSORS FOR THE MEASUREMENT OF AIR POLLUTION IN AMBIENT AIR
Laurent Spinelle[3], Michel Gerboles[3], Maria Gabriella Villani[2], Manuel Aleixandre[1], Fausto Bonavitacola[4]
[1]Consejo Superior de Investigaciones Científicas, Spain; [2]ENEA, Italy; [3]Joint Research Center, Italy; [4]Phoenix Sistemi & Automazione s.a.g.l., Switzerland

---

10:00 - 11:30
A1L-B: OPTICAL FIBER SENSORS I
Auditorium 2
Session Chairs: Elfed Lewis (University of Limerick, Ireland), Jesus M. Corres (Public University of Navarra, Spain)

10:00
NOVEL FBG FEMTOSECOND LASER INSCRIPTION METHOD FOR IMPROVED FPI SENSORS FOR MEDICAL APPLICATIONS
Sven Poeggel[2], Dinesh Babu Duraibabu[2], Daniele Tosi[2], Gabriel Leen[2], Elfed Lewis[2], Amedee Lacraz[1], Michael Hambalis[1], Charalambos Koutsides[1], Kyricaos Kalli[1]
[1]Cyprus University of Technology, Cyprus; [2]University of Limerick, Ireland

10:15
HIGH-SPEED TUNABLE FDML LASER, INTERFACED TO A CONTINUOUS FPGA ACQUISITION SYSTEM, FOR FBG ACCELEROMETER INTERROGATION
Mourad Alexandre Ben Abdallah, Guillaume Laffont, Nicolas Roussel, Pierre Ferdinand
Commissariat à l'Énergie Atomique et aux Énergies Alternatives, France

10:30
NANOSECOND FLUORESCENCE LIFETIME LOW-COST SENSOR
Zulay Franco[2], Felix Sotelo[1], Sara Gómez-de Pedro[3], Jose Antonio Altabas[1], Mar Puyol[3], David Izquierdo[1], Julian Alonso[3], Ignacio Garcés[1]
[1]Universidad de Zaragoza, Spain; [2]Universidad Nacional Experimental Politécnica Antonio José de Sucre, Venezuela; [3]Univestitat Autonoma de Barcelona, Spain

10:45
OPTICAL FIBER °BRIX SENSOR BASED ON LOSSY MODE RESONANCES (LMRS)
Pablo Zubiate, Carlos Ruiz Zamarreño, Ignacio Raúl Matías, Francisco Javier Arregui
Universidad Pública de Navarra, Spain

11:00
DISTRIBUTED FIBER-OPTIC SENSORS FOR THERMAL MONITORING IN RADIOFREQUENCY THERMAL ABLATION IN PORCINE PHANTOM
Daniele Tosi[4], Sven Poeggel[4], Gabriel Leen[4], Elfed Lewis[4], Algredo Cigada[2], Edoardo Gino Macchi[3], Giovanni Braschi[3], Mario Gallati[3], Sandro Rossi[1]
[1]IRCCS Policlinico San Matteo Foundation, Italy; [2]Politecnico di Milano, Italy; [3]Università degli studi di Pavia, Italy; [4]University of Limerick, Ireland

11:15
FIBER OPTIC CURVATURE SENSOR
Patrick Leyendecker, Robert Haslinger
German Aerospace Center, Germany

10:00 - 11:15
A1L-C: ADVANCED MATERIALS OR ARCHITECTURES FOR CHEMICAL SENSING
Auditorium 3A
Session Chairs: Eduard Llobet (Universitat Rovira i Virgili, Spain), Massood Atashbar (Western Michigan University, USA)

10:00
COMPLEX IMPEDANCE CHARACTERIZATION OF HIGHLY SENSITIVE CARBON NANOTUBE GAS SENSORS
Ahmed Abdelhalim, Alaa Abdellah, Paolo Lugli
Technische Universität München, Germany

10:15
A RFID-ENABLED WIRELESS GAS SENSOR UTILIZING INKJET-PRINTED ANTENNA AND PEDOT/PSS
Taoran Le, Manos Tentzeris
Georgia Institute of Technology, USA

10:30
SELECTIVE GAS SENSING WITH MOS2 THIN FILM TRANSISTORS
Michael Shur[1], Sergey Rumyantsev[1], Chenglong Jiang[2], Rameez Samnakay[2], Jacqueline Renteria[2], Alexander Balandin[2]
[1]Rensselaer Polytechnic Institute, USA; [2]University of California, Riverside, USA

10:45
PT/WO3 MICROSENSOR GROWN BY COLD WALL REACTOR AEROSOL ASSISTED CHEMICAL VAPOR DEPOSITION FOR C6H6 AND NO2 DETECTION
Fatima Ezahra Annanouch[2], Zouhair Haddi[2], Eduard Llobet[2], Stella Vallejos[1]
[1]Instituto de Microelectrónica de Barcelona, Spain; [2]Universitat Rovira i Virgili, Spain

11:00
DUAL GATE ARCHITECTURE FOR HIGH SENSITIVITY, HIGH SELECTIVITY CHEMICAL-SENSING FIELD EFFECT TRANSISTORS
Benjamin Bunes, Trevor Knowlton, Daniel Jacobs, Paul Slattum, Ling Zang
University of Utah, USA

10:00 - 11:30
A1L-D: CIRCUITS AND DEVICES
Auditorium 3B
Session Chair: Andrea de Marcellis (Università degli Studi dell'Aquila, Italy)

10:00
A DIGITALLY-CALIBRATED 2-STAGE CYCLIC ADC FOR A 33-MPIXEL 120-FPS SUPER HIGH-VISION CMOS IMAGE SENSOR
Toshihisa Watabe[2], Kazuya Kitamura[3], Tetsuya Hayashida[3], Tomohiko Kosugi[1], Hiroshi Ohtake[3], Hiroshi Shimamoto[3], Shoji Kawahito[4]
[1]Brookman Technology, Inc., Japan; [2]NHK Engineering System, Inc., Shizuoka University, Japan; [3]Nippon Hoso Kyokai, Japan; [4]Shizuoka University, Japan

10:15
A BUILT-IN CMOS TOTAL IONIZATION DOSE SMART SENSOR
Javier Agustin, Carlos Gil Soriano, Marisa Lopez Vallejo, Pablo Ituero
Universidad Politécnica de Madrid, Spain

10:30
A WIDE-RANGE FREQUENCY TUNABLE SMR-CMOS OSCILLATOR FOR GAS SENSING
Taepyeong Kim[1], Sunjae Lim[1], Sanghun Lee[1], Duho Kim[1], Farah Al-Naimi[1], Patrick Helfenstein[1], Malcolm Spain[1], Si Hoon Lee[1], Girish Rughoobur[2], Luis Garcia-Gancedo[2], Andrew Flewitt[2], Sang-Hyun Lee[1]
[1]Samsung Electronics, USA; [2]University of Cambridge, United Kingdom

10:45
A CMOS 1.2-V 1.7-MW LOCK-IN AMPLIFIER FOR SENSING APPLICATIONS UP TO 0.7-MHZ
María de Rodanas Valero, Nicolás Medrano, Santiago Celma, Belén Calvo
Universidad de Zaragoza, Spain

11:00
ROLE OF PLATINUM FILMS IN THE MORPHOLOGICAL EVOLUTION OF ZNO NANORODS BY SOLUTION GROWTH METHOD
Venkateswarlu Gaddam, Rakesh Kumar Rajaboina, Mitesh Parmar, Konandur Rajanna, M.M. Nayak
Indian Institute of Science, India

11:15
A NOVEL THICK-FILM SCREEN PRINTED ELECTRICAL CONDUCTIVITY SENSOR FOR MEASUREMENT OF LIQUID AND SOIL CONDUCTIVITY
John Atkinson, Marios Sophocleous
University of Southampton, United Kingdom

10:00 - 11:30
A1L-E: ACOUSTIC TRANSDUCERS
Rooms 1 & 2
Session Chairs: Matteo Rinaldi (Northeastern University, USA), Libor Rufer (TIMA IMAG, France)

10:00
IN-AIR ULTRASONIC GESTURE SENSING WITH MEMS MICROPHONES
Douwe van Willigen, Erwin Mostert, Michiel Pertijs
Technische Universiteit Delft, Netherlands

10:15
ACOUSTIC VS ELECTRIC POWER RESPONSE OF A HIGH-PERFORMANCE MEMS MICROSPEAKER
Alexandre Houdouin[2], Stephane Durand[2], Nourdin Yaakoubi[2], Gilbert Sassine[1], Iman Shahosseini[4], Emile Martincic[3], Marion Woytasik[3], Johan Moulin[3], Elie Lefeuvre[3]
[1]Institut d'Electronique Fondamentale, France; [2]Université du Maine, France; [3]Université Paris Sud, France; [4]University of Michigan, France

10:30
A NOVEL SURFACE ACOUSTIC WAVE SENSOR WITH EMBEDDED MICROCAVITIES FOR SIZE DIFFERENTIATION OF SOLID MICROPARTICLES
Sukru Senveli, Onur Tigli
University of Miami, USA

10:45
ANNULAR MULTIFREQUENCY PIEZOELECTRIC ARRAY FOR ENHANCED WIDEBAND ULTRASONIC RESPONSE
Jorge Topete, Tomas Gomez Alvarez-Arenas
Consejo Superior de Investigaciones Científicas, Spain

11:00
HIGHLY SENSITIVE STRUCTURES FOR ULTRASONIC MICROSENSORS BY BUCKLING CONTROL OF DIAPHRAGMS THROUGH INTRINSIC STRESS OF PZT FILMS
Kaoru Yamashita, Hikaru Tanaka, Minoru Noda
Kyoto Institute of Technology, Japan

11:15
SUB-SECOND HUMIDITY SENSING USING SURFACE ACOUSTIC WAVES IN ELECTROSPRAY-DEPOSITED CARBON NANOFIBER AND REDUCED GRAPHENE OXIDE STRUCTURES
Daumantas Ciplys[3], Romualdas Rimeika[3], Oriol Monereo[2], Elena Xuriguera[2], Aida Varea[2], Albert Cirera[2], Michael Shur[1]
[1]Rensselaer Polytechnic Institute, USA; [2]Universitat de Barcelona, Spain; [3]Vilnius University, Lithuania

10:00 - 11:30
A1L-F: AGRICULTURE & WATER
Rooms 3 & 4
Session Chairs: Aggelos Bletsas (Technical University of Crete, Greece), Daniele Trinchero (Politecnico di Torino, Italy)

10:00
WIRELESS SENSOR MOTE FOR SNAIL PEST DETECTION
Esteban Ferro, Victor Manuel Brea, Diego Cabello, Paula López, Francisco Javier Iglesias, José Castillejo
Universidade de Santiago de Compostela, Spain

10:15
ENERGY-EFFICIENT OR-BASED MAC PROTOCOL FOR UNDERWATER SENSOR NETWORKS
Ming-Te Chen[2], Yu-Chen Shen[2], Jose Luis[1], Cheng-Fu Chou[2]
[1]National Chi Nan University, Spain; [2]National Taiwan University, Taiwan

10:30
SOIL MOISTURE WIRELESS SENSING WITH ANALOG SCATTER RADIO, LOW POWER, ULTRA-LOW COST AND EXTENDED COMMUNICATION RANGES
Spyridon Daskalakis, Stylianos Assimonis, Eleftherios Kampianakis, Aggelos Bletsas
Technical University of Crete, Greece

10:45
LOW COST WIRELESS SENSOR NETWORK FOR SALINITY MONITORING IN MANGROVE FORESTS
Lorena Parra[2], Sandra Sendra[2], Jaime Lloret[2], Joel J. P. C. Rodrigues[1]
[1]Universidade da Beira Interior, Portugal; [2]Universitat Politècnica de València, Spain

11:00
UAVS IN WSNS FOR AGRICULTURAL APPLICATIONS: AN ANALYSIS OF THE TWO-RAY RADIO PROPAGATION MODEL
Felice Manlio Bacco[2], Erina Ferro[1], Alberto Gotta[1]
[1]Consiglio Nazionale delle Ricerche, Italy; [2]Università degli Studi di Siena / Consiglio Nazionale delle Ricerche, Italy

11:15
EXPERIMENTAL EVALUATION OF DATA AGGREGATION METHODS APPLIED TO SOIL MOISTURE MEASUREMENTS
Camilo Lozoya, Gilberto Mendoza, Carlos Mendoza, Velentin Torres, Miguel Grado
Instituto Tecnologico y de Estudios Superiores de Monterrey, Mexico

11:30 - 12:00
BREAK
Foyer

12:00 - 13:45
A2L-A: SPECIAL SESSION: DISTRIBUTED FIBER-OPTIC SENSORS USING BRILLOUIN SCATTERING
Auditorium 1
Session Chairs: Avi Zadok (Bar-Ilan University, Israel), Alayn Loayssa (Public University of Navarra, Spain)

12:00
INVITED TALK: RECENT PROGRESS IN DISTRIBUTED BRILLOUIN SCATTERING FIBER SENSORS
Moshe Tur, Avi Motil, Ido Sovran, Arik Bergman
Tel-Aviv University, Israel

12:30
RECENT ACHIEVEMENTS IN BOCDA/BOCDR
Kazuo Hotate
University of Tokyo, Japan

12:45
BRILLOUIN DISTRIBUTED FIBER SENSORS: PRACTICAL LIMITATIONS AND GUIDELINES FOR THE MAKING OF A GOOD SENSOR
Luc Thévenaz, Marcelo Soto
École Polytechnique Fédérale de Lausanne, Switzerland

13:00
LONG-RANGE STATIC AND DYNAMIC DISTRIBUTED SENSING
Miguel Gonzalez-Herraez[2], Alejandro Dominguez-Lopez[2], Alexia Lopez-Gil[2], Hugo Martins[2], Sonia Martin-Lopez[2], Xabier Angulo-Vinuesa[1], Pedro Corredera[1]
[1]Consejo Superior de Investigaciones Científicas, Spain; [2]Universidad de Alcalá, Spain

13:15
DISTRIBUTED FIBER SENSORS BASED ON BRILLOUIN DYNAMIC GRATINGS
Kwang Yong Song
Chung-Ang University, Korea, South

13:30
BRILLOUIN TIME-DOMAIN AND CORRELATION-DOMAIN ANALYSES COMBINED
Yair Antman, David Elooz, Raphael Cohen, Yosef London, Avi Zadok
Bar-Ilan University, Israel

12:00 - 13:30
A2L-B: ACTUATION & ENERGY HARVESTING
Auditorium 2
Session Chairs: Rajashree Baskaran (INTEL, USA), Eugene Hwang (Analog Devices, Inc., USA)

12:00
CMOS-NEM RELAY BASED ON TUNGSTEN VIA LAYER
Martín Riverola, Gabriel Vidal-álvarez, Francesc Torres, Núria Barniol
Universitat Autonoma de Barcelona, Spain

12:15
ENERGY EFFICIENT CHIP TRANSIENCE WITH SUPERABSORBENT POLYMER ACTUATORS
Shashank Pandey, Niladri Banerjee, Carlos Mastrangelo
University of Utah, USA

12:30
PDMS MEMBRANE WITH INTEGRATED OPEN-POROUS FOAM FEATURING A GRADIENT IN PORE-SIZE FOR SIMULTANEOUS FILTRATION AND PUMPING OF FLUIDS IN MICROFLUIDIC STRUCTURES
Wolfgang Hilber, Stefan Clara, Johannes Sell, Bernhard Jakoby
Johannes Kepler Universität Linz, Austria

12:45
EXPERIMENTAL STUDY ON LOW-POWER WIRELESS MONITOR OF ROTARY MOTION USING IMPROVED ENERGY HARVESTING SYSTEM WITH PIEZOELECTRIC ELEMENT
Hitoshi Kitayoshi, Kunio Sawaya, Hiroki Kuwano
Tohoku University, Japan

13:00
ELECTROMAGNETIC GENERATOR OPTIMIZATION FOR NON-RESONANT ENERGY HARVESTER
Iman Shahosseini, Rebecca L. Peterson, Ethem E. Aktakka, Khalil Najafi
University of Michigan, USA

13:15
A SELF-POWERED AND EFFICIENT RECTIFIER FOR ELECTROMAGNETIC ENERGY HARVESTERS
Hasan Ulusan, Ozge Zorlu, Ali Muhtaroglu, Haluk Külah
Middle East Technical University, Turkey

12:00 - 13:30
A2L-C: MEMS CHEMICAL SENSORS I
Auditorium 3A
Session Chair: Eduard Llobet (Universitat Rovira i Virgili, Spain)

12:00
METHANE DETECTION WITH HIGH TEMPERATURE ALL-SILICON MICROHEATER
Hongyu Ma, Wenjuan Wang, Xiaowen Liu
China University of Mining and Technology, China

12:15
DEVELOPMENT OF A CMOS-MEMS RF-AEROGEL-BASED CAPACITIVE HUMIDITY SENSOR
Vincent Chung, Jack K. C. Liang, Chao-Lin Cheng, Ming-Chuen Yip, Weileun Fang
National Tsing Hua University, Taiwan

12:30
POLYMER COATED MEMS RESONATOR FOR ROOM TEMPERATURE NH3 SENSING
Van Anh Dam, Daan Wouters, Wout Knoben, Sywert Brongersma, Rob van Schaijk
Holst Centre/IMEC, Netherlands

12:45
AMPLITUDE CONTROL OF PARAMETRIC RESONANCES FOR MASS SENSING
Lily Li, Tobias Hiller, Bassam Bamieh, Kimberly Turner
University of California, Santa Barbara, USA

13:00
INVESTIGATION OF POLYMER DEPOSITION TECHNIQUES ON A SOLIDLY MOUNTED RESONATOR ARRAYS FOR VAPOUR SENSING
Farah Al-Naimi[1], Malcolm Spain[1], Patrick Helfenstein[1], Taepyeong Kim[1], Yongin Lee[1], Si Hoon Lee[1], Girish Rughoobur[2], Luis Garcia-Gancedo[2], Andrew Flewitt[2]
[1]Samsung Electronics, Korea, South; [2]University of Cambridge, United Kingdom

13:15
NOVEL STATIONARY PHASE FOR SILICON GAS CHROMATOGRAPHY MICROCOLUMNS
Florence Ricoul[2], David Lefebvre[2], Amélie Bellemin-Comte[2], Nadine David[2], Bertrand Bourlon[2], Vincent Jousseaume[2], Carine Marcoux[2], Eric Ollier[2], Mélanie Petitjean[1], Pierre Puget[1]
[1]APIX Technology, France; [2]Commissariat à l'Énergie Atomique et aux Énergies Alternatives, France

---

12:00 - 13:30
A2L-D: DEVICES AND INTERFACES
Auditorium 3B
Session Chair: Diana Leitao (INESC Microsistemas e Nanotecnologias & IN and Instituto Superior Tecnico, Portugal)

12:00
A COST-EFFECTIVE ANGLE DEMODULATOR IC FOR PATH MATCHED DIFFERENTIAL INTERFEROMETRY BASED SENSORS
Hao-Chiao Hong[2], Yun-Tse Chen[2], Shao-Feng Hung[2], Chin-Cheng Wu[1], Yi Chiu[2]
[1]Chung-Shan Institute of Science & Technology, Taiwan; [2]National Chiao Tung University, Taiwan

12:15
DESIGN OF SH-SAW PHONONIC DEVICES FOR HIGHLY SENSITIVE AND ULTRA-LOW POWER SENSING APPLICATIONS
Mandek Richardson[2], Venkat Bhethanabotla[2], Subramanian Sankaranarayanan[1]
[1]Argonne National Laboratory, USA; [2]University of South Florida, USA

12:30
OPTICAL DATA LINK ASSEMBLY FOR 360 µM DIAMETER IVUS ON GUIDEWIRE IMAGING DEVICES
Ronald Stoute[2], Marcus Louwerse[2], Jeannet van Rens[1], Vincent Henneken[1], Ronald Dekker[2]
[1]Philips Research, Netherlands; [2]Technische Universiteit Delft, Netherlands

12:45
AN ENERGY-EFFICIENT RECONFIGURABLE READOUT CIRCUIT FOR RESONANT SENSORS BASED ON RING-DOWN MEASUREMENT
Yuxin Yan[3], Zeng Zeng[1], Chao Chen[3], Hui Jiang[3], Zu-Yao Chang[3], Devrez Karabacak[2], Michiel Pertijs[3]
[1]Broadcom Corporation, Netherlands; [2]Holst Centre/IMEC, Netherlands; [3]Technische Universiteit Delft, Netherlands

13:00
A NEW SMALL-SIZED PIERCE CRYSTAL OSCILLATOR READOUT WITH NOVEL ON-CHIP ALL-DIGITAL TEMPERATURE SENSING AND COMPENSATION
Hsuan-Wen Peng[1], Chung-Hsin Su[2], Paul C.-P. Chao[1], Jing-Wen Hsieh[1], Chun-Kai Chang[1]
[1]National Chiao Tung University, Taiwan; [2]Sitronix Technology Corp., Taiwan

13:15
TABLET-TYPE GPS TRACKING RADIATION DETECTION SYSTEM AND VIEWER SOFTWARE
Yoshinori Matsumoto[1], Masatoshi Satoh[2]
[1]Keio University, Japan; [2]Yaguchi Denshi Corp., Japan

12:00 - 13:30
A2L-E: FLUIDIC SENSORS
Rooms 1 & 2
Session Chairs: Istvan Barsony (University of Pannonia), Gary O'Brien (Robert Bosch LLC, USA)

12:00
TWO-PHASE FLOW MEASUREMENTS USING AN ELECTROLOCATION METHOD INSPIRED BY WEAKLY ELECTRIC FISH
Herbert Bousack[1], Qi Zheng[1], Medisa Jabbari[1], Gerhard von der Emde[2]
[1]Forschungszentrum Jülich, Germany; [2]Universität Bonn, Germany

12:15
CAPACITIVE SENSOR BASED ON PCB TECHNOLOGY FOR AIR BUBBLE INSIDE FLUIDIC FLOW DETECTION
T. Vu Quoc[2], T. Pham Quoc[2], Trinh Chu Duc[2], T. T. Bui[1], K. Kikuchi[1], M. Aoyagi[1]
[1]National Institute of Advanced Industrial Science and Technology, Japan; [2]Vietnam National University, Hanoi, Vietnam

12:30
DENSITY-VISCOSITY SENSOR BASED ON PIEZOELECTRIC MEMS RESONATOR AND OSCILLATOR CIRCUIT
Tomás Manzaneque[2], Víctor Ruiz-Díez[2], Jorge Hernando-García[2], Elisabeth Wistrela[1], Martin Kucera[1], Ulrich Schmid[1], José Luis Sánchez-Rojas[2]
[1]Technische Universität Wien, Austria; [2]Universidad de Castilla-La Mancha, Spain

12:45
PARALLEL PLATES SHEAR-WAVE TRANSDUCERS FOR THE CHARACTERIZATION OF VISCOUS AND VISCOELASTIC FLUIDS
Ali Abdallah[2], Erwin K. Reichel[2], Martin Heinisch[2], Bernhard Jakoby[2], Thomas Voglhuber-Brunnmaier[1]
[1]Donau-Universität Krems / Johannes Kepler Universität Linz, Austria; [2]Johannes Kepler Universität Linz, Austria

13:00
INVESTIGATION OF HIGHER MODE EXCITATION OF RESONANT MASS DENSITY AND VISCOSITY SENSORS
Martin Heinisch[2], Erwin K. Reichel[2], Bernhard Jakoby[2], Thomas Voglhuber-Brunnmaier[1], Isabelle Dufour[3]
[1]Donau-Universität Krems / Johannes Kepler Universität Linz, Austria; [2]Johannes Kepler Universität Linz, Austria; [3]Université Bordeaux 1, France

13:15
IMPLANTABLE CATHETER FLOW SENSOR WITH LEGS IN AIR PASSAGE FOR LABORATORY ANIMAL
Takayuki Yamada[2], Ryota Ono[2], Takuya Matsuyama[2], Miyoko Matsushima[2], Tsutomu Kawabe[2], Mitsuhiro Shikida[1]
[1]Hiroshima City University, Japan; [2]Nagoya University, Japan

---

12:00 - 13:30
A2L-F: ENABLING TECHNOLOGIES
Rooms 3 & 4
Session Chairs: Georgios Papadopoulos (University of Strasbourg, France), Dennis Laurijssen (Universiteit Antwerpen, Belgium)

12:00
ENHANCING CONTIKIMAC FOR BURSTY TRAFFIC IN MOBILE SENSOR NETWORKS
Georgios Papadopoulos[2], Antoine Gallais[2], Thomas Noel[2], Vasilis Kotsiou[1], Periklis Chatzimisios[1]
[1]Hellenic Open University, Greece; [2]Université de Strasbourg, France

12:15
ANTENNA ARRAYS FOR RSS BASED INDOOR LOCALIZATION SYSTEMS
Dennis Laurijssen, Jan Steckel, Maarten Weyn
Universiteit Antwerpen, Belgium

12:30
AN ACCELEROMETER DIGITAL FRONT END FOR EFFICIENT SEISMIC EVENT DETECTION SUPPORT IN A WIRELESS SENSOR NODE
Fabio Federici, Roberto Alesii, Andrea Colarieti, Fabio Graziosi, Marco Faccio
Università degli Studi dell'Aquila, Italy

12:45
FRAME SYNCHRONIZATION FOR NETWORKED HIGH-SPEED VISION SYSTEMS
Akihito Noda, Yuji Yamakawa, Masatoshi Ishikawa
University of Tokyo, Japan

13:00
ONE INPUT - MULTI OUTPUT SENSORS: A RELEVANT CONCEPT?
Didier Robbes[3], Gilles Allègre[3], Stéphane Flament[2], Sylvain Lebargy[3], Adrian Swinton[1], Olivier Masséglia[1]
[1]Bartington Ltd, United Kingdom; [2]École nationale supérieure d'ingénieurs de Caen, France; [3]Université de Caen Basse Normandie, France

13:30 - 15:00
LUNCH
Room: Multipurpose Rooms 1 & 2

15:00 - 16:20
A3P-H: METAL OXIDES AND CARBON NANOMATERIALS FOR GAS SENSING
Poster Area - Foyer
Session Chair: Roman Beigelbeck (Danube University Krems, Autria)

A3P-H1
ONE-POT SYNTHESIS RGO-NIO COMPOSITES FOR HIGHLY SENSITIVE ROOM TEMPERATURE NO2 GAS SENSOR
Jian Zhang, Dawen Zeng
Huazhong University of Science and Technology, China

A3P-H2
A NEW METHOD IN THE GAS IDENTIFICATION BY USING MOS GAS SENSOR BASED ON THE TEMPERATURE-PROGRAMMED TECHNIQUE
Guozhu Zhang, Changsheng Xie, Shunping Zhang
Huazhong University of Science and Technology, China

A3P-H3
NOISE ANALYSIS OF METAL-OXIDE GAS MICROSENSORS RESPONSE TO A MIXTURE OF NO2 AND CO
Thierry Contaret, Jean-Luc Seguin, Khalifa Aguir
Aix-Marseille Université, France

A3P-H4
CONDUCTION OF DIFFERENT CARRIERS IN (SR1-XYX)1-ZTI1-YFEYO3-DELTA
Xing-Min Guo, Ke Shan
University of Science and Technology Beijing, China

A3P-H5
NANOCRYSTALLINE P-TIO2 BASED MIS DEVICE FOR EFFICIENT ACETONE DETECTION
Basanta Bhowmik, Arnab Hazra, Koushik Dutta, Partha Bhattacharyya
Indian Institute of Engineering Science and Technology Shibpur, India

A3P-H6
SNO2 AND CE MODIFIED SNO2 MESOSTRUCTURED FOR SELECTIVE ETHANOL DETECTION
Laura Navarrete[2], Fidel Toldra-Reig[2], Jose Manuel Serra[2], Simona Somacescu[1]
[1]Institute of Physical Chemistry Ilie Murgulescu, Romania; [2]Universitat Politècnica de València, Spain

A3P-H7
SELECTIVE ROOM-TEMPERATURE SENSING OF NO2 BY WO3 FILM/GRAPHENE LAYERS
Malcolm Govender[1], Bonex Mwakikunga[1], Sanjay Mathur[2], Trilok Singh[2], Ali Kaouk[2], Yakup Gönüllü[2], Augusto Machatine[3], Herbert Kunert[3]
[1]Council for Scientific and Industrial Research, South Africa; [2]Universität zu Köln, Germany; [3]University of Pretoria, South Africa

A3P-H8
GRAPHENE OXIDE/SNO2 NANOCOMPOSITES FOR ENHANCED SENSING OF ETHANOL IN PRESENCE OF VOCS
Maedeh Arvani, Hamide Mohammad Aliha, Abbasali Khodadadi, Yadollah Mortazavi
University of Tehran, Iran

A3P-H9
ELECTROCHEMICAL DETECTION OF SEROTONIN USING POLYETHYLENEDIOXYTHIOPHENE AND CORE-SHELL MOLECULARLY IMPRINTED POLYMER NANOPARTICLES
Barbara Introna[2], Elisabetta Mazzotta[2], Antonio Turco[2], Cosimino Malitesta[2], Reza Mohammadi[1], Farid Ramezany[1], Börje Sellergren[1]
[1]Technische Universität Dortmund, Germany; [2]Università del Salento, Italy

15:00 - 16:20
A3P-J: MECHANICAL AND PHOTONIC BIOSENSORS
Poster Area - Foyer
Session Chair: Anna G. Mignani (CNR-Institute of Applied Physics 'Nello Carrara', Italy)

A3P-J1
LOW LEVEL DETECTION OF MICROCYSTIN USING A PLASMONIC BIOSENSOR
Jayson Briscoe, Sang-Yeon Cho
New Mexico State University, USA

A3P-J2
BIOASSAY OF PROTEINS IN STABLE SOLUTION STATE USING A NOVEL CANTILEVER-BASED LIPOSOME BIOSENSOR
Ziyang Zhang[2], Toshio Akai[1], Keisuke Takada[2], Kaoru Yamashita[2], Minoru Noda[2], Masayuki Sohgawa[3]
[1]Kyoto Institute of Technolog, Japan; [2]Kyoto Institute of Technology, Japan; [3]Niigata University, Japan

A3P-J3
SURFACE ACOUSTIC WAVE SENSOR BASED ON NICKEL(II) PHTHALOCYANINE THIN FILMS FOR ORGANOPHOSPHOROUS PESTICIDES SELECTIVE DETECTION
Idriss Bakas[4], Najla Fourati[2], Chouki Zerrouki[2], Mahamadou Seydou[4], Naima Maouche[3], Ajay Singh[1], Soumen Samanta[1], Dinesh Aswal[1], Mohamed Chehimi[4]
[1]Bhabha Atomic Research Center, India; [2]Conservatoire National des Arts et Métiers, France; [3]Université Ferhat Abbas, Algeria; [4]Université Paris Diderot, France

A3P-J4
SENSITIVE DETECTION OF 2,4,6-TRINITROTOLUENE BY SURFACE PLASMON FLUORESCENCE SPECTROSCOPY
Satoshi Ito, Shuhei Tanaka, Rui Yatabe, Takeshi Onodera, Kiyoshi Toko
Kyushu University, Japan

A3P-J5
TOWARDS A BIOSENSING MULTIPLE PLATFORM BASED ON AN ARRAY OF HOLLOW MICROBRIDGE RESONATORS
Salomon Marquez[1], Mar Alvarez[1], David Fariña[1], Carlos Domínguez[2], Laura Lechuga[1]
[1]Centre d'Investigació en Nanociència i Nanotecnologia, Spain; [2]Institut de Ciència de Materials de Barcelona, Consejo Superior de Investigaciones Científicas, Spain

A3P-J6
CONCEPTUAL SPACES AND LANGUAGE GAMES FOR AN ARTIFICIAL FINGERTIP
Patrick McGovern, Jonathan Lawry, Jonathan Rossiter, Ute Leonards
University of Bristol, United Kingdom

A3P-J7
LASER INDUCED FLUORESCENCE READER FOR SANDWICHTYPE NANOPARTICLE IMMUNOASSAY TO DETERMINE SALINOMYCIN
Y. H. Kim, K J. Son, Heung Bin Lim
Dankook University, Korea, South

A3P-J8
MINIATURE PH SENSOR FOR CAPSULE ENDOSCOPY WITH COMPOSITE DIAGNOSIS
Qi Shao[2], Hao Liu[2], Hongyi Li[2], Yunsheng Yang[1]
[1]Chinese PLA General Hospital, China; [2]Shenyang Institute of Automation Chinese Academy of Sciences, China

A3P-J9
CANTILEVER ARRAY SENSOR FOR MULTIPLE LIVER CANCER BIOMARKERS DETECTION
Jingjing Wang, Shuaipeng Wang, Xing Wang, Yinfang Zhu, Jinling Yang, Fuhua Yang
Chinese Academy of Sciences, China

A3P-J10
A NON-ENZYMATIC MICRO-NEEDLE PATCH SENSOR FOR FREE-CHOLESTEROL CONTINUOUS MONITORING
Hyo Sang Yoon[2], Su Jin Lee[2], Jae Yeong Park[2], Seung Joon Paik[1], Mark Allen[1]
[1]Georgia Institute of Technology, USA; [2]Kwangwoon University, Korea, South

---

15:00 - 16:20
A3P-K: OPTICAL SENSORS I
Poster Area - Foyer
Session Chairs: Jesus M. Corres (Public University of Navarra, Spain), Carlos Ruiz Zamarreño (Public University of Navarra, Spain)

A3P-K1
RAMAN SIGNATURES OF TABLE-TOP ARTIFICIAL SWEETENERS
Anna Grazia Mignani[1], Leonardo Ciaccheri[1], Andrea Azelio Mencaglia[1], Mariateresa Russo[2]
[1]Consiglio Nazionale delle Ricerche, Italy; [2]Università degli Studi Mediterranea di Reggio Calabria, Italy

A3P-K2
SENSING LIGHT AND SOUND VELOCITIES OF FLUIDS IN A TWO-DIMENSIONAL PHOXONIC CRYSTAL
Samira Amoudache[2], Rayisa Moiseyenko[5], Yan Pennec[5], Bahram Djafari Rouhani[5], Antoine Khater[1], Ralf Lucklum[4], Rachi Tigrine[3]
[1]Institut des Molécules et Matériaux du Mans, France; [2]Institut d'Electronique, de Microélectronique et de Nanotechnologie, France; [3]Laboratoire de Physique et Chimie Quantique, Algeria; [4]Otto-von-Guericke-Universität Magdeburg, Germany; [5]Université des Sciences et Technologies de Lille, France

A3P-K3
HIGH-SENSITIVE REFRACTIVE INDEX SENSOR BASED ON SLOW LIGHT ENGINEERED PHOTONIC CRYSTAL CAVITY
Ya-Nan Zhang, Yong Zhao, Jin Li, Ri-Qing Lv
Northeastern University, China

A3P-K4
OPTICAL FEEDBACK INTERFEROMETRY SENSOR FOR FLOW CHARACTERIZATION INSIDE EX-VIVO VESSEL
Adam Quotb[2], Evelio Esteban Ramírez-Miquet[1], Clement Tronche[2], Julien Perchoux[2]
[1]Centro de Aplicaciones Tecnológicas y Desarrollo Nuclear, Cuba; [2]LAAS / CNRS / Université de Toulouse, France

A3P-K5
MULTI POINT, HIGH SENSITIVE TACTILE SENSING MODULE FOR ROBOTS AND DEVICES
Utku Büyüksahin, Ahmet Kirli
Yildiz Technical University, Turkey

A3P-K6
COMPENSATED INTENSITY-MODULATED OPTICAL FIBRE BENDING SENSOR BASED ON TILT ANGLE LOSS MEASUREMENT
Mohd Anwar Zawawi, Sinead O'Keeffe, Elfed Lewis
University of Limerick, Ireland

A3P-K7
CMOS INTEGRATED ACTIVE-PIXEL SENSOR IN CRYOGENIC TEMPERATURE
Luciana Pedrosa Salles, Pedro Vitor Ferreira do Rosário, Artur Soares Bezerra de Mello, Davies William de Lima Monteiro
Universidade Federal de Minas Gerais, Brazil

A3P-K8
CHARACTERIZATION OF GLUCOSE RESPONSIVE PHENYLBORONIC ACID-BASED HYDROGEL USING OPTICAL COHERENCE TOMOGRAPHY
Brian Stevens, Gymama Slaughter
University of Maryland Baltimore County, USA

A3P-K9
DESIGN AND OPTIMIZATION TAPERED FIBER WITH NEGATIVE DIELECTROPHORETIC EFFECT FOR OIL-IN-WATER CONCENTRATION SENSOR
Sheng Hu, Yong Zhao
Northeastern University, China

A3P-K10
INCREASING PHOTO-THERMAL EFFICIENCY OF VO2-BASED DEVICES USING CARBON NANOTUBE THIN-FILMS
Tongyu Wang, David Torres, Chuan Wang, Nelson Sepulveda
Michigan State University, USA

A3P-K11
TEMPERATURE SENSOR BASED ON A LIQUID CRYSTAL PLASMONIC WIRE GRATING
José Francisco Algorri, Braulio Garcia-Cámara, Virginia Urruchi, José Manuel Sánchez-Pena
Universidad Carlos III de Madrid, Spain

A3P-K12
NOVEL MINIATURE PRESSURE AND TEMPERATURE OPTICAL FIBRE SENSOR BASED ON AN EXTRINSIC FABRY-PEROT INTERFEROMETER (EFPI) AND FIBRE BRAGG GRATINGS (FBG) FOR THE OCEAN ENVIRONMENT
Dinesh Babu Duraibabu[2], Sven Poeggel[2], Edin Omerdic[2], Kyricaos Kalli[1], Romano Capocci[2], Amedee Lacraz[1], Gerard Dooly[2], Elfed Lewis[2], Thomas Newe[2], Gabriel Leen[2], Daniel Toal[2]
[1]Cyprus University of Technology, Cyprus; [2]University of Limerick, Ireland

A3P-K13
AN ADJUSTABLE SENSOR PLATFORM USING DUAL WAVELENGTH MEASUREMENTS FOR OPTICAL COLORIMETRIC SENSITIVE FILMS
Carlos Machado[2], Carlos Gouveia[1], João Ferreira[2], Barna Kovacs[3], Pedro Jorge[2], Luis Lopes[2]
[1]Institute for Systems and Computer Engineering of Porto, Portugal; [2]Universidade do Porto, Portugal; [3]University of Pécs, Hungary

A3P-K14
HIGH-SPEED INTERROGATION OF MULTIPLEXED FIBER BRAGG GRATINGS ENABLING REAL-TIME VISUALIZATION OF DYNAMIC EVENTS SUCH AS IMPACT LOADING
Bram Van Hoe[2], Kyle Oman[3], Kara Peters[3], Geert Van Steenberge[2], Nikola Stan[1], Stephen Schultz[1]
[1]Brigham Young University, USA; [2]Ghent University / IMEC, Belgium; [3]North Carolina State University, USA

A3P-K15
A MINIATURIZED COMPOUND-EYE CAMERA FOR COMBINED POSITION, PROXIMITY AND TACTILE SENSING
Kazuhiro Shimonomura[1], Hiroto Nakashima[1], Keiichiro Kagawa[2]
[1]Ritsumeikan University, Japan; [2]Shizuoka University, Japan

15:00 - 16:20
A3P-L: MECHANICAL AND PHYSICAL SENSORS I
Poster Area - Foyer
Session Chair: Siavash Pourkamali (University of Texas at Dallas)

A3P-L1
AN INTEGRATED MICROWAVE POWER AND FREQUENCY SENSOR BASED ON GAAS MMIC PROCESS AND MEMS TECHNOLOGY
Zhenxiang Yi, Xiaoping Liao
Southeast University, China

A3P-L2
MAGNETOSTRICTIVE-RING TYPE TORQUE SENSOR USING TWO HALL ICS WITH DIFFERENTIAL MAGNETIC FIELD DETECTION
Hideo Muro[1], Chihiro Saito[3], Munekatsu Shimada[2], Yasubumi Furuya[2]
[1]Chiba Institute of Technology, Japan; [2]Hirosaki University, Japan; [3]Namiki Precision Jewel Co., Ltd., Japan

A3P-L3
IONIZING RADIATION SENSORS UTILIZING OPTICALLY STIMULATED LUMINESCENCE IN SNO-DOPED SRO-B2O3 AND ZNO-P2O5 GLASS
Hidehito Nanto[3], Ryouta Nakagawa[2], Yoshinori Takei[3], Kazuki Hirasawa[3], Shin-Ich Taniguchi[3], Yuka Miyamoto[1], Hitrokazu Masai[5], Toshio Kurobori[4], Takayuki Yanagida[6]
[1]Chiyoda Technol Co., Japan; [2]Kanazawa Insitiute of Technology, Japan; [3]Kanazawa Institute of Technology, Japan; [4]Kanazawa University, Japan; [5]Kyoto University, Japan; [6]Kyusyu Institute of Technology, Japan

A3P-L4
A MEMS-BASED HOT-FILM THERMAL ANEMOMETER WITH WIDE DYNAMIC MEASUREMENT RANGE
Somaie Saremi, Alborz Alyari, Dare Feili, Helmut Seidel
Universität des Saarlandes, Germany

A3P-L5
FLEXIBLE THERMAL MEMS FLOW SENSOR BASED ON CU ON POLYIMIDE SUBSTRATE
Shunji Shibata[2], Yosuke Niimi[2], Mitsuhiro Shikida[1]
[1]Hiroshima City University, Japan; [2]Nagoya University, Japan

A3P-L6
AN ALL-METAL PASSIVE THRESHOLD SENSOR FOR OMNI-DIRECTIONAL VIBRATION MONITORING APPLICATION
Wenguo Chen, Guifu Ding, Yan Wang, Hong Wang, Xiaoling Zhao, Chunsheng Yang, Zhuoqing Yang
Shanghai Jiao Tong University, China

A3P-L7
TEMPERATURE SENSING PROPERTIES OF THE PASSIVE WIRELESS SENSOR BASED ON GRAPHENE OXIDE FILMS
Qing-Ying Ren, Jian-Qiu Huang, Li-Feng Wang, Shu Wan, Li-Tao Sun, Qing-An Huang
Southeast University, China

A3P-L8
A NOVEL CAPACITIVE TEMPERATURE SENSOR FOR A LAB-ON-A-CHIP SYSTEM
Qing-Ying Ren, Li-Feng Wang, Jian-Qiu Huang, Cong Zhang, Qing-An Huang
Southeast University, China

A3P-L9
BIOMIMETIC MEMS DIRECTIONAL MICROPHONE STRUCTURES FOR MULTI-BAND OPERATION
Yansheng Zhang, James Windmill, Deepak Uttamchandani
University of Strathclyde, United Kingdom

A3P-L10
GIANT MAGNETORESISTANCE (GMR) SENSORS FOR 0.35µM CMOS TECHNOLOGY SUB-MA CURRENT SENSING
Andrea De Marcellis[3], Candid Reig[4], Maria-Dolores Cubells[4], Jordi Madrenas[5], Filipe Cardoso[1], Susana Cardoso[2], Paulo P. Freitas[1]
[1]INESC Microsistemas e Nanotecnologias, Portugal; [2]INESC Microsistemas e Nanotecnologias & IN and Instituto Superior Tecnico, Portugal; [3]Università degli Studi dell'Aquila, Italy; [4]Universitat de València, Spain; [5]Universitat Politècnica de Catalunya, Spain

A3P-L11
MEMS ARTIFICIAL CANAL NEUROMAST SENSOR ARRAYS FOR UNDERWATER SENSING
Ajay Giri Prakash Kottapalli[3], Mohsen Asadnia[2], Jianmin Miao[2], Michael Triantafyllou[1]
[1]Massachusetts Institute of Technology, USA; [2]Nanyang Technological University, Singapore; [3]Singapore-MIT Alliance for Research and Technology, Singapore

---

15:00 - 16:20
A3P-M: ACTUATION
Poster Area - Foyer
Session Chairs: Oliver Paul (University of Freiburg, Germany), Gijs Krijnen (University of Twente, Netherlands)

A3P-M1
A NOVEL GEOMETRY FOR A CORONA WIND ELECTROHYDRODYNAMIC PUMP
Olutosin Fawole, Massood Tabib-Azar
University of Utah, USA

A3P-M2
POLYMERIC MULTI-POINT PRESSURE SENSOR AND PLASMA ACTUATOR COUPLED SYSTEM FOR AIRCRAFT ACTIVE FLOW SEPARATION CONTROL
Luca Francioso, Chiara De Pascali, Giovanni Montagna, Pietro Siciliano
Consiglio Nazionale delle Ricerche, Italy

A3P-M3
SELF-POWERED MICRO-SENSORS TO IMPROVE CONTROL AND MANEUVERING OF A ROBOTIC STINGRAY
Mohsen Asadnia[2], Jianmin Miao[2], Ajay Giri Prakash Kottapalli[3], Pablo Valdivia y Alvarado[3], Michael Triantafyllou[1]
[1]Massachusetts Institute of Technology, USA; [2]Nanyang Technological University, Singapore; [3]Singapore-MIT Alliance for Research and Technology, Singapore

---

15:00 - 16:20
A3P-N: SENSOR NETWORKS I
Poster Area - Foyer
Session Chairs: Konstantin Mikhaylov (University of Oulu, Finland), Spyridon Daskalakis (Technical University of Crete, Greece)

A3P-N1
LOW POWER WIRELESS HUMAN DETECTOR UTILIZING THERMOPILE INFRARED ARRAY SENSOR
Junichi Tanaka[2], Hiroshi Imamoto[1], Tomonori Seki[2], Masatoshi Oba[2]
[1]Micro Machine Center, Japan; [2]Omron Corporation, Japan

A3P-N2
HIERARCHICAL REGULATION OF SENSOR DATA TRANSMISSION FOR NETWORKED TELEROBOTS
Ángel Martínez-Tenor, Ana Gago-Benítez, Juan-Antonio Fernández-Madrigal, Ana Cruz-Martín, Rafael Asenjo, ángeles Navarro
Universidad de Málaga, Spain

A3P-N3
MODULAR WIRELESS SENSOR AND ACTUATOR NETWORK NODES WITH PLUG-AND-PLAY MODULE CONNECTION
Konstantin Mikhaylov, Martti Huttunen
University of Oulu, Finland

A3P-N4
EMERGENCY NAVIGATION WITHOUT AN INFRASTRUCTURE
Huibo Bi
Imperial College London, United Kingdom

A3P-N5
A WEARABLE WIRELESS SENSOR NODE FOR SAFETY APPLICATIONS
Francisco Pérez, Diego Antolín Cañada, Nicolás Medrano, Belén Calvo, Daniel García-Romeo
Universidad de Zaragoza, Spain

A3P-N6
SEMANTIC ATTACKS ON WIRELESS MEDICAL DEVICES
Renchi Yan, Teng Xu, Miodrag Potkonjak
University of California, Los Angeles, USA

A3P-N7
ROBUST ACTIVITY RECOGNITION USING WEARABLE IMU SENSORS
Yashaswini Raghuram Prathivadi, Jian Wu, Terrell Bennett, Roozbeh Jafari
University of Texas at Dallas, USA

15:00 - 16:20
A3P-P: MEDICAL APPLICATIONS I
Poster Area - Foyer
Session Chairs: Giuseppe Barillaro (Univerisity of Pisa, Italy), Olga Conde (University of Cantabria, Spain)

A3P-P1
A RESPIRATION SENSOR FOR A CHEST-STRAP BASED WIRELESS BODY SENSOR
Marc Hesse, Peter Christ, Timm Hörmann, Ulrich Rückert
Universität Bielefeld, Germany

A3P-P2
AN ADVANCED, LOW COST PROSTHETIC ARM
Ciarán O'Neill
Trinity College Dublin, Ireland

A3P-P3
A LOW-COST MOBILE DEVICE FOR SKIN TONE MEASUREMENT USING FILTER ARRAY SPECTRUM SENSOR
Cheng-Chun Chang[2], Yung-Chi Chuang[2], Chien-Ta Wu[2], Byung Il Choi[1], Kwansik Lee[1], Seongsu Woo[1], Saifullah Rao[1], Jihoon Kim[1]
[1]NanoLambda, Inc., Korea, South; [2]National Taipei University of Technology, Taiwan

A3P-P4
TOWARDS INJECTABLE BIOPHOTONIC SENSORS FOR PHYSIOLOGICAL MONITORING OF ANIMALS
Jose Valero-Sarmiento[2], Suprio Bhattacharya[2], Andrew Krystal[1], Alper Bozkurt[2]
[1]Duke University, USA; [2]North Carolina State University, USA

A3P-P5
A DIRECTION OF ARRIVAL ESTIMATION METHOD TO IDENTIFY EPILEPTIC ACTIVITY FROM INTRACRANIAL EEG
Patrizia Vergallo[2], Aimé Lay-Ekuakille[2], Radek Janca[1], Roman Cmejla[1], Pavel Krsek[1]
[1]Czech Technical University, Czech Rep.; [2]Università del Salento, Italy

A3P-P6
SALAD LEAF DISEASE DETECTION USING MACHINE LEARNING BASED HYPER SPECTRAL SENSING
Ritaban Dutta[1], Daniel Smith[1], Yanfeng Shu[1], Qing Liu[1], Petra Doust[2], Shaun Heidrich[2]
[1]Commonwealth Scientific and Industrial Research Organisation, Australia; [2]Houston's Farm & Commonwealth Scientific and Industrial Research Organisation, Australia

A3P-P7
OPTICAL SYSTEM FOR RAPID DETECTION OF ESCHERICHIA COLI IN DRINKING WATER
Francisco Javier Ferrero[2], Marta Valledor[2], Juan Carlos Campo[2], L. Marín[2], I. Gutiérrez[2], Felipe Lombó[2], Natalia Cobián[1], F. Olmos[1], I. Méndez[1]
[1]HIPSITEC, S.A, Spain; [2]Universidad de Oviedo, Spain

A3P-P8
SENSORY-EVOKED POTENTIAL USING A NON-INVASIVE FLEXIBLE MULTI-CHANNEL DRY EEG ELECTRODE WITH VIBRATION MOTOR STIMULATION
Chanmi Yeon, Donghyeon Kim, Kiseon Kim, Euiheon Chung
Gwangju Institute of Science and Technology, Korea, South

15:00 - 16:20
A3P-Q: SENSOR MATERIALS AND DEVICES I
Poster Area - Foyer
Session Chair: Antonio Lopez (Public University of Navarra, Spain)

A3P-Q1
INVESTIGATION OF AMORPHOUS HYDROGENATED CARBON LAYERS AS SACRIFICIAL STRUCTURES FOR MEMS APPLICATIONS
Andre Röth[3], Thoralf Kautzsch[2], Mirko Vogt[2], Maik Stegemann[2], Heiko Fröhlich[2], Cornelia Breitkopf[1]
[1]Dresden University of Technology, Germany; [2]Infineon Technologies Dresden GmbH, Germany; [3]Infineon Technologies Dresden GmbH / Technische Universität Dresden, Germany

A3P-Q2
CMOS SC-SPINNING, CURRENT-FEEDBACK HALL SENSOR FOR HIGH SPEED AND LOW COST APPLICATIONS
Tiger Chang, Kai-Cheung Juang
Industrial Technology Research Institute, Taiwan

A3P-Q3
MEMS PRESSURE SENSORS EMBEDDED INTO FIBER COMPOSITE AIRFOILS
Martin Schwerter[2], Monika Leester-Schädel[2], Stephanus Büttgenbach[2], Andreas Dietzel[2], Christian Behr[2], Michael Sinapius[2], Peter Wierach[1]
[1]German Aerospace Center, Germany; [2]Technische Universität Braunschweig, Germany

A3P-Q4
A CAPACITIVELY COUPLED DATA TRANSMISSION SYSTEM FOR RESISTANCE BASED SENSOR ARRAYS FOR IN-SITU MONITORING OF LITHIUM-ION BATTERY CELLS
Nora Martiny[3], Andre Hornung[2], Martin Schüßler[1], Andreas Jossen[2]
[1]Technische Universität Darmstadt, Germany; [2]Technische Universität München, Germany; [3]TUM CREATE Ltd., Singapore

A3P-Q5
CAPACITOR CHARGING USING PHOSPHATE-BASED ABIOTIC FUEL CELL
Joshua Sunday, Gymama Slaughter
University of Maryland Baltimore County, USA

A3P-Q6
HIGH-RESOLUTION ANALOG QUADRATURE SINE OSCILLATOR FOR LOCK-IN AMPLIFIERS APPLICATIONS
Daniel García-Romeo, Pedro Martínez, Belén Calvo, Nicolás Medrano
Universidad de Zaragoza, Spain

A3P-Q7
DETECION OF SUB-MICROLITER LIQUID DROPLETS USING A METAMATERIAL MESH SENSOR
Takashi Kondo[2], Seiji Kamba[2], Tetsuhito Suzuki[1], Yuichi Ogawa[1], Naoshi Kondo[1]
[1]Kyoto University, Japan; [2]Murata Manufacturing Company, Japan

A3P-Q8
NOISE EFFECTS ON RESONATOR BIAS POLARIZATION IN CMOS-MEMS OSCILLATORS
Guillermo Sobreviela, Martín Riverola, Arantxa Uranga, Núria Barniol
Universitat Autònoma de Barcelona, Spain

A3P-Q9
ENHANCING RF INTERFEROMETER SENSITIVITY WITH A RESONATOR
Zhe Chen, Pingshan Wang
Clemson University, USA

A3P-Q10
SHARP NEEDLE TIP FORMATION BASED ON TRIANGULAR PYRAMIDAL STRUCTURE
Kodai Imaeda[2], Katsuhiko Bessho[2], Mitsuhiro Shikida[1]
[1]Hiroshima City University, Japan; [2]Nagoya University, Japan

A3P-Q11
EMBEDDED WIRE DIAGNOSIS SENSOR FOR INTERMITTENT FAULT LOCATION
Luca Incarbone, Fabrice Auzanneau, Wafa Ben Hassen, Yannick Bonhomme
Commissariat à l'Énergie Atomique et aux Énergies Alternatives, France

15:00 - 16:20
A3P-R: PHENOMENA, MODELING AND EVALUATION
Poster Area - Foyer
Session Chairs: Srinivas Tadigadapa (The Pennsylvania State University, USA), Bernhard Jakoby (Johannes Kepler University Linz, Austria)

A3P-R1
FIRST-PRINCIPLES STUDY ON THE MECHANICAL AND ELECTRICAL PROPERTIES OF UNPASSIVATED SI NANOWIRES IN <111> DIRECTION
Jianbo Zhu, Ruifeng Han, Shuangying Lei, Chu-Ping Wen, Hong Yu, Qing-An Huang
Southeast University, China

A3P-R2
THREE-DIMENSIONAL MODELING AND SIMULATION OF THE BOSCH PROCESS WITH THE LEVEL SET METHOD
Xiao-Qian Li, Zai-Fa Zhou, Wei-Hua Li, Qing-An Huang
Southeast University, China

A3P-R3
FINITE ELEMENT MODELLING OF PARTICLE SENSORS BASED ON SOLIDLY MOUNTED RESONATORS
Farah-Helúe Villa-López, Sanju Thomas, Marina Cole, Julian William Gardner
University of Warwick, United Kingdom

A3P-R4
NEAR-REAL-TIME ANALYSIS OF BINARY MIXTURES OF ORGANIC COMPOUNDS IN WATER USING SH-SAW SENSORS AND ESTIMATION THEORY
Karthick Sothivelr[2], Florian Bender[2], Edwin Yaz[2], Fabien Josse[2], Rachel Mohler[1], Antonio Ricco[3]
[1]Chevron Energy Technology Co., USA; [2]Marquette University, USA; [3]Stanford University, USA

A3P-R5
THREE DIMENSIONAL ELECTRIC FIELD MEASUREMENT METHOD BASED ON COPLANAR DECOUPLING STRUCTURE
Xiaolong Wen[1], Dongming Fang[1], Chunrong Peng[1], Pengfei Yang[2], Fengjie Zheng1, Shanhong Xia[1]
[1]Chinese Academy of Sciences, China; [2]Peking University, China

A3P-R6
MATHEMATICAL MODEL AND SOFTWARE ARCHITECTURE FOR THE SOLUTION OF INVERSE PROBLEMS INVOLVING SENSOR ARRAYS
Paul O'Leary, Christoph Gugg, Matthew Harker, Gerhard Rath
University of Leoben, Austria

A3P-R7
AIR DAMPING MODEL FOR LATERALLY OSCILLATING MOEMS VIBRATION SENSORS
Andreas Kainz[2], Franz Keplinger[2], Wilfried Hortschitz[1], Michael Stifter[1]
[1]Donau-Universität Krems, Austria; [2]Technische Universität Wien, Austria

A3P-R8
SEMI-NUMERIC BOUNDARY ELEMENT METHOD FOR PIEZOELECTRIC FLUID SENSORS USING A FOURIER SPECTRAL APPROACH
Thomas Voglhuber-Brunnmaier[2], Roman Beigelbeck[1], Bernhard Jakoby[3]
[1]Donau-Universität Krems, Austria; [2]Donau-Universität Krems / Johannes Kepler Universität Linz, Austria; [3]Johannes Kepler Universität Linz, Austria

A3P-R9
ENHANCEMENT OF ULTRASOUND GENERATED BY EVANESCENT LIGHT IN CONFINED GEOMETRY
Iwao Matsuya, Kento Matozaki, Yuki Takahashi, Ikuo Ihara
Nagaoka University of Technology, Japan

A3P-R10
INTRODUCTION OF A GENERAL MODEL FOR THE RESONANCE PARAMETERS OF FLUID SENSORS AND VALIDATION WITH RECENT SENSOR SETUPS
Martin Heinisch[2], Bernhard Jakoby[2], Thomas Voglhuber-Brunnmaier[1], Isabelle Dufour[3]
[1]Donau-Universität Krems / Johannes Kepler Universität Linz, Austria; [2]Johannes Kepler Universität Linz, Austria; [3]Université Bordeaux 1, France

A3P-R11
A GEOMETRY DEPENDENT PREDICTIVE FEM MODEL OF A HIGH TEMPERATURE CLOSED MEMBRANE SOI CMOS MEMS THERMAL CONDUCTIVITY SENSOR
Sohab Sarfraz[2], Vasant Kumar[2], Florin Udrea[2], Syed Zeeshan Ali[1]
[1]Cambridge CMOS Sensors Ltd, United Kingdom; [2]University of Cambridge, United Kingdom

16:30 - 18:15

A4L-A: SPECIAL SESSION: TIME OF FLIGHT IMAGING, SENSORS & ALGORITHMS
Auditorium 1
Session Chairs: Erez Tadmor (Microsoft, Israel), Micha Feigin (Massachusetts Institute of Technology, USA)

16:30
INVITED TALK: INTRODUCTION TO TIME-OF-FLIGHT IMAGING
Edoardo Charbon
Technische Universiteit Delft, Netherlands

17:00
RESOLVING MULTIPATH INTERFERENCE IN KINECT: AN INVERSE PROBLEM APPROACH
Ayush Bhandari[1], Micha Feigin[1], Shahram Izadi[2], Christoph Rhemann[2], Mirko Schmidt[2], Ramesh Raskar[1]
[1]Massachusetts Institute of Technology, USA; [2]Microsoft R&D, USA

17:15
A FAST GLOBAL SHUTTER IMAGE SENSOR BASED ON THE VOD MECHANISM
Erez Tadmor, Idan Bakish, Shlomo Felzenshtein, Eli Larry, Giora Yahav, David Cohen
Microsoft R&D, Israel

17:30
DEPTH-RANGE EXTENSION WITH FOLDING TECHNIQUE FOR SPAD-BASED TOF LIDAR SYSTEMS
Daniele Perenzoni, Leonardo Gasparini, Nicola Massari, David Stoppa
Fondazione Bruno Kessler, Italy

17:45
A LOW-POWER PIXEL-LEVEL CIRCUIT FOR HIGH DYNAMIC RANGE TIME-OF-FLIGHT CAMERA
Nicola Massari[1], David Stoppa[1], Lucio Pancheri[2]
[1]Fondazione Bruno Kessler, Italy; [2]Università degli Studi di Trento, Italy

18:00
REVIEW OF METHODS FOR RESOLVING MULTI-PATH INTERFERENCE IN TIME-OF-FLIGHT RANGE CAMERAS
Refael Whyte, Lee Streeter, Michael Cree, Adrian Dorrington
University of Waikato, New Zealand

16:30 - 18:00
A4L-B: SPECTROSCOPY
Auditorium 2
Session Chairs: Anna G. Mignani (CNR-Institute of Applied Physics 'Nello Carrara', Italy), Olga Conde (University of Cantabria, Spain)

16:30
FT-IR SPECTROSCOPY AND HYPERSPECTRAL IMAGING APPLIED TO POST-CONSUMER PLASTIC PACKAGING CHARACTERIZATION AND SORTING
Giuseppe Bonifazi[1], Francesco Di Maio[2], Fabio Potenza[1], Silvia Serranti[1]
[1]Sapienza - Università di Roma, Italy; [2]Technische Universiteit Delft, Netherlands

16:45
COLORIMETRIC ANALYSIS FOR ON-LINE ARC-WELDING DIAGNOSTICS BY MEANS OF PLASMA OPTICAL SPECTROSCOPY
Jesus Mirapeix Serrano, Ruben Ruiz Lombera, Jose Julian Valdiande, José Miguel López-Higuera
Universidad de Cantabria, Spain

17:00
CHARACTERISTICS OF WHISPERING GALLERY MODE IN MICROSPHERE COVERED ANTIGEN-ANTIBODY LAYER AT ATTENUATED-TOTAL-REFLECTION CONFIGURATION
Takeshi Tajiri[1], Shuzo Matsumoto[1], Toshihiko Imato[2], Toshihiro Okamoto[3], Masanobu Haraguchi[3]
[1]Industrial Technology Center of Nagasaki, Japan; [2]Kyushu University, Japan; [3]University of Tokushima, Japan

17:15
SILICON PHOTONICS IN THE MID-INFRARED: WAVEGUIDE ABSORPTION SENSORS
Ventsislav Lavchiev[2], Bernhard Jakoby[2], Grant Ritchie[4], James Kirkbride[4], Ursula Hedenig[1], Thomas Grille[1], Peter Irsigler[1], Bernhard Lendl[3]
[1]Infineon Technologies Austria AG, Austria; [2]Johannes Kepler Universität Linz, Austria; [3]Technische Universität Wien, Austria; [4]University of Oxford, United Kingdom

17:30
CHALLENGES IN THE REALIZATION OF A FULLY INTEGRATED OPTICAL LAB-ON-CHIP
Sergio Nicoletti[1], Pierre Barritault[1], Salim Boutami[1], Mickael Brun[1], Alain Glière[1], Pierre Labeye[1], Justin Rouxel[1], Jaroslaw Czarny[1], Helene Lhermet[1], Mathieu Carras[2], Gregory Maisons[2]
[1]Commissariat à l'Énergie Atomique et aux Énergies Alternatives, France; [2]III-V Lab, France

17:45
DEVELOPMENT OF A 3D LASER SCANNING SYSTEM FOR LASER-INDUCED BREAKDOWN SPECTROSCOPY
Satoshi Ikezawa, Yury L'vovich Zimin, Toshitsugu Ueda
Waseda University, Japan

16:30 - 18:00
A4L-C: MEMS CHEMICAL SENSORS II
Auditorium 3A
Session Chair: Eduard Llobet (Universitat Rovira i Virgili, Spain)

16:30
A PASSIVE WIRELESS INTEGRATED HUMIDITY SENSOR BASED ON DUAL-LAYER SPIRAL INDUCTORS
Cong Zhang, Li Guo, Lifeng Wang, Jian-Qiu Huang, Qing-An Huang
Southeast University, China

16:45
STUDY OF PULSED OPERATING MODE OF A MICROSTRUCTURED PELLISTOR TO OPTIMIZE SENSITIVITY AND POISONING RESISTANCE
Thomas Fricke, Tilman Sauerwald, Andreas Schütze
Universität des Saarlandes, Germany

17:00
DEVELOPMENT OF A NOVEL PRINTED FLEXIBLE MICROFLUIDIC SENSING PLATFORM BASED ON PCB TECHNOLOGY
Binu Baby Narakathu, Sai Guruva Reddy Avathu, Ali Eshkeiti, Sepehr Emamian, Massood Zandi Atashbar
Western Michigan University, USA

17:15
DETECTION OF HEAVY METALS USING FULLY PRINTED THREE ELECTRODE ELECTROCHEMICAL SENSOR
Sai Guruva Reddy Avathu, Binu Baby Narakathu, Ali Eshkeiti, Sepehr Emamian, Brad Bazuin, Margaret Joyce, Massood Zandi Atashbar
Western Michigan University, USA

17:30
ZEBRA GC: A FULLY INTEGRATED MICRO GAS CHROMATOGRAPHY SYSTEM
Apoorva Garg, Muhammad Akbar, Shree Narayanan, Leyla Nazhandali, Masoud Agah
Virginia Polytechnic Institute and State University, USA

17:45
A LOW-POWER GAS SENSOR FOR ENVIRONMENTAL MONITORING USING A CAPACITIVE MICROMACHINED ULTRASONIC TRANSDUCER
Marzana Mantasha Mahmud, J. Li, Jean E. Lunsford, Xiao Zhang, Feysel Yamaner, H. Troy Nagle, Ömer Oralkan
North Carolina State University, USA

16:30 - 18:00
A4L-D: MEDICAL APPLICATIONS II
Auditorium 3B
Session Chairs: Alper Bozkurt (North Carolina State University, USA), Jurgen Kosel (King Abdullah University of Science and Technology, Saudi Arabia)

16:30
PERMITTIVITY MEASUREMENTS FOR THE QUANTIFICATION OF EDEMA IN HUMAN BRAIN TISSUE - OPEN-ENDED COAXIAL AND COPLANAR PROBES FOR FAST TISSUE SCANNING
Tobias Reinecke[1], Lars Hagemeier[2], Sebastian Ahrens[1], Michael Klintschar[2], Stefan Zimmermann[1]
[1]Gottfried Wilhelm Leibniz Universität Hannover, Germany; [2]Medizinische Hochschule Hannover, Germany

16:45
WEARABLE SELF-POWERED DIAPER-SHAPED URINARY-INCONTINENCE SENSOR SUPPRESSING RESPONSE-TIME VARIATION WITH 0.3-V START-UP CONVERTER
Ami Tanaka, Fumiyasu Utsunomiya, Takakuni Douseki
Ritsumeikan University, Japan

17:00
AN INVESTIGATION ON E-NOSE PLATFORM RELEVANCE TO RESPIRATORY DISEASES
Marco Santonico[2], Alessandro Zompanti[2], Chiara Vernile[1], Giorgio Pennazza[2], Paul Brinkman[5], Ariane Wagener[5], Peter Sterk[5], Arnaldo D'Amico[4], Paolo Montuschi[3]
[1]Università Campus Bio-Medico, Italy; [2]Università Campus Bio-Medico di Roma, Italy; [3]Università Cattolica del Sacro Cuore, Italy; [4]Università degli Studi di Roma Tor Vergata, Italy; [5]University of Amsterdam, Netherlands

17:15
SILICON MICRONEEDLES FOR TRANSDERMAL APPLICATIONS BY ELECTROCHEMICAL MICROMACHINING TECHNOLOGY
Angela Longo, Lucanos Strambini, Letizia Ventrelli, Giuseppe Barillaro
Università di Pisa, Italy

17:30
OCT FOR ANOMALY DETECTION IN AORTIC ANEURYSM RESECTION
Eusebio Real, José Fernando Val-Bernal, Alejandro Pontón, Marta Calvo Díez, Marta Mayorga, José Manuel Revuelta, José Miguel López-Higuera, Olga María Conde
Universidad de Cantabria, Spain

17:45
FORCE-SENSING MICRONEEDLE FOR ASSISTED RETINAL VEIN CANNULATION
Berk Gonenc[2], Russell Taylor[2], Iulian Iordachita[2], Peter Gehlbach[1], James Handa[1]
[1]Johns Hopkins School of Medicine, USA; [2]Johns Hopkins University, USA

16:30 - 18:00
A4L-E: MAGNETIC SENSORS
Rooms 1 & 2
Session Chairs: Matteo Rinaldi (Northeastern University, USA), Michael Kraft (Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung, Germany)

16:30
MOS-GATED BIPOLAR MAGNETOTRANSISTORS FOR 360° ANGULAR SENSING
Victor Zieren, Olaf Wunnicke, Klaus Reimann, Aad Duinmaijer, Rabindra Rijal
NXP Semiconductors, Netherlands

16:45
HIGH-Q LORENTZ FORCE MEMS MAGNETOMETER WITH INTERNAL SELF-AMPLIFICATION
Emad Mehdizadeh, Varun Kumar, Xiaobo Guo, Siavash Pourkamali
University of Texas at Dallas, USA

17:00
EQUIVALENT MAGNETIC NOISE OF THIN FILM BASED GIANT MAGNETO-IMPEDANCE MICROSENSORS
Eduardo Fernández[2], Alfredo García-Arribas[2], Jose Manuel Barandiaran[1], Andrey V. Svalov[2], Galina V. Kurlyandskaya[2], Christophe Dolabdjian[3]
[1]Basque Center for Materials Applications & Nanostructures, Spain; [2]Universidad del País Vasco, Spain; [3]Université de Caen Basse Normandie, France

17:15
SENSITIVITY IMPROVEMENT OF A RESONANT 3-AXIS MAGNETOMETER USING DUAL MASS VIBRATING SYSTEM
Chien-Wei Kung, Feng-Yu Lee, Chun-I Chang, Sheng-Shian Li, Weileun Fang
National Tsing Hua University, Taiwan

17:30
MAGNETO-TRANSPORT BEHAVIOR OF DOUBLE EXCHANGE MAGNETIC TUNNEL JUNCTION SENSORS
Ana V. Silva[2], Diana C. Leitao[2], Elvira Paz[3], Zhiwei Hou[1], Ricardo Ferreira[3], Susana Cardoso[2], Paulo P. Freitas[1]
[1]INESC Microsistemas e Nanotecnologias, Portugal; [2]INESC Microsistemas e Nanotecnologias & IN and Instituto Superior Tecnico, Portugal; [3]International Iberian Nanotechnology Laboratory, Portugal

17:45
FIBER OPTIC MAGNETOMETER WITH SUB-PICO TESLA SENSITIVITY FOR MAGNETO-ENCEPHALOGRAPHY
Pradeep Pai[2], Lingyao Chen[1], Massood Tabib-Azar[2]
[1]Inven Sense, USA; [2]University of Utah, USA

16:30 - 18:00
A4L-F: LOW POWER SOLUTIONS
Rooms 3 & 4
Session Chair: Francisco Alvarez (Arquimea Ingeniería S.L.U., Spain), Francesco Giuseppe Della Corte (Università degli Studi Mediterranea di Reggio Calabria, Italy)

16:30
NEW APPROACHES IN LOW POWER AND MASS PAYLOAD FOR WIRELESS SENSOR NETWORKS (WSNS) FOR LUNAR SURFACE EXPLORATION
Francisco Álvarez[1], David Millen[1], Cayetano Rivera[1], Carlos Benito[1], Jesus Lopez[1], Diego Fernández[1], Luis Moreno[2]
[1]Arquimea Ingeniería S.L.U, Spain; [2]Universidad Carlos III de Madrid, Spain

16:45
REMOTE IMAGE CAPTURING WITH LOW-COST AND LOW-POWER WIRELESS CAMERA NODES
Sebastian Bader, Matthias Krämer, Najeem Lawal, Mattias O'Nils, Bengt Oelmann
Mid Sweden University, Sweden

17:00
A CARD SIZE ENERGY HARVESTING ELECTRIC POWER SENSOR FOR IMPLEMENTING EXISTING ELECTRIC APPLIANCES INTO HEMS
Yuki Tsunoda[3], Chikara Tsuchiya[2], Yuji Segawa[2], Hajime Sawaya[1], Minoru Hasegawa[1], Koichiro Ishibashi[3]
[1]REVSONIC Corporation, Japan; [2]TM Link Co.,Ltd., Japan; [3]University of Electro-Communications, Japan

17:15
PERFORMANCE ASSESSMENT OF AN ENHANCED RFID SENSOR TAG FOR LONG-RUN SENSING APPLICATIONS
Massimo Merenda, Ivan Farris, Corrado Felini, Leonardo Militano, Silverio Carlo Spinella, Francesco Giuseppe Della Corte, Antonio Iera
Università degli Studi Mediterranea di Reggio Calabria, Italy

17:30
THIN FILM BASED FLEXIBLE CURRENT CLAMP SENSOR FOR GREEN WIRELESS SENSOR NETWORKS
Takahiro Yamashita, Yi Zhang, Hironao Okada, Toshihiro Itoh, Ryutaro Maeda
National Institute of Advanced Industrial Science and Technology, Japan

17:45
WDM SENSOR NETWORK APPROACH: BRIDGING THE GAP TOWARDS POF-BASED PHOTONIC SENSING
Alberto Tapetado[2], David Sánchez Montero[2], Carmen García Vázquez[2], David J. Webb[1]
[1]Aston University, United Kingdom; [2]Universidad Carlos III de Madrid, Spain

TUESDAY, NOVEMBER 4TH

8:00 – 18:00
REGISTRATION
Foyer

8:45 - 9:00
IEEE SENSORS 2015 INTRODUCTION, BEST SENSORS JOURNAL PAPER AWARDS & MERITORIOUS SERVICE AWARD
Auditorium 1

9:00 - 9:50
KEYNOTE – HERRE VAN DER ZANT
Auditorium 1
Session Chair: Lina Sarro (TUDelft, The Netherlands)

GRAPHENE SENSORS IN THE EUROPEAN GRAPHENE FLAGSHIP
Herre van der Zant
Kavli Institute of Nanoscience, Delft University of Technology, The Netherlands

10:00 - 11:45
B1L-A: SPECIAL SESSION: LASER SELF-MIXING SENSORS
Auditorium 1
Session Chairs: Thierry Bosch (Tsinghua Laboratory of Analysis and Architecture of Systems- CNRS, France), Santiago Royo (Universitat Politècnica de Catalunya, Spain)

10:00
INVITED TALK: PLENOPTIC MICROSCOPE BASED ON LASER OPTICAL FEEDBACK IMAGING (LOFI)
Wilfried Glastre, Olivier Hugon, Olivier Jacquin, Hugues Guillet de Chatellus, Eric Lacot
Université Joseph Fourier, France

10:30
CARRIERS DENSITY IMAGING BY SELF-MIXING INTERFEROMETRY IN A THZ QUANTUM CASCADE LASER
Lorenzo Luigi Columbo[2], Francesco Paolo Mezzapesa[2], Maurizio Dabbicco[2], Massimo Brambilla[2], Gaetano Scamarcio[2], Miriam Serena Vitiello[1]
[1]Istituto Nanoscienze and Scuola Normale Superiore, Italy; [2]Università degli Studi di Bari Aldo Moro, Italy

10:45
MEASUREMENT OF RELATIVE VELOCITY OF INDEPENDENT TARGETS BY A QUANTUM CASCADE LASER SUBJECT TO OPTICAL FEEDBACK
Francesco Paolo Mezzapesa, Lorenzo Luigi Columbo, Massimo Brambilla, Maurizio Dabbicco, Vincenzo Spagnolo, Gaetano Scamarcio
Università degli Studi di Bari Aldo Moro, Italy

11:00
ANALYTIC PHASE RETRIEVAL OF DYNAMIC OPTICAL FEEDBACK SIGNALS FOR LASER VIBROMETRY
Antonio Luna Arriaga, Francis Bony, Thierry Bosch
LAAS / CNRS / Université de Toulouse, France

11:15
TOWARDS ATOMIC FORCE MICROSCOPY MEASUREMENTS USING DIFFERENTIAL SELF-MIXING INTERFEROMETRY
Francisco Javier Azcona, Santiago Royo, Ajit Jha
Universitat Politècnica de Catalunya, Spain

11:30
ULTIMATE ERROR SOURCES IN SELF-MIXING INTERFEROMETRY
Giuseppe Martini[2], Silvano Donati[2], Tiziana Tambosso[1]
[1]Dayeh University, Taiwan; [2]Università degli Studi di Pavia, Italy

---

10:00 - 11:15
B1L-B: SENSORS & SENSING SYSTEMS I
Auditorium 2
Session Chairs: Libor Rufer (TIMA IMAG, France), Oliver Paul (University of Freiburg, Germany)

10:00
MICROFLUIDIC-BASED REAL-TIME DETECTOR FOR FINE PARTICULATE MATTER
Leon Yuen[2], Winnie Chu[1], Boris Stoeber[2]
[1]Nanozen Inc., Canada; [2]University of British Columbia, Canada

10:15
A NOVEL SMART PRODDER WITH SENSOR FEEDBACK FOR MATERIAL RECOGNITION IN HUMANITARIAN DEMINING APPLICATIONS
Salvatore Baglio, Luciano Cantelli, Fabio Giusa, Giovanni Antonio Muscato, Alessio Noto
Università degli Studi di Catania, Italy

10:30
THE DEVELOPMENT OF MAGNETIC POWDERY SENSOR
Shunsuke Nagahama[2], Yosuke Kimura[2], Chyon.Hae Kim[1], Shigeki Sugano[2]
[1]Iwate University, Japan; [2]Waseda University, Japan

10:45
DUAL TOUCH AND GESTURE RECOGNITION IN 4-WIRE RESISTIVE TOUCHSCREENS
Javier Calpe-Maravilla[1], Italo Medina[2], Mariajose Martínez[1], Alberto Carbajo[1]
[1]Analog Devices Inc., Spain; [2]Analog Devices, Inc, Ireland

11:00
NOVEL HIGH RESOLUTION TACTILE ROBOTIC FINGERTIPS
Alin Drimus, Vince Jankovics, Matija Gorsic, Stefan Mátéfi-Tempfli
University of Southern Denmark, Denmark

10:00 - 11:30
B1L-C: METAL OXIDE GAS SENSORS
Auditorium 3A
Session Chair: Eduard Llobet (Universitat Rovira i Virgili, Spain)

10:00
ENERGY-EFFICIENT ATMOSPHERIC CO CONCENTRATION SENSING WITH ON-DEMAND OPERATING MOX GAS SENSOR
Dinko Oletic, Vana Jelicic, Dario Antolovic, Vedran Bilas
University of Zagreb, Croatia

10:15
INTERPLAY BETWEEN ACTIVE SITES OF MODIFIED NANOCRYSTALLINE TIN DIOXIDE AND SELECTIVITY TO CO AND NH3 GASES
Artem Marikutsa, Marina Rumyantseva, Alexander Gaskov
Moscow State University, Russia

10:30
ZNO AS FUNCTIONAL MATERIAL FOR SUB-PPM ACETONE DETECTION
Ambra Fioravanti[1], Antonino Bonanno[1], Maria Cristina Carotta[1], Sandro Gherardi[2], Stefano Lettieri[1], Pasqualino Maddalena[3], Emanuele Orabona[3], Deborah Katia Pallotti[3], Roberto Paoluzzi[1]
[1]Consiglio Nazionale delle Ricerche, Italy; [2]Università degli Studi di Ferrara, Italy; [3]Università degli Studi di Napoli Federico II, Italy

10:45
SELECTIVE HYDROGEN DETECTION WITH TIO2 NANOFILM VIA THE POROUS-ALUMINA-ASSISTED ANODIZING OF TITANIUM LAYERS
Rosa Maria Vázquez[2], Francesc Gispert-Guirado[2], Eduard Llobet[2], Alexander Mozalev[1]
[1]Brno University of Technology, Czech Rep.; [2]Universitat Rovira i Virgili, Spain

11:00
A COMPARATIVE STUDY ON METHANOL SENSING PERFORMANCE OF ZNO NANOFLOWER AND NANOROD BASED RESISTIVE DEVICES
Debanjan Acharyya, Nabaneeta Banerjee, Partha Bhattacharyya
Indian Institute of Engineering Science and Technology Shibpur, India

11:15
THERMAL METHOD OF GAS SEPARATION WITH MICRO-PORES
Shoeji Nakaye[1], Hiroshi Sugimoto[1], Naveen Gupta[2], Yogesh Gianchandani[2]
[1]Kyoto University, Japan; [2]University of Michigan, USA

10:00 - 11:30
B1L-D: NOVEL SENSORS - PHENOMENA AND EVALUATION
Auditorium 3B
Session Chair: Bernhard Jakoby (Johannes Kepler University Linz, Austria)

10:00
QUANTIZED CURRENT CONDUCTION IN MEMRISTORS AND ITS PHYSICAL MODEL
Yuying Zhang, Nurunnahar Islam Mou, Pradeep Pai, Massood Tabib-Azar
University of Utah, USA

10:15
STUDY OF A PIEZORESISTIVE CANTILEVER USED AS A TEMPERATURE SENSING STRUCTURE IN LOW TEMPERATURE ENVIRONMENTS
Jian-Qiu Huang[2], Qing-Hai Liu[2], Chun-Hua Cai[1]
[1]Hohai University, China; [2]Southeast University, China

10:30
ELECTRO-THERMAL SIMULATION AND CHARACTERIZATION OF VERTICALLY ALIGNED CNTS DIRECTLY GROWN ON A SUSPENDED MICROHOPLATE FOR THERMAL MANAGEMENT APPLICATIONS
Cinzia Silvestri, Paolo Picciafoco, Bruno Morana, Fabio Santagata, Kouchi Zhang, Pasqualina M. Sarro
Technische Universiteit Delft, Netherlands

10:45
TIME DOMAIN RESONANCE FREQUENCY MEASUREMENT OF INDUCTIVELY COUPLED RESONANT SENSORS USING THE MATRIX PENCIL METHOD
Sebastian Sauer, Wolf-Joachim Fischer
Technische Universität Dresden, Germany

11:00
INVESTIGATION OF AN ENCIRCLING PULSED EDDY CURRENT PROBE FOR CORROSION DETECTION
Shiva Majidnia[1], Rajogopal Nilavalan[1], John Rudlin[2]
[1]Brunel University, United Kingdom; [2]TWI Ltd., United Kingdom

11:15
RFID-BASED SENSING TECHNOLOGY WITH MICROSTRIP LINES
Hiroshi Fukuda, Keishi Kosaka, Wataru Hattori
NEC Corporation, Japan

10:00 - 11:30
B1L-E: MEDICAL FORCE SENSORS
Rooms 1 & 2
Session Chairs: Seong Ho Kong (Kyungpook National University, Korea), Mitsuhiro Shikida (Hiroshima City University, Japan; [2]Nagoya University, Japan)

10:00
A MULTIPOINT THIN FILM POLYMER PRESSURE/FORCE SENSOR TO VISUALIZE TRADITIONAL MEDICINE PALPATIONS
Xiaoyu Mi, Fumihiko Nakazawa
Fujitsu Laboratories Ltd., Japan

10:15
A FLEXIBLE SKIN PILOERECTION MONITORING SENSOR
Jaemin Kim, Dae Geon Seo, Young-Ho Cho
Korea Advanced Institute of Science and Technology, Korea, South

10:30
ON-CHIP FLEXIBLE MULTI-LAYER SENSORS FOR HUMAN STRESS MONITORING
Sunghyun Yoon, Jai Kyoung Sim, Young-Ho Cho
Korea Advanced Institute of Science and Technology, Korea, South

10:45
FLEXIBLE 3-AXES CAPACITIVE PRESSURE SENSOR ARRAY FOR MEDICAL APPLICATIONS
Thi-Hong-Nhung Dinh, Pierre-Yves Joubert, Emile Martincic, Elisabeth Dufour-Gergam
Université Paris Sud, France

11:00
A SMART CATHETER PROTOTYPE WITH 3D CONTACT FORCE SENSING AT DISTAL END
Shenshen Zhao, Chang Liu
Northwestern University, USA

11:15
CONFORMABLE TACTILE SENSING USING SCREEN PRINTED P(VDF-TRFE) AND MWCNT-PDMS COMPOSITES
Saleem Khan[2], Ravinder Singh Dahiya[4], Sajina Tinku[3], Leandro Lorenzelli[1]
[1]Fondazione Bruno Kessler, Italy; [2]Università degli Studi di Trento, Italy; [3]Università degli Studi di Trento & Fondazione Bruno Kessler, Italy; [4]University of Glasgow , United Kingdom

10:00 - 11:30
B1L-F: NANOBIOSENSORS
Rooms 3 & 4
Session Chair: Avi Zadok (Bar-Ilan University, Israel)

10:00
HIGH SENSITIVE DETECTION IN TUMOR EXTRACTS WITH SINW-FET IN-AIR BIOSENSORS
Francesca Puppo[1], Marie-Agnès Doucey[3], Jean-François Delaloye[4], Thomas Moh[2], Gregory Pandraud[2], Pasqualina M. Sarro[2], Giovanni De Micheli[1], Sandro Carrara[1]
[1]École Polytechnique Fédérale de Lausanne, Switzerland; [2]Technische Universiteit Delft, Netherlands; [3]Université de Lausanne, Switzerland; [4]University Hospital of Lausanne, Switzerland

10:15
FLUIDICALLY AND ELECTRICALLY INTEGRATED SOLID STATE NANOPORE ARRAYS FOR BIOCHEMICAL SENSING
Mate Varga[2], Zsofia Bérczes[2], Levente Illés[2], Gyorgy Sáfrány[2], István Bársony[2], Péter Fürjes[2], Robert Gyurcsányi[1], Gyula Jágerszki[1]
[1]Budapest University of Technology and Economics, Hungary; [2]Hungarian Academy of Sciences, Hungary

10:30
TIO2 AND SHRINK INDUCED TUNABLE GRAPHENE COMPOSITES BASED ON NANO SELF ASSEMBLY FOR BIOSENSORS
Peng Li[2], Gaoshan Jing[1], Tianhong Cui[4], Bo Zhang[3]
[1]Tsinghua University, China; [2]Tsinghua University & University of Minnesota, China; [3]University of Minnesota, USA; [4]University of Minnesota & Tsinghua University, USA

10:45
A PARYLENE-C BASED 16 CHANNELS FLEXIBLE BIO-ELECTRODE FOR ECOG RECORDING
Lei-Chun Chou, Shang-Wei Tsai, Wun-Lun Chang, Jin-Chern Chiou, Tzai-Wen Chiu
National Chiao Tung University, Taiwan

11:00
MICROFLUIDIC ELISA FOR SENSING OF PROSTATE CANCER BIOMARKERS USING INTEGRATED A-SI:H P-I-N PHOTODIODES
Narayanan Madaboosi[1], Catarina R. Pedrosa[1], Miguel F. Reis[2], Ruben R.G. Soares[2], Virginia Chu[1], João Pedro Conde[3]
[1]INESC Microsistemas e Nanotecnologias, Portugal; [2]Instituto Superior Tecnico, Universidade de Lisboa, Portugal; [3]Universidade de Lisboa, Portugal

11:15
INTEGRATED POINT-OF-CARE SINW BIOSENSORS
Mohd Azraie Mohd Azmi, Zari Tehrani, Daniel Thomas, Gareth Blayney, Owen Guy
Swansea University, United Kingdom

11:30 - 12:00
BREAK
Foyer

12:00 - 13:45
B2L-A: SPECIAL SESSION: PHOTONIC & PHONONIC CRYSTAL SENSORS
Auditorium 1
Session Chairs: Ralf Lucklum (Otto von Guericke Universitaet, Germany), Giuseppe Barillaro (Univerisity of Pisa, Italy)

12:00
INVITED TALK: PHOTONIC CRYSTAL BIOSENSORS
Brian Cunningham
University of Illinois at Urbana-Champaign, USA

12:30
PHOTONIC CRYSTAL CAVITIES FOR INTEGRATED SENSING
Mark G. Scullion[2], Thomas F. Krauss[2], Andrea Di Falco[1]
[1]University of St Andrews, United Kingdom; [2]University of York, United Kingdom

12:45
HIGH SENSITIVITY GAS DETECTION USING HOLLOW CORE PHOTONIC BANDGAP FIBRES DESIGNED FOR MID-IR OPERATION
Marco Petrovich, Natalie Wheeler, Alexander Heidt, Naveen Baddela, Seyed Reza Sandoghchi, Yong Chen, Francesco Poletti, David J. Richardson
University of Southampton, United Kingdom

13:00
IMPULSIVELY EXCITED SURFACE PHONONIC CRYSTALS: A ROUTE TOWARDS NOVEL SENSING SCHEMES
Damiano Nardi[3], Margaret Murnane[3], Henry Kapteyn[3], Marco Travagliati[1], Gabriele Ferrini[2], Claudio Giannetti[2], Francesco Banfi[2]
[1]Scuola Normale Superiore and Istituto Nanoscienze / Consiglio Nazionale delle Ricerche, Italy; [2]Università Cattolica del Sacro Cuore, Italy; [3]University of Colorado Boulder, USA

13:15
DETECTION OF BIOMOLECULES WITH 1D PHOTONIC CRYSTALS BASED ON POROUS SILICON
Claudia Pacholski
Max-Planck-Gesellschaft zur Förderung der Wissenschaften e. V., Germany

13:30
PHONONIC CYSTAL SENSOR FOR MEDICAL APPLICATIONS
Ralf Lucklum[2], Mikhail Zubtsov[2], Ralf Grundmann[2], Simon Villa Arango[1]
[1]Escuela de Ingenieria de Antioquia, Colombia; [2]Otto-von-Guericke-Universität Magdeburg, Germany

12:00 - 13:30
B2L-B: INTERFACING & RESONANT SENSORS
Auditorium 2
Session Chairs: Michael Maharbiz (UC Berkeley, USA), Patrick Pons (CNRS LAAS, Toulouse, France)

12:00
COMPACT DDS-BASED SYSTEM FOR CONTACTLESS INTERROGATION OF RESONANT SENSORS BASED ON TIME-GATED TECHNIQUE
Marco Ferrari, Marco Baù, Manuel Pagnoni, Vittorio Ferrari
Università degli Studi di Brescia, Italy

12:15
CMOS 0.18 µM STANDARD PROCESS CAPACITIVE MEMS HIGH-Q OSCILLATOR WITH ULTRA LOW-POWER TIA READOUT SYSTEM
Fu-Yen Kuo, Chia-Fong Chang, Kuei-Ann Wen
National Chiao Tung University, Taiwan

12:30
A ROTATIONAL CAPACITIVE MICROMACHINED ULTRASONIC TRANSDUCER (RCMUT)
Donghwan Kim, Michael Kuntzman, Neal Hall
University of Texas at Austin, USA

12:45
NONLINEARITY CHARACTERISTIC OF DISK RESONATOR
Wei Luo, Hui Zhao, Bohua Peng, Jicong Zhao, Quan Yuan, Jinling Yang, Fuhua Yang
Chinese Academy of Sciences, China

13:00
BACKGROUND CALIBRATED MEMS GYROSCOPE
Burak Eminoglu[2], Mitchell Kline[1], Igor Izyumin[2], Yu-Ching Yeh[2], Bernhard Boser[2]
[1]Nest Labs, USA; [2]University of California, Berkeley, USA

13:15
MUTUAL INDUCTANCE SUPPRESSED STACKED INDUCTORS FOR PASSIVE WIRELESS MULTI-PARAMETER SENSORS
Ralf Lei Dong, Li-Feng Wang, Qing-Ying Ren, Qing-An Huang
Southeast University, China

12:00 - 13:30
B2L-C: OPTICAL CHEMICAL SENSOR SYSTEMS
Auditorium 3A
Session Chair: Eduard Llobet (Universitat Rovira i Virgili, Spain)

12:00
FUNCTIONALIZED NANOPOROUS MATERIALS FOR VOLATILE METABOLITES MONITORING WITH DIRECT OPTICAL TRANSDUCTION
Marjorie Vrignaud, Zoé Buniazet, Pierre Marcoux, Jean Hue, Isabelle Texier-Nogues, Florence Ricoul
Commissariat à l'Énergie Atomique et aux Énergies Alternatives, France

12:15
LOW POWER NDIR CO2 SENSOR BASED ON CMOS IR EMITTER FOR BOILER APPLICATIONS
Syed Zeeshan Ali[1], Andrea De Luca[3], Zoltan Racz[4], Piers Tremlett[2], Tracy Wotherspoon[2], Julian William Gardner[5], Florin Udrea[3]
[1]Cambridge CMOS Sensors Ltd, United Kingdom; [2]Microsemi Ltd, United Kingdom; [3]University of Cambridge, United Kingdom; [4]University of Durham, United Kingdom; [5]University of Warwick, United Kingdom

12:30
DESIGN OF A MULTILAYERED ABSORBER STRUCTURE BASED ON SU-8 EPOXY FOR BROAD AND EFFICIENT ABSORPTION IN MID-IR SENSITIVE THERMAL DETECTORS
Shakeel Ashraf[1], Claes Mattsson[1], Göran Thungström[1], Henrik Rödjegård[2]
[1]Mid Sweden University, Sweden; [2]SenseAir AB, Sweden

12:45
LINEAR SENSOR FOR AREAL SUBSURFACE GAS MONITORING - CALIBRATION ROUTINE AND VALIDATION EXPERIMENTS
Matthias Bartholmai[1], Patrick Paul Neumann[1], Klaus-Dieter Werner[1], Sebastian Ebert[1], Detlef Lazik[2]
[1]Federal Institute for Materials Research and Testing, Germany; [2]Helmholtz Centre for Environmental Research, Germany

13:00
FUNCTIONLIZED AUNPS BY DYE MATERIALS FOR CHEMICAL SENSOR APPLICATION
Masashi Watanabe, Rhohei Yokoyama, Ayana Oiwa, Chuanjun Liu, Kenshi Hayashi
Kyushu University, Japan

13:15
OPTOCHEMICAL SENSORS BASED ON POLYMER NANOFIBERS WITH ULTRA-FAST RESPONSE CHARACTERISTICS
Christian Wolf[1], Martin Tscherner[1], Stefan Köstler[1], Volker Ribitsch[2]
[1]Joanneum Research Forschungsgesellschaft mbH, Austria; [2]Karl-Franzens-Universität Graz, Austria

---

12:00 - 13:30
B2L-D: SENSOR MODELING AND OPTIMIZATION
Auditorium 3B
Session Chair: Srinivas Tadigadapa (The Pennsylvania State University, USA), Sebastian Wöckel (Institute for Automation and Communication, Magdeburg, Germany)

12:00
MODELLING OF A MICRO CORIOLIS MASS FLOW SENSOR FOR SENSITIVITY IMPROVEMENT
Jarno Groenesteijn[1], Bert van de Ridder[1], Joost Lötters[2], Remco Wiegerink[1]
[1]Universiteit Twente, Netherlands; [2]Universiteit Twente & Bronkhorst High-Tech BV, Netherlands

12:15
EFFICIENT NUMERICAL MODELING OF OSCILLATORY FLUID-STRUCTURE INTERACTION
Erwin K. Reichel[2], Martin Heinisch[2], Bernhard Jakoby[2], Thomas Voglhuber-Brunnmaier[1]
[1]Donau-Universität Krems / Johannes Kepler Universität Linz, Austria; [2]Johannes Kepler Universität Linz, Austria

12:30
ANALYSIS OF ENERGY CONSUMPTION FOR WEARABLE ECG DEVICES
Jungyoon Kim[2], Chao-Hsien Chu[1]
[1]Pennsylvania State University, USA; [2]Singapore Management University, Singapore

12:45
ALN SHEAR MODE SOLIDLY MOUNTED RESONATOR WITH TEMPERATURE COMPENSATION FOR IN-LIQUID SENSING
Mario DeMiguel-Ramos, Jimena Olivares, Marta Clement, Teona Mirea, Jesús Sangrador, Enrique Iborra, Mariano Barba
Universidad Politécnica de Madrid, Spain

13:00
EVALUATION OF GAS PERMEABILITY FOR MICRO-SCALE THIN POLYMER FILM WITH ENCAPSULATED MEMS DAMPED OSCILLATOR
Ryunosuke Gando, Naofumi Nakamura, Yumi Hayashi, Daiki Ono, Kei Masunishi, Yasushi Tomizawa, Hiroaki Yamazaki, Tamio Ikehashi, Yoshiaki Sugizaki, Hedeki Shibata
Toshiba Corporation, Japan

13:15
CONTACT RESISTANCE, STICTION FORCE, AND FIELD-ASSISTED GROWTH AND MIGRATION IN MEMS AND NEMS METALS
Massood Tabib-Azar, Nazmul Hassan, Hoorad Pourzand, Pradeep Pai
University of Utah, USA

12:00 - 13:30
B2L-E: MEMS RESONANT TRANSDUCERS
Rooms 1 & 2
Session Chairs: Ajit Sharma (Texas Instruments, USA), Michiel Pertijs (Technische Universiteit Delft, Netherlands)

12:00
DESIGN OF A NOVEL MICROMACHINED NON-CONTACT RESONANT VOLTAGE SENSOR FOR POWER DISTRIBUTION SYSTEMS
Chunrong Peng[1], Pengfei Yang[2], Xiaolong Wen[1], Dongming Fang[1], Shanhong Xia[1]
[1]Chinese Academy of Sciences, China; [2]Peking University, China

12:15
SUBWAVELENGTH PLASMONIC ABSORBERS FOR SPECTRALLY SELECTIVE RESONANT INFRARED DETECTORS
Vikrant Gokhale, Paul Myers, Mina Rais-Zadeh
University of Michigan, USA

12:30
HIGH RESOLUTION CALORIMETRIC SENSING BASED ON ALUMINUM NITRIDE MEMS RESONANT THERMAL DETECTORS
Zhenyun Qian, Raul Vyas, Yu Hui, Matteo Rinaldi
Northeastern University, USA

12:45
AN ULTRA HIGH-Q MICROMECHANICAL IN-PLANE TUNING FORK
Xiaobo Guo, Emad Mehdizadeh, Varun Kumar, Alireza Ramezany, Siavash Pourkamali
University of Texas at Dallas, USA

13:00
OUT-OF-PLANE ELECTRODE ARCHITECTURE FOR FUSED SILICA MICRO-GLASSBLOWN 3-D WINEGLASS RESONATORS
Doruk Senkal, Mohammed Ahamed, Mohammad Asadian, Sina Askari, Andrei Shkel
University of California, Irvine, USA

13:15
ELECTROSTATIC STABILIZATION OF THERMAL VARIATION IN QUALITY FACTOR USING ANCHOR LOSS MODULATION
Jie Han, Sergei A. Zotov, Brenton R. Simon, Igor P. Prikhodko, Gunjana Sharma, Alexander Trusov, Andrei Shkel
University of California, Irvine, USA

12:00 - 13:15
B2L-F: ELECTROCHEMICAL BIOSENSORS AND APPLICATIONS
Rooms 3 & 4
Session Chair: Stefan Rupitsch (Erlangen University, Germany)

12:00
LOW-COST AND HIGH-PERFORMANCE MICRO-CHANNEL INTEGRATED BIOSENSOR SYSTEMS
Peng Li[1&2], Gaoshan Jing[1], Tianhong Cui[1&2], Bo Zhang[2]
[1]Tsinghua University, China; [2]University of Minnesota, USA

12:15
CONVECTION-BASED REALTIME POLYMERASE CHAIN REACTION (PCR) UTILIZING TRANSPARENT GRAPHENE HEATERS
Kwang Hyo Chung, Yo Han Choi, Hong Kyw Choi, Jin Tae Kim, Young-Jun Yu, Jin Sik Choi, Doo-Hyeb Youn, Choon-Gi Choi
Electronics and Telecommunications Research Institute, Korea, South

12:30
DNA DETECTION USING MICROBEADS-BASED DIELECTROPHORETIC IMPEDANCE MEASUREMENT
Michihiko Nakano, Zhenhao Ding, Hiromichi Kasahara, Junya Suehiro
Kyushu University, Japan

12:45
RESPONSE PREDICTION OF AN INSECT'S OLFACTORY RECEPTOR NEURON BY USING STRUCTURAL PARAMETERS OF ODORANT AND SELF-ORGANIZING MAP
Yuki Harada[1], Tomoki Kazawa[2], Ryohei Kanzaki[2], Takamichi Nakamoto[1]
[1]Tokyo Institute of Technology, Japan; [2]University of Tokyo, Japan

13:00
FLEXIBLE MICROFLUIDIC BIO-LAB-ON-A-CHIP MULTI-SENSOR PLATFORM FOR ELECTROCHEMICAL MEASUREMENTS
Ana Moya[1], Xavier Illa[1], Elisabet Prats-Alfonso[1], Nadia Zine[2], Gemma Gabriel[1], Abdelhamid Errachid[2], Rosa Villa[1]
[1]Consejo Superior de Investigaciones Científicas, Spain; [2]Université Claude-Bernard Lyon 1, France

---

12:00 - 13:30
B2L-G: LATE NEWS: OTHER SENSING APPLICATIONS
Rooms 6 & 7
Session Chair: Francisco Falcone (Universidad Pública de Navarra, Spain)

12:00
A NOVEL APPROACH FOR ATTITUDE ESTIMATION USING MEMS INERTIAL SENSORS
Zheming Wu, Zhenguo Sun, Wenzeng Zhang, Qiang Chen
Tsinghua University, China

12:15
ULTRASOUND-BASED AIR LEAK DETECTION USING A RANDOM MICROPHONE ARRAY AND SPARSE REPRESENTATIONS
Jan Steckel, Herbert Peremans
Universiteit Antwerpen, Belgium

12:30
ROTATION AND TRANSLATION INVARIANT OBJECT RECOGNITION WITH A TACTILE SENSOR
Shan Luo[1], Wenxuan Mou[2], Min Li[1], Kaspar Althoefer[1], Hongbin Liu[1]
[1]King's College London, United Kingdom; [2]Queen Mary University, United Kingdom

12:45
AUTOMATIC DETECTION OF TRANSMISSION TOWERS
Olivier Steiger, Erwan Lucas, Yannick Maret
ABB Ltd., Switzerland

13:00
SUPER RESOLUTION INFRARED CAMERA USING SINGLE CARBON NANOTUBE PHOTODETECTOR
Liangliang Chen, Zhanxin Zhou, Ning Xi, Ruiguo Yang, Bo Song, Zhiyong Sun, Chengzhi Su
Michigan State University, USA

13:15
A CARBON NANOTUBE BASED RESETTABLE SENSOR FOR MEASURING FREE CHLORINE IN DRINKING WATER
Leo Huan-Hsuan Hsu, Enamul Houqe, Ravi Selvaganapathy, Peter Kruse
McMaster University, Canada

13:30 - 15:00
LUNCH
Room: Multipurpose Rooms 1 & 2

15:00 - 16:20
B3P-H: OPTICAL AND TRACE LEVEL DETECTION
Poster Area - Foyer
Session Chair: Bernhard Jakoby (Johannes Kepler University Linz, Austria)

B3P-H1
IMPROVEMENT OF ADSORPTION PERFORMANCE OF MICROPRECONCENTRATOR BY USING CNT FOR TRACE LEVEL BIOMARKER DETECTION
Koji Oyama[2], Naoki Kakita[2], Hidetoshi Miyashita[2], Satoru Kishida[2], Jeong-O Lee[1], Sang-Seok Lee[2]
[1]Korea Research Institute of Chemical Technology, Korea, South; [2]Tottori University, Japan

B3P-H2
VIBRATION SENSITIVITY REDUCTION OF PHOTOACOUSTIC GAS ANALYZERS
Yannick Maret, Daniele Angelosante, Olivier Steiger, Detlef Pape, Miklos Lenner
ABB Ltd., Switzerland

B3P-H3
OPTICAL GAS SENSOR BASED ON AN ANDROID APPLICATION FOR REAL-TIME, RECONFIGURABLE SPECTROSCOPIC DATA ANALYSIS
Dmitry Duda, Pedro Martín-Mateos, Borja Jerez, Marta Ruiz-Llata, Pablo Acedo
Universidad Carlos III de Madrid, Spain

B3P-H4
DETECTION OF VAPOUR EXPLOSIVES BY A MULTI-SENSOR PROTOTYPE-PERFORMANCE EVALUATION UNDER LABORATORY AND REAL CONDITIONS
Celine Frenois, Christelle Barthet, Franck Pereira, Benoit Minot, Florian Veignal, Stephanie Besnard, Rodrigue Rousier, Aurelien Mayoue
Commissariat à l'Énergie Atomique et aux Énergies Alternatives, France

B3P-H5
MACROPOROUS SILICON FOR SPECTROSCOPIC CO2 DETECTION
Didac Vega, Ferran Martí, Angel Rodriguez, Trifon Trifonov
Universitat Politècnica de Catalunya, Spain

B3P-H6
REDOX CHEMO-CHROMIC SENSORS FOR DETECTING BLOOD GLUCOSE LEVELS IN DIABETICS
Rakesh Nair, Akhil Moorthi
Technische Universität Chemnitz, Germany

B3P-H7
DETECTION OF 2,4-DINITROTOLUENE (DNT) USING GRAVURE PRINTED SURFACE ENHANCEMENT RAMAN SPECTROSCOPY (SERS) FLEXIBLE SUBSTRATE
Sepehr Emamian, Ali Eshkeiti, Binu Baby Narakathu, Sai Guruva Reddy Avathu, Massood Zandi Atashbar
Western Michigan University, USA

B3P-H8
NO2 OPTICAL FIBER SENSOR BASED ON TFBG COATED WITH LUPC2
Antonio Bueno[2], Marc Debliquy[2], Driss Lahem[1], Alexandre Van Baekel[2], Patrice Mégret[2], Christophe Caucheteur[2]
[1]MateriaNova ASBL, Belgium; [2]Université de Mons, Belgium

B3P-H9
MICROPLASMA CHAMBER FOR MOLECULAR EMISSION SPECTROSCOPY
Tamás Kárpáti, István Bársony, Péter Fürjes
Hungarian Academy of Sciences, Hungary

B3P-H10
ALL-FIBER MACH-ZEHNDER INTERFEROMETER USING A TAPERED PHOTONIC CRYSTAL FIBER FOR REFRACTIVE INDEX MEASUREMENT
Yong Zhao, Di Wu, Qi Wang
Northeastern University, China

15:00 - 16:20
B3P-J: ELECTROCHEMICAL BIOSENSORS
Poster Area - Foyer
Session Chair: Cecilia Jimenez (IMB-CNM (CSIC), Spain), Francesco Giuseppe Della Corte (Università degli Studi Mediterranea di Reggio Calabria, Italy)

B3P-J1
A THREE SENSOR EYE TRACKING SYSTEM BASED ON ELECTROOCULOGRAPHY
Natasha Steinhausen, Robert Prance, Helen Prance
University of Sussex, United Kingdom

B3P-J2
INKJET PRINTING OF ORGANIC ELECTROCHEMICAL IMMUNOSENSORS
Rita Faddoul, Romain Coppard, Thomas Berthelot
Commissariat à l'Énergie Atomique et aux Énergies Alternatives, France

B3P-J3
MULTICHANNEL MULTIMODAL NANO-WATT CMOS IMPLANTABLE BIOSENSOR FOR SIMULTANEOUS NEUROCHEMICAL AND AP RECORDING WITH RESOURCE SHARING
Mohammad Poustinchi, Sam Musallam
McGill University, Canada

B3P-J4
CMOS POTENTIOSTAT AND SENSOR WITH MULTILAYER MEMBRANE FOR WIDE RANGE MEASUREMENTS OF GLUCOSE CONCENTRATIONS
Stefan Mross, Peter Fürst, Sebastien Pierrat, Tom Zimmermann, Michael Kraft
Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung, Germany

B3P-J5
INKJET PRINTED SILVER PATTERNING ON PDMS TO FABRICATE MICROELECTRODES FOR MICROFLUIDIC SENSING
Jianwei Wu[1], Robert Roberts[2], Norman C. Tien[2], Dachao Li[1]
[1]Tianjin University, China; [2]University of Hong Kong, Hong Kong

B3P-J6
DEVELOPMENT OF A NOVEL ISONIAZID-MEMBRANE-FIELD-EFFECT TRANSISTOR
Safae Merzouk[4], Michael Lee[4], Nicole Jaffrezic-Renault[3], Abdelhamid Errachid[3], Nadia Zine[3], Joan Bausells[2], Clara Vinas[1], Francesc Teixidor[1]
[1]Institut de Ciència de Materials de Barcelona, Consejo Superior de Investigaciones Científicas, Spain; [2]Instituto de Microelectronica de Barcelona, Spain; [3]Université Claude-Bernard Lyon 1, France; [4]Université de Lyon, France

B3P-J7
CIRCUIT MODELS FOR NON-FARADAIC CMOS ELECTROCHEMICAL SENSING
Philip Gordon[2], Krishna Jayant[1], Yingqui Cao[2], Kshitij Auluck[2], Joshua Phelps[2], Edwin Kan[2]
[1]Columbia University, USA; [2]Cornell University, USA

B3P-J8
A NON-INVASIVE FLEXIBLE MULTI-CHANNEL ELECTRODE FOR IN VIVO MOUSE EEG RECORDING
Donghyeon Kim, Chanmi Yeon, Euiheon Chung, Kiseon Kim
Gwangju Institute of Science and Technology, Korea, South

15:00 - 16:20
B3P-K: OPTICAL SENSORS II
Poster Area - Foyer
Session Chairs: Anna G. Mignani (CNR-Institute of Applied Physics 'Nello Carrara', Italy), Francisco J. Arregui (Public University of Navarra, Spain)

B3P-K1
VERY HIGH SENSITIVITY ELECTRICALLY MODULATED SI-PHOTODIODE IN PHOTOVOLTAIC-MODE AS PHASE-SENSITIVE DETECTOR OF LIGHT POWER
Andrea De Marcellis, Elia Palange, Riccardo Giuliani, Mohammed Janneh
Università degli Studi dell'Aquila, Italy

B3P-K2
MICRO-X-RAY SOURCES FROM FLOWING GASES AND PZT CRYSTALS
Olutosin Fawole, Massood Tabib-Azar
University of Utah, USA

B3P-K3
RELIABILITY OF AN ALL-OPTICAL DIFFERENTIAL CURRENT DETECTION TECHNIQUE DURING ENVIRONMENTAL TEMPERATURE PERTURBATIONS
Grzegorz Fusiek, Philip Orr, Pawel Niewczas
University of Strathclyde, United Kingdom

B3P-K4
USING THE TAGUCHI METHOD TO OPTIMIZE THE INSPECTION EQUIPMENT FOR HUMAN CHORIONIC GONADOTROPIN DETECTION
Chia-Hsien Yeh[2], Zi-Qi Zhao[2], Yu-Cheng Lin[2], Pi-Lan Shen[1]
[1]Firstep Bioresearch, Inc., Taiwan; [2]National Cheng Kung University, Taiwan

B3P-K5
TEMPERATURE GRADIENT MEASUREMENTS BASED ON A LONG FIBER BRAGG GRATING AND TIME-DOMAIN ANALYSIS
Amelia Lavinia Ricchiuti[2], David Barrera[2], Salvador Sales[2], Koji Nonaka[1]
[1]Kochi University of Technology, Japan; [2]Universitat Politècnica de València, Spain

B3P-K6
DESIGN OF A HYBRID OPTOFLUIDIC RING RESONATOR
Genni Testa, Gianluca Persichetti, Romeo Bernini
Consiglio Nazionale delle Ricerche, Italy

B3P-K7
DEVELOPMENT AND CHARACTERIZATION OF A FIBRE BRAGG GRATING TEMPERATURE PROBE FOR MEDICAL LASER ABLATION THERAPY
Davide Polito[2], Emiliano Schena[2], Paola Saccomandi[2], Sergio Silvestri[2], Andrea Polimadei[1], Michele A Caponero[1]
[1]Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Italy; [2]Università Campus Bio-Medico di Roma, Italy

B3P-K8
UNDERWATER LASER-BASED STRUCTURED LIGHT SYSTEM FOR ONE-SHOT 3D RECONSTRUCTION
Miquel Massot-Campos, Gabriel Oliver-Codina
Universitat de les Illes Balears, Spain

B3P-K9
EXHALED BREATH OPTICAL FIBER SENSOR BASED ON LMRS FOR RESPIRATION MONITORING
Pedro Sanchez, Carlos Ruiz Zamarreño, Miguel Hernaez, Ignacio Raúl Matías, Francisco Javier Arregui
Universidad Pública de Navarra, Spain

B3P-K10
FIBER OPTIC AMMONIA SENSOR USING BROMOCRESOL GREEN PH INDICATOR
Adolfo Josue Rodríguez Rodríguez[1], Daniel Alberto May-Arrioja[1], Rene Fernando Domínguez Cruz[1], Carlos Ruiz Zamarreño[2], Ignacio Raúl Matías[2], Francisco Javier Arregui[2]
[1]Universidad Autónoma de Tamaulipas, Mexico; [2]Universidad Pública de Navarra, Spain

B3P-K11
FLUID TURBULENCE MONITORING BY MEANS OF FBG MESH
Carlos Ruiz Zamarreño[1], Francisco Javier Arregui[1], Ignacio Raúl Matías[1], Cicero Martelli[2], Virginia Helena Baroncini[2], Eduardo dos Santos[2], Marco Jose da Silva[2], Rigoberto Eleazar Morales[2]
[1]Universidad Pública de Navarra, Spain; [2]Universidade Tecnológica Federal do Paraná, Brazil

B3P-K12
AN INFRARED DETECTOR BASED ON SWNT FILM SUSPENDED ON DOUBLE-CANTILEVER
Seongho Han, Donggeon Jung, Seongho Kong
Kyungpook National University, Korea, South

B3P-K13
A HIGH-SPEED/POWER LASER TRANSMITTER FOR SINGLE PHOTON IMAGING APPLICATIONS
Lauri Hallman, Jaakko Huikari, Juha Kostamovaara
University of Oulu, Finland

15:00 - 16:20
B3P-L: MECHANICAL AND PHYSICAL SENSORS II
Poster Area - Foyer
Session Chair: Seong Ho Kong (Kyungpook National University, Korea)

B3P-L1
WEARABLE DISPLACEMENT SENSOR SYSTEM BASED ON ELEVATING TUBE FOR MEASURING BREATHING PATTERN
Ryota Ono[2], Miyoko Matsushima[2], Tsutomu Kawabe[2], Mitsuhiro Shikida[1]
[1]Hiroshima City University, Japan; [2]Nagoya University, Japan

B3P-L2
WIRELESS PASSIVE HIGH-DOSES RADIATION SENSOR
Emilie Debourg[1], Ayoub Rifai[1], Hervé Aubert[1], Patrick Pons[1], Izabela Augustyniak[4], Pawel Knapkiewicz[4], Jan Dziuban[4], Michal Matusiak[2], Michal Olszacki[2], D. Lavielle[3], C. Chatry[3]
[1]LAAS / CNRS / Université de Toulouse, France; [2]National Centre for Nuclear Research, Poland; [3]TRAD, France; [4]Wroclaw University of Technology, Poland

B3P-L3
HUMAN STEP DETECTION FROM A PIEZOELECTRIC POLYMER FLOOR SENSOR USING NORMALIZATION ALGORITHMS
Renan Serra[2], Pascal Di Croce[1], Richard Peres[1], Dominique Knittel[2]
[1]Tarkett GDL, Luxembourg; [2]Université de Strasbourg, France

B3P-L4
MAGNETICALLY COUPLED RESONATORS FOR RATE INTEGRATING GYROSCOPES
Pradeep Pai, Hoorad Pourzand, Massood Tabib-Azar
University of Utah, USA

B3P-L5
A TIME DOMAIN READOUT STRATEGY FLOW SENSOR
Bruno Andò, Salvatore Baglio, Angela Beninato, Vincenzo Marletta
Università degli Studi di Catania, Italy

B3P-L6
STABILITY CHARACTERISTICS OF THE DOUBLE POLE WHEEL FOR ACCURATE MAGNETIC SPEED SENSING
Vidya Sagar Kantamneni[1], Nitin Goyal[1], Tobias Werth[2], Michael Ortner[1]
[1]Carinthian Tech Research AG, Austria; [2]Infineon Technologies AG, Austria

B3P-L7
THE EFFECT OF BACK-CHAMBER VOLUME ON THE SURFACE MICROMACHINED ACOUSTIC SENSOR
Chang Han Je, Jaewoo Lee, Sung Q Lee, Woo Seok Yang
Electronics and Telecommunications Research Institute, Korea, South

B3P-L8
PULSED EDDY CURRENT IMAGER FOR THE ENHANCED NON DESTRUCTIVE EVALUATION OF AERONAUTICAL RIVETED ASSEMBLIES
Pierre-Yves Joubert[2], Yohan Le Diraison[1]
[1]Université de Cergy Pontoise, France; [2]Université Paris Sud, France

B3P-L9
SCREEN PRINTED FLEXIBLE CAPACITIVE PRESSURE SENSOR
Ali Eshkeiti, Sepehr Emamian, Sai Guruva Reddy Avathu, Binu Baby Narakathu, Michael Joyce, Margaret Joyce, Brad Bazuin, Massood Zandi Atashbar
Western Michigan University, USA

15:00 - 16:20
B3P-M: ELECTRONICS & INTERFACING
Poster Area - Foyer
Session Chairs: Oliver Paul (University of Freiburg, Germany), Gijs Krijnen (University of Twente, Netherlands)

B3P-M1
LOW-POWER COLUMN-PARALLEL ADC FOR CMOS IMAGE SENSOR BY LEVERAGING SPATIAL LIKELIHOOD IN NATURAL SCENE
Lifen Liu, Hang Yu, Shoushun Chen
Nanyang Technological University, Singapore

B3P-M2
A MULTI-MODE INTERFACE FOR MEMS VIBRATORY GYROSCOPE WITH SELF-TUNED FILTER
Tao Yin[1], Huanming Wu[2], Guocheng Huang[1], Haigang Yang[1]
[1]Chinese Academy of Sciences, China; [2]Ningbo University, China

B3P-M3
SOI CMOS MULTI-SENSORS MEMS CHIP FOR AEROSPACE APPLICATIONS
Mohtashim Mansoor[1], Ibraheem Haneef[1], Suhail Akhtar[1], Muhammad Aftab Rafiq[3], Syed Zeeshan Ali[2], Florin Udrea[4]
[1]Air University, Pakistan; [2]Cambridge CMOS Sensors Ltd, United Kingdom; [3]Pakistan Institute of Engineering and Applied Sciences, Pakistan; [4]University of Cambridge, United Kingdom

B3P-M4
AN AUTONOMOUS AND ENERGY EFFICIENT SMART SENSOR PLATFORM
Massimo Merenda, Corrado Felini, Francesco Giuseppe Della Corte
Università degli Studi Mediterranea di Reggio Calabria, Italy

B3P-M5
A READOUT SYSTEM FOR PELLISTORS WITH PULSED THERMAL FEEDBACK
Olivier Leman, Mangleshwar Srivastava, Johann Hauer
Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung, Germany

B3P-M6
ACCURATE ANALOG TEMPERATURE CONTROL OF A THIN FILM MICROHEATER ON GLASS SUBSTRATE FOR LAB-ON-CHIP APPLICATIONS
Andrea Scorzoni[1], Michele Tavernelli[1], Pisana Placidi[1], Paolo Valigi[1], Augusto Nascetti[2]
[1]Italian Università degli Studi di Perugia, Italy; [2]Sapienza - Università di Roma, Italy

B3P-M7
ELECTRICAL INTERFERENCE SUPPRESSION TECHNIQUE FOR 26 X 26 HIGH-DENSITY GROUND REACTION SENSOR ARRAY
Qingbo Guo, Carlos Mastrangelo, Darrin Young
University of Utah, USA

15:00 - 16:20
B3P-N: SENSOR NETWORKS II
Poster Area - Foyer
Session Chairs: Takahiro Yamashita National Institute of Advanced Industrial Science and Technology, Japan), Spyridon Daskalakis (Technical University of Crete, Greece)

B3P-N1
ANALOG COMPUTATION OVER THE WIRELESS CHANNEL: A PROOF OF CONCEPT
Andreas Kortke, Mario Goldenbaum, Slawomir Stanczak
Technische Universität Berlin, Germany

B3P-N2
A SECURITY AND NFC ENHANCED WIRELESS SENSOR NETWORK NODE
Antonio Jonjic[2], Jasmin Grosinger[1], Wolfgang Bösch[1], Thomas Herndl[3], Rainer Matischek[3], Gerald Holweg[3]
[1]Graz University of Technology, Austria; [2]Graz University of Technology & Infineon Technologies AG, Austria; [3]Infineon Technologies AG, Austria

B3P-N3
DEVELOPMENT OF A WIRELESS SENSOR NETWORK USING M-ARY FSK MODULATION WITH SHORT PACKET
Hironao Okada, Toshihiro Itoh
National Institute of Advanced Industrial Science and Technology, Japan

B3P-N4
MOBILE-BASED KERNEL-FUZZY-C-MEANS-WAVELET FOR DRIVER FATIGUE PREDICTION WITH CLOUD COMPUTING
Boon Giin Lee[1], Jae-Hee Park[1], Chuan-Chin Pu[3], Wan-Young Chung[2]
[1]Keimyung University, Korea, South; [2]Pukyong National University, Korea, South; [3]Sunway University, Malaysia

B3P-N5
CONCEPT OF BOUNDED ERROR TO IMPROVE WIRELESS SENSOR NETWORK DATA COMPRESSION
Che-Lung Lin, Jui-Hua Tsai, Yu-Hsien Chu, Ray-I Chang
National Taiwan University, Taiwan

B3P-N6
ANALYSIS OF MAC PROTOCOLS FOR EHEALTH SYSTEMS
Kannan Govindan
Samsung Advanced Institute of Technology, India

B3P-N7
A LIGHTWEIGHT SECURITY PRIMITIVE USING LASER-BASED FAULT INJECTION
Teng Xu, Miodrag Potkonjak
University of California, Los Angeles, USA

B3P-N8
ULTRA-LIGHTWEIGHT SYMMETRIC-KEY CIPHER FOR RESOURCE CONSTRAINED SYSTEMS
Teng Xu, James Bradley Wendt, Miodrag Potkonjak
University of California, Los Angeles, USA

B3P-N9
AN EFFICIENT PARTICLE FILTER-BASED POTENTIAL GAME METHOD FOR DISTRIBUTED SENSOR NETWORK MANAGEMENT
Su-Jin Lee, Han-Lim Choi
Korea Advanced Institute of Science and Technology, Korea, South

15:00 - 16:20
B3P-P: AUTOMATION AND SENSING PLATFORMS
Poster Area - Foyer
Session Chairs: Salvatore Baglio (Dipartimento di Ingegneria Elettrica Elettronica e Informatica University of Catania, Italy), Ettore Massera (Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Italy)

B3P-P1
A CMOS DIGITIZED WIND TRANSDUCER WITH NOISE INSENSITIVITY FOR FLOWERS IN GREENHOUSE APPLICATIONS
Cheng-Ta Chiang, Cheng-Wei Wang
National Chiayi University, Taiwan

B3P-P2
EOG-BASED SYSTEM FOR MOUSE CONTROL
Alberto López, Pedro Arévalo, Francisco Javier Ferrero, Marta Valledor, Juan Carlos Campo
Universidad de Oviedo, Spain

B3P-P3
FABRICATION OF ULTRA-THIN SILICON STRESS SENSOR CHIPS WITH HIGH FLEXIBILITY AND HIGH SENSITIVITY
Pai Zhao, Ning Deng, Zheyao Wang
Tsinghua University, China

B3P-P4
CATTLE BEHAVIOUR CLASSIFICATION USING 3-AXIS COLLAR SENSOR AND MULTI-CLASSIFIER PATTERN RECOGNITION
Ritaban Dutta[1], Daniel Smith[1], Richard Rawnsley[2], Greg Bishop-Hurley[1], James Hills[2]
[1]Commonwealth Scientific and Industrial Research Organisation, Australia; [2]University of Tasmania, Australia

B3P-P5
BRAITENBERG'S VEHICLE-LIKE ODOR PLUME TRACKING ROBOT
Yoshinori Takei, Yuhei Shimizu, Kazuki Hirasawa, Hidehito Nanto
Kanazawa Institute of Technology, Japan

B3P-P6
HARD-FIELD THZ TOMOGRAPHY IN AMPLITUDE CONTRAST
Miguel Banuelos-Saucedo, Krikor Ozanyan
University of Manchester, United Kingdom

B3P-P7
IRRADIATION EFFECTS OF THE INLINE PACKAGED RF MEMS POWER SENSOR
Zhiqiang Zhang, Xiaoping Liao
Southeast University, China

B3P-P8
SENSOR FUSION OF VISION, FORCE AND ACCELERATION FOR COMPLIANT ROBOT MOTION CONTROL
Alejandro Sánchez García, Silvia Satorres Martínez, Javier Gámez García, Juan Gómez Ortega
Universidad de Jaén, Spain

B3P-P9
STRAIN GAUGES - VOLUME EMBEDDING VS. SURFACE APPLICATION
Gerrit Dumstorff, Walter Lang
Universität Bremen, Germany

B3P-P10
INSTRUMENTATION FOR MONITORING ANIMAL MOVEMENTS
Tomasz Kutrowski, Turgut Meydan, John Barnes, Noor Aldoumani, Jonathan Erichsen
Cardiff University, United Kingdom

B3P-P11
REDUCED ELECTRICAL CAPACITANCE TOMOGRAPHY SENSOR FOR FLOW PROFILE ESTIMATION
Markus Neumayer, Thomas Bretterklieber
Graz University of Technology, Austria

B3P-P12
TRANSIENT MEASUREMENT METHOD FOR THE THERMAL PROPERTIES OF THE THIN-FILM MEMBRANE IN A MULTI-PARAMETER WIND SENSOR
Roman Beigelbeck[2], Samir Cerimovic[2], Franz Kohl[2], Thomas Voglhuber-Brunnmaier[3], Bernhard Jakoby[4], Diego Reyes-Romero[1], Gerald Urban[1]
[1]Albert-Ludwigs-Universität Freiburg, Germany; [2]Donau-Universität Krems, Austria; [3]Donau-Universität Krems / Johannes Kepler Universität Linz, Austria; [4]Johannes Kepler Universität Linz, Austria

B3P-P13
MINIMIZE WIRELESS SENSOR NODE BUILT-IN 3-AXIS ACCELERATION METER FOR COW'S RUMEN MONITORING SYSTEM
Hirofumi Nogami[1], Hironao Okada[2], Shozo Arai[3], Ryutaro Maeda[2], Toshihiro Itoh[2]
[1]Kyushu University & National Institute of Advanced Industrial Science and Technology, Japan; [2]National Institute of Advanced Industrial Science and Technology, Japan; [3]National Institute of Animal Health, Japan

B3P-P14
MICROFABRICATED IMPEDANCE SENSORS FOR CONCURRENT TACTILE, BIOPOTENTIAL, AND WETNESS DETECTION
Feiyan Lin, Michael McKnight, James Dieffenderfer, Eric Whitmire, Tushar Ghosh, Alper Bozkurt
North Carolina State University, USA

B3P-P15
WEARABLE GAIT ANALYSIS SYSTEM FOR AMBULATORY MEASUREMENT OF KINEMATICS AND KINETICS
Guangyi Li[3], Tao Liu[3], Linyi Gu[3], Yoshio Inoue[2], Haojie Ning[1], Meimei Han[1]
[1]Insenco R&D Lab Inc., Japan; [2]Kochi University of Technology, Japan; [3]Zhejiang University, China

15:00 - 16:20
B3P-Q: SENSOR MATERIALS AND DEVICES II
Poster Area - Foyer
Session Chairs: Srinivas Tadigadapa (Pennsylvania State University, USA), Michele Penza (ENEA, Italy)

B3P-Q1
HIGH LEVEL MODELING AND SIMULATION OF A SENSOR SYSTEM FOR VAPOR TRACE DETECTION OF EXPLOSIVES
Drago Strle
University of Ljubljana, Slovenia

B3P-Q2
GLUCOSE WAVEGUIDE SENSOR BASED ON GRAPHENE
Taehyun Hwang, Jang Ah Kim
Sungkyunkwan University, Korea, South

B3P-Q3
FUNCTIONAL GRAPHENE COMPOSITE FILMS FOR SURFACE PLASMON RESONANCE SENSOR TECHNOLOGY
Jang Ah Kim, Taehyun Hwang, Sreekantha Reddy Dugasani, Kulkarni Atul, Sung Ha Park, Taesung Kim
Sungkyunkwan University, Korea, South

B3P-Q4
CHARACTERIZATION OF A RESISTIVE VOLTAGE DIVIDER DESIGN FOR WIDEBAND POWER MEASUREMENTS
Michael Grubmüller, Bernhard Schweighofer, Hannes Wegleiter
Graz University of Technology, Austria

B3P-Q5
INFLUENCE OF THERMAL CONDITIONS ON THE RESPONSE OF A CALORIMETER DEDICATED TO NUCLEAR HEATING MEASUREMENTS
Julie Brun[1], Christelle Reynard-Carette[1], Cedric De Vita[1], Michel Carette[1], Hicham Amharrak[1], Abdallah Lyoussi[2], Jean-François Villard[2], Philippe Guimbal[2], Damien Fourmentel[2]
[1]Aix-Marseille University, France; [2]Commissariat à l'Énergie Atomique et aux Énergies Alternatives, France

B3P-Q6
TEST ENVIRONMENT FOR CHARACTERIZATION OF A NANOSCALE SENSOR SYSTEM CONSISTING OF FLUID FLOW SENSORS BASED ON THE THERMAL-TIME-OF-FLIGHT (TTOF) PRINCIPLE AND ABSOLUTE PRESSURE SENSORS
Sven Ebschke, Jakob Zimmermann, Achim Wiggershaus, Klaus Kallis, Horst Fiedler
Technische Universität Dortmund, Germany

B3P-Q7
FUNCTIONALIZED MICROMOLDED NANOPARTICLES TOWARDS GAS SENSOR ARRAYS
Kristen Dorsey, David Rolfe, Gordon Hoople, Albert Pisano
University of California, San Diego, USA

B3P-Q8
A FAST TUNABLE SEMICONDUCTOR LASER FOR FBG SENSOR INTERROGATION SYSTEMS
Jinyu Mo[2], Logan He[2], Chao Lu[1]
[1]Hong Kong Polytechnic University, Hong Kong; [2]Oclaro Technology Co., Ltd, China

B3P-Q9
A HYBRID CSVM-HMM MODEL FOR ACOUSTIC SIGNAL CLASSIFICATION USING A TETRAHEDRAL SENSOR ARRAY
Hao Wu[2], Prudhvi Gurram[1], Heesung Kwon[1], Saurabh Prasad[2]
[1]U.S. Army Research Laboratory, USA; [2]University of Houston, USA

B3P-Q10
SPARSE DECOMPOSITION OF IN-AIR SONAR IMAGES FOR OBJECT LOCALIZATION
Jan Steckel, Herbert Peremans
Universiteit Antwerpen, Belgium

B3P-Q11
ON-OFF SENSORS BASED ON STRANGE ATTRACTORS
Arturo Buscarino, Carlo Famoso, Luigi Fortuna, Mattia Frasca
Università degli Studi di Catania, Italy

15:00 - 16:20
B3P-R: OPEN POSTER SESSION
Poster Area - Foyer
Session Chair: Javier Calpe (Analog Devices, Spain)

B3P-R1
NANOPARTICLE ENHANCED-SPR ON GOLD NANOSLITS FOR ULTRA-SENSITIVE, LABEL-FREE DETECTION OF NUCLEIC ACID BIOMARKERS
Seyedehmansoureh Zarei Mousavi, Huai-Yi Chen, Kuang-Li Lee, Pei-Kuen Wei, Ji-Yen Cheng
Academia Sinica, Taiwan

B3P-R2
SUSPENDED SOI WAVEGUIDE WITH SUB-WAVELENGTH GRATING CLADDING FOR MID-INFRARED
Jordi Soler Penades[3], Carlos Alonso-Ramos[2], Ali Khokhar[3], Milos Nedeljkovic[3], Liam Boodhoo[3], Alejandro Ortega-Moñux[2], Iñigo Molina-Fernández[2], Pavel Cheben[1], Goran Mashanovich[3]
[1]National Research Council, Canada; [2]Universidad de Málaga, Spain; [3]University of Southampton, United Kingdom

B3P-R3
MEMS-BASED ULTRA-THIN PIEZOELECTRIC CANTILEVERS WITH ALN THIN FILMS FOR IMPROVED SENSITIVITY
Md Sajeeb Rayhan, Donald Butler, Zeynep Celik-Butler
University of Texas at Arlington, USA

B3P-R4
CONTINUOUS PREDICTION BASED ON RESERVOIR COMPUTING IN GAS SENSOR ARRAYS
Sadique Sheik[3], Santiago Marco[1], Ramon Huerta[3], Antonio Pardo[2], Jordi Fonollosa[3]
[1]Institute for Bioengineering of Catalonia, Spain; [2]Universitat de Barcelona, Spain; [3]University of California, USA

B3P-R5
MONITORING OF TRANSVERSE DISPLACEMENT OF REINFORCED CONCRETE BEAMS UNDER FLEXURAL LOADING BY MEANS OF EMBEDDED ARRAYS OF CONVENTIONAL MULTIMODE SILICA OPTICAL FIBERS
Sergei Khotiaintsev, María Del Carmen López Bautista, Juan Emmanuel González Tinoco, Amalia Nallely Cartro Martínez, Selene Pérez García, Héctor Javier Guzmán Olguín, Enrique Ramón Gómez Rosas
Universidad Nacional Autónoma de México, Mexico

B3P-R6
A NOVEL BIOSENSOR FOR CONTINUOUS IN-LINE MEASUREMENT OF PLASMIN ACTIVITY IN MILK
Helen Dacres, Murat Gel, Jian Wang, Alisha Anderson, Stephen Trowell
CSIRO, Australia

B3P-R7
UTILIZATION OF MACH-ZEHNDER INTERFEROMETER IN A SOLID-FLUID PHONONIC CRYSTAL AS A LIQUID CONCENTRATION SENSOR
Aysevil Salman[2], Olgun Adem Kaya[2], Ahmet Cicek[3], Bulent Ulug[1]
[1]Akdeniz University, Turkey; [2]Inonu University, Turkey; [3]Mehmet Akif Ersoy University, Turkey

B3P-R8
XPS CHARACTERIZATION OF MAGNETO-PLASMONIC NANOMATERIALS FOR SENSING APPLICATIONS
Mariagrazia Manera[3], Roberto Rella[3], Adriano Colombelli[3], Pierpaolo Lupo[2], Franca Albertini[2], Simona Rella[1], Cosimino Malitesta[1]
[1]DiSTeBA-Unisalento, Italy; [2]IMEM-CNR, Italy; [3]IMM-CNR, Italy

B3P-R9
RAPID MEDICAL DIAGNOSIS PLATFORM WITH SENSITIVITY ENHANCED COATING AND MOLECULAR ROTORS AS CONDITIONAL FLUORESCENT LABELS
Xiaoqun Zhou[1], Weihua Hu[3], Changming Li[3], Min Yen Lee[2], Yin Nah Teo[2]
[1]Institute for Infocomm Research, Singapore; [2]Molecular Engineering Laboratory, Singapore; [3]Nanyang Technological University, Singapore

B3P-R10
PERMITTIVITY SENSORS FOR MULTIPHASE PETROLEUM FLOW APPLICATIONS
Jan Kocbach, Kjetil Haukalid, Kjetil Folgerø
Christian Michelsen Research, Norway

B3P-R11
INTEGRATION OF MULTIPLE SENSORS FOR VEGETATION MONITORING IN ALPINE AREAS
Andrea Vilardi, Abraham Mejia-Aguilar, Claudia Notarnicola, Enrico Tomelleri, Roberto Monsorno, Marc Zebisch
EURAC-Institute for Applied Remote Sensing, Italy

B3P-R12
DISCRIMINATION OF PERFUMES BY ELECTRONIC NOSE USING DESORPTION RATE CONSTANTS
Juan Vorobioff, Carlos Rinaldi, Norberto Boggio, Daniel Rodriguez
CNEA, Argentina

B3P-R13
CMOS IMAGE SENSOR WITH 4.9DB SNR IMPROVEMENT AT LOW LIGHT CONDITION
Dongsoo Kim, Jian Jang, Hwayoung Kang, Youngkwon Yoon
Samsung Electronics, Korea, South

B3P-R14
OPTIMUM CONDITION FOR IDENTIFICATION OF ALCOHOLIC GASES BY SEMICONDUCTOR GAS SENSOR
Akira Fujimoto
National Institute of Technology, Wakayama College, Japan

B3P-R15
IMPLANTABLE SENSOR FOR LIVESTOCK TRACEABILITY AND INFECTIOUS DISEASE PREVENTION
Young-Han Kim, Hyun-Seok Ahn, Yongseok Lim, Yongju Park, Seung-Ok Lim
Korea Electronics Technology Institute (KETI), Korea, South

B3P-R16
DETECTION OF PASSING AUTOMOBILE SOUND FOR SOUND MAPS
Itaru Usami[1], Niwat Thepvilojanapong[2], Naofumi Kitsunezaki[1], Yoshito Tobe[1]
[1]Aoyama Gakuin University, Japan; [2]Mie University, Japan

B3P-R17
OXYGEN SENSOR USING MULTI-MODE GRADED-INDEX OPTICAL SILICA FIBER BASED ON RU COMPLEX EMBEDDED IN LAYER-BY-LAYER THIN FILM
Sayuri Ban, Ai Hosoki, Michiko Nishiyama, Atsushi Seki, Kazuhiro Watanabe
Soka University, Japan

B3P-R18
SIGNAL DETECTION METHOD WITH CARRIER TRACKING LOOP FOR MOVEMENT TARGETS
ON INDOOR POSITIONING SYSTEM WITH SPREAD SPECTRUM ULTRASONIC WAVES
Shohei Terao[2], Akimasa Suzuki[1], Taketoshi Iyota[2]
[1]Iwate Prefectural University, Japan; [2]Soka University, Japan

B3P-R19
MATERIAL AND ELECTRICAL PROPERTIES OF CR2O3 DOPE Y0.2AL0.1MN0.27FE0.16NI0.27OX FOR CERAMIC THERMISTOR
Woonyoung Lee, Jinseong Park
Chosun University, Korea, South

B3P-R20
HETERO-CORE STRUCTURED FABRY-PEROT FIBER OPTIC HYDROGEN SENSOR WITH PALLADIUM FILM
Michiko Nishiyama[2], Ai Hosoki[2], Hirotaka Igawa[1], Kazuhiro Watanabe[2], Atushi Seki[2]
[1]Japan Aerospace Exploration Agency, Japan; [2]Soka University, Japan

B3P-R21
MULTISPECTRAL INFRARED SENSOR FOR MARTIAN ATMOSPHERIC PARAMETERS RETRIEVAL
Alberto Fernández, Francisco Cortés, Fernando López
Universidad Carlos III de Madrid, Spain

B3P-R22
SENSORIAL STEEL: IN-SITU MEASUREMENT OF STRAINS AND TEMPERATURES DURING GRINDING BY WORKPIECE INTEGRATED THIN FILM SENSORS
Gerrit Dumstorff[2], Benjamin Kolkwitz[1], Mridusmita Sarma[2], Carsten Heinzel[1], Walter Lang[2]
[1]Foundation Institute of Materials Science (IWT) Bremen, Germany; [2]Institute of Microsensors, -actuators, and -systems (IMSAS), Germany

B3P-R23
HYDROTHERMAL SYNTHESIS OF ZNO NANORODS FOR SCHOTTKY DIODE HYDROGEN GAS SENSOR
Yuan Liu, Jerry Yu, P.T. Lai
The University of Hong Kong, Hong Kong

B3P-R24
RADIATION MONITORING USING A SMART PHONE FOLLOWING THE FUKUSHIMA DISASTER
Naoto Bando[2], Atsushi Yamamoto[1], Peter Debarber[1]
[1]Horiba Instruments, Inc., USA; [2]Horiba, Ltd., Japan

B3P-R25
OPTICAL SENSOR TECHNOLOGY FOR SIMULTANEOUS MEASUREMENT OF PARTICLE SPEED AND CONCENTRATION OF MICRO SIZED PARTICLES
Casper Clausen, Anders Bentien
Aarhus University, Denmark

B3P-R26
REDOX CHEMO-CHROMIC SENSORS FOR DETECTING BLOOD GLUCOSE LEVELS IN DIABETICS
Rakesh Nair, Akhil Moorthi
Technical University of Chemnitz, Germany

B3P-R27
DEVELOPMENT OF WEARABLE MOBILE DEVICE USING BIO-SENSORS
Yongkwi Lee, Hyunjin Yoon, Sangwook Park, Mikyung Han, Jong-Hyun Jang
ETRI, Korea, South

B3P-R28
OPTICAL FIBER REFRACTOMETRIC SENSOR WITH ELLIPSOIDAL DETECTION ELEMENT IN REFLECTION MODE
Sergei Khotiaintsev, Amalia Nallely Castro Martínez, María Del Carmen López Bautista, Selene Pérez García, Juan Emmanuel González Tinoco
Universidad Nacional Autonoma de México, Mexico

16:30 – 18:00
B4L-A: SPECIAL SESSION: ELECTRONIC NOSES
Auditorium 1
Session Chair: Maria Carmen Horrillo Güemes (CSIC, Spain)

16:30
MONITORING HOUSEHOLD GARBAGE ODORS IN URBAN AREAS THROUGH DISTRIBUTION MAPS
Javier G. Monroy, Javier Gonzalez-Jimenez, Carlos Sanchez-Garrido
Universidad de Málaga, Spain

17:00
THRESHOLD DETECTION OF CARCINOGENIC ODOR OF FORMALDEHYDE WITH WIRELESS ELECTRONIC NOSE
Muhammad Hassan, Amine Bermak
Hong Kong University of Science and Technology, Hong Kong

17:15
AN INVESTIGATION ABOUT THE ORIGIN OF THE LUNG CANCER SIGNALLING VOCS IN BREATH
Rosamaria Capuano[2], Eugenio Martinelli[2], Silvia Ghezzi[2], Roberto Paolesse[2], Corrado Di Natale[2], Arnaldo D'Amico[2], Marco Santonico[2], Giorgio Pennazza[1]
[1]Università Campus Bio-Medico di Roma, Italy; [2]Università degli Studi di Roma Tor Vergata, Italy

17:30
MOX-NW ELECTRONIC NOSE FOR DETECTION OF FOOD MICROBIAL CONTAMINATION
Giorgio Sberveglieri[1], Giulia Zambotti[1], Matteo Falasconi[1], Emanuela Gobbi[1], Veronica Sberveglieri[2]
[1]Università degli Studi di Brescia, Italy; [2]Università degli Studi di Modena e Reggio Emilia & Consiglio Nazionale delle Ricerche / Istituto Naz, Italy

17:45
LOVE WAVE-BASED ACOUSTIC COMPONENTS AS VERSATILE SENSORS FOR ELECTRONIC NOSE OR TONGUE APPLICATION TO CANCER MONITORING
Naima Lebal[1], Vincent Raimbault[1], Hamida Hallil[1], Bernard Plano[1], Jean Luc Lachaud[1], Corinne Dejous[1], Dominique Rebière[1], Aleksandra Krstulja[2], Raphael Delepée[2], Luigi Agrofoglio[2]
[1]Université Bordeaux 1, France; [2]University of Orleans, France

16:30 - 18:00
B4L-B: PHOTONIC CRYSTALS AND NANOSTRUCTURES
Auditorium 2
Session Chairs: Marco Petrovich (University of Southampton, England), Ralf Lucklum (Otto von Guericke Universitaet, Germany)

16:30
NANOIMPRINTED DISTRIBUTED FEEDBACK DYE LASER SENSOR FOR REAL-TIME IMAGING OF SMALL MOLECULE DIFFUSION
Christoph Vannahme, Martin Dufva, Anders Kristensen
Technical University of Denmark, Denmark

16:45
FABRICATION OF AU-DECORATED 3D ZNO NANOSTRUCTURES AS RECYCLABLE SERS SUBSTRATES
Sung-Gyu Park[2], Jung-Dae Kwon[2], Chae-Won Mun[2], Byungjin Cho[2], Chang Su Kim[2], Myungkwan Song[2], Dong-Ho Kim[2], Tae Yoon Jeon[1], Hwan Chul Jeon[1]
[1]Korea Advanced Institute of Science and Technology, Korea, South; [2]Korea Institute of Materials Science, Korea, South

17:00
EFFECT OF ROUNDING ON THE SENSITIVITY OF OPTICAL ANTENNAS BASED SENSORS
Bhaven Mehta, Mona Zaghloul
George Washington University, USA

17:15
CAPILLARY OPTOFLUIDICS BY HIGH-ASPECT-RATIO PHOTONIC CRYSTALS
Salvatore Surdo[2], Lucanos Strambini[2], Giuseppe Barillaro[2], Francesca Carpignano[1], Sabina Merlo[1]
[1]Università degli Studi di Pavia, Italy; [2]Università di Pisa, Italy

17:30
ACCURATE WAVELENGTH PREDICTION OF PHOTONIC CRYSTAL RESONANT REFLECTION AND APPLICATIONS IN REFRACTIVE INDEX MEASUREMENT
Pétur Gordon Hermannsson, Christoph Vannahme, Cameron L.C. Smith, Anders Kristensen
Technical University of Denmark, Denmark

17:45
STEERING WHEEL PHOTONIC CRYSTAL FIBER FOR HUMAN IGG DETECTION
Jad Rabah, Alpha Mansaray, Rosalind Wynne, Metin Duran
Villanova University, USA

16:30 - 18:00
B4L-C: TRACE DETECTION IN SECURITY AND MEDICAL APPLICATIONS
Auditorium 3A
Session Chair: Eduard Llobet (Universitat Rovira i Virgili, Spain)

16:30
EXPLOSIVES DETECTION BY ARRAY OF SI µ-CANTILEVERS COATED WITH TITANOSILICATE TYPE NANOPOROUS MATERIALS
Maria Pilar Pina, Fernando Almazán, Adela Eguizábal, Ismael Pellejero, Miguel Urbiztondo, Javier Sesé, Jesús Santamaría, Daniel García-Romeo, Belen Calvo, Nicolás Medrano
Universidad de Zaragoza, Spain

16:45
MOX/SAW E-NOSE FOR THE IDENTIFICATION OF NERVE AGENT SIMULANT IN THE PRESENCE OF DIESEL
Harpreet Singh, V. Bhasker Raj, Jitender Kumar, Upendra Mittal, Meena Mishra, Archibald Theodore Nimal, Manoj Umesh Sharma, Vinay Gupta
University of Delhi, India

17:00
CONJUGATED POLYMER-BASED EXPLOSIVES SENSOR: PROGRESSES IN THE DESIGN OF A HANDHELD DEVICE
Tiago Neves, Lino Marques, Liliana Martelo, Hugh Burrows
University of Coimbra, Portugal

17:15
PORTABLE LOCK-IN AMPLIFIER FOR MICROCANTILEVER BASED SENSOR ARRAY. APPLICATION TO EXPLOSIVES DETECTION USING CO-BEA TYPE ZEOLITES AS SENSING MATERIALS
Daniel García-Romeo, Belén Calvo, Nicolás Medrano, María Pilar Pina, Fernando Almazán, Ismael Pellejero, Miguel Urbiztondo, Javier Sesé, Jesús Santamaría
Universidad de Zaragoza, Spain

17:30
STABLE AND REUSABLE ELECTROCHEMICAL SENSOR FOR CONTINUOUS MONITORING OF PHOSPHATE IN WATER
Leo Huan-Hsuan Hsu, Ravi Selvaganapathy
McMaster University, Canada

17:45
MONITORING OF DISEASE-RELATED VOLATILE ORGANIC COMPOUNDS IN SIMULATED ROOM AIR
Toshio Itoh[2], Takafumi Akamatsu[2], Noriya Izu[2], Woosuck Shin[2], Hyung-Gi Byun[1]
[1]Kangwon National University, Korea, South; [2]National Institute of Advanced Industrial Science and Technology, Japan

16:30 - 18:00
B4L-D: SAFETY AND SECURITY APPLICATIONS I
Auditorium 3B
Session Chairs: Omer Oralkan (North Carolina State University, USA), Giuseppe Barillaro (University of Pisa, Italy)

16:30
GAS-DRONE: PORTABLE GAS SENSING SYSTEM ON UAVS FOR GAS LEAKAGE LOCALIZATION
Maurizio Rossi[2], Davide Brunelli[2], Andrea Adami[1], Leandro Lorenzelli[1], Fabio Menna[1], Fabio Remondino[1]
[1]Fondazione Bruno Kessler, Italy; [2]Università degli Studi di Trento, Italy

16:45
ARTIFICIAL OLFACTION TOOL AND TECHNIQUES FOR SAFETY CONTROLS IN AEROSPACE ASSEMBLY AND MAINTENANCE
Saverio De Vito, Maria Salvato, Ettore Massera, Antonio Buonanno, Mara Miglietta, Grazia Fattoruso, Girolamo Di Francia
Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Italy

17:00
A CMOS DIGITIZED SALINITY TRANSDUCER WITH CALIBRATION CIRCUITS FOR MONITORING SALINITY OF OCEAN ENVIRONMENT AND AQUACULTURE
Cheng-Ta Chiang, Che-Wei Chang
National Chiayi University, Taiwan

17:15
APPLICATION OF MEMS TO MONITORING SYSTEM FOR NATURAL DISASTER REDUCTION
Nao Minakata[2], Satoshi Nishiyama[3], Takao Yano[2], Meiji Ryu[1]
[1]Earthtech Toyo Co.,Ltd, Japan; [2]Kyoto University, Japan; [3]Okayama University, Japan

17:30
MARINE MONITORING USING OPTICAL FIBER-BASED SENSING SYSTEM
Giuseppe Griffo, Aimé Lay-Ekuakille, Patrizia Vergallo, Luigi Piper, Fabrizio Spano, Alessandro Massaro, Giuseppe Gigli
Università del Salento, Italy

17:45
SMART METER LED PROBE FOR REAL-TIME APPLIANCE LOAD MONITORING
Paolo Barsocchi[1], Erina Ferro[1], Filippo Palumbo[2], Francesco Potortì[1]
[1]Consiglio Nazionale delle Ricerche, Italy; [2]Università degli Studi di Pisa / Consiglio Nazionale delle Ricerche, Italy

16:30 - 18:00
B4L-E: MONOLITHIC AND CMOS SENSORS
Rooms 1 & 2
Session Chairs: Siavash Pourkamali (University of Texas at Dallas, USA), Ajit Sharma (Texas Instruments, USA)

16:30
A BRIDGE-TYPE RESISTIVE TEMPERATURE SENSOR IN CMOS TECHNOLOGY WITH LOW STRESS SENSITIVITY
Samuel Huber[2], Arnaud Laville[2], Christian Schott[2], Oliver Paul[1]
[1]Albert-Ludwigs-Universität Freiburg, Germany; [2]Melexis Technologies SA, Switzerland

16:45
A CMOS INTERDIGITAL CAPACITIVE HUMIDITY SENSOR ENHANCED BY A MULTI-LAYERED STRUCTURE
Jian-Qiu Huang, Wen-Hao Chen, Dong-Ping Zhu, Lei Han
Southeast University, China

17:00
AN INLINE INSERTION MICROWAVE MEMS POWER SENSOR BASED ON GAAS MMIC TECHNOLOGY WITH ULTRA REFLECTION LOSSES
Zhiqiang Zhang, Xiaoping Liao
Southeast University, China

17:15
A 0.18-µM CMOS CURRENT-MODE HALL MAGNETIC SENSOR WITH VERY LOW BIAS CURRENT AND HIGH SENSITIVE FRONT-END
Hadi Heidari, Edoardo Bonizzoni, Umberto Gatti, Franco Maloberti
Università degli Studi di Pavia, Italy

17:30
CMOS IMPLEMENTATION OF A 3-AXIS THERMAL CONVECTIVE ACCELEROMETER
Frederick Mailly, Huy Binh Nguyen, Laurent Latorre, Pascal Nouet
Laboratoire d'Informatique, de Robotique et de Microélectronique de Montpellier, France

17:45
A TUNGSTEN BASED SOI CMOS MEMS WALL SHEAR STRESS SENSOR
Ibraheem Haneef[1], Muhammad Umer[1], Mohtashim Mansoor[1], Suhail Akhtar[1], Muhammad Aftab Rafiq[3], Syed Zeeshan Ali[2], Florin Udrea[4]
[1]Air University, Pakistan; [2]Cambridge CMOS Sensors Ltd, United Kingdom; [3]Pakistan Institute of Engineering and Applied Sciences, Pakistan; [4]University of Cambridge, United Kingdom

16:30 - 17:45
B4L-F: PHOTONIC AND ACOUSTIC BIOSENSORS
Rooms 3 & 4
Session Chair: Stefan Rupitsch (Erlangen University, Germany)

16:30
ENHANCED FLUORESCENCE THROUGH THE INCORPORATION OF NANOCONES/GAPS INTO A PLASMONIC GRATINGS SENSOR PLATFORM
Aaron Wood, Sheila Grant, Sagnik Basuray, Avinash Pathak, Sangho Bok, Cherian Mathai, Keshab Gangopadhyay, Shubhra Gangopadhyay
University of Missouri, USA

16:45
BIOMARKER QUANTIFICATION AT CLINICALLY RELEVANT CONCENTRATIONS USING METAL ENHANCED FLUORESCENCE COMBINED WITH SURFACE ACOUSTIC WAVES
Samuel Morrill, Venkat Bhethanabotla, Mandek Richardson
University of South Florida, USA

17:00
SEPARATION AND SENSING OF WHOLE CELLS USING METAMATERIAL MESH SENSOR WITH PERIODIC MICROSTRUCTURES
Makoto Hasegawa[3], Kosuke Mori[3], Yasuyo Inagaki[3], Koki Yamamoto[3], Nobuaki Shirai[4], Yuichi Ogawa[1], Seiji Kamba[2], Takashi Kondo[2]
[1]Kyoto University, Japan; [2]Murata Manufacturing Company, Japan; [3]Nagahama Institute of Bio-Science and Technology, Japan; [4]Northeastern Industrial Research Center of Shiga Prefecture, Japan

17:15
RESPONSE ANALYSIS OF ODOR SENSOR BASED UPON INSECT OLFACTORY RECEPTORS USING IMAGE PROCESSING METHOD
Takamichi Nakamoto[1], Miki Kakizaki[1], Yoshinori Suzuki[1], Hidefumi Mitsuno[2], Ryohei Kanzaki[2]
[1]Tokyo Institute of Technology, Japan; [2]University of Tokyo, Japan

17:30
THIN-FILM AMORPHOUS SILICON PHOTODIODES WITH INTEGRATED FLUORESCENT FILTERS FOR MONITORING LIVE-CELL GPROTEIN COUPLED RECEPTORS (GPCR)
Sofia Martins[2], João Mateus[1], Virginia Chu[1], Miguel Prazeres[2], João Pedro Conde[3]
[1]INESC Microsistemas e Nanotecnologias, Portugal; [2]Instituto Superior Técnico, Portugal; [3]Universidade de Lisboa, Portugal

19:00 – 22:00
CONFERENCE GALA DINNER
Masia Xamandreu de Godella
Buses depart the Valencia Congress Centre at 18:30

WEDNESDAY, NOVEMBER 5TH

8:00 – 18:00
REGISTRATION
Foyer

9:00 - 9:50
KEYNOTE – JUN OHTA
Auditorium 1
Session Chair: Ignacio R. Matías (Public University of Navarra, Spain)

COMMUNICATION WITH CELLS BY ELECTRICITY AND LIGHT – IMPLANTABLE MICROELECTRONICS DEVICES
Jun Ohta
Nara Institue of Science and Technology, Japan

10:00 - 11:30
C1L-A: SPECIAL SESSION: BATTERY-LESS RF-ENABLED SENSORS FOR WIRELESS SENSOR NETWORKS
Auditorium 1
Session Chair: Roc Berenguer (CEIT and Tecnun, University of Navarra,Spain)

10:00
INVITED TALK: BATTERY-FREE WIRELESS SENSORS FOR INDUSTRIAL APPLICATIONS BASED ON UHF RFID TECHNOLOGY
Ibon Zalbide[1], Eduardo D'Entremont[1], Ainara Jiménez[1], Héctor Solar[2], Andoni Beriain[2], Roc Berenguer[2]
[1]Farsens SL, Spain; [2]Universidad Pública de Navarra, Spain

10:30
SENSING OF THERMAL THRESHOLDS USING UWB RFID PASSIVE TAGS
Angel Ramos, Antonio Lazaro, Ramon Villarino, David Girbau
Universitat Rovira i Virgili, Spain

10:45
AN RFID-ENABLED INKJET-PRINTED SOIL MOISTURE SENSOR ON PAPER FOR "SMART" AGRICULTURAL APPLICATIONS
Sangkil Kim[3], Taoran Le[3], Manos Tentzeris[3], Amal Harrabi[2], Ana Collado[1], Apostolos Georgiadis[1]
[1]Centre Tecnologic de Telecomunicacions de Catalunya, Spain; [2]Faculty of Mathematical, Physical and Natural Sciences of Tunis, Tunisia; [3]Georgia Institute of Technology, USA

11:00
PASSIVE SENSORS FOR FOOD QUALITY MONITORING AND COUNTERFEITING
Ricardo Goncalves[2], Jimmy Hester[1], Nuno Carvalho[2], Pedro Pinho[2], Manos Tentzeris[1]
[1]Georgia Institute of Technology, USA; [2]Instituto de Telecomunicacoes, Portugal

11:15
MULTI-BAND SIMULTANEOUS INDUCTIVE WIRELESS POWER AND DATA TRANSMISSION
Tobias Dräger, Iker Mayordomo, Jochen Schuster
Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung, Germany

---

10:00 - 11:30
C1L-B: OPTICAL FIBER SENSORS II
Auditorium 2
Session Chairs: Marco Petrovich (University of Southampton, England), Carlos Ruiz Zamarreño (Public University of Navarra, Spain)

10:00
FIBER OPTIC TEMPERATURE SENSOR BASED ON IMAGE PROCESSING OF INTERMODAL INTERFERENCE PATTERN
Frederic Musin, Patrice Mégret, Marc Wuilpart
Université de Mons, Belgium

10:15
TORSION SENSOR WITH AN YB-DOPED PHOTONIC CRYSTAL FIBER BASED ON A MACH-ZEHNDER INTERFEROMETER
Juan Sierra-Hernandez[2], Julián Estudillo-Ayala[2], Daniel Jauregui-Vazquez[2], Roberto Rojas-Laguna[2], Roberto Robledo-Fava[1], Arturo Castillo-Guzman[1], Romeo Selvas-Aguilar[1], Everardo Vargas-Rodriguez[2], Eloisa Gallegos-Arellano[2]
[1]Universidad Autónoma de Nuevo León, Mexico; [2]Universidad de Guanajuato, Mexico

10:30
SIMPLE AND ADJUSTABLE FABRICATION PROCESS FOR GRADED-INDEX POLYMER OPTICAL FIBERS WITH TAILORED PROPERTIES FOR SENSING
Christian-Alexander Bunge[1], Markus Beckers[2], Thomas Gries[2]
[1]Hochschule für Telekommunikation Leipzig, Germany; [2]Rheinisch-Westfälische Technische Hochschule Aachen, Germany

10:45
NEW TOPOLOGIES FOR FIBER LASER NON-CONTACT VIBROMETERS
David A. Jackson[2], Julio E. Posada-Roman[1], Jose A. Garcia-Souto[1]
[1]Universidad Carlos III de Madrid, Spain; [2]University of Kent, United Kingdom

11:00
FIBER BRAGG GRATINGS FOR DISTRIBUTED CRYOGENIC TEMPERATURE MEASUREMENT IN A TUBE IN TUBE HELICALLY COILED HEAT EXCHANGER
Viswanath Kumar Bharathwaj[2], Akshit Markan[1], Milind Atrey[1], Holger Neumann[2], Rajinikumar Ramalingam[2]
[1]Indian Institute of Technology Bombay, India; [2]Karlsruher Institut für Technologie, Germany

11:15
AUTOMATIC STRAIN DETECTION IN A BRILLOUIN OPTICAL TIME DOMAIN SENSOR USING PRINCIPAL COMPONENT ANALYSIS AND ARTIFICIAL NEURAL NETWORKS
Ruben Ruiz Lombera, Jesus Mirapeix Serrano, José Miguel López-Higuera
Universidad de Cantabria, Spain

10:00 - 11:30
C1L-C: DEVICES AND SIGNALS
Auditorium 3A
Session Chair: José L. Sanchez de Rojas (Universidad Castilla-La Mancha, Spain)

10:00
DIELECTRIC AND INDUCTIVE SENSING USING FRINGING ELECTROMAGNETIC FIELDS FROM TEMPERATURE-STABILIZED LC OSCILLATORS
Nathaniel Gaskin, Richard Brown
University of Utah, USA

10:15
INSTRUMENTATION TO INVESTIGATE THE MAGNETORECEPTION OF HOMING PIGEONS BY USING APPLIED MAGNETIC FIELDS
Noor Aldoumani, Tomasz Kutrowski, John Barnes, Turgut Meydan, Jonathan Erichsen
Cardiff University, United Kingdom

10:30
REMOLDABLE INDUCTORS BASED ON SELF-HEATING FUSIBLE ALLOYS
Nathan Lazarus, Sarah Bedair, Chris Meyer
U.S. Army Research Laboratory, USA

10:45
ATTOFARAD-LEVEL CAPACITANCE VARIATION DETECTOR USES RF-SENSOR WITH 98/100 MHZ OSCILLATOR/LOCAL SUPERHETERODYNE SCHEME FOR WIRELESS PEST SENSOR
Hisashi Nishikawa, Takaki Matsumoto, Ami Tanaka, Takakuni Douseki
Ritsumeikan University, Japan

11:00
A CROSSTALK ERROR CORRECTION ALGORITHM FOR CAPACITIVE SENSOR PANELS
Ramon Tortosa[2], Javier Calpe-Maravilla[2], John Cleary[1]
[1]Analog Devices, Ireland; [2]Analog Devices Inc., Spain

11:15
FIBER-REINFORCED COMPOSITE STRUCTURES WITH EMBEDDED PIEZOELECTRIC SENSORS
Robert Schulze[3], Petra Streit[2], Thomas Fischer[2], Alexander Tsapkolenko[2], Michael Heinrich[2], Martynas Sborikas[1], Lothar Kroll[2], Thomas Gessner[3], Michael Wegener[1]
[1]Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung, Germany; [2]Technische Universität Chemnitz, Germany; [3]Technische Universität Chemnitz and Fraunhofer Institute for Electronic Nano Systems, Germany

---

10:00 - 11:30
C1L-D: SENSING PLATFORMS
Auditorium 3B
Session Chairs: Vittorio Ferrari (University of Brescia, Italy), Troy Nagle (North Carolina State University, USA)

10:00
DESIGN OF A QUASI-CHIPLESS HARMONIC RADAR SENSOR FOR AMBIENT TEMPERATURE SENSING
Bernd Kubina, Jordi Romeu, Christian Mandel, Martin Schüßler, Rolf Jakoby
Technische Universität Darmstadt, Germany

10:15
ENERGY AUTONOMOUS WIRELESS FILLING DETECTOR
Risang Yudanto[1], Riccardo Carta[1], Frederik Petre[1], Victor Van Acht[2], Marc Tutelaers[2], Sebren Schaafsma[2], Koen Maertens[3]
[1]Flanders' Mechatronics Technology Centre, Belgium; [2]Holst Centre/IMEC, Netherlands; [3]PicoCal Inc., Belgium

10:30
SELF-POWERED HEAT-SINK SOC AS TEMPERATURE SENSORS WITH WIRELESS INTERFACE: DESIGN AND VALIDATION
Luca Rizzon, Maurizio Rossi, Roberto Passerone, Davide Brunelli
Università degli Studi di Trento, Italy

10:45
CMOS-INTEGRATED PHOTODETECTORS FOR NEUROMORPHIC AND SMART IMAGING APPLICATIONS: A LOW-COST DESIGN AND MEASUREMENT METHOD
Nikola Katic, Alexandre Schmid, Yusuf Leblebici
École Polytechnique Fédérale de Lausanne, Switzerland

11:00
A WIRELESS SENSOR NODE POWERED BY NONLINEAR ENERGY HARVESTER
Bruno Andò[2], Salvatore Baglio[2], Vincenzo Marletta[2], Adi Ratan Bulsara[1]
[1]U.S. Navy Space and Naval Warfare Systems, USA; [2]Università degli Studi di Catania, Italy

11:15
LOW FREQUENCY RADIO SIGNAL POLARISATION SENSOR WITH APPLICATIONS IN ATTITUDE ESTIMATION
Sean Maguire, Paul Robertson
University of Cambridge, United Kingdom

10:00 - 11:30
C1L-E: POSITIONING AND INERTIAL SENSORS
Rooms 1 & 2
Session Chair: Eugene Hwang (Analog Devices, Inc., USA)

10:00
A 1MG-TO-20G INTEGRATED MEMS INERTIAL SENSOR
Daisuke Yamane[2], Toshifumi Konishi[1], Takaaki Matsushima[1], Hiroshi Toshiyoshi[3], Kazuya Masu[2], Katsuyuki Machida[1]
[1]NTT Advanced Technology Corporation, Japan; [2]Tokyo Institute of Technology, Japan; [3]University of Tokyo, Japan

10:15
DEVELOPMENT OF A MEMS ROTATION SENSOR FOR OILFIELD APPLICATIONS
Maxime Projetti[3], Olivier Vancauwenberghe[3], Hans Paulson[3], Nicolas Goujon[3], Frederic Marty[2], Denis Aubry[1]
[1]Ecole Centrale Paris, France; [2]ESIEE, France; [3]Schlumberger Limited, Norway

10:30
A SELF-LEVELLING NANO-G SILICON SEISMOMETER
William Pike[1], Aifric Delahunty[1], Anisha Mukherjee[1], Guangbin Dou[1], Huafeng Liu[1], Simon Calcutt[3], Ian Standley[2]
[1]Imperial College London, United Kingdom; [2]Kinemetrics Inc., USA; [3]University of Oxford, United Kingdom

10:45
TWO-DEGREE OF FREEDOM CAPACITIVE MEMS VELOCITY SENSOR WITH TWO COUPLED ELECTRICALLY ISOLATED MASS-SPRING-DAMPER SYSTEMS
Ali Alshehri[3], Bader Almutairi[3], Paolo Gardonio[1], Michael Kraft[2]
[1]Università degli Studi di Udine, Italy; [2]Universität Duisburg-Essen, Germany; [3]University of Southampton, United Kingdom

11:00
A NOVEL AND COMPATIBLE SENSING COIL FOR A CAPSULE IN WIRELESS CAPSULE ENDOSCOPY FOR REAL TIME LOCALIZATION
Mohd Noor Islam, Andrew Fleming
University of Newcastle, Australia

11:15
DESIGN, FABRICATION AND CHARACTERIZATION OF A MICRO-MACHINED GRAVITY GRADIOMETER SUSPENSION
Huafeng Liu, William Pike, Guangbin Dou
Imperial College London, United Kingdom

10:00 - 11:15
C1L-F: MECHANICAL BIOSENSORS
Rooms 3 & 4
Session Chairs: Omer Oralkan (North Carolina State University, USA), Carlos Calaza (IMB-CNM (CSIC), Spain)

10:00
A NOVEL SELF-SUPPORTED PRINTED FLEXIBLE STRAIN SENSOR FOR MONITORING BODY MOVEMENT AND TEMPERATURE
Ali Eshkeiti, Michael Joyce, Binu Baby Narakathu, Sepehr Emamian, Sai Guruva Reddy Avathu, Margaret Joyce, Massood Zandi Atashbar
Western Michigan University, USA

10:15
A MICROPLATFORM FOR MEASUREMENT OF CELL MECHANICAL PROPERTIES
Hao Tang, Zheyao Wang, Shouhong Jin, Qiong Wu
Tsinghua University, China

10:30
MEASUREMENT OF SUB-BANDAGE PRESSURE DURING VENOUS COMPRESSION THERAPY USING FLEXIBLE FORCE SENSORS
Michael Burke, Bruce Murphy, Dermot Geraghty
Trinity College Dublin, Ireland

10:45
INVESTIGATION ON NANOSTRUCTURED BIOSENSOR FOR BIOTIN DETECTION
Davide Polese[1], Annalisa Convertino[1], Luca Maiolo[1], Andrea Ferrone[1], Luca Pazzini[1], Marco Marrani[1], Francesco Maita[1], Alessandro Pecora[1], Guglielmo Fortunato[1], Giorgia Fiaschi[2]
[1]Consiglio Nazionale delle Ricerche, Italy; [2]Università degli Studi Roma Tre, Italy

11:00
WRIST ANGLE MEASUREMENTS USING SOFT SENSORS
Daniel Vogt, Robert Wood
Harvard University, USA

11:30 - 12:00
BREAK
Foyer

12:00 - 13:45
C2L-A: SPECIAL SESSION: ANALYTICAL & SEMI-NUMERICAL SENSOR MODELING
Auditorium 1
Session Chairs: Roman Beigelbeck (Danube University Krems, Austria), Bernhard Jakoby (Johannes Kepler University Linz, Austria)

12:00
INVITED TALK: FLUID-STRUCTURE INTERACTIONS OF MECHANICAL SENSORS AT NANOMETER SCALES
John Sader
University of Melbourne, Australia

12:30
REAL-TIME COMPOSITION DETERMINATION OF GAS MIXTURES
Joost Lötters[3], Egbert van der Wouden[1], Jarno Groenesteijn[2], Wouter Sparreboom[1], Theo Lammerink[2], Remco Wiegerink[2]
[1]Bronkhorst High-Tech BV, Netherlands; [2]Universiteit Twente, Netherlands; [3]Universiteit Twente & Bronkhorst High-Tech BV, Netherlands

12:45
DETERMINATION OF THERMAL PROPERTIES OF GASES UNDER FLOW CONDITIONS
Diego Reyes-Romero, Ali Cubukcu, Gerald Urban
Albert-Ludwigs-Universität Freiburg, Germany

13:00
DEVELOPMENT OF ANALYTICAL MODELS OF T- AND USHAPED CANTILEVER-BASED MEMS DEVICES FOR SENSING AND ENERGY HARVESTING APPLICATIONS
Stephen Heinrich[1], Mohand Tayeb Boudjiet[2], Damien Thuau[2], Philippe Poulin[2], Cedric Ayéla[2], Isabelle Dufour[2]
[1]Marquette University, USA; [2]Université Bordeaux 1, France

13:15
MODELING PERTURBATIONS INDUCED IN PLATE RESONATOR CHARACTERISTICS DUE TO FLEXURAL BENDING
Gokhan Hatipoglu, Srinivas Tadigadapa
Pennsylvania State University, USA

13:30
EFFICIENT NUMERICAL SIMULATION OF TRANSDUCER OUTPUTS FOR ACOUSTIC MICROSCOPES
Stefan Rupitsch, Michael Nierla
Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

12:00 - 13:30
C2L-B: PHOTODETECTORS I
Auditorium 2
Session Chairs: Nicola Massari (Fondazione Bruno Kessler, Italy), Rihito Kuroda (Tohoku University, Japan)

12:00
BACKSIDE ILLUMINATED CMOS IMAGE SENSORS FOR EXTREME ULTRAVIOLET APPLICATIONS
Padmakumar R. Rao[2], Christian Laubis[1], Stoyan Nihtianov[2]
[1]Physikalisch-Technische Bundesanstalt, Germany; [2]Technische Universiteit Delft, Netherlands

12:15
HIGH QUANTUM EFFICIENCY 200-1000 NM SPECTRAL RESPONSE PHOTODIODES WITH ON-CHIP MULTIPLE HIGH TRANSMITTANCE OPTICAL LAYERS
Yasumasa Koda, Rihito Kuroda, Shigetoshi Sugawa
Tohoku University, Japan

12:30
OPTIMIZATION OF PERIMETER GATED SPADS IN A STANDARD CMOS PROCESS
Mohammad Habib, Farhan Quaiyum, Syed Islam, Nicole McFarlane
University of Tennessee, Knoxville, USA

12:45
STACKED ORGANIC PHOTOCONDUCTIVE FILMS AND THIN-FILM TRANSISTOR CIRCUITS SEPARATED BY THIN SILICON NITRIDE FOR A COLOR IMAGE SENSOR
Hokuto Seo[2], Toshikatsu Sakai[2], Hiroshi Ohtake[2], Mamoru Furuta[1]
[1]Kochi University of Technology, Japan; [2]Nippon Hoso Kyokai, Japan

13:00
QUALITY MONITORING OF DIESEL EXHAUST FLUID IN VEHICLES USING DIFFRACTIVE INTERFERENCE SENSORS
Nityanand Kumawat, Parama Pal, Manoj Varma
Indian Institute of Science, India
13:15
INTERFEROMETIC PARTICLE IMAGING SYSTEM FOR INDUSTRIAL AND NAVAL APPLICATIONS
Eric Ebert, Willfried Kröger, Kay Domke, Nils Damaschke
Universität Rostock, Germany

12:00 - 13:30
C2L-C: MATERIALS AND PROCESSES
Auditorium 3A
Session Chair: Michele Penza (ENEA, Italy)

12:00
PHOSPHATE SENSORS BASED ON NANOFIBROUS CO ELECTRODES
Xiaochen Wang, Xiangmeng Ma, Woo Hyoung Lee, Hyoung Jin Cho
University of Central Florida, USA

12:15
INTERLACING METHOD FOR MICRO-PATTERNING SILVER VIA INKJET PRINTING
Guijun Li, Robert Roberts, Norman C. Tien
University of Hong Kong, Hong Kong

12:30
INTEGRATION OF PDMS MICROFILTERS AND MICROMIXERS BONDED ONTO APTES-FUNCTIONALIZED POLYMERIC FILMS FOR SIZE SORTING AND MIXING OF MICROPARTICLES
Michael Lee[3], Abdoullatif Baraket[3], Nadia Zine[2], Nicole Jaffrezic-Renault[2], Abdelhamid Errachid[2], Maria Jose Lopez-Martinez[1], Jaume Esteve[1], Jose Antonio Plaza[1], Naveed Ahmed[3], Abdelhamid Elaissari[3]
[1]Instituto de Microelectronica de Barcelona, Spain; [2]Université Claude-Bernard Lyon 1, France; [3]Université de Lyon, France

12:45
FABRICATION OF HIERARCHICALLY STRUCTURED SUPERHYDROPHOBIC PDMS SURFACES BY CUO CASTING
Christopher Migliaccio, Nathan Lazarus
U.S. Army Research Laboratory, USA

13:00
PARAMETER STUDY OF MICROWAVE ASSISTED EXFOLIATION OF GRAPHITE AND ITS APPLICATION TO LARGE DEFORMATION STRAIN SENSORS
Jonghun Kim, Seungkeun Oh, Sang-Hee Yoon
Inha University, Korea, South

13:15
A POST PROCESSING APPROACH FOR MANUFACTURING HIGH-DENSITY STRETCHABLE SENSOR ARRAYS
Angel Savov[2], Saeed Pakazad[2], Shivani Joshi[2], Vincent Henneken[1], Ronald Dekker[2]
[1]Philips Research, Netherlands; [2]Technische Universiteit Delft, Netherlands

---

12:00 - 13:30
C2L-D: AUTOMATION APPLICATIONS
Auditorium 3B
Session Chairs: Jurgen Kosel (King Abdullah University of Science and Technology, Saudi Arabia), Salvatore Baglio (Università degli Studi di Catania, Italy)

12:00
TEXTURE MEASUREMENT AND IDENTIFICATION OF OBJECT SURFACE BY MEMS TACTILE SENSOR
Masayuki Sohgawa[1], Kosuke Watanabe[3], Takeshi Kanashima[3], Masanori Okuyama[3], Takashi Abe[1], Haruo Noma[4], Teruaki Azuma[2]
[1]Niigata University, Japan; [2]Nitta Corporation, Japan; [3]Osaka University, Japan; [4]Ritsumeikan University, Japan

12:15
IN-HAND OBJECT LOCALIZATION: SIMPLE VS. COMPLEX TACTILE SENSORS
Andres Salomon Vazquez, Raul Fernandez, Antonio Lopez, Enrique Valero, Ismael Payo, Antonio Adan
Universidad de Castilla-La Mancha, Spain

12:30
HIGH-RESOLUTION ACOUSTIC IMAGING IN AIR BY SYNTHETIC APERTURE USING PIXEL-WISE MATCHED KERNELS
Tomi Nihtilä, Juha Jylhä, Ari Visa
Tampere University of Technology, Finland

12:45
POSITION PREDICTIVE CONTROL OF AN ANTHROPOMORPHIC ROBOTIC ARM USING A TIME-OF-FLIGHT CAMERA
Silvia Satorres Martínez, Jesus de la Casa Cárdenas, Javier Gámez García, Juan Gómez Ortega
Universidad de Jaén, Spain

13:00
VEHICULAR ENGINE OIL SERVICE LIFE CHARACTERIZATION USING ON-BOARD DIAGNOSTIC (OBD) SENSOR DATA
Joshua Siegel, Rahul Bhattacharyya, Ajay Deshpande, Sanjay Sarma
Massachusetts Institute of Technology, USA

13:15
ODOR ASSESSMENT OF AUTOMOBILE CABIN AIR BY MACHINE OLFACTION
Juan Li[2], Ryan D. Hodges[2], Susan Schiffman[2], H. Troy Nagle[2], Ricardo Gutierrez-Osuna[3], Gail Luckey[1], Joel Crowell[1]
[1]Hyundai Motor Group, USA; [2]North Carolina State University, USA; [3]Texas A&M University, USA

12:00 - 13:30
C2L-E: TACTILE/FORCE SENSORS
Rooms 1 & 2
Session Chairs: Rajanna Konandur (Indian Institute of Science, India), Zheyao Wang (Tsinghua University, China)

12:00
LOW-TEMPERATURE FLEXIBLE PIEZOELECTRIC ALN CAPACITOR INTEGRATED ON ULTRA-FLEXIBLE POLY-SI TFT FOR ADVANCED TACTILE SENSING
Francesco Maita, Luca Maiolo, Alessandro Pecora, Antonio Minotti, Guglielmo Fortunato, Emanuele Smecca, Alessandra Alberti
Consiglio Nazionale delle Ricerche, Italy

12:15
TACTILE SENSORS WITH INTEGRATED PIEZOELECTRIC POLYMER AND LOW VOLTAGE ORGANIC THIN-FILM TRANSISTORS
Piero Cosseddu[1], Fabrizio Viola[1], Stefano Lai[1], Luigi Raffo[1], Lucia Seminara[2], Luigi Pinna[2], Maurizio Valle[2], Ravinder Singh Dahiya[3], Annalisa Bonfiglio[1]
[1]Università degli Studi di Cagliari, Italy; [2]Università degli Studi di Genova, Italy; [3]University of Glasgow , United Kingdom

12:30
A CAPACITIVE PRESSURE SENSOR WITH MINIMUM FOOT PRINT FOR CMOS INTEGRATION
Thoralf Kautzsch, Steffen Bieselt
Infineon Technologies Dresden GmbH, Germany

12:45
DEVELOPMENT OF A LASER MICRO-MACHINED INTERDIGITATED CAPACITIVE STRAIN SENSOR FOR STRUCTURAL HEALTH MONITORING APPLICATIONS
Hung Cao[1], Chokri Jebali[1], Ammar K. Kouki[1], Shreyas Thakar[2], Cuong Nguyen[2], Smitha Rao[2], J.-C. Chiao[2]
[1]École de Technologie Supérieure, Canada; [2]University of Texas at Arlington, USA

13:00
FORCE-COMPENSATING MEMS SENSOR FOR AFM CANTILEVER STIFFNESS CALIBRATION
M. Bulut Coskun[1], Steven Moore[2], S.O. Reza Moheimani[2], Adrian Neild[1], Tuncay Alan[1]
[1]Monash University, Australia; [2]University of Newcastle, Australia

13:15
MULTIMODAL MEASUREMENT OF PROXIMITY AND TOUCH FORCE BY LIGHT- AND STRAIN-SENSITIVE MULTIFUNCTIONAL MEMS SENSOR
Masayuki Sohgawa[1], Akito Nozawa[1], Hokuto Yokoyama[3], Takeshi Kanashima[3], Masanori Okuyama[3], Takashi Abe[1], Haruo Noma[4], Teruaki Azuma[2]
[1]Niigata University, Japan; [2]Nitta Corporation, Japan; [3]Osaka University, Japan; [4]Ritsumeikan University, Japan

---

12:00 - 13:30
C2L-F: BIOSENSORS FOR CELL ANALYSIS I
Rooms 3 & 4
Session Chair: Ana Moya (Consejo Superior de Investigaciones Científicas, Spain)

12:00
EXTRACTION OF ACTIVE ENZYMES FROM "HARD-TO-BREAK-CELLS": EVALUATION BY A RCA-BASED ASSAY
Alessio Ottaviani[1], Cinzia Tesauro[1], Søren Fjelstrup[1], Rikke Frøhlich Hougaard[1], Paola Fiorani[2], Alessandro Desideri[2], Birgitta Knudsen[1], Yi-Ping Ho[1]
[1]Aarhus University, Denmark; [2]Università degli Studi di Roma Tor Vergata, Italy

12:15
SENSING OF BIOMOLECULAR MOTION OF LIPOSOME AND TARGET PROTEIN, AND THEIR INTERACTION BY DIELECTRIC DISPERSION ANALYSIS FOR 100-1000 MHZ RANGE
Tomoki Yoshikawa, Keisuke Takada, Ziyang Zhang, Kaoru Yamashita, Minoru Noda
Kyoto Institute of Technology, Japan

12:30
A REAL TIME IMMUNOASSAY IN ALUMINA MEMBRANES
Jesús álvarez[5], Laura Sola[1], Marina Cretich[1], Marcus Swann[2], Kristinn Gylfasson[3], Tormod Volden[4], Marcella Chiari[1], Daniel Hill[5]
[1]Consiglio Nazionale delle Ricerche, Italy; [2]Farfield, United Kingdom; [3]Royal Institute of Technology, Sweden; [4]Swiss Center for Electronics and Microtechnology, Switzerland; [5]Universitat de València, Spain

12:45
PROBING THE DYNAMICS OF THE PROTON-MOTIVE FORCE IN E. COLI
Tom Zajdel[2], Michaela Teravest[2], Behzad Rad[1], Caroline Ajo-Franklin[1], Michel Maharbiz[2]
[1]Lawrence Berkeley National Laboratory, USA; [2]University of California, Berkeley, USA

13:00
MICRONEEDLE SENSOR FOR VOLTAMMETRIC DRUG DETECTION IN PHYSIOLOGICAL FLUIDS
Patricia Vazquez[1], Conor O'Mahony[1], Joseph O'Brien[1], James Scully[1], Alan Blake[1], Cian O'Mathuna[1], Paul Galvin[1], Gregoire Herzog[2]
[1]Tyndall National Institute, Ireland; [2]Universite de Lorraine, France

13:15
ANALYSES OF SINGLE-CELL MECHANOELECTRICAL PROPERTIES VIA MICROFLUIDICS
Vaishnavi Srinivasaraghavan, Deepti Aggarwal, Hesam Babahosseini, Diana Nakidde, Jeannine Strobl, Masoud Agah
Virginia Polytechnic Institute and State University, USA

12:00 - 13:30
C2L-G: LATE NEWS: OTHER PHYSICAL, CHEMICAL AND OPTICAL SENSORS
Rooms 6 & 7
Session Chair: Francisco J. Arregui (Universidad Publica de Navarra, Spain)

12:00
BRILLOUIN DISTRIBUTED SENSING ASSISTED BY BRILLOUIN AMPLIFICATION OF PUMP PULSES
Javier Urricelqui, Mikel Sagues, Alayn Loayssa
Universidad Pública de Navarra, Spain

12:15
MASH2-0 ELECTROMECHANICAL SIGMA-DELTA MODULATOR FOR CAPACITIVE MEMS SENSORS USING DUAL QUANTIZATION METHOD
Bader Almutairi[2], Ali Alshehri[2], Michael Kraft[1]
[1]Universität Duisburg-Essen, Germany; [2]University of Southampton, United Kingdom

12:30
AN RF/MICROWAVE MICROFLUIDIC SENSOR BASED ON A 3D CAPACITIVE STRUCTURE WITH A FLOATING ELECTRODE FOR MINIATURIZED DIELECTRIC SPECTROSCOPY
Michael Suster[1], Brecken Blackburn[2], Umut Gurkan[1], Pedram Mohseni[1]
[1]Case Western Reserve University, USA; [2]Cornell University, USA

12:45
IMPROVED PRESSURE RESPONSE WITH EMBEDDED SOLID MICROBEADS IN MICROFLUIDIC SOFT SENSORS
Hee-Sup Shin, Yong-Lae Park
Carnegie Mellon University, USA

13:00
A MEMS CAPACITIVE PH SENSOR FOR HIGH ACIDIC AND BASIC SOLUTIONS
Md Shamsul Arefin, M. Bulut Coskun, Tuncay Alan, Adrian Neild, Jean-Michel Redoute, Mehmet Yuce
Monash University, Australia

13:15
DISTRIBUTED DEPLOYMENT ALGORITHMS IN A NETWORK OF NONIDENTICAL MOBILE SENSORS SUBJECT TO LOCATION ESTIMATION ERROR
Hamid Mahboubi, Mojtaba Vaezi, Fabrice Labeau
McGill University, Canada

13:30 - 15:00
LUNCH
Room: Multipurpose Rooms 1 & 2

15:00 - 16:20
C3P-H: CHEMICAL AND GAS SENSOR SYSTEMS
Poster Area - Foyer
Session Chair: Eduard Llobet (Universitat Rovira i Virgili,Spain)

C3P-H1
IMPROVEMENT IN RESPONSE OF SWELLING CLAD-TYPE POF HUMIDITY SENSOR USING A MULTICLADDING LAYER
Masayuki Morisawa, Shigeaki Kato
University of Yamanashi, Japan

C3P-H2
CASCADE OF ARTIFICIAL NEURAL NETWORK COMMITTEES FOR THE CALIBRATION OF SMALL GAS COMMERCIAL SENSORS FOR NO2, NH3 AND CO
Manuel Aleixandre, Daniel Matatagui, Jose Pedro Santos, Maria Del Carmen Horrillo
Consejo Superior de Investigaciones Científicas, Spain

C3P-H3
A METHOD FOR OBTAINING DEPENDENCE MATHEMATICAL MODELS FROM GRAPHICS IN CHEMICAL SENSORS
Ismael Monsonís, Jose Pelegri-Sebastia, Tomas Sogorb, Vicente Llario, Vicente Estruch
Universitat Politècnica de València, Spain

C3P-H4
HIGHLY SENSITIVE ELECTROCHEMICAL SENSOR BASED ON BISMUTH NANOPOWDERS FOR DETECTING HEAVY METALS AND URANIUM
Gyoung-Ja Lee, Min Ku Lee, Chang Kyu Rhee
Korea Atomic Energy Research Institute, Korea, South

C3P-H5
A GAS SENSOR USING DOUBLE SPLIT-RING RESONATOR COATED WITH CONDUCTING POLYMER AT MICROWAVE FREQUNCIES
Byung-Hyun Kim, Yong-Joo Lee, Hee-Jo Lee, Yunseog Hong, Jong-Gwan Yook, Moon Hyun Chung, Wonseok Cho, Hyang-Hee Choi
Yonsei University, Korea, South

C3P-H6
A REFLECTION TYPE GAS SENSOR USING CONDUCTING POLYMER AS A VARIABLE IMPEDANCE AT MICROWAVE FRQUENCIES
Yong-Joo Lee, Byung-Hyun Kim, Hee-Jo Lee, Yunseog Hong, Jong-Gwan Yook, Hyang-Hee Choi, Seung Hwan Lee, Jung Joon Lee
Yonsei University, Korea, South

C3P-H7
A SUB-PPM AMMONIA GAS SENSOR FOR LIVER DISEASE USING ULTRATHIN INN-BASED GAS SENSOR
Kun-Wei Kao, Chin-Jen Cheng, Shangjr Gwo, J. Andrew Yeh
National Tsing Hua University, Taiwan

C3P-H8
PACKAGING A PIEZORESISTIVE PRESSURE SENSOR FOR INTRACRANIAL PRESSURE MONITORING
Xiawei Meng, Yulong Zhao
Xi'an Jiaotong University, China

C3P-H9
NOVEL NI3S2 BASED ROOM TEMPERATURE HUMIDITY SENSOR AND POTENTIAL BREATH ANALYZER
Ella Linganiso[1], Bonex Mwakikunga[1], Neil Coville[4], Sabelo Mhlanga[3], Trilok Singh[2], Thomas Fischer[2], Sanjay Mathur[2]
[1]Council for Scientific and Industrial Research, South Africa; [2]Universität zu Köln, Germany; [3]University of Johannesburg, South Africa; [4]University of the Witwatersrand, South Africa

C3P-H10
MOLECULARLY IMPRINTED POLYPYRROLE FOR THE ELECTROCHEMICAL DETECTION OF SULFADIMETHOXINE: THE EFFECT OF IMPRINTING PARAMETERS
Elisabetta Mazzotta[2], Antonio Turco[2], Cosimino Malitesta[2], Stefania Corvaglia[1]
[1]Elettra Sincrotrone Trieste, Italy; [2]Università del Salento, Italy

C3P-H11
SELECTIVE DETECTION OF UNBURNED-HYDROCARBON IN THE EXHAUST GAS USING CATALYTIC FILTER
Mohammad Hossein Saberi, Abbasali Khodadadi, Yadollah Mortazavi
University of Tehran, Iran

C3P-H12
MODELING AND CHARACTERIZATION OF THE TRANSIENT PERFORMANCE OF A GAS DETECTOR BASED ON FRINGE-FIELD CAPACITANCE
Kenichi Morimoto[2], Yutao Qin[1], Yogesh Gianchandani[1]
[1]University of Michigan, USA; [2]University of Tokyo, Japan

---

15:00 - 16:20
C3P-J: BIOSENSORS FOR CELL ANALYSIS II
Poster Area - Foyer
Session Chair: Roc Berenguer (CEIT and Tecnun, University of Navarra, Spain)

C3P-J1
WIRELESS SURFACE-SCANNING ME BIOSENSORS SYSTEM FOR BACTERIAL DETECTION ON FRESH PRODUCE
Yating Chai, Shin Horikawa, Howard C. Wikle, Aleksandr Simonian, Bryan Chin
Auburn University, USA

C3P-J2
SELECTION AND CHARACTERIZATION OF DNA APTAMERS WITH BINDING SELECTIVITY TO CAMPYLOBACTER JEJUNI USING WHOLE-CELL SELEX
Jihea Moon, Giyoung Kim, Saetbyeol Park, Jongguk Lim, Changyeun Mo
National Academy of Agricultural Sciences, Korea, South

C3P-J3
MICROFLUIDIC SEDIMENTATION SYSTEM FOR SEPARATION OF PLASMA FROM WHOLE BLOOD
Chiaki Kuroda[3], Yoshimichi Ohki[3], Hiroki Ashiba[1], Makoto Fujimaki[1], Koichi Awazu[1], Torahiko Tanaka[2], Makoto Makishima[2]
[1]National Institute of Advanced Industrial Science and Technology, Japan; [2]Nihon University School of Medicine, Japan; [3]Waseda University, Japan

C3P-J4
BLOOD PRETREATMENT CHIP BOTH FOR FILTERING THE BLOOD CELLS AND REDUCING THE ALBUMIN CONCENTRATION IN WHOLE BLOOD
Kwang Hyo Chung, Yo Han Choi, Choon-Gi Choi
Electronics and Telecommunications Research Institute, Korea, South

C3P-J5
REMOVAL OF NONSPECIFIC BINDINGS IN ON-CHIP ELISAS WITH LOW POWER ULTRASOUND
Lukas Brandhoff[6], Michael J. Vellekoop[6], Heinz Redl[3], Anna Haller[5], Helene Zirath[1], Johannes Peham[1], Herbert Wiesinger-Mayr[1], Andreas Spittler[4], Guntram Schnetz[2]
[1]Austrian Institute of Technology, Austria; [2]Biegler GmbH, Austria; [3]Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, Austria; [4]Medical University of Vienna, Austria; [5]Technische Universität Wien, Austria; [6]Universität Bremen, Germany

C3P-J6
USING THE NEWLY MICROFLUIDIC BIOSENSOR FOR CARCINOEMBRYONIC ANTIGEN DETECTION
Chia-Hsien Yeh[2], Kuan-Feng Su[2], Yu-Cheng Lin[2], Pi-Lan Shen[1]
[1]Firstep Bioresearch, Inc., Taiwan; [2]National Cheng Kung University, Taiwan

C3P-J7
MINIATURE NEUROTRANSMITTER SENSORS FEATURED WITH IRIDIUM OXIDE NANORODS
Cuong Nguyen, Smitha Rao, J.-C. Chiao, Hung Cao, Ailing Li, Yuan Peng
University of Texas at Arlington, USA

C3P-J8
OPTIMIZING A NEW BLOOD PRESSURE SENSOR FOR MAXIMUM PERFORMANCE BASED ON FINITE ELEMENT MODEL
Tse-Yi Tu[2], Yung-Hua Kao[2], Paul C.-P. Chao[2], Yung-Pin Lee[1]
[1]MedSense Inc., Taiwan; [2]National Chiao Tung University, Taiwan

15:00 - 16:20
C3P-K: OPTICAL SENSORS III
Poster Area - Foyer
Session Chairs: Jesus M. Corres (Public University of Navarra, Spain), Carlos Ruiz Zamarreño (Public University of Navarra, Spain)

C3P-K1
DEVELOPMENT OF OPTICAL SENSOR FOR SOFT TISSUE SARCOMA BOUNDARY DETECTION USING OPTICAL COHERENCE ELASTOGRAPHY
Shang Wang[3], Jiasong Li[2], Raphael E. Pollock[4], Irina V. Larina[1], Kirill Larin[2]
[1]Baylor College of Medicine, USA; [2]University of Houston, USA; [3]University of Houston & Baylor College of Medicine, USA; [4]University of Texas MD Anderson Cancer Center, USA

C3P-K2
EXTRACTING VIBRATIONAL PARAMETERS FROM THE TIME-FREQUENCY MAP OF A SELF MIXING SIGNAL: AN APPROACH BASED ON WAVELET ANALYSIS
Ajit Jha, Santiago Royo, Francisco Javier Azcona, Carlos Yanez
Universitat Politècnica de Catalunya, Spain

C3P-K3
EXPERIMENTAL DEMONSTRATION OF A LEAKAGE MONITORING SYSTEM FOR LARGE DIAMETER WATER PIPES USING A FIBER OPTIC DISTRIBUTED SENSOR SYSTEM
Ruben Ruiz Lombera[2], Jesus Mirapeix Serrano[2], Oscar Martinez[1], Jose Domingo San Emeterio[1], José Miguel López-Higuera[2]
[1]Constructora Obras Públicas San Emeterio S.A., Spain; [2]Universidad de Cantabria, Spain

C3P-K4
EXTREMELY LOW RESONANCE FREQUENCY MOEMS VIBRATION SENSORS WITH SUB-PM RESOLUTION
Wilfried Hortschitz[1], Harald Steiner[1], Michael Stifter[1], Franz Kohl[1], Andreas Kainz[2], Tobias Raffelsberger[2], Franz Keplinger[2]
[1]Donau-Universität Krems, Austria; [2]Technische Universität Wien, Austria

C3P-K5
NOVEL HIGH RESOLUTION MOEMS INCLINATION SENSOR
Wilfried Hortschitz[1], Harald Steiner[1], Michael Stifter[1], Franz Kohl[1], Matthias Kahr[2], Andreas Kainz[2], Tobias Raffelsberger[2], Franz Keplinger[2]
[1]Donau-Universität Krems, Austria; [2]Technische Universität Wien, Austria

C3P-K6
ENHANCED SENSITIVITY IN PERIODICALLY COUPLED ANTENNA SENSORS
Sang-Yeon Cho, Jayson Briscoe
New Mexico State University, USA

C3P-K7
MATHEMATICAL MODELLING FOR CORRELATION BETWEEN TEMPERATURE AND MECHANICAL STRAIN IN LONG PERIOD GRATINGS
Felipe Delgado, Daniel Silveira, Thiago Coelho, Alexandre Bessa dos Santos
Universidade Federal de Juiz de Fora, Brazil

C3P-K8
FIBER-LOOP SENSOR FOR GROUND DISPLACEMENT DETECTION IN HILLSLOPES
Mohd Kamil Abd-Rahman, Nor Jannah Muhamad Satar
Universiti Teknologi MARA, Malaysia

C3P-K9
NOVEL OPTICAL MEMS PRESSURE SENSORS INCORPORATING WAVEGUIDE BRAGG GRATINGS ON DIAPHRAGMS
Prasant Kumar Pattnaik, Vellauru Neeharika
Birla Institute of Technology & Science, India

C3P-K10
LOW VOLTAGE TRANSDUCER BASED ON THE CHANGES IN THE WAVELENGTH OF THE ATTENUATION BAND
Joaquin Ascorbe, Jesus Corres, Francisco Javier Arregui, Ignacio Raúl Matías
Universidad Pública de Navarra, Spain

C3P-K11
OPTICAL FIBER HUMIDITY SENSOR BASED ON A TAPERED FIBER ASYMMETRICALLY COATED WITH INDIUM TIN OXIDE
Joaquin Ascorbe, Jesus Corres, Francisco Javier Arregui, Ignacio Raúl Matías
Universidad Pública de Navarra, Spain

15:00 - 16:20
C3P-L: MECHANICAL AND PHYSICAL SENSORS III
Poster Area - Foyer
Session Chair: Siavash Pourkamali (University of Texas at Dallas, USA)

C3P-L1
SOI 3-AXIS ACCELEROMETER WITH A STRESS REDUCTION STRUCTURE
Motohiro Fujiyoshi[1], Yoshiteru Omura[1], Hirofumi Funabashi[1], Teruhisa Akashi[1], Yoshiyuki Hata[1], Yutaka Nonomura[1], Takahiro Nakayama[2], Hitoshi Yamada[2]
[1]Toyota Central R&D labs., Inc., Japan; [2]Toyota Motor Corporation, Japan

C3P-L2
A NOVEL 2-DIMENSIONAL ELECTRIC FIELD SENSOR BASED ON IN-PLANE MICRO ROTARY ACTUATOR
Yu Wang, Dongming Fang, Ke Feng, Ren Ren, Bo Chen, Chunrong Peng, Shanhong Xia
Chinese Academy of Sciences, China

C3P-L3
DEVELOPMENT OF OPTICAL PROBE CURRENT SENSOR WITH KERR EFFECT FOR POWER ELECTRONICS
Daiki Karasawa, Makoto Sonehara, Shin Kitazawa, Toshiro Sato
Shinshu University, Japan

C3P-L4
TORQUE RIPPLE COMPENSATION METHOD FOR JOINT TORQUE SENSOR EMBEDDED IN HARMONIC DRIVE USING ORDER ANALYSIS
Byung-Jin Jung, Byungchul Kim, Seonggi Kim, Jachoon Koo, Hyouk Ryeol Choi, Hyungpil Moon
Sungkyunkwan University, Korea, South

C3P-L5
ASSOCIATED IDTS IN SURFACE ACOUSTIC WAVE DEVICES FOR CLOSED-LOOP CONTROL INKJET SYSTEM
Hang Bui Thu[1], Pasqualina M. Sarro[1], Tung Bui Duc[2], Trinh Chu Duc[2]
[1]Technische Universiteit Delft, Netherlands; [2]Vietnam National University, Hanoi, Vietnam

C3P-L6
DIRECT DETERMINATION OF THE VOLUMETRIC HEAT CAPACITY OF LIQUIDS USING A MEMS SENSOR AND EFFICIENT EVALUATION METHODS
Roman Beigelbeck[1], Samir Cerimovic[1], Franz Kohl[1], Artur Jachimowicz[1], Thomas Voglhuber-Brunnmaier[2], Bernhard Jakoby[3]
[1]Donau-Universität Krems, Austria; [2]Donau-Universität Krems / Johannes Kepler Universität Linz, Austria; [3]Johannes Kepler Universität Linz, Austria

C3P-L7
FORCE PROPORTIONAL TOUCHPAD WITH GESTURE AND MANEUVER SENSING
Shenshen Zhao, Chang Liu
Northwestern University, USA

C3P-L8
PIEZOELECTRIC RESONANT MEMS BALANCES WITH HIGH LIQUID PHASE Q
Mohammad Mahdavi[2], Gilberto Guerra[2], Hailey McCurry[2], Siavash Pourkamali[2], Reza Abdolvand[1]
[1]University of Central Florida, USA; [2]University of Texas at Dallas, USA

C3P-L9
A MONOLITHIC INTEGRATION MULTIFUNCTIONAL MEMS SENSOR BASED ON CAVITY SOI WAFER
Yangxi Zhang, Chenchen Yang, Fanrui Meng, Guandong Liu, Chengchen Gao, Yilong Hao
Peking University, China

15:00 - 16:20
C3P-M: SENSORS & SENSOR SYSTEMS II
Poster Area - Foyer
Session Chairs: Oliver Paul (University of Freiburg, Germany), Gijs Krijnen (University of Twente, Netherlands)

C3P-M1
DYNAMIC RESPONSE OF MEMS SENSOR NEAR FUNDAMENTAL AND HIGHER-ORDER FREQUENCIES
Hassen Ouakad[2], Mohammad Younis[1]
[1]Binghamton University, USA; [2]King Fahd University of Petroleum and Minerals, Saudi Arabia

C3P-M2
MODAL LIQUID CRYSTAL TEMPERATURE SENSOR
José Francisco Algorri, Pedro Contreras Lallana, Virginia Urruchi, José Manuel Sánchez-Pena
Universidad Carlos III de Madrid, Spain

C3P-M3
COMPARISON OF IN-PLANE AND OUT-OF-PLANE PIEZOELECTRIC MICRORESONATORS FOR DENSITY AND VISCOSITY MEASUREMENTS IN OIL MIXTURES
Javier Toledo Serrano[2], Tomás Manzaneque[2], Victor Ruiz-Díez[2], Jorge Hernando-García[2], Elisabeth Wistrela[1], Martin Kucera[1], Ulrich Schmid[1], José Luis Sánchez-Rojas[2]
[1]Technische Universität Wien, Austria; [2]Universidad de Castilla-La Mancha, Spain

C3P-M4
A CONFIGURABLE SMART E-NOSE FOR SPATIO-TEMPORAL OLFACTORY ANALYSIS
Carlos Sanchez-Garrido, Javier G. Monroy, Javier Gonzalez-Jimenez
Universidad de Málaga, Spain

C3P-M5
FRICTION-BASED SLIPPAGE DETECTION STRATEGY: PRINCIPLES AND PROTOTYPE
Pavel Dzitac[2], Abdul Mazid[1]
[1]Central Queensland University, Australia; [2]Deakin University, Australia

C3P-M6
OLFACTORY SEARCH BEHAVIOR OF HUMAN WEARING OLFACTORY ASSIST MASK
Haruka Matsukura, Hironori Hashiguchi, Hiroshi Ishida
Tokyo University of Agriculture and Technology, Japan

C3P-M7
ACTIVITY AWARENESS CAN IMPROVE CONTINUOUS STRESS DETECTION IN GALVANIC SKIN RESPONSE
Tong Boon Tang, Lip Wee Yeo, Dandy Jing Hui Lau
Universiti Teknologi Petronas, Malaysia

15:00 - 16:20
C3P-N: SENSOR NETWORKS III
Poster Area - Foyer
Session Chairs: Spyridon Daskalakis (Technical University of Crete, Greece), Stylianos Assimonis (Technical University of Crete, Greece)

C3P-N1
METHOD FOR MEASURING INTERNAL RESISTANCE OF BATTERIES IN WSN
Rafael Lajara[2], Jose Pelegri-Sebastia[2], Juan José Perez-Solano[1]
[1]Universitat de Valencia, Spain; [2]Universitat Politècnica de València, Spain

C3P-N2
WIRELESS SUBSURFACE SENSORS FOR LOW-VOLUME ROADWAY MANAGEMENT
Paul Fortier, Benjamin Viall, Brandon Maliguti, David Prairie, Zaidan Shebar
University of Massachusetts Dartmouth, Israel

C3P-N3
AREA WISE HIGH RESOLUTION WATER AVAILABILITY ESTIMATION USING HETEROGENEOUS REMOTE SENSING AND ENSEMBLE MACHINE LEARNING
Cecil Li, Ritaban Dutta, Daniel Smith
Commonwealth Scientific and Industrial Research Organisation, Australia

C3P-N4
THE USE OF A COSMIC RAY PROBE AS A PROXY OF GREEN VEGETATION BIOMASS
Daniel Smith, Ritaban Dutta, Cecil Li
Commonwealth Scientific and Industrial Research Organisation, Australia

C3P-N5
A WHITE-RABBIT NETWORK INTERFACE CARD FOR SYNCHRONIZED SENSOR NETWORKS
Miguel Jiménez López, Jose Luis Gutiérrez Rivas, Javier Díaz Alonso
Universidad de Granada, Spain

C3P-N6
SOFTWARE CONSIDERATIONS FOR ENERGY HARVESTING WIRELESS SENSOR NETWORKS
Monica Redon Segrera
Analog Devices Inc., Spain

C3P-N7
DISTRIBUTED DATA QUERY WITH DYNAMIC BOUNDED-ERROR IN WIRELESS SENSOR NETWORKS
Jui-Hua Tsai, Yu-Cheng Lien, Yu-Hsien Chu, Ray-I Chang
National Taiwan University, Taiwan

C3P-N8
TOWARDS AIR QUALITY INDICES IN SMART CITIES BY CALIBRATED LOW-COST SENSORS APPLIED TO NETWORKS
Michele Penza, Domenico Suriano, Maria Gabriella Villani
ENEA, Italy

C3P-N9
TARGET TRACKING BEHIND OCCLUSIONS USING A NETWORKED HIGH-SPEED VISION SYSTEM
Akihito Noda, Yuji Yamakawa, Masatoshi Ishikawa
University of Tokyo, Japan

C3P-N10
TWO-CLOCKS SYNCHRONIZATION FOR NETWORKED SENSORS
Juan-Antonio Fernández-Madrigal, Ángel Martínez-Tenor
Universidad de Málaga, Spain

15:00 - 16:20
C3P-P: SAFETY AND SECURITY APPLICATIONS II
Poster Area - Foyer
Session Chairs: Troy Nagle (North Carolina State University, USA), Vittorio Ferrari (University of Brascia, Italy)

C3P-P1
RFID TAG FOR VEGETABLE RIPENING EVALUATION USING AN AUXILIARY SMART GAS SENSOR
Fabrizio Formisano, Ettore Massera, Saverio De Vito, Antonio Buonanno, Girolamo Di Francia, Paola Delli Veneri
Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Italy

C3P-P2
DETECTING TRACE AMOUNT OF WATER IN CRUDE OIL WITH CAPACITANCE SENSORS
Tong Boon Tang, Yee Ling Lim, M. Zubair Aslam
Universiti Teknologi Petronas, Malaysia

C3P-P3
LASER SCANNER BASED ROAD SURFACE ESTIMATION FOR AUTOMOTIVE APPLICATIONS
Mohamed Essayed Bouzouraa[1], Martin Kellner[1], Ulrich Hofmann[1], Robert Lutz[2]
[1]AUDI AG, Germany; [2]Karlsruher Institut für Technologie, Germany

C3P-P4
OPTICAL SENSING OF FLUORESCENT MARKER FOR FAST DETECTION OF BEVERAGE NATURALITY
Ming Sun, Bin Yin, Shelly Su
Philips Research, China

C3P-P5
THIN LAYER EFFECTS IN CAPACITIVE ATMOSPHERIC ICING DETECTION
Thomas Bretterklieber, Markus Neumayer, Hubert Zangl
Graz University of Technology, Austria

C3P-P6
A NOVEL APPROACH FOR GAS DISCRIMINATION IN NATURAL ENVIRONMENTS WITH OPEN SAMPLING SYSTEMS
Victor Hernandez Bennetts[1], Erik Schaffernicht[1], Victor Pomareda Sesé[2], Achim Lilienthal[1], Marco Trincavelli[1]
[1]Örebro University, Sweden; [2]Universitat de Barcelona, Spain

C3P-P7
A MULTISENSOR DATA FUSION APPROACH FOR THE VOLCANIC ASH GRANULOMETRY CLASSIFICATION
Bruno Andò, Salvatore Baglio, Vincenzo Marletta
Università degli Studi di Catania, Italy

C3P-P8
OPEN SOURCE BUILDING SCIENCE SENSORS AN OPEN SOURCE SENSOR NETWORK FOR INDOOR ENVIRONMENTAL DATA COLLECTION
Akram Ali, Zachary Zanzinger, Brent Stephens
Illinois Institute of Technology, USA

C3P-P9
APPLICATION ASPECT OF THIN FILM IMPACT SENSOR FOR DETECTING MILK ADULTERATION
Sudeep Joshi, Nitish Prabhu, M.M. Nayak, Konandur Rajanna
Indian Institute of Science, India

15:00 - 16:20
C3P-Q: SENSOR MATERIALS AND DEVICES III
Poster Area - Foyer
Session Chair: Javier Calpe (Analog Devices, Spain)

C3P-Q1
SAW SENSOR WITHOUT THE REFERENCE CHANNEL BASED ON THE TWO PATH DELAY LINE
Sergey Balashov[1], Carlos Eduardo Teles[2], Jacobus Willibrordus Swart[2]
[1]Center for Information Technology Renato Archer, Brazil;
[2]Universidade Estadual de Campinas, Brazil

C3P-Q2
MAGNETIC POLYMER NANOCOMPOSITES FOR SENSING APPLICATIONS
Ahmed Alfadhel, Bodong Li, Jurgen Kosel
King Abdullah University of Science and Technology, Saudi Arabia

C3P-Q3
THIN AND FLEXIBLE PRESSURE/DEFORMATION SENSORS BASED ON PIEZOELECTRIC NANOCOMPOSITES
Leonardo Ricotti, Tommaso Ranzani, Valerio Calarota, Arianna Menciassi
Scuola Superiore Sant'Anna, Italy

C3P-Q4
SPECTRUM RECONSTRUCTION FROM MIMO PERSPECTIVES FOR REALIZING LOW-COST ON-CHIP SPECTROMETERS
Cheng-Chun Chang[2], Chien-Ta Wu[2], Yung-Chi Chuang[2], Byung Il Choi[1]
[1]NanoLambda, Inc., Korea, South; [2]National Taipei University of Technology, Taiwan

C3P-Q5
NOVEL AUTOMATIC DIGITAL CALIBRATION TECHNIQUES FOR GMR SENSORS
Antonio Lopez-Martin, Alfonso Carlosena
Universidad Pública de Navarra, Spain

C3P-Q6
HIGH-FREQUENCY CHARACTERISTICS OF CONDUCTING POLYMER FOR GAS-SENSOR
Hee-Jo Lee, Byung-Hyun Kim, Yong-Joo Lee, Yunseog Hong, Jong-Gwan Yook, Seung Hwan Lee, Jung Joon Lee, Hyang-Hee Choi
Yonsei University, Korea, South

C3P-Q7
POLYMER MICROARRAYS FOR SURFACE PLASMON RESONANCE BASED SENSORS
Alfred Kick[1], Michael Mertig[2]
[1]Kurt-Schwabe-Institut für Mess- und Sensortechnik e. V. Meinsberg, Germany; [2]Technische Universität Dresden, Germany

C3P-Q8
EFFECT OF PROCESS PARAMETERS OF CSI PHOTOCATHODE PREPARATION IN THE ENHANCEMENT OF EFFICIENCY OF UV PHOTON SENSOR
Baishali Garai[1], Venkatraman Radhakrishnan[2], Konandur Rajanna[1]
[1]Indian Institute of Science, India; [2]Indian Space Research Organization, India

C3P-Q9
DEVELOPMENT OF MWCNT/SU-8 NANOFIBER COMPOSITE USING ELECTROSPINNING TECHNIQUE FOR BIOSENSING APPLICATIONS
Durga Prakash, Siva Rama Krishna V, Asudeb Dutta, Chandrasekar Sharma, Shiv Govind Singh
Indian Institute of Technology Hyderabad, India

C3P-Q10
MODIFIED STANDARD SCREEN-PRINTING TECHNOLOGY FOR PROCESSING OF FREE-STANDING PHYSICAL AND CHEMICAL SENSORS
Hélène Debéda, Claude Lucat
Université Bordeaux 1, France

C3P-Q11
SELF SENSING OF ELASTOMER ACTUATION BY MEANS OF AC SUPERIMPOSED CURRENT
Pedro Llovera-Segovia[1], Vicente Fuster[1], Dimitri Letihon[2], Raphaël Vorias[2]
[1]Universitat Politècnica de València, Spain; [2]University of Hasselt, Belgium

C3P-Q12
A NOVEL CURRENT-BASED APPROACH FOR VERY LOW VARIATION DETECTION OF RESISTIVE SENSORS IN WHEATSTONE BRIDGE CONFIGURATION
Andrea De Marcellis[1], Candid Reig[2], Maria-Dolores Cubells[2]
[1]Università degli Studi dell'Aquila, Italy; [2]Universitat de València, Spain

C3P-Q13
SMART CONTACT LENS USING PASSIVE STRUCTURES
Sajina Tinku[1], Cristian Collini[1], Leandro Lorenzelli[1], Ravinder Singh Dahiya[2]
[1]Fondazione Bruno Kessler, Italy; [2]University of Glasgow , United Kingdom

C3P-Q14
MICRO-TRANSFER-PRINTING: HETEROGENEOUS INTEGRATION OF MICROSCALE SEMICONDUCTOR DEVICES USING ELASTOMER STAMPS
Christopher Bower, Matthew Meitl, David Kneeburg
X-Celeprint Limited, Ireland

C3P-Q15
SELF-ADAPTIVE CORRELATION METHOD FOR SOFT DEFECT DETECTION IN CABLE BY REFLECTOMETRY
Soumaya Sallem, Nicolas Ravot
CEA Saclay, France

C3P-Q16
ACTUATORS FOR TOUCHSCREEN TACTILE OVERLAY
Ahmed Farooq, Grigori Evreinov, Roope Raisamo
University of Tampere, Finland

C3P-Q17
ACCELERATING HARDWARE GAUSSIAN RANDOM NUMBER GENERATION USING ZIGGURAT AND CORDIC ALGORITHMS
Biruk Getachew Sileshi, Carles Ferrer, Joan Oliver
Universitat Autònoma de Barcelona, Spain

16:30 – 18:00
C4L-A: SPECIAL SESSION: ELECTRONIC TONGUES
Auditorium 1
Session Chairs: Gijs Krijnen (University of Twente, Netherlands), Santiago Marco (Universitat de Barcelona, Spain)

16:30
ELECTRONIC TONGUE AS A RAPID TOOL FOR THE ASSESSMENT OF COFFEE FLAVOUR AND CHEMICAL COMPOSITION
Ana Maria Simoes Costa, Maria Madalena Costa Sobral, Ivonne Delgadillo, Alisa Rudnitskaya
Aveiro University, Portugal

17:00
HYBRID ELECTRONIC TONGUES BASED ON MICROSENSORS APPLIED TO WINE QUALITY CONTROL
Manuel Gutiérrez-Capitán[2], Jordi Vila-Planas[2], Andreu Llobera[2], Cecilia Jiménez-Jorquera[2], Fina Capdevila[1], Carme Domingo[1], Anna Puig-Pujol1
[1]Institut de Recerca i Tecnologia Agroalimentàries-Institut Català de la Vinya i el Vi, Spain; [2]Instituto de Microelectrónica de Barcelona, Spain

17:15
OPTICAL MONITORING OF WINE ALCOHOLIC FERMENTATION USING A NON-SPECIFIC NDIR MICROARRAY
Carlos Calaza, Luis Fonseca
Instituto de Microelectrónica de Barcelona, Spain

17:30
ANALYSIS OF GRAPES AND WINES USING A VOLTAMMETRIC BIOELECTRONIC TONGUE CORRELATION WITH THE PHENOLIC AND SUGAR CONTENT
Maria Luz Rodriguez-Méndez[4], Cristina Medina-Plaza[4], Celia García-Hernández[4], Jose Antonio de Saja[4], Jose Antonio Fernández-Escudero[2], Enrique Barajas-Tola[3], German Medrano[1]
[1]Bodega Cooperativa de Cigales, Spain; [2]Estación Enológica de Castilla y León, Spain; [3]Instituto Tecnológico Agrario de Castilla y León, Spain; [4]Universidad de Valladolid, Spain

17:45
APPLICATION OF ELECTRONIC TONGUES IN THE QUALITATIVE AND QUANTITATIVE ANALYSIS OF BEERS
Xavier Cetó, Manel del Valle
Universitat Autonoma de Barcelona, Spain

16:30 - 18:00
C4L-B: PHOTODETECTORS II
Auditorium 2
Session Chairs: Rihito Kuroda (Tohoku University, Japan), Nicola Massari (Fondazione Bruno Kessler, Italy)

16:30
SPEED OPTIMIZED LARGE AREA AVALANCHE PHOTODETECTOR IN STANDARD CMOS TECHNOLOGY FOR VISIBLE LIGHT COMMUNICATION
Sagar Ray[1], Mona M. Hella[1], Md. Mottaleb Hossain[2], Payman Zarkesh-Ha[2], Majeed M. Hayat[2]
[1]Rensselaer Polytechnic Institute, USA; [2]University of New Mexico, USA

16:45
MINIATURIZED PARTICULATE MATTER SENSOR FOR PORTABLE AIR QUALITY MONITORING DEVICES
Xueming Li[3], Elina Iervolino[2], Fabio Santagata[2], Jia Wei[3], Cadmus Yuan[1], Pasqualina M. Sarro[3], Kouchi Zhang[3]
[1]Chinese Academy of Sciences, China; [2]State Key Laboratory of Solid State Lighting, China; [3]Technische Universiteit Delft, Netherlands

17:00
LOW-PROFILE, SELF-PACKAGED UNCOOLED MICROBOLOMETER ON A FLEXIBLE SUBSTRATE TOWARDS AN INFRARED RADIATION SENSITIVE SKIN
Moinuddin Ahmed, Donald Butler, Zeynep Celik-Butler
University of Texas at Arlington, USA

17:15
POSITION SENSITIVE PHOTOSENSORS BASED ON SIPM ARRAYS
Antonio Javier González[2], Pablo Conde[2], Liczandro Hernández[2], Filomeno Sánchez[2], Jose Benlloch[2], Stan Majewski[3], Albert Aguilar[1], Raimundo Garcia-Olcina[1], Jose Torres[1]
[1]Universitat de València, Spain; [2]Universitat Politècnica de València, Spain; [3]West Virginia University, USA

17:30
A LOW-NOISE HIGH-SENSITIVITY CMOS IMAGE SENSOR FOR SCIENTIFIC AND INDUSTRIAL APPLICATIONS
Min-Woong Seo, Taishi Takasawa, Keita Yasutomi, Keiichiro Kagawa, Shoji Kawahito
Shizuoka University, Japan

17:45
INCIDENT LIGHT ANGLE DETECTION TECHNIQUE USING POLARIZATION PIXELS
Vigil Varghese, Shoushun Chen
Nanyang Technological University, Singapore

16:30 - 18:00
C4L-C: MATERIALS AND DEVICES
Auditorium 3A
Session Chair: Michele Penza (ENEA, Italy)

16:30
FABRICATION OF BILAYER PLATE FOR A MICRO THERMAL ENERGY HARVESTER
Emilie Trioux[2], Stéphane Monfray[2], Thomas Skotnicki[2], Paul Muralt[1], Skandar Basrour[3]
[1]École Polytechnique Fédérale de Lausanne, Switzerland; [2]STMicroelectronics, France; [3]Université Joseph Fourier, France

16:45
EXPERIMENTAL VERIFICATION OF A BRIDGE-SHAPED, NON-LINEAR VIBRATION ENERGY HARVESTERS
Giacomo Gafforelli[2], Alberto Corigliano[2], Ruize Xu[1], Sang-Gook Kim[1]
[1]Massachusetts Institute of Technology, USA; [2]Politecnico di Milano, Italy

17:00
A STATISTICAL TEMPERATURE SENSOR
Maximilian Hofer, Christoph Boehm
Infineon Technologies Austria AG, Austria

17:15
DEVELOPMENT OF A LOW TEMPERATURE PZT/POLYMER PASTE FOR SCREEN PRINTED FLEXIBLE ELECTRONICS APPLICATIONS
Ahmed Almusallam, Kai Yang, Dibin Zhu, Russel Torah, John Tudor, Steve Beeby
University of Southampton, United Kingdom

17:30
GOLD-TIN EUTECTIC BONDING FOR HERMETIC PACKAGING OF MEMS DEVICES WITH VERTICAL FEEDTHROUGHS
Mustafa Mert Torunbalci, Eyup Can Demir, Inci Donmez, Said Emre Alper, Tayfun Akin
Middle East Technical University, Turkey

17:45
DETECTION OF BIOLOGICAL TARGETS BY USING POROUS POLYMER AND METAMATERIAL MESH SENSORS
Tetsuhito Suzuki[1], Yuichi Ogawa[1], Naoshi Kondo[1], Takashi Kondo[2], Seiji Kamba[2]
[1]Kyoto University, Japan; [2]Murata Manufacturing Company, Japan

16:30 - 18:00
C4L-D: BIO-APPLICATIONS
Auditorium 3B
Session Chairs: Alper Bozkurt (North Carolina State University, USA), Olga Conde (University of Cantabria, Spain)

16:30
ACOUSTIC SENSORS FOR BIOBOTIC SEARCH AND RESCUE
Eric Whitmire, Tahmid Latif, Alper Bozkurt
North Carolina State University, USA

16:45
ASSESSING WIRELESS INERTIA MEASUREMENT UNITS FOR MONITORING ATHLETICS SPRINT PERFORMANCE
Lydia Philpott, Sam Weaver, David Gordon, Paul Conway, Andrew West
Loughborough University, United Kingdom

17:00
WEARABLE WIRELESS BIOPHOTONIC AND BIOPOTENTIAL SENSORS FOR CANINE HEALTH MONITORING
Rita Brugarolas, James Dieffenderfer, Katherine Walker, Ashley Wagner, Barbara Sherman, David Roberts, Alper Bozkurt
North Carolina State University, USA

17:15
INCREMENTAL SIMILARITY METRIC TO EVALUATE COMPLEXITY OF HUMAN GAIT: A DISTRIBUTED WIRELESS SENSOR NETWORK APPROACH
Mihaela I. Chidean[2], Eduardo Morgado[2], Eduardo Del Arco[2], Giancarlo Pastor[1], Antonio Moreno-Carretero[2], Julio Ramiro-Bargueño[2], Antonio J. Caamaño[2]
[1]Aalto University, Finland; [2]Universidad Rey Juan Carlos, Spain

17:30
A FRAMEWORK FOR COMPREHENSIVE ANALYSIS OF A SWING IN SPORTS USING LOW-COST INERTIAL SENSORS
Amin Ahmadi, Francois Destelle, David Monaghan, Noel E. O'Connor, Chris Richter, Kieran Moran
Dublin City University, Ireland

17:45
DYNAMIC ACCURACY ASSESSMENT OF DATA--FUSION TECHNIQUES FOR WEARABLE, INERTIAL AND MAGNETIC BASED HUMAN MOTION CAPTURE
Luca Ricci, Domenico Formica
Campus Biomedico Roma, Italy

16:30 - 17:45
C4L-E: TEMPERATURE AND HUMIDITY SENSORS
Rooms 1 & 2
Session Chair: Deepak Uttamchandani (University of Strathclyde, UK)

16:30
MICROMECHANICAL RELATIVE HUMIDITY SENSOR BASED ON EPITAXIAL SILICON CANTILEVERS
Jian-Qiu Huang, Dong-Ping Zhu, Wen-Hao Chen, Meng Nie
Southeast University, China

16:45
SCREEN PRINTED CHIPLESS WIRELESS TEMPERATURE SENSOR TAG BASED ON BARIUM STRONTIUM TITANATE THICK FILM CAPACITOR
Martin Schüßler[2], Christian Kohler[1], Alex Wiens[2], Bernd Kubina[2], Christian Mandel[2], Andreas Friedrich[1], Joachim Binder[1], Rolf Jakoby[2]
[1]Karlsruher Institut für Technologie, Germany; [2]Technische Universität Darmstadt, Germany

17:00
PRINTED WEARABLE TEMPERATURE SENSOR FOR HEALTH MONITORING
Wataru Honda, Shingo Harada, Takayuki Arie, Seiji Akita, Kuniharu Takei
Osaka Prefecture University, Japan

17:15
SENSITIVE HUMIDITY MICRO-SWITCH BASED ON POLYMERS
Christian Bellmann[3], Reza Sarwar[2], Arndt Steinke[1], Thomas Frank[1], Helmut F. Schlaak[2], Gerald Gerlach[3]
[1]CIS Forschungsinstitut für Mikrosensorik und Photovoltaik GmbH, Germany; [2]Technische Universität Darmstadt, Germany; [3]Technische Universität Dresden, Germany

17:30
INKJET PRINTED DIFFERENTIAL MODE TOUCH AND HUMIDITY SENSORS ON INJECTION MOLDED POLYMER PACKAGES
Vladimir Matic[1], Laura Liedtke[1], Thomas Guenther[1], André Buelau[1], Annemarie Ilchmann[1], Jürgen Keck[1], Bernhard Polzinger[1], Wolfgang Eberhardt[1], Heinz Kueck[2]
[1]Mikroaufbautechnik am HSG-IMAT, Germany; [2]Universität Stuttgart, Germany

---

16:30 - 18:00
C4L-F: WEARABLES
Rooms 3 & 4
Session Chair: Unmesh Ghoshdastider (University off Duisburg-Essen, Germany)

16:30
ESTIMATION OF SPINAL SHAPE PROFILES IN MOTION USING ACCELEROMETERS
Shiho Washizawa, Yasuyuki Nakata, Daisuke Uchida, Kazuho Maeda, Akihiro Inomata, Yoshinori Yaginuma
Fujitsu Laboratories Ltd., Japan

16:45
OPEN AND LOW POWER NEAR FIELD COMMUNICATION BASED PLATFORM IN HEALTHCARE APPLICATIONS
Gabriele Rescio, Alessandro Leone, Giovanni Montagna, Pietro Siciliano
Consiglio Nazionale delle Ricerche, Italy

17:00
WEARABLE SENSOR NETWORKS SUPPORTED BY MOBILE DEVICES FOR FALL DETECTION
Ricardo Freitas[1], Miguel Terroso[1&3], Marco Marques[1], Joaquim Gabriel[3], Antonio Torres Marques[3], Ricardo Simoes[1&2]
[1]Instituto Politecnico do Cavado e do Ave, Portugal; [2]Universidade do Minho, Portugal [3]Universidade do Porto, Portugal;

17:15
WIRELESS TIME SYNCHRONIZATION OF A COLLABORATIVE BRAIN-COMPUTER-INTERFACE USING BLUETOOTH LOW ENERGY
Unmesh Ghoshdastider, Reinhard Viga, Michael Kraft
Universität Duisburg-Essen, Germany

17:30
ACUTE MYOCARDIAL INFARCTION DETECTION SYSTEM USING ECG SIGNAL AND CARDIAC MARKER DETECTION
Jihoon Lee, Jaehyo Jung, Jihwan Lee, Youn Tae Kim
Chosun University, Korea, South

17:45
DEVICE-FREE HUMAN PRESENCE DETECTION USING FREQUENCY DOMAIN
Bojan Mrazovac[2], Branislav M. Todorovic[1], Dragan Kukolj[2], Miodrag Temerinac[2]
[1]RT-RK Institute for Computer Based Systems, Serbia; [2]University of Novi Sad, Serbia