# 2017 IEEE SENSORS

## Glasgow, United Kingdom
## 29 October – 1 November 2017

## Pages 1140-1711

**IEEE Catalog Number:** CFP17SEN-POD
**ISBN:** 978-1-5090-1013-4

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| | |
|---|---|
| IEEE Catalog Number: | CFP17SEN-POD |
| ISBN (Print-On-Demand): | 978-1-5090-1013-4 |
| ISBN (Online): | 978-1-5090-1012-7 |
| ISSN: | 1930-0395 |

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*Pierre-Antoine Meignen, Emmanuel Le Clézio, Thomas Delaunay, Gilles Despaux*
*University of Montpellier / CNRS, France*

**5:00**
**MONOLITHIC PHOTONIC CRYSTAL FIBER ACOUSTIC SENSOR** ..... ***1113***
*Yu-Po Wong, Olav Solgaard*
*Stanford University, United States*

**5:15**
**WEARABLE SYSTEM FOR MEASUREMENT OF THORACIC SOUNDS WITH A MICROPHONE ARRAY** ..... *1116*
*Jens Kirchner, Sara Souilem, Georg Fischer*
*Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany*

**4:00 PM - 5:30 PM**
**B3L-B: Chemical Sensing in Liquids**
**LOCATION: Dochart**
**SESSION CHAIR:**
**Giuseppe Barillaro, University of Pisa**

**4:00**
**HYBRID AMPEROMETRIC AND POTENTIOMETRIC SENSING BASED ON A CMOS ISFET ARRAY** ..... *1119*
*Christos Giagkoulovits, Mohammed A. Al-Rawhani, Boon Chong Cheah, Christopher Martin, Christoph Busche, Leroy Cronin, David R.S. Cumming*
*University of Glasgow, United Kingdom*

**4:30**
**PHOTOELECTROCHEMICAL NITRATE SENSOR UTILIZING CU/PD NANOPARTICLES ON TIO2-NANOPARTICLES CARRIER - COMBINATION OF CATALYTIC AND PHOTOCATALYTIC MECHANISM** ..... *1122*
*Rita Siris, Jamila Boudaden, Armin Klumpp*
*Fraunhofer-Einrichtung für Mikrosysteme und Festkörper-Technologien, Germany*

**4:45**
**HIGH PERFORMANCE EXTENDED GATE FIELD EFFECT TRANSISTOR-BASED PESTICIDE SENSING SYSTEM WITH A PLANAR MICROREFERENCE ELECTRODE** ..... *1125*
*Chia-Hsu Hsieh{2}, Le-Quyen Ly{2}, Guan-Jie Su{2}, Yu-Cheng Lin{1}, I-Yu Huang{2}*
*{1}National Cheng Kung University, Taiwan; {2}National Sun Yat-sen University, Taiwan*

**5:00**
**PENCIL-DRAWN CHEMIRESISTIVE SENSOR FOR FREE CHLORINE IN WATER**
*Aditya Aryasomayajula, Enamul Hoque, Leo H. H. Hsu, Peter Kruse, Ravi Selvaganapathy*
*McMaster University, Canada*

**5:15**
**ACOUSTIC MODAL ANALYSIS OF RESONANT PHOTOACOUSTIC SPECTROSCOPY WITH DUAL-WAVELENGTH DIFFERENTIAL DETECTION FOR NONINVASIVE GLUCOSE MONITORING**
*Yujiro Tanaka, Takurou Tajima, Michiko Seyama*
*NTT Device Technology Labs / NTT Corporation, Japan*

**4:00 PM - 5:30 PM**
**B3L-C: Optical Sensors and Interrogation Techniques I**
**LOCATION: Lomond Auditorium**
**SESSION CHAIRS:**
**Carlos Ruiz Zamarreño, Public University of Navarra; Ralf Bauer, University of Strathclyde**

**4:00**
**DESIGN OF A 2D MEMS MICROMIRROR WITH INDIRECT STATIC ACTUATION** ..... ***1128***
*Philip Kaupmann{2}, Stefan Pinter{2}, Jochen Franz{2}, Reinhard Streiter{3}, Thomas Otto{1}*
*{1}Fraunhofer-Institut für Elektronische Nanosysteme / Technische Universität Chemnitz, Germany; {2}Robert Bosch GmbH, Germany; {3}Technische Universität Chemnitz, Germany*

**4:15**
**MICROFABRICATED SINGLE-LENS SHACK-HARTMANN LIGHT ANGLE SENSOR** ..... ***1131***
*Fariha Khan, Aishwaryadev Banerjee, Mehedy Hasan, Hanseup Kim, Carlos H. Mastrangelo*
*University of Utah, United States*

**4:30**
**OPTICAL FEEDBACK INTERFEROMETRY FOR RASTER SCAN PROFILOMETRY** ..... ***1134***
*Bastien Grimaldi{1}, Antonio Luna Arriaga{1}, Francis Bony{1}, Clement Tronche{2}, Julien Perchoux{2}*
*{1}LAAS-CNRS, France; {2}Université de Toulouse / LAAS - CNRS, France*

**4:45**
**EFFECT OF CELL SIZE ON AMBIENT LIGHT REJECTION IN SIPM-BASED TIME-OF-FLIGHT RANGE SENSORS** ..... ***1137***
*Andrea Ficorella{2}, Lucio Pancheri{2}, Fabio Acerbi{1}, Claudio Piemonte{1}*
*{1}Fondazione Bruno Kessler, Italy; {2}Università degli Studi di Trento, Italy*

**5:00**
**HIGH-EFFICIENCY AND LOW DARK CURRENT CRYSTALLINE SELENIUM-BASED HETEROJUNCTION PHOTODIODE WITH A HIGH-QUALITY TELLURIUM NUCLEATION LAYER** ..... ***1140***
*Shigeyuki Imura, Keitada Mineo, Kazunori Miyakawa, Masakazu Namba, Hiroshi Ohtake, Misao Kubota*
*NHK Science & Technology Research Laboratories, Japan*

**5:15**
**TEMPERATURE EFFECTS UPON A MULTICORE OPTICAL FIBRE CURVATURE SENSOR** ..... ***1143***
*Nikolitsa Papachristou, Jonathan Morton, Richard M. Carter, Robert R. J. Maier, WilliamN. MacPherson*
*Heriot-Watt University, United Kingdom*

**4:00 PM - 5:30 PM**
**B3L-D: Data Acquisition and Processing**
**LOCATION: Alsh**
**SESSION CHAIRS:**
**Silvio Montresor, Université du Maine; Ahrabian Alireza, University of Surrey**

**4:00**
**AN IMPROVED 6D POSE DETECTION METHOD BASED ON MULTIPLE MAGNETS TRACKING** ..... ***1146***
*Shuang Song{2}, Xiaoxiao Qiu{2}, Max Q.-H Meng{1}*
*{1}Chinese University of Hong Kong, China; {2}Harbin Institute of Technology, China*

**4:15**
**PROCESSING OF DIGITAL HOLOGRAMS WITH 2D WINDOWED FOURIER TRANSFORM: STUDY, PERFORMANCE ANALYSIS AND GPU IMPLEMENTATION** ..... ***1149***
*Silvio Montrésor, Florent Carlier, Pascal Picart*
*Université du Maine, France*

**4:30**
**DETECTING CHANGES IN THE VARIANCE OF MULTI-SENSORY ACCELEROMETER DATA USING MCMC** ..... ***1152***
*Alireza Ahrabian, Tarek Elsaleh, Yasmin Fathy, Payam Barnaghi*
*University of Surrey, United Kingdom*

**4:45**
**FUSION OF THERMAL IMAGERY AND LIDAR DATA FOR GENERATING TBIM MODELS** ..... ***1155***
*Antonio Adán, Tomas Prado, Samuel Prieto, Blanca Quintana*
*Universidad de Castilla-La Mancha, Spain*

**5:00**
**AN ANALYTIC ALGORITHM BASED POSITION AND ORIENTATION DETECTION USING A TRI-AXIAL MAGNETORESISTIVE SENSOR** ..... ***1158***
*Xianping Zeng{1}, Shuang Song{2}, Junsheng Wang{1}, Houde Dai{1}, Shijian Su{1}*
*{1}Chinese Academy of Sciences, China; {2}Harbin Institute of Technology, China*

**5:15**
**AN "INTERNET OF EARS" FOR CROWD-AWARE SMART BUILDINGS BASED ON SPARSE SENSOR NETWORKS** ..... ***1161***
*Xinyao Tang, Ming-Chun Huang, Soumyajit Mandal*
*Case Western Reserve University, United States*

**4:00 PM - 5:30 PM**
**B3L-E: Sensor Technologies for Robotics, Localization, and Scene Understanding**
**LOCATION: Boisdale 1**
**SESSION CHAIRS:**
**Robert Roberts, The University of Hong Kong; Hua Wang Georgia Institute of Technology**

**4:00**
**SENSORS FOR SAFE, COLLABORATIVE ROBOTS IN SMART MANUFACTURING** ..... ***1164***
*Jeremy Marvel*
*National Institute of Standards and Technology, United States*

**4:30**
**APPLICATION OF AN OFF-THE-SHELF FIBER OPTIC GYROSCOPE BASED INERTIAL MEASUREMENT UNIT FOR ATTITUDE AND HEADING ESTIMATION** ..... ***1167***
*Alexander Albrecht, Janko Petereit*
*Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung, Germany*

**4:45**
**MORPHORIDER: ACQUISITION AND RECONSTRUCTION OF 3D CURVES WITH MOBILE SENSORS** ..... **1170**
*Tibor Stanko{1}, Nathalie Saguin-Sprynski{1}, Laurent Jouanet{1}, Stefanie Hahmann{2}, Georges-Pierre Bonneau{2}*
*{1}Commissariat à l'Energie Atomique et aux Energies Alternatives / Université Grenoble Alpes, France; {2}Institut National de Recherche en Informatique et Automatique, France*

**5:00**
**SENSOR DATA FUSION OF LIDAR WITH STEREO RGB-D CAMERA FOR OBJECT TRACKING** ..... ***1173***
*Thomas Dieterle, Florian Particke, Lucila Patino-Studencki, Jörn Thielecke*
*Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany*

**5:15**
**AUTONOMOUS QUADROTOR TERRAIN-FOLLOWING WITH A LASER RANGEFINDER AND GIMBAL SYSTEM** ..... ***1176***
*Matthew Clark{1}, Robert C. Roberts{2}*
*{1}Corvidae Technology (HK) Limited, Hong Kong; {2}University of Hong Kong, Hong Kong*

**4:00 PM - 5:30 PM**
**B3L-F: Physical Sensors I**
**LOCATION: Boisdale 2**
**SESSION CHAIRS:**
**Jens Anders, University of Ulm**

**4:00**
**PASSIVE CHIPLESS WIRELESS PRESSURE SENSOR BASED ON DIELECTRIC RESONATORS** ..... ***1179***
*Christian Schuster, Peter Schumacher, Martin Schüßler, Alejandro Jiménez-Sáez, Rolf Jakoby*
*Technische Universität Darmstadt, Germany*

**4:15**
**GMI LOW FREQUENCY NOISE CHARACTERIZATION VERSUS WIRE DIAMETERS** ..... ***1182***
*Alexandre Esper{2}, Elodie Portalier{2}, Basile Dufay{2}, Christophe Dolabdjian{2}, Sorin Corodeanu{1}, H. Chiriac{1}*
*{1}National Authority for Scientific Research and Innovation, France; {2}Université de Caen Normandie, France*

**4:30**
**MESOPOROUS TITANIA-COATED LOVE WAVE SENSORS AND FEM MODEL APPLIED TO VISCOSITY MICRO-MEASUREMENTS** ..... ***1185***
*Ollivier Tamarin{3}, Wassim Ouelhazi{1}, Jean-Luc Lachaud{1}, Hamida Hallil{3}, Vincent Raimbault{4}, Cedric Boissière{5}, Marie Paule Bonnet{2}, Dominique Rebière{3}, Corinne Dejous{3}*
*{1}IMS Bordeaux, France; {2}IRD Montpellier, France; {3}Université de Bordeaux, France; {4}Université de Toulouse / LAAS - CNRS, France; {5}Université Pierre et Marie Curie/CNRS/LCMCP, France*

**4:45**
**LOW-POWER AND HIGH-SENSITIVITY SYSTEM-ON-CHIP HALL EFFECT SENSOR**.....*1188*
*Bin Liu, Yongshun Sun, Yinjie Ding, Patrick Cao, Aaron Liu, Shiang Yang Ong, Michael Tiong, Gong Cheng, Mohd Nurul Islam, Ruchil Jain, Tam Lyn Tan, Elgin Quek, Eng-Huat Toh*
*GLOBALFOUNDRIES Singapore Pte, Ltd, Singapore*

**5:00**
**A DENSITY AND VISCOSITY SENSOR UTILIZING A LEVITATED SPHERE**.....*1191*
*Dominik Breuer, Stefan Clara, Friedrich Feichtinger, Bernhard Jakoby*
*Johannes Kepler Universität Linz, Austria*

**5:15**
**GRAPHENE NANOPLATELETS-BASED SMART TEXTILE FOR KINESTHETIC MONITORING**.....*1194*
*Andrea Rinaldi, Alessio Tamburrano, Maria Sabrina Sarto*
*Sapienza – Università di Roma, Italy*

**10:30 AM - 12:00 PM**
**C1L-A: Near-Zero Power Sensor Systems**
**LOCATION: Carron**
**SESSION CHAIRS:**
**Matteo Rinaldi, Northeastern University; Benjamin Griffin, Sandia National Laboratories**

**10:30**
**SPECIAL-PURPOSE OPTICS TO REDUCE POWER DISSIPATION IN COMPUTATIONAL SENSING AND IMAGING SYSTEMS** ..... ***1197***
*David G. Stork, Patrick R. Gill*
*Rambus Labs, United States*

**11:00**
**THRESHOLD SCALING OF NEAR-ZERO POWER MICROMECHANICAL PHOTOSWITCHES USING BIAS VOLTAGE** ..... ***1200***
*Vageeswar Rajaram, Zhenyun Qian, Sungho Kang, Nicol McGruer, Matteo Rinaldi*
*Northeastern University, United States*

**11:15**
**NEAR-ZERO POWER ACCELEROMETER WAKEUP SYSTEM** ..... ***1203***
*Robert Reger, Bryson Barney, Sean Yen, Michael Satches, Michael Wiwi, Andrew Young, Matthew Delaney, Benjamin Griffin*
*Sandia National Laboratories, United States*

**11:30**
**NANO-GAP VAPOR SENSOR** ..... ***1206***
*Chayanjit Ghosh, Shakir-Ul Khan, Samuel Broadbent, Hao-Chieh Hsieh, Seungbeom Noh, Aishwaryadev Banerjee, Navid Farhoudi, Carlos H. Mastrangelo, Ryan Looper, Hanseup Kim*
*University of Utah, United States*

**11:45**
**A 113 PW FULLY INTEGRATED CMOS TEMPERATURE SENSOR OPERATING AT 0.5 V** ..... ***1209***
*Hui Wang, Patrick Mercier*
*University of California, San Diego, United States*

**10:30 AM - 12:00 PM**
**C1L-B: Chemical Sensing in Gas and Vapours I**
**LOCATION: Dochart**
**SESSION CHAIRS:**
**Julian Gardner, Warwick University; Alton Horsfall, Newcastle University**

**10:30**
**SELF-POWERED HUMIDITY SENSOR BASED ON TRIBOELECTRIC NANOGENERATOR** ..... ***1212***
*Yuanjie Su, Guangzhong Xie, Si Wang, Huiling Tai, Qiuping Zhang, Hongfei Du, Xiaosong Du, Yadong Jiang*
*University of Electronic Science and Technology of China, China*

**10:45**
**CAPACITIVE MICROWAVE SENSOR FOR TOXIC VAPOR DETECTION IN POLLUTED ENVIRONMENTS** ..... *1215*
*Prince Bahoumina{3}, Hamida Hallil{3}, Katrin Pieper{3}, Jean-Luc Lachaud{1}, Dominique Rebière{3}, Corinne Dejous{3}, Aymen Abdelghani{5}, Kamel Frigui{5}, Stephane Bila{5}, Dominique Baillargeat{5}, Qing Zhang{2}, Philippe Coquet{6}, E. Pichonat{4}, H.*
*{1}IMS Bordeaux, France; {2}Nanyang Technological University, Singapore; {3}Université de Bordeaux, France; {4}Université de Lille, France; {5}Université de Limoges, France; {6}Université Lille 1 / Nanyang Technological University / CINTRA, Singapore*

**11:00**
**CONDUCTING POLYMER NANOWIRES VOLATILE ORGANIC COMPOUNDS SENSOR ARRAY FABRICATED BY SOFT LITHOGRAPHY** ..... *1218*
*Ning Tang, Yang Jiang, Hemi Qu, Yanyan Wang, Xuexin Duan*
*Tianjin University, China*

**11:15**
**IDENTIFICATION OF H2S IMPURITY IN HYDROGEN USING TEMPERATURE MODULATED METAL OXIDE RESISTIVE SENSORS WITH A NOVEL SIGNAL PROCESSING TECHNIQUE**
*Julian Gardner, Barbara Urasinska-Wojcik*
*University of Warwick, United Kingdom*

**11:30**
**TWO DIMENSIONAL TUNGSTEN OXIDE NANOSHEETS WITH UNPRECEDENTED SELECTIVITY AND SENSITIVITY TO NO2** ..... *1221*
*Hareem Khan, Ali Zavabeti, Jian Zhen Ou, Torben Daeneke, Yongxiang Li, Kourosh Kalantar-Zadeh*
*RMIT University, Australia*

**11:45**
**AN INNOVATIVE APPROACH TO OVERCOME SATURATION AND RECOVERY ISSUES OF CVD GRAPHENE-BASED GAS SENSORS** ..... *1224*
*Filiberto Ricciardella{2}, Sten Vollebregt{2}, Tiziana Polichetti{1}, Brigida Alfano{1}, Ettore Massera{1}, Pasqualina Maria Sarro{2}*
*{1}ENEA, Italy; {2}Technische Universiteit Delft, Netherlands*

**10:30 AM - 12:00 PM**
**C1L-C: Optical Sensors and Interrogation Techniques II**
**LOCATION: Lomond Auditorium**
**SESSION CHAIRS:**
**Patricia Scully, University of Manchester; Huikai Xie; University of Florida**

**10:30**
**COMPARISON OF PHOTOACOUSTIC AND WAVELENGTH MODULATION SPECTROSCOPY IN A 3D-PRINTED RESONANT GAS CELL** ..... *1227*
*Oscar Elías Bonilla-Manrique, Pedro Martín-Mateos, Pablo Acedo, Marta Ruiz-Llata*
*Universidad Carlos III de Madrid, Spain*

**10:30 AM - 12:00 PM**
**C1L-D: Emerging Medical Sensors Utilizing Electromagnetics & RF Technologies**
**LOCATION: Alsh**
**SESSION CHAIRS:**
**J.-C. Chiao, University of Texas – Arlington; Hung Cao, University of Washington - Bothell**

**11:15**
**SMART T-SHIRT WITH WIRELESS RESPIRATION SENSOR** ..... *1251*
*Stepan Gorgutsa, Simon Bellemare-Rousseau, Philippe Guay, Amine Miled, Younès Messaddeq*
*Université Laval, Canada*

**11:30**
**A CMOS RADIO FREQUENCY BIOSENSOR FOR RAPID DETECTION AND SCREENING OF SPUTUM-MUCIN VISCOSITY** ..... *1254*
*Subhajit Guha{2}, Katrin Ramaker{1}, Thorsten Krause{1}, Christian Wenger{2}*
*{1}Forschungszentrum Borstel, Germany; {2}Leibniz-Institut für innovative Mikroelektronik, Germany*

**11:45**
**PASSIVE NANOTECHNOLOGY BASED SENSORS FOR THE REMOTE DETECTION OF ENVIRONMENTAL POLLUTANTS IMPACTING PUBLIC HEALTH** ..... *1257*
*Krishna Naishadham{3}, Elena Bekyarova{1}, Patrizia Savi{2}*
*{1}Carbon Solutions, Inc., United States; {2}Politecnico di Torino, Italy; {3}Wi-Sense, United States*

**10:30 AM - 12:00 PM**
**C1L-E: Advanced Sensors for Environmental and Biomedical Monitoring**
**LOCATION: Boisdale 1**
**SESSION CHAIRS:**
**Robert Roberts, The University of Hong Kong; Paddy French, Delft University of Technology**

**10:30**
**AGE-SENSITIVE DIFFERENCES IN SINGLE AND DUAL WALKING TASKS FROM FOOTPRINT FLOOR SENSOR DATA** ..... *1260*
*Omar Costilla-Reyes, Patricia J Scully, Krikor Ozanyan*
*University of Manchester, United Kingdom*

**10:45**
**STRETCHABLE PH SENSING PATCH IN A HYBRID PACKAGE** ..... *1263*
*Wenting Dang{3}, Libu Manjakkal{3}, Leandro Lorenzelli{1}, Vincenzo Vinciguerra{2}, Ravinder Dahiya{3}*
*{1}Fondazione Bruno Kessler, Italy; {2}STMicroelectronics, Italy; {3}University of Glasgow, United Kingdom*

**11:00**
**ULTRA-THIN RELATIVE HUMIDITY SENSORS FOR HYBRID SYSTEM-IN-FOIL APPLICATIONS** ..... *1266*
*Mourad Elsobky{1}, Björn Albrecht{1}, Harald Richter{1}, Joachim Burghartz{1}, Pirmin Ganter{2}, Katalin Szendrei{2}, Bettina Lotsch{2}*
*{1}Institut für Mikroelektronik Stuttgart, Germany; {2}Max-Planck-Institut für Festkörperforschung, Germany*

**11:15**
**TOWARDS A WEARABLE PERSPIRATION SENSOR** ..... *1269*
*Murat Yokus, Cheyanne Hass, Talha Agcayazi, Alper Bozkurt, Michael Daniele*
*North Carolina State University, United States*

**11:30**
**THREE-DIMENSIONAL PRINTED INSULATION FOR DYNAMIC THERMOELECTRIC HARVESTERS WITH ENCAPSULATED PHASE CHANGE MATERIALS**
*Michail Kiziroglou{2}, Thomas Becker{1}, Steven Wright{3}, Eric Yeatman{3}, James Evans{4}, Paul Wright{4}*
*{1}Airbus Group Innovations, Germany; {2}ATEI Thessaloniki, Greece; {3}Imperial College London, United Kingdom; {4}University of California, Berkeley, United States*

**11:45**
**HOUSING DESIGN FOR TWO-DIMENSIONAL AIR FLOW SENSORS** ..... ***1272***
*Reiner Jedermann, Nico Hartgenbusch, Mykhailo Borysov, Walter Lang*
*Universität Bremen, Germany*

**10:30 AM - 12:00 PM**
**C1L-F: Microfluidic & Biosensors I**
**LOCATION: Boisdale 2**
**SESSION CHAIRS:**
**Hua Wang, Georgia Institute of Technology; Wen Li, Michigan State University**

**10:30**
**MICROFLUIDIC PLANT, SOIL AND NEMATODE ASSAY CHIPS FOR HIGH-THROUGHPUT PLANT PHENOTYPING AND SUSTAINABLE AGRICULTURAL MANAGEMENT** ..... ***1275***
*Liang Dong*
*Iowa State University, United States*

**11:00**
**DETECTION OF FOOD DECAY PRODUCTS USING FUNCTIONALIZED ONE-DIMENSIONAL TITANIA NANOTUBULAR ARRAYS**
*Pankaj Kumar, Swomitra K. Mohanty, S. Guruswamy, York R. Smith, Mano Misra*
*University of Utah, United States*

**11:15**
**SALIVA BASED NONINVASIVE OPTICAL UREA BIOSENSOR** ..... ***1278***
*Anuradha Soni, Sandeep Jha*
*Indian Institute of Technology Delhi, India*

**11:30**
**HUMAN IGM DETECTION USING AN OPTICAL FIBRE LONG PERIOD GRATING SENSOR** ..... ***1281***
*Liangliang Liu{2}, Leonel Marques{2}, Ricardo Correia{2}, Stephen Morgan{2}, Seung-Woo Lee{1}, Paddy Tighe{2}, Lucy Fairclough{2}, Serhiy Korposh{2}*
*{1}University of Kitakyushu, Japan; {2}University of Nottingham, United Kingdom*

**11:45**
**POROUS SILICON INTERFEROMETERS FOR HIGH-SENSITIVITY LABEL-FREE DETECTION OF BIOMOLECULES** ..... ***1284***
*Stefano Mariani{2}, Lucanos Strambini{3}, Lorena Tedeschi{1}, Giuseppe Barillaro{2}*
*{1}Consiglio Nazionale delle Ricerche, Italy; {2}Università di Pisa, Italy; {3}Università di Pisa / IEIIT/ Consiglio Nazionale delle Ricerche, Italy*

**1:30 PM – 3:30 PM**
**C2P-G: Chemical, Electrochemical, and Gas Sensors**
**LOCATION: Hall 5**
**SESSION CHAIRS:**
**Giuseppe Barillaro, University of Pisa Sergiy; Korposh, University of Nottingham**

**1:30 PM – 3:30 PM**
**C2P-H: Microfluidic & Biosensors-III**
**LOCATION: Hall 5**
**SESSION CHAIRS:**
**Leandro Lorenzelli, Fondazione Bruno Kessler**; **Md Adbul Kafi, University of Glasgow**

**1:30 PM – 3:30 PM**
**C2P-J: Optical Sensors and Systems II**
**LOCATION: Hall 5**
**SESSION CHAIRS:**
**Pawel Niewczas, University of Strathclyde; Ambarish Paul, University of Glasgow**

**1:30 PM - 3:30 PM**
**C2PK: Acoustics and Ultrasonic Sensors**
**LOCATION: Hall 5**
**SESSION CHAIRS:**
**Sevan Harput, Imperial College; Matteo Rinaldi, Northeastern University**

**1:00 PM - 3:00 PM**
**C2P-L: Sensors for Smart Living II**
**LOCATION: Hall 5**
**SESSION CHAIRS:**
**Jurgen Kosel, KAUST; Majeed Soufian, Edinburgh Napier University**

**1:30 PM - 3:30 PM**
**C2P-M: Low Power Sensor Systems**
**LOCATION: Hall 5**
**SESSION CHAIRS:**
**David Cowell, University of Leeds; Matteo Rinaldi, Northeastern University**

**1:30 PM - 3:30 PM**
**C2P-M: Sensing the Brain**
**LOCATION: Hall 5**
**SESSION CHAIR:**
**Walter Besio, University of Rhode Island; Mike McShane, Texas A&M University**



**4:00 PM - 5:30 PM**
**C3L-A: Piezoelectric-based Sensors and Near-Zero Power Systems**
**LOCATION: Carron**
**SESSION CHAIRS:**
**Benjamin Griffin, Sandia National Laboratories; Matteo Rinaldi, Northeastern University**

**4:15**
**ULTRA-LOW-POWER AND HIGH SENSITIVITY RESONANT MICROMECHANICAL RECEIVER** ..... ***1614***
*Luca Colombo, Mary Beth Galanko, Hoda Abdelsalam, Abhay Kochhar, Gabriel Vidal-Álvarez, Tamal Mukherjee, Jeyanandh Paramesh, Jeffrey Weldon, Gary K. Fedder, Gianluca Piazza*
*Carnegie Mellon University, United States*

**4:30**
**A PASSIVE 461 MHZ ALN-CMOS RF FRONT-END FOR EVENT-DRIVEN WAKEUP RECEIVERS** ..... ***1617***
*Pouyan Bassirian{2}, Jesse Moody{2}, Anming Gao{1}, Tomas Manzaneque{1}, Benton Calhoun{2}, Scott Barker{2}, Songbin Gong{1}, Steven Bowers{2}*
*{1}University of Illinois at Urbana Champaign, United States; {2}University of Virginia, United States*

**4:45**
**PZT LATERAL BIMORPH BASED SENSOR CUBOID FOR NEAR ZERO POWER SENSOR NODES** ..... ***1620***
*Visarute Pinrod, Alexander Ruyack, Robin Ying, Benyamin Davaji, Alyosha Molnar, Amit Lal*
*Cornell University, United States*

**5:00**
**ULTRASENSITIVE MICROMACHINED BULK ACOUSTIC WAVE RESONATORS BASED VACUUM GAUGES AND THEIR OPTIMIZATION** ..... ***1623***
*Nishit Goel{2}, Stephen Bart{1}, Srinivas Tadigadapa{2}*
*{1}MKS Instruments, Inc., United States; {2}Pennsylvania State University, United States*

**5:15**
**FLEXURAL PLATE WAVE SENSORS WITH BURIED IDT FOR SENSING IN LIQUIDS** ..... ***1626***
*Markus Reusch{2}, Katarzyna Holc{2}, Agnė žukauskaitė{2}, Vadim Lebedev{2}, Nicolas Kurz{1}, Oliver Ambacher{1}*
*{1}Albert-Ludwigs-Universität Freiburg, Germany; {2}Fraunhofer-Institut für Angewandte Festkörperphysik, Germany*

**4:00 PM - 5:30 PM**
**C3L-B: Chemical Sensing in Gas and Vapours II**
**LOCATION: Dochart**
**SESSION CHAIR:**
**Camilla Baratto, University of Brescia; Kourosh Kalantar-zadeh, RMIT University**

**4:00**
**PT-ALGAN/GAN HEMT-SENSOR LAYOUT OPTIMIZATION FOR ENHANCEMENT OF HYDROGEN DETECTION** ..... ***1629***
*Robert Sokolovskij{3}, Elina Iervolino{1}, Changhui Zhao{1}, Fei Wang{1}, Hongyu Yu{1}, Fabio Santagata{2}, Pasqualina Maria Sarro{2}, Guo Qi Zhang{2}*
*{1}Southern University of Science and Technology, China; {2}Technische Universiteit Delft, Netherlands; {3}Technische Universiteit Delft / Southern University of Science and Technology, China*

**4:15**
**SOLVENT SENSING FOR EXTREME ENVIRONMENTS** ..... ***N/A***
*Ryan Siddall, Michael Varey, Nick Wright, Alton Horsfall*
*Newcastle University, United Kingdom*

**4:30**
**WINE FERMENTATION SENSOR BASED ON PIEZOELECTRIC RESONATORS** ..... ***1635***
*Javier Toledo{2}, Víctor Ruiz-Díez{2}, José Luis Sánchez-Rojas{2}, Georg Pfusterschmied{1}, Michael Schneider{1}, Ulrich Schmid{1}*
*{1}Technische Universität Wien, Austria; {2}Universidad de Castilla-La Mancha, Spain*

**4:45**
**LOCALIZED SURFACE PLASMON RESONANCE MODIFIED WITH MOLECULARLY IMPRINTED SOL-GEL SENSOR FOR CIS-JASMONE VAPOR DETECTION** ..... ***1638***
*Liang Shang, Chuanjun Liu, Kenshi Hayashi*
*Kyushu University, Japan*

**5:00**
**HIGHLY SENSITIVE ETHANOL VAPOUR MEASUREMENTS USING A FIBRE OPTIC SENSOR COATED WITH METAL ORGANIC FRAMEWORK ZIF-8** ..... ***1641***
*Jiri Hromadka, Begum Tokay, Ricardo Correia, Stephen Morgan, Sergiy Korposh*
*University of Nottingham, United Kingdom*

**5:15**
**A LOW-COST VERSATILE FLUORESCENCE QUENCHING DETECTION SYSTEM FOR LIQUID- AND VAPOR-PHASE SENSING** ..... ***1644***
*Nico Bolse, Robert Huber, Anne Habermehl, Ralph Eckstein, Gerardo Hernandez-Sosa, Adrian Mertens, Carsten Eschenbaum, Uli Lemmer*
*Karlsruher Institut für Technologie, Germany*

**4:00 PM - 5:30 PM**
**C3L-C: Sensors for Smart Living I**
**LOCATION: Lomond Auditorium**
**SESSION CHAIR:**
**Majeed Soufian, Edinburgh Napier University; Jurgen Kosel, KAUST**

**4:00**
**DEMOCRATIZED ELECTRONICS TO ENABLE SMART LIVING FOR ALL** ..... ***1647***
*Muhammad Hussain, Joanna Nassar, Sherjeel Khan, Sohail Saikh, Galo Torres Sevilla, Arwa Kutbee, Rabab Bahabry, Wedyan Babatain, Amani Muslem, Maha Nour, Irmandy Wicaksono, Kush Mishra*
*King Abdullah University of Science and Technology, Saudi Arabia; King Abdullah University of Science and Technology, United States*

**4:00 PM - 5:30 PM**
**C3L-D: Systems and Techniques for Brain Monitoring**
**LOCATION: Alsh**
**SESSION CHAIRS:**
**Mike McShane, Texas A&M University; Walter Besio, University of Rhode Island**

**5:15**
**HUMAN BRAIN AUDITORY ACTIVITY OBSERVATION USING ELECTRICAL CAPACITANCE VOLUME TOMOGRAPHY** ..... ***1670***
*Fianti Femmilia Darmawan{2}, Dhany Arifianto{2}, Mahfudz Al Huda{1}, Warsito P Taruno{1}*
*{1}CTech Labs Edwar Technology, Indonesia; {2}Institut Teknologi Sepuluh Nopember, Indonesia*

**5:30**
**FLEXIBLE CW-FNIRS SYSTEM BASED ON SILICON PHOTOMULTIPLIERS: IN-VIVO CHARACTERIZATION OF SENSORIMOTOR RESPONSE** ..... ***1673***
*Antonio Maria Chiarelli{3}, Filippo Zappasodi{3}, Francesco Di Pompeo{3}, Arcangelo Merla{3}, Massimo Mazzillo{2}, Giorgio Fallica{2}, Sebania Libertino{1}, Salvatore Lombardo{1}*
*{1}Consiglio Nazionale delle Ricerche, Italy; {2}STMicroelectronics, Italy; {3}Università degli Studi 'G. d'Annunzio' Chieti-Pescara, Italy*

**4:00 PM - 5:30 PM**
**C3L-E: Sensors Applications for Online Process Monitoring**
**LOCATION: Boisdale 1**
**SESSION CHAIRS:**
**Duncan Bremner, University of Glasgow; Ashish Pandharipande, Philips Research**

**4:00**
**IN-LINE SENSOR FOR THE MEASUREMENT OF STEAM QUALITY USING NIR ABSORPTION** ..... ***1676***
*Alexandre Leclerc{1}, Yasuaki Matsugi{1}, Yasuhiro Gosho{1}, Mitchell Kane{2}, Jeremy Miller{2}*
*{1}Azbil Corporation, Japan; {2}Spirax Sarco, United Kingdom*

**4:15**
**ON-LINE SENSING OF THE INTERLACING PROCESS** ..... ***1679***
*Maddalena Bertolla{3}, Mario Scotoni{2}, Mauro Caldara{1}, Gianmarco Giacomelli{1}, Michele Preghenella{1}, Emanuele Pasqualini{1}*
*{1}Aquafil Spa, Italy; {2}Università degli Studi di Trento, Italy; {3}Università degli Studi di Trento & Aquafil Spa, Italy*

**4:30**
**EMISSION MONITORING OF MACHINES USING EQUALLY DISTRIBUTED WIRELESS ACOUSTIC SENSOR NODES** ..... ***1682***
*Peter Heilmann{2}, Roland Weiss{2}, Robert Weigel{1}, Lukas Schwarz{1}*
*{1}Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; {2}Siemens AG, Germany*

**4:45**
**ENHANCED RESPONSE TIME FOR TRANSFORMER OIL MONITORING BY A THERMAL PUMP** ..... ***1685***
*Detlef Pape{2}, Sebastian Abegg{2}, Louis-Philippe Bibeau{1}, Alex Ouellet-Belanger{1}*
*{1}ABB Inc., Canada; {2}ABB Schweiz AG, Switzerland*

**5:00**
**MICROSECOND INTERMITTENT FAULT DETECTION FOR WIRE AND CONNECTOR DEFECT PROGNOSTICS** ..... ***1688***
*Fabrice Auzanneau, Christophe Layer*
*Commissariat à l'Energie Atomique et aux Energies Alternatives, France*

**5:15**
**MOBILE ROBOT MULTI-SENSOR UNIT FOR UNSUPERVISED GAS DISCRIMINATION IN UNCONTROLLED ENVIRONMENTS** ..... ***1691***
*Yuxin Xing{2}, Timothy Vincent{2}, Marina Cole{2}, Julian Gardner{2}, Han Fan{1}, Victor Hernandez Bennetts{1}, Erik Schaffernicht{1}, Achim Lilienthal{1}*
*{1}Orebro University, Sweden; {2}University of Warwick, United Kingdom*

**4:00 PM - 5:30 PM**
**C3L-F: Microfluidic & Biosensors II**
**LOCATION: Boisdale 2**
**SESSION CHAIRS:**
**Leandro Lorenzelli, Fondazione Bruno Kessler; Hua Wang, Georgia Institute of Technology**

**4:00**
**GRAPHENE OXIDE-CHITOSAN BASED FLEXIBLE BIOSENSOR** ..... ***1694***
*Md. Abdul Kafi, Ambarish Paul, Ravinder Dahiya*
*University of Glasgow, United Kingdom*

**4:15**
**SENSING THE BLOOD CELL DAMAGE IN A MAGNETICALLY ACTUATED CIRCULAR PUMP** ..... ***1697***
*Markus Gusenbauer, Giulia Mazza, Martin Brandl, Thomas Schrefl*
*Danube University Krems, Austria*

**4:30**
**BIOFUEL CELL OPERATING IN HUMAN PLASMA** ..... ***1700***
*Tanmay Kulkarni{2}, Md Qumrul Hasan{1}, Gymama Slaughter{1}*
*{1}University of Maryland Baltimore County, United States; {2}University of Maryland, Baltimore County, United States*

**4:45**
**IR-LIGHT INDUCED PYROELECTRIC EFFECT FOR CELL CULTURES CHARACTERIZATION** ..... ***1703***
*Salvatore Andrea Pullano, Marta Greco, Sebastiano Messineo, Antonio Brunetti, Antonino S Fiorillo*
*Università degli studi Magna Græcia di Catanzaro, Italy*

**5:00**
**MICROFLUIDIC SWAP STRUCTURE TO ENHANCE ON-CHIP LIQUID MIXING** ..... ***1706***
*Martin Oellers, Frank Bunge, Frieder Lucklum, Poornanchandra Papireddy Vinayaka, Christian Habben, Melanie Kirsch, Sander van Den Driesche, Michael J. Vellekoop*
*Universität Bremen, Germany*

**5:15**
**PHOTON ASSISTED ULTRA-SELECTIVE FORMALDEHYDE SENSING BY DEFECT INDUCED NIO NANOSTRUCTURED SENSING LAYER** ..... ***1709***
*Sayan Dey, Sumita Santra, Sabyasachi Sen, Debasree Burman, Samit Ray, Prasanta Kumar Guha*
*Indian Institute of Technology Kharagpur, India*

**AUTHOR INDEX**