# TABLE OF CONTENTS

**MESSAGE FROM THE CHAIRPERSONS** ................................................................. IV
**GENERAL INFORMATION** ............................................................................... VI
**SOCIAL PROGRAM** ........................................................................................ VIII
**CARIBE ROYALE FLOOR PLAN** ....................................................................... X
**IEEE SENSORS 2016 COMMITTEE** ............................................................... XI
**IEEE SENSORS 2016 TRACK CHAIRS** ........................................................ XII
**IEEE SENSORS 2016 TPC** .............................................................................. XIII
**SENSORS COUNCIL** ...................................................................................... XVI
**SPONSORS** .................................................................................................. XX
**PATRONS** ...................................................................................................... XXI
**EXHIBITORS** ................................................................................................ XXII
**TECHNICAL PROGRAM INFORMATION** .................................................. XXXI
**TECHNICAL PROGRAM - POSTER INFORMATION** ...................................... XXXII
**SENSORS JOURNAL** .................................................................................... XXXIII
**IEEE SENSORS 2017 CALL FOR PAPERS** .................................................. XXXV
**PRESENTATION DOWNLOADS** ..................................................................... XXXVI
**KEYNOTE SPEAKERS** ................................................................................... XXXVII
**LUNCH SPEAKER - MONDAY, OCTOBER 31** ................................................. XXXVIII
**DEMOS** ....................................................................................................... XXXIX
**PROFESSIONAL DEVELOPMENT PROGRAM** ............................................ XL
**INDUSTRY TRACK** ....................................................................................... XLI
**SESSION GRID: SUNDAY, OCTOBER 30 (TUTORIALS - AM)** ....................... XLIII
**SESSION GRID: SUNDAY, OCTOBER 30 (TUTORIALS - PM)** ....................... XLIV
**SESSION GRID: MONDAY, OCTOBER 31 - AM** .......................................... XLV
**SESSION GRID: MONDAY, OCTOBER 31 - PM** .......................................... XLVI
**SESSION GRID: TUESDAY, NOVEMBER 1** .................................................. XLVII
**SESSION GRID: WEDNESDAY, NOVEMBER 2** .......................................... XLVIII
**SUNDAY, OCTOBER 30 - TUTORIALS** ......................................................... XLIX
**MONDAY, OCTOBER 31** ............................................................................... LI
**MONDAY, OCTOBER 31 – POSTER SESSION** ........................................... LVII
**TUESDAY, NOVEMBER 1** ............................................................................. LXXXI
**TUESDAY, NOVEMBER 1 – POSTER SESSION** .......................................... LXXXVII
**WEDNESDAY, NOVEMBER 2** ....................................................................... CVII
**WEDNESDAY, NOVEMBER 2 – POSTER SESSION** ..................................... CXIII
MONDAY, OCTOBER 31

9:10 AM - 10:00 AM
A1L-A: PLENARY 1
LOCATION: Grand Sierra A-C
SESSION CHAIR:
Venkat Bhethanabotla, University of South Florida

EVENT DRIVEN PERSISTENT SENSING: OVERCOMING THE ENERGY AND LIFETIME LIMITATIONS IN UNATTENDED WIRELESS SENSORS

Roy Olsson III(2), Radoslav Bogoslovov(3), Christal Gordon(1)
(1)Booz Allen Hamilton, United States; (2)Defense Advanced Research Projects Agency, United States; (3)Defense Advanced Research Projects Agency / ECS Federal, LLC, United States

10:30 AM - 12:00 PM
A2L-A: FUNDAMENTALS OF RESONATING SENSORS
LOCATION: Curacao 1-2
SESSION CHAIRS:
Michael Vellekoop, University of Bremen
David Elata, Technion - Israel Institute of Technology

10:30
INVITED: MODE-LOCALIZED SENSING IN MICRO- AND NANOMECHANICAL RESONATOR ARRAYS

Ashwin Seshia
Cambridge University, United Kingdom

11:00
PREDICTIVE ANALYTICAL MODEL OF FUNDAMENTAL FREQUENCY AND IMPERFECTIONS IN GLASSBLOWN FUSED QUARTZ HEMI-TOROIDAL 3D MICRO SHELLS

Yusheng Wang, Mohammad Asadian, Andrei Shkel
University of California, Irvine, United States

11:15
ON ORDERING OF FUNDAMENTAL WINEGLASS MODES IN TOROIDAL RING GYROSCOPE

Alexandra Efimovskaya, Danmeng Wang, Yu-Wei Lin, Andrei Shkel
University of California, Irvine, United States

11:30
HIGH FREQUENCY CHARACTERIZATION OF LEAKY WAVES FOR LIQUID DELAY LINE SENSORS

Marshall Smith, Donald Malocha
University of Central Florida, United States

11:45
TEMPERATURE AND PRESSURE CHARACTERIZATION OF THE QUALITY FACTOR IN A CMOS-MEMS RESONATOR

Saoni Banerji, Jordi Madrenas, Daniel Fernández
Universitat Politècnica de Catalunya, Spain
10:30 AM - 12:00 PM
A2L-B: MATERIALS & NANOSTRUCTURES FOR ELECTROCHEMICAL & CHEMIRESISTIVE SENSORS
LOCATION: Curacao 3-4
SESSION CHAIRS:
Lina Sarro, Delft University of Technology
Trinh Chu Duc, Vietnam National University, Hanoi, VNU

10:30
INVITED: 1D OXIDE NANOSTRUCTURES BASED CHEMICAL SENSORS FOR NONINVASIVE MEDICAL DIAGNOSIS
Giwan Katwal, Banki Manmadha Rao, Oomman K Varghese
University of Houston, United States

11:00
THICKNESS-DEPENDENT SENSITIVITY OF COPPER PHTHALOCYANINE CHEMIRESISTIVE NITROGEN DIOXIDE SENSORS
Liping Sharon Chia¹, Suresh Palale², Pooi See Lee¹
¹Nanyang Technological University, Singapore; ²Robert Bosch (SEA) Pte Ltd, Singapore

11:15
ONE-STEP RAPID SYNTHESIS OF AU-PT NANOFERNS FOR ELECTROCHEMICAL SENSING AND BIOSENSING
Irene Taurino¹, Gabriella Sanzó², Sandro Carrara¹, Giovanni De Micheli¹, Gabriele Favero², Franco Mazzi², Riccarda Antiochia²
¹École Polytechnique Fédérale de Lausanne, Switzerland; ²Sapienza - Università di Roma, Italy

11:30
OZONE SENSING PROPERTIES OF NICKEL PHTHALOCYANINE:ZNO NANOROD HETEROSTRUCTURES
Niravkumar Joshi¹, Flávio Makoto Shimizu¹, Iram T. Awan¹, Jean-Claude M’Peko¹, Valmor R. Mastelaro¹, Osvaldo Novais Oliveira Jr.¹, Luis F. Da Silva²
¹Universidade de São Paulo, Brazil; ²Universidade Estadual Paulista Júlio de Mesquita Filho, Brazil

11:45
SENSOR SUBSTRATES BASED ON BIODEGRADABLE GLASS MATERIALS
Kassan Unda², Ali Mohammadkhah², Kwang-Man Lee¹, Delbert E. Day², Matthew J. O’Keefe², Chang-Soo Kim²
¹Jeju National University, United States; ²Missouri University of Science and Technology, United States
10:30
COST-EFFECTIVE TUNABLE LASER GAS-SENSOR MODULE FOR HIGH-VOLUME APPLICATIONS, USING DFB LASER DIODES IN THE NIR, AND ICL IN THE MIR
Lars Hildebrandt{1}, Robert Weih{1}, Michael Legge{1}, Nicolas Koslowski{1}, Marc Fischer{1}, Michael von Edlinger{1}, Julian Scheuermann{1}, Steffen Becker{1}, Karl Rößner{1}, Wolfgang Zeller{1}, Lars Nähle{1}, Johannes Koeth{1}, Martin Kamp{2}, Sven Höf
{1}nanoplus Nanosystems and Technologies GmbH, Germany; {2}Universität Würzburg, Germany

10:45
OPTICAL-BASED DIAGNOSTIC TECHNIQUE FOR DETECTION OF TOOTH CARIES USING LASER-INDUCED BREAKDOWN SPECTROSCOPY
Satoshi Ikezawa{3}, Toshitsugu Ueda{3}, Masataka Fujimoto{2}, Shinji Yoshii{1}, Chiaki Kitamura{1}
{1}Kyushu Dental University, Japan; {2}Kyushu Dental University / Waseda University, Japan; {3}Waseda University, Japan

11:00
DEVELOPMENT OF POLARIZATION INTERFEROMETER BIOSENSOR FOR DETECTION OF MYCOTOXINS
Ali Al-Jawdah{1}, Alexei Nabok{1}, Alan Holloway{1}, Anna Tsargorodska{2}
{1}Sheffield Hallam University, United Kingdom; {2}Sheffield University, United Kingdom

11:15
MONTE CARLO AND PARTICLE SWARM METHODS APPLIED TO THE DESIGN OF SURFACE PLASMON RESONANCE SENSORS
Leonardo Machado Cavalcanti, Eduardo Fontana
Universidade Federal de Pernambuco, Brazil

11:30
SURFACE-ENHANCED NEAR-INFRARED ABSORPTION (SENIRA) SPECTROSCOPY
Wei-Chuan Shih, Fusheng Zhao, Oussama Zenasni, Masud Arnob, Yu-Lung Sung
University of Houston, United States

11:45
INTEGRATION OF LINEAR VARIABLE FILTERS ON CMOS FOR COMPACT EMISSION AND ABSORPTION SENSING
University of Illinois at Urbana–Champaign, United States
10:30 AM - 12:00 PM
A2L-D: Robotic Sensing Applications
LOCATION: Curacao 7-8
SESSION CHAIRS:
Robert Roberts, University of Hong Kong
Gijs Krijnen, University of Twente

10:30
INVITED: ELECTROMAGNETIC TRACKER FOR ACTIVE HANDHELD ROBOTIC SYSTEMS .................52
Robert MacLachlan{1}, Nicholas Parody{1}, Shohin Mukherjee{1}, Ralph Hollis{1}, Cameron Riviere{1}, Joseph Martel{2}, Louis Lobes Jr.{2}
{1}Carnegie Mellon University, United States; {2}University of Pittsburgh, United States

11:00
SENSOR BASED CONTROLLED LEG TYPE AUTOMATIC LANDING SYSTEM FOR AERIAL VEHICLES .....55
Yusuke Komatsuzaki{1}, Takahiro Doi{1}, Kenjiro Tadakuma{2}
{1}Kanazawa Institute of Technology, Japan; {2}Tohoku University, Japan

11:15
SENSING SKIN FOR DETECTING WING DEFORMATION WITH EMBEDDED SOFT STRAIN SENSORS.......58
Hee-Sup Shin{2}, Lina Maria Castano{2}, James Sean Humbert{1}, Sarah Bergbreiter{2}
{1}University of Colorado, Boulder, United States; {2}University of Maryland, College Park, United States

11:30
SENSORS FUSION PARADIGM FOR SMART INTERACTIONS BETWEEN DRIVER AND VEHICLE ..........61
Alessandro Mecocci{7}, Moshe Shahar{1}, Per Ericsson{6}, Sébastien Piccand{3}, Ilse Ravyse{5}, Tim Llewellyn{4}, Davide Di Censo{2}
{1}Ceva D.S.P LTD, Israel; {2}Harman Becker GmbH, Germany; {3}KeyLemon S.A., Switzerland; {4}nViso S.A., Switzerland; {5}Softkinetic Software, Belgium; {6}Tobii Technology, Sweden; {7}Università degli Studi di Siena, Italy

11:45
MRI-GUIDED NEEDLE STEERING FOR TARGETS IN MOTION BASED ON FIBER BRAGG GRATING SENSORS .........................................................................................................................64
Jiangzhen Guo, Ehsan Azimi, Berk Gonenc, Iulian Iordachita
Johns Hopkins University, United States
10:30 AM - 12:00 PM
A2L-E: Focused Session: Flexible and Wearable Sensors
LOCATION: Bonaire 1-2
SESSION CHAIRS:
Zeynep Celik-Butler, University of Texas at Arlington
Reza Abdolvand, University of Central Florida

10:30
INVITED: LARGE AREA ELECTRONIC SKIN .................................................................67
Ravinder Dahiya
University of Glasgow, United Kingdom

11:00
INKJET-PRINTED PAPER SURFACE ENHANCED RAMAN SPECTROSCOPY (SERS) SENSORS:
PORTABLE, LOW COST DIAGNOSTICS FOR MICRORNA...........................................70
Stephen Restaino, Ian White
University of Maryland, College Park, United States

11:15
MEMS-BASED PASSIVE WIRELESS RESPIRATION PROFILE SENSOR..........................73
Sina Moradian, Reza Abdolvand
University of Central Florida, United States

11:30
ALL-SOFT SENSING PLATFORM BASED ON LIQUID METAL FOR LIQUID- AND GAS-PHASE VOC
DETECTION..................................................................................................................76
Min-Gu Kim, Hommoood Alrowais, Choongsoon Kim, Oliver Brand
Georgia Institute of Technology, United States

11:45
FABRICATION OF STRETCHABLE COMPOSITES WITH ANISOTROPIC ELECTRICAL CONDUCTIVITY FOR
COMPLIANT PRESSURE TRANSDUCERS......................................................................79
Oluwaseun Araromi, Conor Walsh, Robert Wood
Harvard University, United States
### 10:30 AM - 12:00 PM
A2L-F: Actuators & Sensor Power Systems I
LOCATION: Bonaire 3-4
SESSION CHAIRS:
Yuji Suzuki, The University of Tokyo
Haluk Külah, Middle East Technical University

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30</td>
<td>INVITED: ADVANCEMENTS IN ELECTRODYNAMIC WIRELESS POWER TRANSMISSION</td>
<td>Alexandra Garraud, David Arnold</td>
<td>University of Florida, United States</td>
</tr>
<tr>
<td>11:00</td>
<td>ELECTROPERMANENT MAGNET BASED WIRELESS MICROACTUATOR FOR MICROFLUIDIC SYSTEMS: ACTUATOR CONTROL AND ENERGY CONSUMPTION ASPECTS</td>
<td>Dulsha Kularatna Abeywardana, Patrick Hu, Zoran Salcic</td>
<td>University of Auckland, New Zealand</td>
</tr>
<tr>
<td>11:15</td>
<td>HIGH-EFFICIENT BETAVOLTAIC BATTERIES USING GRAPHENE COATED TIO2 NANOTUBE ARRAYS</td>
<td>Changsong Chen{1}, Na Wang{1}, Haisheng San{2}, Zaijun Cheng{3}</td>
<td>{1}Pen-Tung Sah Institute of Micro-Nano Science and Technology of Xiamen University, China; {2}Xiamen University, China; {3}Xiamen University of Technology, China</td>
</tr>
<tr>
<td>11:30</td>
<td>A MEMS INERTIAL SWITCH WITH COMPACT CONSTRAINT STRUCTURES FOR LOWERING OFF-AXIS SENSITIVITY</td>
<td>Qihuan Zhang, Zhuoqing Yang, Qiu Xu, Mengyuan Zhao, Jinyuan Yao, Guifu Ding, Xiaolin Zhao</td>
<td>Shanghai Jiao Tong University, China</td>
</tr>
<tr>
<td>11:45</td>
<td>MODELING AND FABRICATION OF LOW-COST ELECTROWETTING ACTUATORS FOR FLEXIBLE MICROFLUIDIC DISPLAY APPLICATIONS</td>
<td>Andreas Tröls, Herbert Enser, Bernhard Jakoby</td>
<td>Johannes Kepler University, Austria</td>
</tr>
</tbody>
</table>
A-1-1
MULTI-ORDER SYSTEM DYNAMIC MODEL OF THE CENTER SUPPORT QUADRUPEL MASS GYRO (CSQMG) .................................................................97
Tian Zhang, Bin Zhou, Peng Yin, Siwei Li, Rong Zhang
Tsinghua University, China

A-1-3
STUDY OF THE SELF-RESONANCE FREQUENCY OF A FLAT COIL FOR AN EDDY-CURRENT POSITION SENSOR ..................................................................................................................100
Johan Vogel, Stoyan Nihtianov
Technische Universiteit Delft, Netherlands

A-1-5
A SELF-CLOCKED READOUT CIRCUIT FOR MEMS GYROSCOPE TO AVOID FREQUENCY ALIASING .... 103
Longcan Jiang, Dingbang Xiao, Zhihua Chen, Qiang Xu, Shuai Guan, Yi Wang, Xuezhong Wu
National University of Defense Technology, China

A-1-7
DESIGN FRAMEWORK FOR A GAS SENSOR BASED ON AN OPEN PHOTOACOUSTIC RESONATOR..... 106
Benjamin Lang(1), Alexander Bergmann(2)
{1}FH Joanneum, Austria; {2}Graz University of Technology, Austria

A-1-9
A SIMPLE METHOD FOR DETERMINING THE COEFFICIENTS OF THERMAL EXPANSION OF POLYSILICON THIN FILMS BY USING RESONANCE FREQUENCY MEASUREMENTS .........................109
Haiyun Liu
Hohai University, China

A-1-11
POSITION SELF-SENSING FOR PIEZOELECTRIC ACTUATORS UTILIZING AN ANTI-RESONANT CIRCUIT .................................................................................................................................112
Max Arzberger(1), Rudolf Seethaler(2)
{1}Technische Universität München, Germany; {2}University of British columbia, Canada

A-1-14
CORE TEMPERATURE MEASUREMENT USING INDUCTIVELY COUPLED NOISE THERMOMETRY AT 522MHZ .......................................................................................................................115
Colm Mc Caffrey, Heikki Seppä, Pekka Pursula
VTT Technical Research Centre of Finland, Finland
### A-2-55
**FLEXIBLE NH3 SENSOR BASED ON SPRAY DEPOSITION AND INKJET PRINTING**

Ahmed Abdelhalim, Aniello Falco, Florin Loghin, Paolo Lugli, Jose F. Salmeron, Almudena Rivadeneyra  
Technische Universität München, Germany

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### A-2-31
**FABRICATION OF ULTRA-THIN SILICON CHIPS USING THERMALLY DECOMPOSABLE TEMPORARY BONDING ADHESIVE**

Xingjun Xue, Shujie Yang, Dong Wu, Liyang Pan, Zheyao Wang  
Tsinghua University, China

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### A-2-34
**IMPROVEMENT OF BONDING STRENGTH UNIFORMITY VIA ANCHOR DESIGN FOR SILICON-ON-GLASS PROCESS**

Usung Park, Jun Eon An, Jaewook Rhim  
Agency for Defense Development, Korea, South

---

### A-2-37
**NEW COATING SYSTEM FOR DIRECT-DEPOSITION OF SENSORS ON COMPONENTS OF ARBITRARY SIZE: A NOVEL APPROACH ALLOWING FOR THINNER SENSORS WITH HIGHER MEASURING ACCURACY**

Daniel Klaas{1}, Jürgen Becker{1}, Marc Christopher Wurz{1}, Jan Schlosser{2}, Matthias Kunze{2}  
{1}Leibniz Universität Hannover, Germany; {2}scia Systems GmbH, Germany

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### A-2-60
**EXPERIMENTAL DETERMINATION OF 2ND ORDER PHASE MATCHING TURNING POINTS IN LONG PERIOD GRATINGS**

James Barrington, Matthew Partridge, Stephen James, Ralph Tatam  
Cranfield University, United Kingdom

---

### A-2-40
**A NEW FABRICATION PROCESS OF TGV SUBSTRATE USING DOUBLE SIDE GLASS IN SILICON REFLOW PROCESS**

Wenyin Li, Dingbang Xiao, Xuezhong Wu, Zhanqiang Hou, Zhihua Chen, Xinghua Wang  
National University of Defense Technology, China

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### A-2-43
**ELECTROCHEMICAL FORMATION OF N-TYPE GAN AND N-TYPE INP POROUS STRUCTURES FOR CHEMICAL SENSOR APPLICATIONS**

Taketomo Sato, Xiaoyi Zhang, Keisuke Ito, Satoru Matsumoto, Yusuke Kumazaki  
Hokkaido University, Japan

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### A-2-46
**SIMULATION STUDY OF SU-8 STRUCTURES REALIZED BY SINGLE-STEP PROJECTION PHOTOLITHOGRAPHY**

Katsuo Nakamura{2}, Yoshikazu Hirai{2}, Toshiyuki Tsuchiya{2}, Osamu Tabata{2}, Florian Larramendy{1}, Oliver Paul{1}  
{1}Albert-Ludwigs-Universität Freiburg, Germany; {2}Kyoto University, Japan
A-2-49
PIEZOELECTRIC TRANSFORMER-DRIVEN SPRAY COATING FOR MEMBRANE SENSOR
FABRICATION....................................................................................................................................................
Zeinab Ramshani, Massood Zandi Atashbar, Peng Gao, William Phillip, David Go
{1}University of Notre Dame, United States; {2}Western Michigan University, United States

A-2-52
A 48-WELL TRANSPARENT MICROELECTRODE ARRAY FABRICATED UTILIZING A FLEXIBLE,
“WRAPPED AROUND” INTERCONNECT TECHNOLOGY.................................................................................
Phillip Tyler, Swaminathan Rajaraman
{1}Axion BioSystems Inc., United States; {2}University of Central Florida, United States

A-2-57
FABRICATION OF NANOELECTRODE ENSEMBLES USING SILICON NANOWIRES IN AN
ELECTROCHEMICAL GLUCOSE SENSOR........................................................................................................
Sanghamitra Mandal, Mohammed Marie, Omar Manasreh
University of Arkansas, United States

A-2-59
EMBEDDED WIRE-ELECTRODE INTO BIODEGRADABLE MICRONEEDLE DEVICE FOR BRAIN-MACHINE
INTERFACE...........................................................................................................................................................
Yuki Nabekura, Yoshihiro Hasegawa, Mitsuhiro Shikida
Hiroshima City University, Japan

1:00 PM - 3:00 PM
A3P-J: Gas Sensing
LOCATION: Poster Area
SESSION CHAIR:
Jan Mitrovics, JLM Innovation

A-3-61
MICROWAVE GAS SENSOR BASED ON INTERDIGITAL CAPACITOR: REFLECTION & TRANSMISSION
MEASUREMENTS....................................................................................................................................................
Amal Harrabi, Guillaume Bailly, Jerome Rossignol, Stuerga Stuerga, Pierre Pribetich, Jean Pierre Bellat, Igor
Bezverkhyy, Bruno Domenichini
Université Bourgogne - Franche-Comté, France

A-3-64
EFFECT OF PT, PD, AG, Y ADDITIVES ON THE SURFACE AND IN THE BULK OF TIN DIOXIDE THIN
NANOCRYSTALLINE FILMS ON CHARACTERISTICS OF RESISTIVE HYDROGEN SENSORS ....................
Alexey Almaev, Nadezhda Maksimova, Evgeny Sevastyanov, Evgeny Chernikov
Tomsk State University, Russia

A-3-67
ENHANCED LITHIUM NIOBATE PYROELECTRIC IONIZER FOR CHIP-SCALE ION MOBILITY-BASED GAS
SENSING.........................................................................................................................................................
K.B. Vinayakumar, V Gund, N Lambert, S Lodha, A Lal
Cornell University, United States

A-3-70
RGO-Cu2O NANOCOMPOSITES FOR ENHANCED NH3 GAS SENSING AT ROOM TEMPERATURE ........
Yong Zhou, Xiangyi Zhu, Guoqing Liu, Xiaogang Lin, Yukun Huang, Hao Ren, Yongcai Guo
Chongqing University, China
A-3-73
GAS SPECTROSCOPY WITH 245 GHZ CIRCUITS IN SIGE BICMOS AND FRAC-N PLL FOR FREQUENCY RAMPS
Klaus Schmalz{2}, Johannes Borngräber{2}, Selahattin Berk Yilmaz{3}, Nick Rothbart{1}, Dietmar Kissinger{2}, Heinz-Wilhelm Hübbers{1}
{1}Deutsches Zentrum für Luft- und Raumfahrt e.V., Germany; {2}Leibniz-Institut für innovative Mikroelektronik, Germany; {3}Silicon Radar GmbH, Germany

A-3-76
IMPROVEMENT OF POF HUMIDITY SENSOR WITH SWELLING POLYMER CLADDING VIA BENDING .....169
Masayuki Morisawa, Hiroshi Yamaoka, Yutaka Suzuki
University of Yamanashi, Japan

A-3-79
MICROWAVE NEAR-FIELD SENSOR FOR CONTACTLESS GAS PRESSURE DETERMINATION ..........172
Birk Hattenhorst, Christoph Baer, Thomas Musch
Ruhr-Universität Bochum, Germany

A-3-82
POLYMER-CARBON NANOTUBES COMPOSITE SENSITIVE FILM AND FLEXIBLE PAPER SUBSTRATE BASED VOC VAPOR SENSING .................................................................................................................................N/A
{1}Nanyang Technological University, Singapore; {2}Université de Bordeaux, France; {3}Université de Limoges, France; {4}Université Lille 1, France

A-3-85
AMMONIA GAS SENSORS INK-JET PRINTED ON TEXTILE SUBSTRATES ...................................................178
Zbigniew Stempien{2}, Marek Kozicki{2}, Ryszard Pawlak{2}, Ewa Korzeniewska{2}, Grzegorz Owczarek{1}, Adam Poscik{1}, Dariusz Sajna{3}
{1}Centralny Instytut Ochrony Pracy - Państwowy Instytut Badawczy, Poland; {2}Lodz University of Technology, Poland; {3}MAT Ltd., Poland

A-3-88
CHARACTERIZING THE INFLUENCE OF GATE BIAS ON ELECTRICAL AND CATALYTICAL PROPERTIES OF A POROUS PLATINUM GATE ON FIELD EFFECT GAS SENSORS ..................................................181
Manuel Bastuck{2}, Donatella Puglisi{1}, Anita Lloyd Spetz{1}, Andreas Schütze{2}, Mike Andersson{1}
{1}Linköping University, Sweden; {2}Universität des Saarlandes, Germany

A-3-91
CO/ZNO NANORODS SYSTEM FOR MAGNETIC GAS SENSING APPLICATIONS.......................................184
Camilla Baratto{3}, Federica Rigoni{3}, Nicola Cattabiani{3}, Matteo Ferroni{3}, Giorgio Sberveglieri{3}, Gabriele Barrera{1}, Paola Tiberto{1}, Paolo Allia{2}
{1}Istituto Nazionale di Ricerca Metrologica, Italy; {2}Politecnico di Torino, Italy; {3}Università degli Studi di Brescia / Istituto Nazionale di Ottica, Italy

A-3-94
CHARACTERIZATION OF AN O2 SENSOR USING MICROELECTRODES ....................................................187
Yusra Obeidat, Tom Chen
Colorado State University, United States
A-3-96
ROOM TEMPERATURE CO2 DETECTION USING INTERDIGITATED CAPACITORS WITH HETEROPOLYSILOXANE SENSING FILMS
Choongsoon Kim, Spyridon Pavlidis, Min-Gu Kim, Oliver Brand, Hang Chen
Georgia Institute of Technology, United States

A-3-98
A BLACK PHOSPHORUS HUMIDITY SENSOR WITH HIGH SENSITIVITY AND FAST RESPONSE
Wen-Hao Chen, Jian-Qiu Huang, Chong-Yang Zhu, Qing-An Huang
Southeast University, China

A-3-100
OXYGEN PLASMA TREATED GRAPHENE/INN NANOWIRE HETEROJUNCTION BASED SENSORS FOR TOXIC GAS DETECTION
Ifat Jahangir{3}, Alina Wilson{2}, Md Ahsan Uddin{1}, MVS Chandrashekhar{3}, Goutam Koley{1}
{1}Clemson University, United States; {2}Midlands Technical College, United States; {3}University of South Carolina, United States

1:00 PM - 3:00 PM
A3P-K: Medical
LOCATION: Poster Area
SESSION CHAIR:
Masayuki Sohgawa, Niigata University

A-4-121
CONTROLLED DRUG LOADING AND RELEASE ENABLED BY NANOPORE THIN FILM AND LAYER-BY-LAYER NANOASSEMBLY
Chao Song, Xiangchen Che, Long Que
Iowa State University, United States

A-4-106
MOLECULARLY IMPRINTED PLASMONIC BIOSENSORS FOR HEMOGLOBIN DETECTION
Yeseren Saylan, Adil Denizli
Hacettepe University, Turkey

A-4-109
LABEL-FREE TUMOR CELL DETECTION AND DIFFERENTIATION BASED ON ELECTRICAL IMPEDANCE SPECTROSCOPY
Rajapaksha Gajasinghe, Onur Tigli, Michelle Jones, Tan Ince
University of Miami, United States

A-4-112
2D MOS2/GLASSY CARBON BASED ELECTROCHEMICAL SENSOR FOR PICO-MOLAR DETECTION OF HYDROGEN PEROXIDE AND HYPOCHLOROUS ACID
Ankur Gupta, Craig Neal, Soumen Das, Sudipta Seal
University of Central Florida, United States

A-4-115
A HIGHLY SENSITIVE AMYLOID-B DETECTION BY CANTILEVER MICROSENSOR IMMOBILIZED WITH LIPOSOME WITH INCORPORATED CHOLESTEROL AND PHOSPHATIDYLCHOLINE LIPID WITH SHORT HYDROPHOBIC ACYL CHAINS
Yuki Murakami{1}, Tomoya Taniguchi{1}, Ziyang Zhang{1}, Kaoru Yamashita{1}, Minoru Noda{1}, Masayuki Sohgawa{2}
{1}Kyoto Institute of Technology, Japan; {2}Niigata University, Japan
A-4-118
MICROCALORIMETRIC DETECTION OF CREATININE IN URINE
David Gaddes III, Srinivas Tadigadapa
Pennsylvania State University, United States

A-4-124
TOWARDS A SWEAT-BASED WIRELESS AND WEARABLE ELECTROCHEMICAL SENSOR
James Dieffenderfer, Michael Wilkins, Charles Hood, Eric Beppler, Michael Daniele, Alper Bozkurt
North Carolina State University, United States

1:00 PM - 3:00 PM
A3P-L: Optical Physical Sensors II
LOCATION: Poster Area
SESSION CHAIR:
Satoshi Ikezawa, Waseda University

A-5-126
AN AFFORDABLE AND EASY-TO-USE INTERFEROMETER WITH A DEDICATED ACQUISITION SYSTEM
Walid Adel Merzouk{2}, Barthélemy Cagneau{2}, Khalid Hilouane{2}, Luc Chassagne{2}, Florent Gardillou{1}
{1}TeemPhotonics, France; {2}Université de Versailles Saint-Quentin-en-Yvelines, France

A-5-128
PRESSURE SENSING BY SURFACE PLASMON RESONANCE IN THE OTTO CONFIGURATION
José Otávio Maciel Neto{3}, Gustavo Oliveira Cavalcanti{4}, Ignacio Llamas-Garro{1}, Jung-Mu Kim{2}, Eduardo Fontana{5}
{1}Centre Tecnològic de Telecomunicacions de Catalunya, Spain; {2}Chonbuk National University, Korea, South; {3}Instituto Federal de Pernambuco, Brazil; {4}Universidade de Pernambuco, Brazil; {5}Universidade Federal de Pernambuco, Brazil

A-5-160
DEVELOPMENT OF FBG INTERROGATION SYSTEM USING WAVELENGTH SWEEPING OF FDML LASER
Tatsuya Yamaguchi{2}, Yukitaka Shinoda{1}
{1}Nihon Univeristy, Japan; {2}Nihon University, Japan

A-5-162
FABRICATION AND EVALUATION OF DENTAL ENDOSCOPIC INSTRUMENTS USING FIBER-OPTIC SYSTEM
Masataka Fujimoto{2}, Shinji Yoshii{1}, Chiaki Kitamura{1}, Satoshi Ikezawa{3}, Toshitsugu Ueda{3}
{1}Kyushu Dental University, Japan; {2}Kyushu Dental University / Waseda University, Japan; {3}Waseda University, Japan

A-5-130
NUMERICAL ANALYSIS OF A NOVEL REFRACTIVE INDEX AND TEMPERATURE SENSOR BASED ON A KAGOMÉ HOLLOW-CORE PHOTONIC CRYSTAL FIBER
Haihu Yu, Jian Ma, Xiaofu Li, Huiyong Guo, Minghong Yang
Wuhan University of Technology, China

A-5-132
THEORETICAL CALCULATIONS OF CROSSTALK AND TIME DELAY IN IDENTICAL FBG ARRAY IN PM FIBER
Yu Zheng, Haihu Yu, Huiyong Guo, Xiaofu Li, Desheng Jiang
Wuhan University of Technology, China
A-5-134
NOISE REDUCTION, ERROR ANALYSIS AND EXPERIMENTAL FIABILITY FOR 3D DEFORMATION MEASUREMENT WITH DIGITAL COLOR HOLOGRAPHY ................................................................. 238
Silvio Montrésor(2), Pascal Picart(2), Oleksandr Sakharuk(1), Leonid Muravsky(1)
{1}Lviv Institute of Physics and Mechanics, Ukraine; {2}Université du Maine, France

A-5-136
STUDY ON LASER MICROPHONE USING SELF-COUPING EFFECT OF SEMICONDUCTOR LASER FOR SENSITIVITY IMPROVEMENT .......................................................................................... 241
Daisuke Mizushima, Norio Tsuda, Jun Yamada
Aichi Institute of Technology, Japan

A-5-168
FLEXIBLE NEAR INFRARED PHOTOSENSORS BASED ON RECRYSTALLIZED AMORPHOUS GERMANIUM THIN FILMS .......................................................................................................................... 244
Andrea Ferrone(2), Luca Maiolo(2), Antonio Minotti(2), Alessandro Pecora(2), Andrea De Laccovo(2), Lorenzo Colace(2), Siyack V. Grayl(1), Gary W. Leach(1), Behrad Bahreyni(1)
{1}Simon Fraser University, Canada; {2}Università degli Studi Roma Tre, Italy

A-5-138
A HYBRID CMOS-IMAGER WITH PEROVSKITE AS PHOTOACTIVE LAYER ............................................ 247
Pei-Wen Yen(1), Yan-Rung Lin(1), Shing-Chiou Shiu(1), Shih-Cheng Lou(1), Kai-Ping Chuang(1), Bor-Nian Chuang(1), Yen-Chih Chiou(2), Chih-Cheng Hsieh(2)
{1}Industrial Technology Research Institute, Taiwan; {2}National Tsing Hua University, Taiwan

A-5-140
FABRICATION OF A MID-IR SENSITIVE THERMOPILE DETECTOR .................................................................. 250
Shakeel Ashraf, Claes Mattsson, Göran Thungström
Mid Sweden University, Sweden

A-5-142
A PILOT STUDY: EVALUATION OF SENSOR SYSTEM DESIGN FOR OPTICAL FIBRE HUMIDITY SENSORS SUBJECTED TO AGGRESSIVE AIR SEWER ENVIRONMENT .................................................. 253
Lourdes Alwis(2), Heriberto Bustamante(4), Kort Bremer(3), Bernhard Roth(3), Tong Sun(1), Kenneth Grattan(1)
{1}City University London, United Kingdom; {2}Edinburgh Napier University, United Kingdom; {3}Leibniz Universität Hannover, Germany; {4}Sydney Water Corporation, Australia

A-5-144
AN OPTICAL SENSOR FOR TRACKING HAND ARTICULATIONS .................................................................. 256
Lefan Wang, Turgut Meydan, Paul Williams
Cardiff University, United Kingdom

A-5-146
SOI SENSOR BASED ON MMI-COUPLED RING-ASSISTED MACH ZEHNDER INTERFEROMETER (RAMZI) ................................................................................................................................. 259
Owen Marsh, Yule Xiong, Winnie Ye
Carleton University, Canada

A-5-169
BLUE-ENHANCED AND BANDWIDTH-EXTENDED PHOTodiode IN STANDARD 0.35-µM CMOS............. 262
Bassem Fahs(1), Asif Chowdhury(1), Yiwen Zhang(1), Javad Ghasemi(2), Collin Hitchcock(1), Payman Zarkesh-Ha(2), Mona Hella(1)
{1}Rensselaer Polytechnic Institute, United States; {2}University of New Mexico, United States
A-5-164
HIGH THROUGHPUT INTERROGATION PLATFORM FOR REAL TIME AND HIGHLY MULTIPLEXED PHOTONIC DETECTION USING PHOTONIC BANDGAP STRUCTURES
Francisco Prats, Raffaele Caroselli, Ángela Ruiz-Tórtola, Jaime García-Rupérez
Universitat Politècnica de València, Spain

A-5-166
HIGH PIXEL DENSITY CONCENTRIC SI SPATIALLY RESOLVED DIFFUSE REFLECTANCE PROBE: WIDE ABSORPTION RANGE PHANTOM STUDY
Ozlem Senlik, Callie Woods, Nan Jokerst
Duke University, United States

A-5-148
RADIATION SENSOR IN A OIL BOILER BASED ON FLAME SPECTRAL ANALYSIS
Hugo O. Garcés{1}, Alejandro J. Rojas{2}, Victor Valdebenito{3}, Alejandro Navarro{3}, Cristian Pereira{3}
{1}Universidad Católica de la Santísima Concepción, Chile; {2}Universidad de Concepción, Chile; {3}Universidad Técnica Federico Santa María, Sede Concepción, Chile

A-5-150
COMPACT INTERFEROMETRIC DISPLACEMENT GAUGE WITH SUB-NANOMETER RESOLUTION AND MILIMETER RANGE
Simon Rerucha, Miroslava Hola, Martin Sarbort, Jindrich Oulehla, Bretislav Mikel, Josef Lazar, Ondrej Cip
ISI Brno, Czech Rep.

A-5-167
A MULTIMODE FIBER REFRACTIVE INDEX SENSOR
Haris Apriyanto{1}, Gautier Ravel{1}, Olivier Bernal{1}, Michel Cattoen{1}, Françoise Lizion{1}, Han Cheng Seat{1}, Valerie Chavagnac{2}
{1}Laboratoire d'Analyse et d’Architecture des Systèmes / Université de Toulouse, France; {2}Observatoire Midi-Pyrénées / Université de Toulouse, France

A-5-170
OPTICAL 3D μ-PRINTING OF FERRULE-TOP POLYMER SUSPENDED-MIRROR DEVICES
Mian Yao, P. K. A. Wai, Jushuai Wu, A. Ping Zhang, Hwa-Yaw Tam
Hong Kong Polytechnic University, Hong Kong

A-5-152
190-1100 NM WAVEBAND MULTISPECTRAL IMAGING SYSTEM USING HIGH LIGHT RESISTANCE WIDE DYNAMIC RANGE CMOS IMAGE SENSOR
Yasuyuki Fujihara, Satoshi Nasuno, Shunichi Wakashima, Yusuke Aoyagi, Rihito Kuroda, Shigetoshi Sugawa
Tohoku University, Japan

A-5-154
MAGNETIC FIELD OPTICAL SENSOR BASED ON LOSSY MODE RESONANCES
Joaquin Ascorbe, Jesus Corres, Francisco Javier Arregui, Ignacio Raul Matías
Universidad Pública de Navarra, Spain

A-5-156
A LOW-COST LASER BARRIER BASED VECTORIAL VELOCITY MEASUREMENT SYSTEM
Stefan Lindner, Robert Weigel, Alexander Koelpin
Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

A-5-158
AUTOMATED VEHICLE DETECTION USING OPTICAL FIBER COMMUNICATION
Samarth Gupta, Vikas Upadhyaya
NIIT University, India
<table>
<thead>
<tr>
<th>ID</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-6-171</td>
<td>MULTIFUNCTIONAL CAPACITIVE PROXIMITY SENSING SYSTEM FOR INDUSTRIAL SAFETY APPLICATIONS</td>
<td>Fan Xia, Behraad Bahreyni, Fabio Campi</td>
<td>Simon Fraser University, Canada</td>
</tr>
<tr>
<td>A-6-173</td>
<td>AMPLITUDE MEASUREMENT WITH LIMITING AMPLIFIER FOR GMI MAGNETIC SENSOR</td>
<td>Aktham Asfour, Jean-Paul Yonnet, Papa Silly Traoré, Manel Zidi</td>
<td>Ecoles d'Ingénieurs et formations de docteurs, France</td>
</tr>
<tr>
<td>A-6-175</td>
<td>A MEASUREMENT SYSTEM OF SHORTWAVE PHASE SHIFT IN GRAIN STORAGE</td>
<td>Fangming Wu, Bingfang Wu, Leidong Yang</td>
<td>Chinese Academy of Sciences, China</td>
</tr>
<tr>
<td>A-6-177</td>
<td>MONITORING OF YOGURT FORMATION USING A CONTACTLESS RADIOFREQUENCY DIELECTRIC SENSOR</td>
<td>Thi Hing Nhung Dinh{2}, E. Martincic{2}, Pierre-Yves Joubert{1}, Stephane Serfaty{2}</td>
<td>{1}Université Paris Sud, France; {2}Université Paris-Sud / Université Paris Saclay, France</td>
</tr>
<tr>
<td>A-6-179</td>
<td>A WEARABLE CONDUCTIVITY SENSOR FOR SWEAT AND BLOOD LEAKAGE MONITORING DURING HEMODIALYSIS</td>
<td>Yi-Chun Du{2}, Wei-Ting Chen{2}, Cheng-Hsin Chuang{2}, Ming-Jui Wu{1}</td>
<td>{1}Kaohsiung Veterans General Hospital, Taiwan; {2}Southern Taiwan University of Science and Technology, Taiwan</td>
</tr>
<tr>
<td>A-6-181</td>
<td>CARBON FIBER TOW ANGLE DETERMINATION USING MICROWAVE REFLECTOMETRY</td>
<td>William Wilson, Jason Moore, Peter Juarez</td>
<td>Langley Research Center, United States</td>
</tr>
<tr>
<td>A-6-183</td>
<td>MAGNETIC GRADIOMETER WITH SELF COMPENSATION OF OFFSET DRIFT</td>
<td>Mattia Butta, Michal Janosek</td>
<td>Czech Technical University in Prague, Czech Rep.</td>
</tr>
<tr>
<td>A-6-185</td>
<td>A LOW-COST MICROWAVE-BASED SENSOR FOR WATER CONTENT DETECTION</td>
<td>Igor Bier{1}, Mathias Hampe{1}, Taylor Zigon{2}, Walter Leon-Salas{2}, Michael Harris{2}</td>
<td>{1}Ostfalia Hochschule für angewandte Wissenschaften, Germany; {2}Purdue University, United States</td>
</tr>
</tbody>
</table>
A-6-187
TOWARDS HIGH-BANDWIDTH CAPACITIVE IMAGING..........................................................319
Rakesh Kumar, Jeffrey Lang, Tyler Hamer, David Trumper
Massachusetts Institute of Technology, United States

A-6-189
MAGNETOELECTRIC INTRINSIC GRADIOMETER WITH HIGH DETECTION SENSITIVITY AND AMBIENT
NOISE REJECTION..............................................................................................................322
Mingji Zhang, Siu Wing Or, Yiu Man Yip
Hong Kong Polytechnic University, Hong Kong

A-6-191
A DC CURRENT SENSOR BASED ON DISK-TYPE MAGNETOELECTRIC LAMINATE COMPOSITE........325
Guofeng Lou, Xinjie Yu, Rui Ban
Tsinghua University, China

A-6-193
A LORENTZ FORCE MEMS MAGNETOMETER .........................................................................328
Sedat Pala, Meltem Çiçek, Kivanc Azgun
Middle East Technical University, Turkey

A-6-195
A WIRELESS MULTI-CHANNEL PHYSIOLOGICAL SIGNAL ACQUISITION SYSTEM-ON-CHIP FOR
WEARABLE DEVICES ........................................................................................................331
National Chiao Tung University, Taiwan

A-6-197
FREQUENCY MODULATED ELECTROSTATICALLY COUPLED RESONATORS FOR SENSING
APPLICATIONS ....................................................................................................................334
Alireza Ramezany, Vahid Qaradaghi, Varun Kumar, Siavash Pourkamali
University of Texas at Dallas, United States

A-6-201
AN ON-CHIP THERMAL STRESS EVALUATION METHOD FOR SILICON RESONANT
ACCELEROMETER..................................................................................................................340
Guo-Ming Xia{1}, Qin Shi{1}, Anping Qiu{1}, Xue-Hao Yu{2}, Zhonghai Pei{2}
{1}Nanjing University of Science and Technology, China; {2}Shanghai Aerospace Control Technology Institute, China

A-6-203
AN OXIDE ELECTROTHERMAL FILTER IN STANDARD CMOS...........................................343
Lorenzo Pedalà{1}, Uğur Sönmmez{1}, Fabio Sebastiano{1}, Kofi Makinwa{1}, Krishnaswamy Nagaraj{2}, Joonsung
Park{2}
{1}Technische Universiteit Delft, Netherlands; {2}Texas Instruments, United States
A-6-205
A LEVITATING SPHERE VISCOMETER OPERATING IN A ROTATIONAL MODE ..............................................346
Stefan Clara, Hannes Antlinger, Ali Abdallah, Erwin K. Reichel, Wolfgang Hilber, Bernhard Jakoby
Johannes Kepler University, Austria

A-6-207
MEASUREMENT OF HEARTBEAT SIGNALS FROM AIRFLOW AT MOUTH IN RAT BY CATHETER FLOW SENSOR........................................................................................................................................349
Hidetaka Kawaoka{1}, Yoshihiro Hasegawa{1}, Mitsuhiro Shikida{1}, Miyoko Matsushima{2}, Tsutomu Kawabe{2}
{1}Hiroshima City University, Japan; {2}Nagoya University, Japan

A-6-209
EUTECTIC GA-IN LIQUID METAL BASED FLEXIBLE CAPACITIVE PRESSURE SENSOR ...........................352
Mohammed Mohammed Ali, Binu Narakathu, Sepehr Emamian, Amer Chlaihawi, Farah Aljanabi, Dinesh Maddipatla, Bradley Bazuin, Massood Zandi Atashbar
Western Michigan University, United States

A-6-211
CHARACTERIZATION OF A THERMOPILE-BASED CALORIMETRIC FLOW SENSOR .....................................355
Thilo Sauter{3}, Samir Cerimovic{2}, Harald Steiner{2}, Thomas Glatzl{2}, Marlies Schlau{1}, Franz Kohl{2}
{1}Attophotonics Lifesciences GmbH, Austria; {2}Danube University Krems, Austria; {3}Technische Universität Wien / Danube University Krems, Austria

A-6-213
DEVELOPMENT OF CYLINDER HOLLOW STRUCTURE WITH FLOW SENSOR BY FILM TRANSFER TECHNOLOGY ........................................................................................................................................358
Chiaki Okihara{1}, Yoshihiro Hasegawa{1}, Mitsuhiro Shikida{1}, Miyoko Matsushima{2}, Tsutomu Kawabe{2}
{1}Hiroshima City University, Japan; {2}Nagoya University, Japan

1:00 PM - 3:00 PM
A3P-O: Tactile, Motion, & Gesture Tracking Applications
LOCATION: Poster Area
SESSION CHAIR:
Philip Feng, Case Western Reserve University

A-10-237
APPLICATION OF MEMS ACCELEROMETERS IN SENSING PASSIVE EYE RESPONSE AS A SURROGATE FOR BRAIN RESPONSE TO HEAD ACCELERATION ........................................................................361
Yuan Meng{1}, Mark Adams{1}, Lei Liu{2}, Mark Bolding{2}
{1}Auburn University, United States; {2}University of Alabama at Birmingham, United States

A-10-239
CONVOLUTION NEURAL NETWORK ENHANCED BINARY SENSOR NETWORK FOR HUMAN ACTIVITY RECOGNITION ...........................................................................................................364
Guocheng Liu, Jinhao Liang, Gongjin Lan, Qi Hao, Mei Chen
South University of Science and Technology of China, China

A-10-255
PEDESTRIAN DETECTION WITH HIGH RESOLUTION INERTIAL MEASUREMENT UNIT ..........................367
Arto Perttula, Jussi Parviainen, Jussi Collin
Tampere University of Technology, Finland
A-10-241
PERSONAL DEAD RECKONING USING IMU DEVICE AT UPPER TORSO FOR WALKING AND RUNNING
Tri Nhut Do, Ran Liu, Chau Yuen, U-Xuan Tan
Singapore University of Technology and Design, Singapore

A-10-243
STATIC GESTURES RECOGNITION FOR BRAZILIAN SIGN LANGUAGE WITH KINECT SENSOR
Sergio Carneiro{1}, Edson Santos{1}, Talles M. G. de A. Barbosa{1}, José Ferreira{1}, Symone Soares Alcalá{3}, Adson Da Rocha{2}
{1}Pontifícia Universidade Católica de Goiás, Brazil; {2}Universidade de Brasília, Brazil; {3}Universidade Federal de Goiás, Brazil

A-10-245
SENSOR FUSED THREE-DIMENSIONAL LOCALIZATION USING IMU, CAMERA AND LIDAR
Hanieh Deilamsalehy, Timothy Havens
Michigan Technological University, United States

A-10-247
HANDMAGIC: TOWARDS USER INTERACTION WITH INERTIAL MEASURING UNITS
Jules Calella, Francisco Ortega, Naphtai Rishe, Jonathan Bernal, Armando Barreto
Florida International University, United States

A-10-249
GYROSCOPE DRIFT CORRECTION ALGORITHM FOR INERTIAL MEASUREMENT UNIT USED IN HAND MOTION TRACKING
Nonnarit O-Larnnithipong, Armando Barreto
Florida International University, United States

A-10-251
INDOOR POSITIONING USING VISUAL AND INERTIAL SENSORS
Ashish Gupta, Alper Yilmaz
Ohio State University, United States

A-10-253
FALL DETECTION USING ULTRA-WIDEBAND POSITIONING
Alessio Vecchio, Guglielmo Cola
Università di Pisa, Italy

A-10-257
A FINGER TOUCH FORCE DETECTION METHOD FOR TEXTILE BASED CAPACITIVE TACTILE SENSOR ARRAYS
Talha Agcayazi, Michael McKnight, Hannah Kausche, Tushar Ghosh, Alper Bozkurt
North Carolina State University, United States

A-10-259
WIRELESS SENSOR FOR DETERMINING THE IMPEDANCE OF HUMAN SKIN
Gregory Salsbery, Massood Tabib-Azar
University of Utah, United States
1:00 PM - 3:00 PM
A3P-P: Geological & Agricultural Sensing Applications
LOCATION: Poster Area
SESSION CHAIR:
Robert Roberts, University of Hong Kong

A-10-261
DIFFERENTIATION OF ORGANIC AND NON-ORGANIC APPLES USING NEAR INFRARED REFLECTANCE SPECTROSCOPY – A PATTERN RECOGNITION APPROACH ................................................................. 397
Weiran Song, Hui Wang, Paul Maguire, Omar Nibouche
Ulster University, United Kingdom

A-10-275
SPECTROSCOPIC IDENTIFICATION OF ANTI-PERSONNEL MINE SURROGATES FROM PLANAR SENSOR MEASUREMENTS .................................................................................................................. 400
Liam Marsh{1}, John L. Davidson{1}, Michael O'Toole{1}, Anthony Peyton{1}, Davorin Ambruš{2}, Darko Vasić{2}, Vedran Bilas{2}
{1}University of Manchester, United Kingdom; {2}University of Zagreb, Croatia

A-10-263
MICROSCALE PHLOEM SAP EXTRACTION SENSOR DEVICE FOR MEASURING BIOLOGICAL INFORMATION IN PLANT BRANCHES ........................................................................................................... 403
Akihito Ono{2}, Akihito Yoneda{1}, Yuichi Tao{2}, Kyoei Terao{2}, Hidekuni Takao{2}, Ryuji Ichihashi{2}, Tsuyoshi Kobayashi{2}, Ikuo Kataoka{2}, Fusao Shimokawa{2}
{1}Civil Aviation College, Japan; {2}Kagawa University, Japan

A-10-273
MEASUREMENT OF COMPLEX DIELECTRIC MATERIAL PROPERTIES OF ICE USING ELECTRICAL IMPEDANCE SPECTROSCOPY ........................................................................................................... 406
Matthias Flatscher, Markus Neumayer, Thomas Bretterklieber, Bernhard Schweighofer
Graz University of Technology, Austria

A-10-265
APPLICATION OF NIR HYPERSPECTRAL IMAGING FOR WATER DISTRIBUTION MEASUREMENTS IN PLANT ROOTS AND SOIL .................................................................................................................. 409
Thomas Arnold{1}, Raimund Leitner{1}, Gernot Bodner{2}
{1}CTR Carinthian Tech Research AG, Austria; {2}Universität für Bodenkultur Wien, Austria

A-10-267
SENSOR-BASED ESTIMATION OF BTEX CONCENTRATIONS IN WATER SAMPLES USING RECURSIVE LEAST SQUARES AND KALMAN FILTER TECHNIQUES ............................................................................ 412
Karthick Sothivel{1}, Florian Bender{1}, Fabien Josse{1}, Edwin Yaz{1}, Antonio Ricco{2}
{1}Marquette University, United States; {2}Stanford University, United States

A-10-269
MACROSCOPIC KELVIN PROBE FOR CONTACTLESS CORROSION ASSESSMENT OF STRUCTURES BURIED IN SOIL ................................................................................................................................. 415
Alberto A. Sagüés, Leonidas P. Emmenegger, Enrique A. Paz Velásquez, William C. Ruth
University of South Florida, United States

A-10-271
DETECTION OF FUNGUS THROUGH AN OPTICAL SENSOR SYSTEM USING THE HISTOGRAM OF ORIENTED GRADIENTS ......................................................................................................................... 418
Muhammad Waseem Tahir, Nayyer Abbas Zaidi, Roland Blank, Poornachandra P Vinayaka, Michael J. Vellekoop, Walter Lang
Universität Bremen, Germany
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliations</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-10-277</td>
<td>MULTI-SENSOR PLATFORM FOR AUTOMATIC DISORDERS DETECTION IN CIRCADIAN RHYTHM</td>
<td>Alessandro Leone, Andrea Caroppo, Giovanni Diraco, Gabriele Rescio, Pietro Siciliano</td>
<td>Consiglio Nazionale delle Ricerche, Italy</td>
</tr>
<tr>
<td>A-10-279</td>
<td>INTRA-TISSUE PRESSURE MEASUREMENT DURING LASER ABLATION WITH FIBER-OPTIC EXTRINSIC FABRY-PEROT SENSOR</td>
<td>Daniele Tosi{1}, Paola Saccomandi{2}, Emiliano Schena{2}, Sergio Silvestri{2}, Dinesh Babu Duraibabu{3}, Sven Poegegel{3}, Gabriel Leen{3}, Elfed Lewis{3}</td>
<td>{1} Nazarbayev University, Russia; {2} Università Campus Bio-Medico di Roma, Italy; {3} University of Limerick, Ireland</td>
</tr>
<tr>
<td>A-10-281</td>
<td>APPLICATION OF ION-SENSITIVE FIELD EFFECT TRANSISTORS FOR MEASURING GLIAL CELL K+ TRANSPORT</td>
<td>Yihao Zhu{1}, Goutam Koley{1}, Kenneth Walsh{2}, Ashley Galloway{2}, Pavel Ortinski{2}</td>
<td>{1} Clemson University, United States; {2} University of South Carolina, United States</td>
</tr>
<tr>
<td>A-10-283</td>
<td>AUTOMATING LASER CALIBRATION FOR MEDICAL LINEAR ACCELERATORS</td>
<td>Brandon VanGenderen{1}, Cameron Appeldoorn{1}, Ramani Ramaseshan{1}, Caroline Dearden{2}, Josha Ho{2}, Xiao Lin Long{2}</td>
<td>{1} BC Cancer Agency, Canada; {2} University of the Fraser Valley, Canada</td>
</tr>
<tr>
<td>A-10-285</td>
<td>PORTABLE EMBEDDED SYSTEMS FOR PROSTHETIC INTERFACE STRESS MAPPING OF LOWER LIMBS AMPUTEES</td>
<td>Maurizio Rossi{2}, Andrea Rizzi{2}, Leandro Lorenzelli{1}, Davide Brunelli{2}</td>
<td>{1} Fondazione Bruno Kessler, Italy; {2} Università degli Studi di Trento, Italy</td>
</tr>
<tr>
<td>A-10-287</td>
<td>CONTACTLESS DIRECT HEART-MOTION SENSOR USING FEMTOFARAD-LEVEL CAPACITANCE-VARIATION DETECTOR WITH VHF-BAND LC-OSCILLATOR</td>
<td>Hisashi Nishikawa, Yuta Kambara, Yuya Shimizu, Kei Igarashi, Ami Tanaka, Takakuni Douseki</td>
<td>Ritsumeikan University, Japan</td>
</tr>
<tr>
<td>A-10-289</td>
<td>TEMPERATURE MONITORING DURING THERMAL ABLATION ON EX-VIVO ORGANS BY FIBER BRAGG GRATINGS</td>
<td>Giovanna Palumbo{3}, Agostino Iadicicco{3}, Nicola Campopiano{2}, Daniele Tosi{1}, Paolo Verze{2}, Stefania Carlonagno{3}, Vincenzo Tammaro{2}, Juliet Ippolito{2}</td>
<td>{1} Nazarbayev University, Russia; {2} Università degli Studi di Napoli Federico II, Italy; {3} Università degli Studi di Napoli Parthenope, Italy</td>
</tr>
<tr>
<td>Session Time</td>
<td>Session Title</td>
<td>Location</td>
<td>Session Chairs</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>----------------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>1:00 PM - 3:00 PM</td>
<td>A3P-R: Actuators &amp; Sensor Power Systems II</td>
<td>Poster Area</td>
<td>Yuji Suzuki, The University of Tokyo</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Haluk Külah, Middle East Technical University</td>
</tr>
</tbody>
</table>

### A-12-317
**DEVELOPING A STICK-SLIP BASED KINESTHETIC TOUCHSCREEN SYSTEM FOR REALTIME STYLUS MANIPULATION**

Ahmed Farooq{2}, Philipp Weitz{2}, Grigori Evreinov{2}, Roope Raisamo{2}, Daisuke Takahata{1}

{1}FUKOKU Co., Ltd., Japan; {2}University of Tampere, Finland

### A-12-318
**FABRICATION OF ACOUSTIC EJECTORS WITH REPLACEABLE ACOUSTIC LENS BY USING SOFT-LITHOGRAPHY**

You-Lin Tu{1}, Jin-An Wu{1}, Shih-Jui Chen{1}, Barthélemy Cagneau{2}, Luc Chassagne{2}

{1}National Central University, Taiwan; {2}Université de Versailles Saint-Quentin-en-Yvelines, France

### A-12-319
**RF-MEMS FOR 5G MOBILE COMMUNICATIONS: A BASIC ATTENUATOR MODULE DEMONSTRATED UP TO 50 GHZ**

Jacopo Iannacci{1}, Christian Tschoban{2}, Jacob Reyes{2}, Uwe Maaß{2}, Max Huhn{2}, Ivan Ndip{2}, Harald Pötter{2}

{1}Fondazione Bruno Kessler, Italy; {2}Fraunhofer-Institut für Zuverlässigkeit und Mikrointegration, Germany

### A-12-320
**DESIGN AND FABRICATION OF AN ELECTRO-THERMAL LINEAR MOTOR WITH LARGE OUTPUT FORCE AND DISPLACEMENT**

Tengjiang Hu{2}, Yulong Zhao{2}, Xiuyuan Li{2}, You Zhao{2}, Yingwei Bai{1}

{1}Shaanxi Applied Physical Chemistry Research Institute, China; {2}Xi'an Jiaotong University, China

### A-12-321
**MEMS ACTUATOR FOR SPLINTER-LIKE SKIN PENETRATION IN GLUCOSE-SENSING APPLICATIONS: DESIGN AND DEMONSTRATION**

Martin Berka, Orly Yadid-Pecht, Martin Mintchev, Gang Wang

University of Calgary, Canada

### A-12-322
**REDUCED GRAPHENE OXIDE AND GEL POLYMER BASED THIN FILM SUPERCAPACITOR**

Yingqi Jiang{1}, Chen Yang{1}, Qian Zhang{1}, Ken Yang{1}, Suppanat Kosolwattana{2}, Jarin Joyner{2}, Hemtej Gullapalli{2}, Robert Vaia{2}

{1}Analog Devices, Inc., United States; {2}Rice University, United States

### A-12-323
**MANUFACTURING OF LINI0.5MN1.5O4/LIPON/SINX STRUCTURED FLEXIBLE LITHIUM MICROBATTERIES**

Haena Yim{1}, Ji-Won Choi{1}, Min-Seok Jeon{2}, Yung-Eun Sung{3}

{1}Korea Institute of Science and Technology, Korea, South; {2}Korea Testing Laboratory, Korea, South; {3}Seoul National University, Korea, South
MICRO BATTERIES FOR DRIVING GLUCOSE SENSORS ON SMART LENSES .................................................462
Hyunseok Lee{1}, Narendra Parmar{1}, Ji-Won Choi{1}, Min-Seok Jeon{2}, Kwang-Bum Kim{3}
{1}Korea Institute of Science and Technology, Korea, South; {2}Korea Testing Laboratory, Korea, South; {3}Yonsei University, Korea, South

1:00 PM - 3:00 PM
A3P-T: Focused Session Posters: Piezoelectric Energy Harvesting
LOCATION: Poster Area
SESSION CHAIR:
Fang Chen, State Key Lab of Transducer Technology

A NOVEL TOGGLE-TYPE MEMS VIBRATION ENERGY HARVESTER FOR INTERNET OF THINGS APPLICATIONS ....................................................................................................................................................464
Jacopo Iannacci{1}, Guido Sordo{1}, Michael Schneider{2}, Ulrich Schmid{2}, Antonio Camarda{3}, Aldo Romani{3}
{1}Fondazione Bruno Kessler, Italy; {2}Technische Universität Wien, Austria; {3}Università di Bologna, Italy

A MULTIFUNCTIONAL DEVICE AS BOTH STRAIN SENSOR AND ENERGY HARVESTER FOR STRUCTURAL HEALTH MONITORING ............................................................................................................467
Zheng Jun Chew{2}, Tingwen Ruan{2}, Meiling Zhu{2}, Marise Bafleur{1}, Jean-Marie Dilhac{1}
{1}Laboratoire d'Analyse et d'Architecture des Systèmes / Université de Toulouse, France; {2}University of Exeter, United Kingdom

COMBINED POWER EXTRACTION WITH ADAPTIVE POWER MANAGEMENT MODULE FOR INCREASED PIEZOELECTRIC ENERGY HARVESTING TO POWER WIRELESS SENSOR NODES .........................................................470
Zheng Jun Chew, Meiling Zhu
University of Exeter, United Kingdom

FLEXIBLE FIBER-BASED TRIBOELECTRIC GENERATOR FOR SELF-POWERED SENSORS.........................473
Jiwon Park, A Young Choi, Chang Jun Lee, Youn Tae Kim
Chosun University, Korea, South

SUB-G VIBRATION-THRESHOLD TRIGGERED DUAL FUNCTIONS OF ENERGY-HARVESTING AND VIBRATION-SENSING .................................................................................................................................476
Qisheng He, Zao Ni, Fang Chen, Jiachou Wang, Xinxin Li
Shanghai Institute of Microsystem and Information Technology / Chinese Academy of Sciences, China

HIGHLY FLEXIBLE P(VDF-TRFE) FILM-BASED PIEZOELECTRIC SELF-POWERED ENERGY HARVESTER ..................................................................................................................................................479
Soaram Kim, Itmenon Towfeeg, Ferhat Bayram, Digangana Khan, Goutam Koley
Clemson University, United States

ACCURACY AND MULTI DOMAIN PIEZOELECTRIC POWER HARVESTING MODEL USING VHDL-AMS AND SPICE .................................................................................................................................482
Flavilene Da Silva Souza{1}, Nobuo Oki{1}, Jozuê V. Filho{1}, Richard Loendersloot{2}, Arthur P. Berkhoff{2}
{1}Universidade Estadual Paulista Júlio de Mesquita Filho, Brazil; {2}Universiteit Twente, Netherlands
A-16-371
A PIEZOELECTRIC BASED VIBRATION ENERGY HARVESTER FABRICATED USING SCREEN PRINTING
TECHNIQUE ................................................................. 485
Sepehr Emamian, Amer Chlaihawi, Binu Narakathu, Bradley Bazuin, Massood Zandi Atashbar
Western Michigan University, United States

A-16-374
A PIEZOELECTRIC VIBRATION ENERGY HARVESTER USING MULTIPLE NONLINEAR
TECHNIQUES ............................................................... 488
Xiang Wang, Peng Zhou, Haisheng San
Xiamen University, China

3:00 PM - 4:00 PM
A4P-G: Live Demos
LOCATION: Bonaire 7-8
SESSION CHAIRS:
Ravinder Dahiya, University of Glasgow
Hua Wang, Georgia Institute of Technology

A-18-376
LIVE DEMONSTRATION: A 1024-PIXEL CMOS MULTI-MODALITY SENSING ARRAY FOR CELL-BASED
ASSAYS ................................................................. 491
Jong Seok Park(2), Moez Aziz(2), Taiyun Chi(2), Amy Su(2), Andrew Zhao(1), Hee Cheol Cho(1), Mark
Styczynski(2), Hua Wang(2)
(1)Emory University, United States; (2)Georgia Institute of Technology, United States

A-18-386
LIVE DEMONSTRATION: FEMTO- TO-MACRO SCALE INTERDISCIPLINARY SENSING WITH TENSIONED
METASTABLE FLUID DETECTORS ........................................ 492
Rusi Taleyarkhan(1), Alexander Hagen(1), Anthony Sansone(1), Brian Archambault(2)
(1)Purdue University, United States; (2)Sagamore Adams Laboratories, LLC, United States

A-18-377
LIVE DEMONSTRATION: CHARACTERIZATION OF 3D PRINTED PIEZOELECTRIC SENSORS ................. 493
Max Kirkpatrick(2), Joshua Tarbutton(2), Tue Le(2), Chabum Lee(1)
(1)Tennessee Technical University, United States; (2)University of South Carolina, United States

A-18-378
LIVE DEMONSTRATION: AN IR-BASED FACIAL EXPRESSION TRACKING SENSOR FOR HEAD-MOUNTED
DISPLAYS ................................................................................ 494
Jaekwang Cha, Jinhuyk Kim, Shiho Kim
Yonsei University, Korea, South

A-18-379
LIVE DEMONSTRATION: BIOSLEEVE, A WEARABLE HANDS-FREE GESTURE CONTROL
INTERFACE ............................................................................... 495
Christopher Assad, Jaakko Karras, Javier Rodriguez, Elijah Pivo, Calvin Huang, Michael Wolf, Marc Pomerantz,
Adrian Stoica
Jet Propulsion Laboratory, United States

A-18-380
LIVE DEMONSTRATION: HIGH-DEFINITION WIRELESS PERSONAL AREA TRACKING USING AC
MAGNETIC FIELD .................................................................. 496
Mohit Singh, Byunghoo Jung
Purdue University, United States
A-18-381
LIVE DEMONSTRATION: A WIRELESS MULTI-CHANNEL PHYSIOLOGICAL SIGNAL ACQUISITION SYSTEM-ON-CHIP FOR WEARABLE DEVICES .................................................................497
National Chiao Tung University, Taiwan

A-18-382
LIVE DEMONSTRATION: EXTREME ENVIRONMENT ANALOGUE ELECTRONICS FOR SENSOR NODES ............................................................................................................498
Hua-Khee Chan, Nick Wright, Alton Horsfall
Newcastle University, United Kingdom

A-18-383
LIVE DEMONSTRATION: PRINTED E-NOSE FOR UNIVERSAL APPLICATIONS ..................................................499
Mustahsin Adib, Martin Sommer
Karlsruher Institut für Technologie, Germany

A-18-384
LIVE DEMONSTRATION: CHIP-SCALE, NANO-ENGINEERED, ENVIRONMENTAL GAS SENSORS...........500
Brian Thomson{2}, Ratan Debnath{2}, Baomei Wen{2}, Audie Castillo{2}, Ting Xie{3}, Asha Rani{1}, Abhishek Motayed{2}
{1}George Washington University, United States; {2}N5 Sensors Inc, United States; {3}University of Maryland, United States

A-18-385
LIVE DEMONSTRATION: PULSE TRANSIT TIME MEASUREMENT ON A MODIFIED WEIGHING SCALE FOR CUFFLESS BLOOD PRESSURE ESTIMATION .........................................................501
Andrew Carek, Jordan Conant, Omer Inan
Georgia Institute of Technology, United States
4:00 PM - 5:30 PM
A5L-A: New Sensing Principles & Applications
LOCATION: Curacao 1-2
SESSION CHAIRS:
David Elata, Technion - Israel Institute of Technology
Michael Vellekoop, University of Bremen

4:00
ELECTRIC FIELD DRIVEN EXTENSIONAL RHEOMETRY OF SYNOVIAL FLUID ..............................................
Erwin K. Reichel{2}, Thomas Voglhuber-Brunnmaier{2}, Lisa Wolf{3}, Roman Beigelbeck{1}, Bernhard Jakoby{2}
{1}Danube University Krems / Technische Universität Wien, Austria; {2}Johannes Kepler University, Austria;
{3}Justus Liebig University Gießen, Germany

4:15
STUDY OF A SILICON PARALLEL PLATE CAPACITOR AS A DEW POINT SENSOR ...................................
Jochen Stehle{1}, Oliver Ambacher{2}, Ashwin Samarao{2}, Gary Yama{2}, Uma Krishnamoorthy{2}
{1}Albert-Ludwigs-Universität Freiburg, Germany; {2}Robert Bosch Research and Technology Center, United
States

4:30
DIRECT OPTICAL STRESS SENSING IN SEMICONDUCTOR MANUFACTURING USING RAMAN MICRO-
SPECTROMETRY ..................................................................................................................................................
Martin De Biasio{1}, Martin Kraft{1}, Michael Roesner{3}, Christoph Bergmann{3}, Maria Mercedes Cerezuela-
Barreto{2}, Dirk Lewke{2}, Martin Schellenberger{2}
{1}CTR Carinthian Tech Research AG, Austria; {2}Fraunhofer-Institut für Integrierte Systeme und
Bauelementetechnologie, Germany; {3}Infineon Technologies Austria AG, Austria

4:45
CAPACITIVE DIRECT-IMAGING SENSOR FOR TWO-PHASE FLOW VISUALIZATION ..................................
Aluisio Do Nascimento Wrasse, Tiago P. Vendruscolo, Eduardo N. Santos, Fernando C. Castaldo, Rigoberto E. M.
Morales, Marco Jose Da Silva
Universidade Tecnológica Federal do Paraná, Brazil

5:00
BUCKLING RESPONSE OF ELECTROTHERMALLY ACTUATED MICRO-BEAMS TO PARALLEL AND
TRANSVERSE FLOW............................................................................................................................................
Yoav Kessler, Alex Liberzon, Slava Krylov
Tel Aviv University, Israel

5:15
DESIGN PRINCIPLES FOR DIFFUSION CHARGERS SENSING PARTICLE NUMBER CONCENTRATION ..
Mario Anton Schriefl, Alexander Bergmann
Graz University of Technology, Austria
4:00 - 5:30 PM
A5L-B: Fabrication & Integration Issues in Mechanical & Chemobiological Sensors

LOCATION: Curacao 3-4
SESSION CHAIRS:
Karthik Shankar, University of Alberta
Jacopo Iannacci, FBK, Trento, Italy

4:00
FABRICATION CHALLENGES OF LAB-ON-CHIP
Chris Backhouse
University of Waterloo, Canada

4:30
A NANOFOREST-BASED SERS SENSOR FABRICATED BY BOSCH PROCESS FOR MULTIPLEXED CHEMICAL DETECTION
Yuan He, Chao Song, Long Que, Chao Wang, Chenxu Yu
Iowa State University, United States

4:45
PATTERNING OF NANOPHOTONIC STRUCTURES AT OPTICAL FIBER TIP FOR REFRACTIVE INDEX SENSING
Shawana Tabassum, Yifei Wang, Jikang Qu, Qiugu Wang, Seval Oren, Robert J. Weber, Meng Lu, Ratnesh Kumar, Liang Dong
Iowa State University, United States

5:00
ALL LASER PRINTED RESISTIVE CHEMICAL SENSOR: FABRICATION AND EVALUATION
Symeon Papazoglou{2}, Marina Makrygianni{2}, Ioanna Zergioti{2}, Myrto Filippidou{1}, Stavros Chatzandroulis{1}
{1}National Centre of Scientific Research Demokritos, Greece; {2}National Technical University of Athens, Greece

5:15
CHALLENGES OF MONOLITHIC INTEGRATION FOR SIGE MEMS TECHNOLOGY
Ashesh Ray Chaudhuri{2}, Simone Severi{1}, Philippe Helin{1}, Laurent A. Francis{3}, Harrie A.C. Tilmans{1}
{1}IMEC, Belgium; {2}IMEC / Université Catholique de Louvain, Belgium; {3}Université Catholique de Louvain, Belgium
4:00 PM - 5:30 PM
A5L-C: Light Detection
LOCATION: Curacao 5-6
SESSION CHAIRS:
Eduardo Fontana, Universidade Federal de Pernambuco
Carlos Ruiz-Zamarreño, Public University of Navarra

4:00
A VECTOR LIGHT DETECTOR FOR PROXIMITY SENSING APPLICATIONS...................................................... 535
Ibrahim El-chami, Siamack Vosoogh-Grayli, Donghao Zhuo, Behraad Bahreyni
Simon Fraser University, Canada

4:15
SIMULATION AND FABRICATION OF POLARIZED ORGANIC PHOTODIODES................................................. 538
Aniello Falco{1}, Robin Nagel{1}, Paolo Lugli{1}, Emanuele Bezzeccheri{2}, Rosalba Liguori{2}, Alfredo Rubino{2}
{1}Technische Universität München, Germany; {2}Università degli Studi di Salerno, Italy

4:30
AN EMBEDDED 2D IMAGER FOR MICROSCALE FLOWMETRY BASED ON OPTICAL FEEDBACK INTERFEROMETRY ................................................................................................................................. 541
Raul Da Costa Moreira, Adam Quotb, Clement Tronche, Francis Jayat, Antonio Luna-Arriaga, Thierry Bosch,
Julien Perchoux
Laboratoire d'Analyse et d'Architecture des Systèmes / Université de Toulouse, France

4:45
EPITAXIAL GRAPHENE (EG)/SIC BASED SCHOTTKY EMITTER BIPOLAR PHOTOTRANSISTORS FOR UV DETECTION AND EFFECT OF HYDROGEN INTERCALATION ON DEVICE I-V CHARACTERISTICS .......... 544
Venkata S.N. Chava{2}, MVS Chandrashekhar{2}, Kevin M. Daniels{1}, Bobby G. Barker{2}, Andrew B. Greytak{2}
{1}U.S. Naval Research Laboratory, United States; {2}University of South Carolina, United States

5:00
IMPROVED SIGNAL TO NOISE RATIO ACROSS THE SPECTRAL RANGE FOR CMOS SILICON PHOTOMULTIPLIERS ................................................................................................................................. 547
Mohammad Habib, Mst Shawkat, Nicole McFarlane
University of Tennessee, United States

5:15
A CMOS IMAGE SENSOR WITH NEARLY UNITY-GAIN SOURCE FOLLOWER AND OPTIMIZED COLUMN AMPLIFIER ...................................................................................................................... 550
Xiaoliang Ge, Albert Theuwissen
Technische Universiteit Delft, Netherlands
4:00 PM - 5:30 PM
A5L-D: Sensing Applications I
LOCATION: Curacao 7-8
SESSION CHAIRS:
Bernard Jakoby, Johannes Kepler University Linz, Austria
Jianzhen Ou, Royal Melbourne Institute of Technology, Australia

4:00
HUMAN ACTIVITY RECOGNITION WITH INERTIAL SENSORS USING A DEEP LEARNING APPROACH...553
Tahmina Zebin, Patricia J. Scully, Krikor B. Ozanyan
University of Manchester, United Kingdom

4:15
A NOVEL RECURSIVE ZERO-VELOCITY DETECTION APPROACH FOR SMARTPHONE BASED PEDESTRIAN DEAD RECKONING SYSTEMS.................................N/A
Yizhen Wang(2), Lingxiang Zheng(2), Biyu Tang(2), Ao Peng(2), Lulu Yuan(2), Qi Yang(2), Haibin Shi(2), Xiaoyang Ruan(2), Huiru Zheng(1)
(1)University of Ulster, United Kingdom; (2)Xiamen University, China

4:30
APPLICATION OF POLYPYRROLE-BASED SELECTIVE ELECTRODES IN ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY TO DETERMINE NITRATE CONCENTRATION..............................................................559
Meghdad Hajimorad(1), Saqer Alhoul(2), Hadil Mustafa(1), Monica So(1), Hitesh Oswal(1)
(1)California State University, Chico, United States; (2)Eastern Washington University, United States

4:45
IONOGEL-BASED NITRATE SENSOR DEVICE.........................................................................................562
Janire Saez, Fernando Benito-Lopez, Gorka Arana, Luis Angel Fernandez-Cuadrado
Universidad del Pais Vasco, Spain

5:00
NON CONDUCTING OBJECT DETECTION USING LOW FREQUENCY ELECTRIC FIELD IMAGING: POSSIBLE APPLICATION TO ANOMALY DETECTION IN INSULATING MATERIALS....................................................565
Olivier Mareschal, Basile Dufay, Sylvain Lebargy, Gilles Allègre, Matthieu Denoual, Didier Robbes
Université de Caen, France

5:15
CLICK CHEMISTRY BASED BIOMOLECULAR CONJUGATION MONITORING USING SURFACE-ENHANCED RAMAN SPECTROSCOPY MAPPING..................................................................................568
Mirko Palla(1), Shiv Kumar(1), Zengmin Li(1), Steffen Jockusch(1), James Russo(1), Jingyue Ju(1), Filippo Bosco(2), Tomas Rindzevicius(2), Tommy S. Alstrom(2), Michael S. Schmidt(2), Anja Boisen(2)
(1)Columbia University, United States; (2)Technical University of Denmark, Denmark
4:00 PM - 5:30 PM
A5L-E: Focused Session: Wearables
LOCATION: Bonaire 1-2
SESSION CHAIRS:
Mark Ming-Cheng Cheng, Wayne State University
Zeynep Celik-Butler, University of Texas at Arlington

4:00
TACTILE SENSORIZED GLOVE FOR FORCE AND MOTION SENSING .......................................................... 571
Joo Chuan Yeo{1}, Cassidy Lee{1}, Zhiping Wang{2}, Chwee Teck Lim{1}
{1}National University of Singapore, Singapore; {2}Singapore Institute of Manufacturing Technology, Singapore

4:15
CMOS HALL SENSOR WITH REDUCED SENSITIVITY DRIFT BY SYNCHRONOUS EXCITATION CALIBRATION FOR WEARABLE BIOMAGNETIC SENSOR IN SYSTEM-ON-CHIP ........................................ 574
Tiger Chang, Kai-Cheung Juang
Industrial Technology Research Institute, Taiwan

4:30
ELECTRONIC BRACELET FOR MONITORING OF ALCOHOL LIFESTYLE .................................................... 577
David Kinnamon{2}, Anjan Panneer Selvam{2}, Shalini Prasad{2}, Sriram Muthukumar{1}
{1}EnLiSense LLC., United States; {2}University of Texas at Dallas, United States

4:45
WEARABLE ANEMOMETER FOR 2D WIND DETECTION ................................................................................ 580
Shuai Zhao, Peng Jiang, Rong Zhu, Ruiyi Que
Tsinghua University, China

5:00
FLEXIBLE SENSOR FOR MEASUREMENT OF SKIN PRESSURE AND TEMPERATURE IN A CLINICAL SETTING ................................................................................................................................................................ 583
John McNeill{2}, Matthew Crivello{2}, Yitzhak Mendelson{2}, Devdip Sen{2}, Raymond Dunn{1}, Kelli Hickle{1}
{1}University of Massachusetts Medical School, United States; {2}Worcester Polytechnic Institute, United States

5:15
TEXTILE-BASED WEARABLE SENSORS USING METAL-NANOWIRE EMBEDDED CONDUCTIVE FIBERS.................................................................................................................. 586
Jimi Eom, Woobin Lee, Yong-Hoon Kim
Sungkyunkwan University, Korea, South
4:00 PM - 5:30 PM
A5L-F: Chemical & Gas Sensing Devices
LOCATION: Bonaire 3-4
SESSION CHAIRS:
Massood Atashbar, Western Michigan University
Ramgopal Rao, IIT Delhi

4:00
INVITED: ORGANIC FIELD EFFECT TRANSISTORS FOR EXPLOSIVE AND RADIATION DOSIMETRY APPLICATIONS .................................................................589
Valipe Ramgopal Rao, Sandeep G Surya
Indian Institute of Technology Bombay, India

4:30
A NOVEL IN-LINE FIBRE-OPTIC SENSOR FOR THE DETECTION OF HYDRATE INHIBITORS WITHIN THE OIL AND GAS INDUSTRY ..............................................................592
Gary McDowell(2), Mahesh Uttamalal(2), Sheila Holmes-Smith(2), Alan Graham(1)
{1}FMC Technologies, United Kingdom; {2}Glasgow Caledonian University, United Kingdom

4:45
RAMAN ENHANCED STRUCTURE WITH RECONFIGURED MOLECULARLY-IMPRINTED-POLYMER FOR GAS DETECTION .................................................................595
Satoshi Araki, Masashi Watanabe, Fumihiro Sassa, Kenshi Hayashi
Kyushu University, Japan

5:00
DETECTION OF AROMATIC COMPOUNDS IN ARTIFICIAL GASOLINE WITH HYBRID SURFACE ACOUSTIC WAVE SENSOR ARRAY AND A SHORT PACKED COLUMN (SAW-GC) .................................................................598
Caroline Carriel Schmitt, Michael Rapp, Achim Voigt, Nicolaus Dahmen
Karlsruher Institut für Technologie, Germany

5:15
VOC DETECTION USING MULTIMODE E-NOSE COMPOSED OF BULK ACOUSTIC WAVE RESONATOR AND SILICON NANOWIRE FIELD EFFECT TRANSISTOR ARRAY .................................................................601
Ye Chang(1), Hemi Qu(1), Xuexin Duan(1), Luye Mu(2), Mark Reed(2)
{1}Tianjin University, China; {2}Yale University, United States
TUESDAY, NOVEMBER 1

10:30 AM - 12:00 PM
LOCATION: Curacao 1-2
SESSION CHAIRS:
Darrin Young, University of Utah
Robert Roberts, University of Hong Kong

10:30
INVITED: PACKAGED CAPACITIVE PRESSURE SENSOR SYSTEM FOR AIRCRAFT ENGINE HEALTH MONITORING ........................................................................................................................................................604
Maximilian Scardelletti[2], Christian Zorman[1]
[1]Case Western Reserve University, United States; [2]Glenn Research Center, United States

11:00
AN INSTRUMENTATION GRADE WALL SHEAR STRESS SENSING SYSTEM.................................................................................................................................607
Casey Barnard[2], Jessica Meloy[1], Mark Sheplak[2]

11:15
DOPPLER SENSING OF UNSTEADY DENSE PARTICULATE FLOWS ...............................................................................................................................610
Benjamin Chorpening[2], Michael Spencer[2], Richard Stehle[2], Jared Charley[2], David Greve[1]

11:30
LINEARLY CHIRPED FIBER-OPTIC BRAGG GRATING AS DISTRIBUTED TEMPERATURE SENSOR FOR LASER ABLATION ..........................................................................................................................613
Sanzhar Korganbayev[2], Nurlan Zhakin[2], Daniele Tosi[2], Flavia Napoleon[i[4], Emiliano Schena[4], Paola Saccomandi[4], Riccardo Gassino[3], Guido Perrone[3], Michele Caponero[1]

11:45
A TWO-AXIS TACTILE SENSOR WITH 1μM DIAMETER TIP OF CONTACTER FOR DETECTION ABILITY OF MICRO REGION SURFACE TEXTURE ..........................................................................................................................616
Kazuki Watatani, Ryogo Kozai, Kyohei Terao, Fusao Shimokawa, Hidekuni Takao
Kagawa University, Japan
10:30
SILICON CAVITY RESONATOR BASED ON LOCALLY RESONANT PHONONIC CRYSTAL

Wanli Jiang, Duan Feng, Dehui Xu, Bin Xiong, Yuelin Wang
Shanghai Institute of Microsystem and Information Technology / Chinese Academy of Sciences, China

10:45
3D PHONONIC-FLUIDIC CAVITY SENSOR FOR RESONANCE MEASUREMENTS OF VOLUMETRIC FLUID PROPERTIES

Frieder Lucklum, Michael J. Vellekoop
Universität Bremen, Germany

11:00
NARROWBAND MEMS RESONANT INFRARED DETECTORS BASED ON ULTRATHIN PERFECT PLASMONIC ABSORBERS

Zhenyun Qian, Sungho Kang, Vageeswar Rajaram, Matteo Rinaldi
Northeastern University, United States

11:15
DIRECTLY TRAPPING OF NANOSCALE BIOMOLECULES USING BULK ACOUSTIC WAVE RESONATORS

Wenpeng Liu, Chongling Sun, Ji liang, Zifan Tang, Hongxiang Zhang, Hao Zhang, Wei Pang, Xuexin Duan
Tianjin University, China

11:30
A DIFFRACTION FREE PRESSURE WAVE SENSOR SETUP FOR THE ACOUSTIC VISCOSITY OF LIQUIDS

Hannes Antlinger{2}, Stefan Clara{2}, Thomas Voglhuber-Brunnmaier{2}, Bernhard Jakoby{2}, Roman Beigelbeck{1}, Samir Cerimovic{3}, Franz Keplinger{3}
{1}Danube University Krems / Technische Universität Wien, Austria; {2}Johannes Kepler University, Austria; {3}Technische Universität Wien, Austria

11:45
NOVEL MEASUREMENT METHOD OF POSITION AND SOUND VELOCITY OF A LIQUID DROPLET USING A SURFACE ACOUSTIC WAVE DEVICE

Jun Kondoh, Michiyuki Yamada, Ken Sugiura
Shizuoka University, Japan
10:30 AM - 12:00 PM
B2L-C: Optical Biosensors
LOCATION: Curacao 5-6
SESSION CHAIRS:
Huikai Xie, University of Florida
Wei-Chuan Shih, University of Houston

10:30
INVITED: MICRO FBI: A MICROSYSTEM FOR FEEDBACK-BASED BIOFILM INHIBITION

Sowmya Subramanian, Ryan Huiszoon, William Bentley, Reza Ghodssi
University of Maryland, United States

11:00
POROUS PHOTONIC CRYSTAL EXTERNAL CAVITY LASER BIOSENSOR FOR DRUG SCREENING

Qinglan Huang, Jessie Peh, Paul J. Hergenrother, Brian T. Cunningham
University of Illinois at Urbana–Champaign, United States

11:15
SINGLE-MOLECULE FLUORESCENCE IMAGING OF KINESIN USING LINEAR ZERO-MODE WAVEGUIDES

Yuki Morita{2}, Kazuya Fujimoto{2}, Ryota Iino{1}, Michio Tomishige{3}, Hirofumi Shintaku{2}, Hidetoshi Kotera{2}, Ryuji Yokokawa{2}
{1}Chinese Academy of Sciences, Japan; {2}Kyoto University, Japan; {3}University of Tokyo, Japan

11:30
SINGLE STRAND DNA DETECTION BY MEANS OF LOSSY MODE RESONANCE-BASED OPTICAL FIBER DEVICES

Carlos Ruiz Zamarreño{2}, Pablo Zubiate{2}, Pedro Sanchez{2}, Ignacio Raul Matias{2}, Francisco Javier Arregui{2}, Maria Antonia Ramos-Arroyo{1}, Maria Moreno-Igoa{1}, Blanca Hernández-Charro{1}
{1}Complejo Hospitalario de Navarra, Spain; {2}Universidad Pública de Navarra, Spain

11:45
GOLD NANOPARTICLE DECORATED AAO FILTER MEMBRANE FOR SERS SENSING OF URINE ACETAMINOPHEN

Yu-Lung Sung, Fusheng Zhao, Jingting Li, Wei-Chuan Shih
University of Houston, United States
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| 10:30 AM  | ON BED POSTURE RECOGNITION WITH PRESSURE SENSOR ARRAY SYSTEM         | Qingquan Sun{2}, Eli Gonzalez{2}, Yu Sun{1}  
{1}California State Polytechnic University, Pomona, United States; {2}California State University, San Bernardino, United States |
| 10:45     | EVALUATION METHOD OF FABRICS BY VISUAL AND TACTILE TEXTURE INFORMATION| Kenta Takahashi{1}, Takashi Abe{1}, Masayuki Sohgawa{1}, Masanori Okuyama{2}, Haruo Noma{3}  
{1}Niigata University, Japan; {2}Osaka University, Japan; {3}Ritsumeikan University, Japan |
| 11:00     | DEVELOPMENT OF A FUNGAL RISK MONITOR FOR THE NEXT GENERATION OF     | Roland Blank, Poornachandra P Vinayaka, Muhammad Waseem Tahir, Joanne Yong, Michael J. Vellekoop,  
|           | INTELLIGENT CONTAINERSAPER                                         | Walter Lang  
Universität Bremen, Germany                                                                                           |
| 11:15     | FLOODEYE: REAL-TIME FLASH FLOOD PREDICTION SYSTEM FOR URBAN COMPLEX   | Kei Hiroi, Nobuo Kawaguchi  
Nagoya University, Japan                                                                                                   |
|           | WATER FLOW                                                            |                                                                                                                   |
| 11:30     | A CONTACTLESS THREE-PHASE AUTONOMOUS POWER METER                      | Clemente Villani{3}, Simone Benatti{3}, Davide Brunelli{2}, Luca Benini{1}  
{1}Eidgenössische Technische Hochschule Zürich / Universität di Bologna, Switzerland; {2}Università degli Studi di Trento, Italy; {3}Università di Bologna, Italy |
| 11:45     | FBG-BASED TRANSVERSE AND AXIAL FORCE-SENSING MICRO-FORCEPS FOR       | Berk Gonenc, Iulian Iordachita  
Johns Hopkins University, United States                                                                                   |
10:30 AM - 12:00 PM
B2L-E: Focused Session: 3D Printed Sensors
LOCATION: Bonaire 1-2
SESSION CHAIRS:
Gijs Krijnen, University of Twente
Eric MacDonald, University of Texas in El Paso

10:30
INVITED: POLYMER COMPOSITES FOR 3D PRINTING OF FUNCTIONAL SENSORS AND TRANSDUCERS
Simon Leigh
University of Warwick, United Kingdom

11:00
FLEXIBLE, STRUCTURED MWCNT/PDMS SENSOR FOR CHRONIC VASCULAR ACCESS MONITORING
Steve Majerus{2}, Jeremy Dunning{2}, Joseph Potkay{1}, Kath Bogie{2}
{1}Ann Arbor VA Medical Center, United States; {2}Cleveland VA Medical Center, United States

11:15
3D PRINTED BIOMIMETIC WHISKER-BASED SENSOR WITH CO-PLANAR CAPACITIVE SENSING
John Delamare, Remco Sanders, Gijs Krijnen
Universiteit Twente, Netherlands

11:30
DESIGN AND DEVELOPMENT OF A NOVEL 3D PRINTED 1-DOF TACTILE SENSOR WITH CONDUCTIVE POLYMER BASED SENSING ELEMENT
{1}Sapporo City University, Japan; {2}University of Moratuwa, Sri Lanka

11:45
3D PRINTED PRESSURE SENSOR WITH SCREEN-PRINTED RESISTIVE READ-OUT
Frieder Lucklum, Gerrit Dumstorff
Universität Bremen, Germany
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<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
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{1}ams AG, Austria; {2}EV Group, Austria; {3}Institute for Electron Microscopy and Nanoanalysis, Austria; {4}Materials Center Leoben Forschung GmbH, Austria |
| 10:45    | ROOM TEMPERATURE ACETONE SENSOR BASED ON NANOSTRUCTURED K2W7O22          | Danling Wang(1), Qifeng Zhang(2)  
{1}North Dakota State University, United States; {2}University of Washington, United States |
| 11:00    | SYNTHESIS OF ZNS URCHIN-LIKE NANOSTRUCTURES FOR ELECTROCHEMICAL DETERMINATION OF URIC ACID | Yao Zhao(2), Niancai Peng(2), Xueyong Wei(2), Zhuangde Jiang(2), Winson Chun Hsin Kuo(1)  
{1}Texas A&M University, United States; {2}Xi'an Jiaotong University, China |
| 11:15    | PICOWATT GAS SENSING AND RESISTANCE SWITCHING IN TUNNELING NANO-GAP ELECTRODES | Aishwaryadev Banerjee, Navid Farhoudi, Chayanjit Ghosh, Carlos H Mastrangelo, Hanseup Kim, Samuel John Broadbent, Ryan E Looper  
University of Utah, United States |
| 11:30    | HIGH SENSITIVE GAS SENSORS REALIZED BY A TRANSFER-FREE PROCESS OF CVD GRAPHENE | Filiberto Ricciardella(2), Sten Vollebregt(2), Tiziana Polichetti(1), Brigida Alfano(1), Ettore Massera(1), Pasqualina M. Sarro(2)  
{1}Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Italy; {2}Technische Universiteit Delft, Netherlands |
| 11:45    | DETECTION OF COCAINE USING GRAVURE PRINTED SILVER NANOPIRATE BASED SERS SUBSTRATE | Farah Aljanabi, Binu Narakathu, Sepehr Emamian, Mohammed Mohammed Ali, Bradley Bazuin, Paul Fleming, Massood Zandi Atashbar  
Western Michigan University, United States |
TUESDAY, NOVEMBER 1 – POSTER SESSION

1:00 PM - 3:00 PM
B3P-G: Sensor Phenomenon, Modeling, & Evaluation II: Capacitive & Tomography
LOCATION: Poster Area
SESSION CHAIR:
Stefan Rupitsch, Friedrich-Alexander-Universität

B-1-13
FAST ALGORITHM FOR IMAGE RECONSTRUCTION IN ADAPTIVE ELECTRICAL CAPACITANCE TOMOGRAPHY
Zeeshan Zeeshan{1}, Fernando Teixeira{1}, Qussai Marashdeh{2}
{1}Ohio State University, United States; {2}Tech4Imaging LLC, United States

B-1-27
DESIGN AND MODELING OF THREE-DIMENSIONAL TIP-CLEARANCE OPTICAL PROBE BASED ON TWO-CIRCLE REFLECTIVE COAXIAL FIBER BUNDLE
Siying Xie, Xiaodong Zhang
Xi'an Jiaotong University, China

B-1-15
HIGH-POWER HANDLING CAPACITY AND OUTPUT RESPONSE OF A CAPACITIVE MICROWAVE POWER SENSOR
Hao Yan, Xiaoping Liao, Zhenxiang Yi
Southeast University, China

B-1-17
GLASS POLARIZATION INDUCED DRIFT OF CLOSED-LOOP MICROACCELEROMETER
Wu Zhou{3}, Huijun Yu{3}, Bei Peng{3}, Ruiguuo Cai{2}, Jiangguo Cai{2}, Jiangbo He{1}, Xiaoping He{1}
{1}China Academy of Engineering Physics, China; {2}Southeast University, China; {3}University of Electronic Technology and Science of China, China

B-1-19
A DECOUPLING CALIBRATION METHOD BASED ON GENETIC ALGORITHM FOR THREE DIMENSIONAL ELECTRIC FIELD SENSOR
Bing Li, Chunrong Peng, Fengjie Zheng, Biyun Ling, Bo Chen, Shanhong Xia
Chinese Academy of Sciences, China

B-1-21
CHARACTERIZATION OF FADING OF A MOS-BASED SENSOR FOR OCCUPATIONAL RADIATION DOSIMETRY
Charilaos Mousoulis{2}, Christian Elmiger{2}, Manik Singhal{2}, Yi Xuan{2}, Timothy McNamee{1}, James Thistlethwaite{1}, Paul Alexander Walerow{1}, Mark Salasky{1}, Sean Scott{1}, Daniel J. Valentino{1}, Dimitrios Peroulis{2}
{1}Landauer, Inc., United States; {2}Purdue University, United States

B-1-23
ELECTRICAL TAGGING DEVICES FOR THE REMOVAL OF FAULT LOCATION AMBIGUITIES BY REFLECTOMETRY IN COMPLEX ELECTRICAL NETWORKS
Florent Loete{1}, Michel Sorine{2}
{1}CentraleSupélec, France; {2}Institut National de Recherche en Informatique et en Automatique, France

B-1-29
AUGMENTING RESOLUTION CAPABILITIES OF IMAGE RECONSTRUCTION IN ADAPTIVE ELECTRICAL CAPACITANCE TOMOGRAPHY
Zeeshan Zeeshan{1}, Fernando Teixeira{1}, Qussai Marashdeh{2}
{1}Ohio State University, United States; {2}Tech4Imaging LLC, United States
B-1-25
ANALYTICAL MODELING OF ROTATING FIELD EDDY CURRENT SENSOR FOR NONDESTRUCTIVE TESTING OF TUBES

Darko Vasic(2), Davorin Ambrus(2), Vedran Bilas(2), Pengfei Zhao(1), Ze Liu(1)
(1)Beijing Jiaotong University, China; (2)University of Zagreb, Croatia

B-2-32
A NOVEL PACKAGING STRESS ISOLATION STRUCTURE FOR SOI BASED MEMS GYROSCOPES

Yongcun Hao, Weizheng Yuan, Jianbing Xie, Honglong Chang
Northwestern Polytechnical University, China

B-2-35
DESIGN, FABRICATION AND CHARACTERIZATION OF A HIGH PERFORMANCE MEMS ACCELEROMETER

Fatemeh Edalatfar, Bahareh Yaghootkar, Abdul Qader Ahsan Qureshi, Soheil Azimi, Behraad Bahreyni
Simon Fraser University, Canada

B-2-38
WIDEBAND PIEZOELECTRIC MEMS VIBRATION SENSOR

Bahareh Yaghootkar, Soheil Azimi, Behraad Bahreyni
Simon Fraser University, Canada

B-2-41
FABRICATION OF STRESS-FREE MEMS STRUCTURES WITH A MODIFIED SOI-ON-GLASS

Jayaprakash Reddy, Rudra Pratap
Indian Institute of Science, India

B-2-44
EFFECT OF THE INTERRUPTION OF THE PROPAGATION PATH ON THE RESPONSE OF SURFACE ACOUSTIC WAVE TRANSDUCERS

Thuhang Bui(1), An Tran(1), Bruno Morana(1), Jia Wei(1), Trinh Chu Duc(2), Pasqualina M. Sarro(1)
(1)Technische Universiteit Delft, Netherlands; (2)Vietnam National University, Hanoi, Vietnam
B-2-47
FEASIBILITY ANALYSIS OF A NOVEL PRODUCTION METHOD FOR MONOLITHIC INTEGRATED MEMS WITH NANOGAPS ........................................................................................................................................748
Daniel Hohnloser{1}, Denis Shuklin{1}, Carsten Schmidt{2}, Michael Kreitmaier{2}, Mario Blasini{2}, Amelie Hagelauer{1}, Robert Weigel{1}
{1}Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; {2}LFoundry S.r.l., Germany

B-2-50
ZNO THIN FILMS FOR APPLICATIONS IN SURFACE ACOUSTIC WAVE ACTUATORS ..........................................................751
Andrzej Nowek, Rafal Stankiewicz, Magdalena Baran, Izabela Zalewska, Ernest Brzozowski
Institute of Electronic Materials Technology, Poland

1:00 PM - 3:00 PM
B3P-J: Chemical & Gas Sensing: Devices and Systems
LOCATION: Poster Area
SESSION CHAIR:
Binu Narakathu, Western Michigan University

B-3-62
A SELF-POWERED ACTIVE HYDROGEN SENSOR USING TRIBOELECTRIC EFFECT ..........................................................754
A. S. M. Iftekhar Uddin, Gwiy-Sang Chung
University of Ulsan, Korea, South

B-3-65
LEAK DETECTION WITH LINEAR SOIL GAS SENSORS UNDER FIELD CONDITIONS - FIRST EXPERIENCES RUNNING A NEW MEASUREMENT TECHNIQUE ..................................................................................757
Patrick P. Neumann{1}, Matthias Bartholmai{1}, Detlef Lazik{2}
{1}Bundesanstalt für Materialforschung und -prüfung, Germany; {2}Helmholtz Centre for Environmental Research, Germany

B-3-68
A NOVEL PROTOTYPE OF LOW POWER CONSUMPTION MEMS SENSORS FOR HYDROGEN DETECTION ......................................................................................................................................................760
Debin Guan, Fang Yang, Qi Liu, Kun Yu, Jie Sun
China Academy of Engineering Physics, China

B-3-71
GAS SELECTIVE CHEMIRESISTOR COMPOSED OF MOLECULARLY IMPRINTED POLYMER COMPOSIT INK .........................................................................................................................................................763
Sho Shinohara, Fumihiro Sassa, Kenshi Hayashi
Kyushu University, Japan

B-3-74
DETECTION OF VOLATILE ORGANIC COMPUNDS BY HIGH-Q PIEZOTRANSUCED SINGLE-CRYSTAL SILICON BULK ACOUSTIC RESONATOR ARRAYS ........................................................................................................766
Yuan Zhao, Qingrui Yang, Ye Chang, Rui Zhang, Jin Tao, Hemi Qu, Xuexin Duan
Tianjin University, China

B-3-77
SIMULTANEOUS MODE TRACKING FOR SENSING APPLICATIONS WITH DUAL-MODE HETERODYNE NEMS OSCILLATOR ..................................................................................................................................................769
Guillaume Gourlat, Marc Sansa, Guillaume Jourdan, Patrick Villard, Gilles Sicard, Sébastien Hentz
Commissariat à l’Énergie Atomique et aux Énergies Alternatives, France
A GUIDING METHOD TO SELECT AND REDUCE THE NUMBER OF SENSING UNITS IN ELECTRONIC TONGUES

José Alberto Giacometti, Flávio Makoto Shimizu, Olivia Carr, Osvaldo Novais Oliveira Jr.
Universidade de São Paulo, Brazil

SMART CAPACITIVE CO2 SENSOR

Jamila Boudaden, Armin Klumpp, Ignaz Eisele, Christoph Kutter
Fraunhofer-Einrichtung für Mikrosysteme und Festkörper, Germany

A FAST READOUT CIRCUIT FOR AN ORGANIC VERTICAL NANO-JUNCTION SENSOR

Trong-Hieu Tran, Paul Chang-Po Chao, Chin-I Su, Hsiao-Wen Zan
National Chiao Tung University, Taiwan

NUMERICAL AND EXPERIMENTAL INVESTIGATION OF THERMAL BIMORPH MICROCANTILEVER-BASED NANO-CALORIMETER FOR SENSING OF EXPLOSIVE VAPORS

Seok-Won Kang{1}, Debjyoti Banerjee{2}
{1}Korea Railroad Research Institute, Korea, South; {2}Texas A&M University, United States

CMOS INTEGRATED TIN DIOXIDE GAS SENSORS FUNCTIONALIZED WITH BIMETALLIC NANOPARTICLES FOR IMPROVED CARBON MONOXIDE DETECTION

{1}ams AG, Austria; {2}EV Group, Austria; {3}Materials Center Leoben Forschung GmbH, Austria; {4}Universität Freiburg, Germany

INTEGRATED PRE-CONCENTRATOR GAS SENSOR SYSTEM FOR IMPROVED TRACE GAS SENSING PERFORMANCE

Martin Leidinger{3}, Tilman Sauenwald{3}, Andreas Schütze{3}, Christine Alépée{2}, Max Rieger{1}
{1}Fraunhofer-Institut für Chemische Technologie, Germany; {2}SGX Sensortech, Switzerland; {3}Universität des Saarlandes, Germany

IN-SITU SENSOR RESPONSE OF COPPER OXIDE URCHIN-LIKE STRUCTURES

Marcelo Orlandi, Anderson Felix, Pedro Suman, José Varela, Diogo Volanti
Universidade Estadual Paulista Júlio de Mesquita Filho, Brazil

WIDE DYNAMIC RANGE MULTI-CHANNEL ELECTROCHEMICAL INSTRUMENT FOR IN-FIELD MEASUREMENTS

Sina Parsnejad, Yaoxing Hu, Hao Wan, Ehsan Ashoori, Andrew Mason
Michigan State University, United States

ACETONE SENSING USING GRAPHENE QUANTUM CAPACITANCE VARACTORS

Rui Ma, Qun Su, Jing Li, Steven Koester
University of Minnesota, United States
B-3-102
REVISITING GAS SAMPLING AND ANALYSIS WITH MICROTECHNOLOGY: FEASABILITY OF LOW COST HANDHELD GAS CHROMATOGRAPHS .................................................................799
Bertrand Bourlon, Bao-An Pham Ho, Florence Ricoul, Thomas Chappuis, Amelie Bellemín Comte, Olivier Constantin, Beatrice Icard
Commissariat à l'Énergie Atomique et aux Énergies Alternatives, France

B-3-103
DEVELOPMENT OF A PORTABLE, LOW COST, PLASMA IONIZATION SOURCE COUPLED TO A MASS SPECTROMETER FOR SURFACE ANALYSIS .................................................................802
Barry Smith, Fred Jjunju, Stephen Taylor, Iain Young, Simon Maher
University of Liverpool, United Kingdom

B-3-104
MINIATURIZED GAS CHROMATOGRAPHY MODULE WITH MICRO POSTS EMBEDDED MEMS COLUMN FOR THE SEPARATION OF EXHALED BREATH GAS MIXTURES ....................................................805
Janghyeon Lee, Tae Ho Park, Hyun Sung Kang, Si-Hyung Lim
Kookmin University, Korea, South

B-3-105
IRRADIATION OF ON-CHIP CHALCOGENIDE GLASS WAVEGUIDE MID-INFRARED GAS SENSOR ..........808
Peter Su{1}, Zhaohong Han{1}, Derek Kita{1}, Vivek Singh{1}, Qingyang Du{1}, Lionel C. Kimerling{1}, Juejun Hu{1}, Anu Agarwal{1}, Kathleen Richardson{4}, Pao Tai Lin{3}, Dawn Tan{2}
{1}Massachusetts Institute of Technology, United States; {2}Singapore University of Technology and Design, Singapore; {3}Texas A&M University, United States; {4}University of Central Florida, United States

1:00 PM - 3:00 PM
B3P-K: Microfluidics
LOCATION: Poster Area
SESSION CHAIR:
Levent Yobas, Hong Kong University of Science and Technology

B-4-119
COMBINING MICROFLUIDIC CHIP AND BINARY OPTICAL ELEMENT FOR FLOW CYTOMETRY ..........811
Zhao Jingjing, You Zheng
Tsinghua University, China

B-4-107
FLUORESCENCE INITIATED SINGLE DROPLET SORTING (FISDS) PLATFORM BASED ON DIGITAL MICROFLUIDIC .................................................................814
Kang Cao, Yan Su, Weiqiang Wang, Ying Wan
Nanjing University of Science and Technology, China

B-4-110
INVESTIGATION INTO THE USE OF ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY FOR CELLULAR FUNCTIONAL IMMUNOPHENOTYPING ..............................................................................817
Brian Berger{2}, Katsuo Kurabayashi{2}, Mansoor Nasir{1}
{1}Lawrence Technological University, United States; {2}University of Michigan, United States

B-4-113
A 2KPA PER STAGE AND 1.3SCCM FLOW RATE MODULAR TWO-STAGE ELECTROSTATIC GAS MICROPUMP WITH STIFFENED DRIVE ELECTRODES ....................................................820
Amin Sandoughsaz, Khalil Najafi, Luis P. Bernal
University of Michigan, United States
B-4-116
MICROFLUIDIC ELECTROPHORETIC ION NUTRIENT SENSOR ..............................................................823
Zhen Xu, Xinran Wang, Robert J. Weber, Ratnesh Kumar, Liang Dong
Iowa State University, United States

B-4-122
JET FLOW FOCUSING BY CORONA DISCHARGE FOR FLUIDIC APPLICATION ..................................826
Tung Thanh Bui, Thien Xuan Dinh, Tibor Terebessy, Trinh Chu Duc, Van Thanh Dau
{1}Clearview Traffic Group Limited, United Kingdom; {2}Ritsumeikan University, Japan; {3}Sumitomo Chemical Ltd, Japan; {4}Vietnam National University, Hanoi, Vietnam

1:00 PM - 3:00 PM
B3P-L: Optical Bio/Chemo Sensors
LOCATION: Poster Area
SESSION CHAIR:
Haihu Yu, Wuhan University of Technology

B-5-127
ETHYLENE GAS SENSING USING NON-DISPERSIVE INFRARED SPECTROSCOPY .................................829
Martin De Biasio, Raimund Leitner, Christoph Krall, Matic Krivec, Andreas Wilk, Boris Mizaikoff, Roland Waldner, Franciscus Starmans, Dieter Maier
{1}CTR Carinthian Tech Research AG, Austria; {2}Philips Consumer Lifestyle, Austria; {3}Universität Ulm, Germany

B-5-151
MULTIPARAMETER SENSING OF PAPER SHEETS USING TERAHERTZ TIME-DOMAIN SPECTROSCOPY:
CALIPER, FIBER ORIENTATION, MOISTURE, AND THE ROLE OF SPATIAL INHOMOGENEITY...............832
Hannes Merbold, Deran Maas, Dook van Mechelen
ABB Switzerland Ltd., Switzerland

B-5-153
METHANE LEAK DETECTION AND SPECTRAL ANALYSIS BY USING ONLY OPTICAL TIME
DOMAIN REFLECTOMETRY IN SEMIDISTRIBUTED REMOTE OPTICAL SENSORS ..........................835
Claudio Floridia, Felipe Cezar Salgado, João Batista Rosolem, Fábio Renato Bassan, João Paulo Vicentini Fracaroll, Rivael Strobel Penze, Larissa Maria Pereira
{1}Centro de Pesquisa e Desenvolvimento em Telecomunicações, Brazil; {2}Petróleo Brasileiro S.A., Brazil

B-5-129
SENSITIVITY IMPROVEMENT ON CW DUAL-WAVELENGTH PHOTOACOUSTIC SPECTROSCOPY
USING ACOUSTIC RESONANT MODE FOR NONINVASIVE GLUCOSE MONITOR ..........................838
Yujiro Tanaka, Cassandra Purtill, Takuro Tajima, Michiko Seyama, Hiroshi Koizumi
NTT Corporation, Japan

B-5-131
EFFECT OF LIGAND EXCHANGE ON THE PHOTOSENSITIVITY OF NEAR-INFRARED SENSORS
BASED ON PBSE NANOCRYSTALS ....................................................................................................841
Ahmad Nusir, Omar Manasreh
University of Arkansas, United States

B-5-155
SKELETON-FREE TASK-SPECIFIC RAPID UPPER LIMB ERGONOMIC ASSESSMENT USING
DEPTH IMAGING SENSORS .............................................................................................................844
Darius Nahavandi, Mohammed Hossny
Deakin University, Australia
B-5-157
A PHOTONIC SILICON WAVEGUIDE GAS SENSOR USING EVANESCENT-WAVE ABSORPTION.................847
Christian Ranacher{1}, Cristina Consani{1}, Ursula Hedenig{2}, Thomas Grille{2}, Ventsislav Lavchiev{3}, Bernhard Jakoby{3}
{1}CTR Carinthian Tech Research AG, Austria; {2}Infineon Technologies Austria AG, Austria; {3}Johannes Kepler University, Austria

B-5-159
HIGHLY SENSITIVE REFLECTION-TYPE OPTICAL FIBER REFRACTIVE INDEX SENSOR WITH ROUNDED-EDGE STRUCTURE..........................................................................................................................850
Hideki Fukano, Ryo Kataoka, Shuji Taue
Okayama University, Japan

B-5-133
PORTABLE FLUORESCENT SENSING ARRAY FOR MONITORING HEAVY METALS IN WATER ............853
Simon Maher, Behnam Bastani, Barry Smith, Fred Jjunju, Stephen Taylor, Iain Young
University of Liverpool, United Kingdom

B-5-135
AUTOFLUORESCENT NANOPARTICLES FOR THE DETECTION OF MALARIA-INFECTION INDICATOR..856
Xiaoyu Ma, Jun Chen, Yu Lei, Swayandipta Dey, Jing Zhao
University of Connecticut, United States

B-5-137
FLUORESCENT CARBON NANOPARTICLES FOR SENSITIVE AND SELECTIVE DETECTION OF PALLADIUM (PD²⁺)......................................................................................................................859
Sichen Zhang{1}, Xiangcheng Sun{1}, Xiaoyu Ma{1}, Jun Chen{1}, Yu Lei{1}, Yupeng Wu{2}
{1}University of Connecticut, United States; {2}University of Nottingham, United Kingdom

B-5-139
NANOSTRUCTURED ALUMINUM OXIDE THIN FILM-BASED FLUORESCENT SENSING: EFFECTS OF NANOPORE SIZE, DENSITY AND THICKNESS..................................................................................862
Xiangchen Che, Pan Deng, Long Que
Iowa State University, United States

B-5-141
CHARACTERISTICS OF CARBON NANOTUBE BASED NANOCOMPOSITE OXYGEN SENSING MATRICES ..............................................................................................................................................865
Rongsheng Chen, Giovanni Fioroni, Hanne McPeak, Clive Hahn, Andrew Farmery
University of Oxford, United Kingdom

B-5-161
FIBER OPTIC MONITORING OF LITHIUM-ION BATTERIES: A NOVEL TOOL TO UNDERSTAND THE LITHIATION OF BATTERIES ........................................................................................................868
Abdulrahman Ghannoum, Krishna Iyer, Patricia Nieva, Amir Khajepour
University of Waterloo, Canada

B-5-143
FUNCTIONALIZED GOLD NANOPARTICLES FOR SURFACE PLASMON RESONANCE DETECTION OF LEGIONELLA PNEUMOPHILA 16S RNA........................................................................................................871
Feriel Melaine, Maryam Tabrizian
McGill University, Canada
B-5-165
OPTICAL SENSOR FOR DETERMINING CONCENTRATION OF GLUCOSE IN WATER
Gregory Salsbery, Massood Tabib-Azar
University of Utah, United States

B-5-145
A HIGH SENSITIVITY COMPACT GAS CONCENTRATION SENSOR USING UV LIGHT AND CHARGE AMPLIFIER CIRCUIT
Hidekazu Ishii(2), Masaaki Nagase(1), Nobukazu Ikeda(1), Yoshinobu Shiba(2), Yasuyuki Shirai(2), Rihito Kuroda(2), Shigetoshi Sugawa(2)
{1}Fujikin Inc., Japan; {2}Tohoku University, Japan

B-5-147
A NEW FIBER BIOSENSOR FOR REAL-TIME MEASUREMENT OF PH AND OXYGEN DURING THE PROCESS OF CELL METABOLISM
Wei Tao, Yanli Hu, Hui Zhao, Kan Wang, Rong Cai
Shanghai Jiao Tong University, China

B-5-163
SIC-ON-INSULATOR ON-CHIP PHOTONIC SENSOR IN A RADIATIVE ENVIRONMENT
Danhao Ma(1), Zhaohong Han(1), Qingyang Du(1), Juejun Hu(1), Lionel C. Kimerling(1), Anu Agarwal(1), Dawn Tan(2)
{1}Massachusetts Institute of Technology, United States; {2}Singapore University of Technology and Design, Singapore

B-5-149
ULTRAVIOLET LED BASED COMPACT AND FAST CORTISOL DETECTOR WITH ULTRA HIGH SENSITIVITY
Raju Sinha, Phani Kiran Vabbina, Arash Ahmadivand, Mustafa Karabiyik, Burak Gerislioglu, Nezih Pala
Florida International University, United States

1:00 PM - 3:00 PM
B3P-M: Physical Sensors VI: Inertial & Vibrational
LOCATION: Poster Area
SESSION CHAIR:
Eugene Hwang, Analog Devices

B-6-172
A TEMPERATURE COMPENSATION METHOD FOR MEMS ACCELEROMETER BASED ON LM_BP NEURAL NETWORK
Dacheng Xu(2), Zhimei Yang(2), Heming Zhao(2), Xiaolong Zhou(1)
{1}Beijing Institute of Technology, China; {2}Soochow University, China

B-6-174
COMPENSATION METHOD AND MEASUREMENT ACCURACY TO FLOOR VIBRATION IN ELECTRONIC BALANCE SYSTEM
Yuji Yamakawa(2), Takanori Yamazaki(1)
{1}Tokyo Denki University, Japan; {2}University of Tokyo, Japan

B-6-176
AN ELECTROMAGNETIC FEEDBACK METHOD TO IMPROVE LOW-FREQUENCY RESPONSE PERFORMANCE OF GEOPHONE
Kezhu Song, Shengqun Tong, Zhiguo Ding, Lei Dong
University of Science and Technology of China, China
B-6-178
A NOVEL METHOD FOR FABRICATING MEMS THREE-AXIS ACCELEROMETERS USING LOW TEMPERATURE AU-SN EUTECTIC BONDING
Serdar Tez(2), Mustafa Mert Torunbalci(1), Tayfun Akin(1)
(1)Middle East Technical University, Turkey; (2)Pamukkale University, Turkey

B-6-180
A CONCENTRATED SPRINGS ARCHITECTURE FOR SINGLE-DIGIT FREQUENCY SYMMETRY IN SI MEMS GYROSCOPE
Joan Giner, Yuhua Zhang, Takashi Shiota, Daisuke Maeda, Kazuo Ono, Shinya Kajiyama, Takashi Oshima, Taizo Yamawaki, Tomonori Sekiguchi
Hitachi Ltd., Japan

B-6-182
A DOUBLE DIFFERENTIAL TORSIONAL MICRO-ACCELEROMETER BASED ON V-SHAPE BEAM
Dewei Xia, Dingbang Xiao, Zhanqiang Hou, Qingsong Li, Xinghua Wang, Xuezhong Wu
National University of Defense Technology, China

B-6-184
TWO-AXIS TILT ANGLE DETECTION BASED ON DIELECTRIC LIQUID CAPACITIVE SENSOR
Tiep Dang Dinh(1), Tung Than Bui(3), Tuan Vu Quoc(3), Thinpham Quoc(3), Masahiro Aoyagi(2), My Bui Ngoc(1), Trinh Chu Duc(3)
(1)Military Institute of Science and Technology, Vietnam; (2)National Institute of Advanced Industrial Science and Technology, Japan; (3)Vietnam National University, Hanoi, Vietnam

B-6-186
A GYROSCOPE FREE INERTIAL MEASUREMENT UNIT FOR ANGULAR MOTION MEASUREMENT
Yang Yang, Xiong Yu
Case Western Reserve University, United States

B-6-188
EFFECT OF THE CATHODES ON THE CHARACTERISTICS OF THE MEMS BASED ELECTROCHEMICAL SEISMOMETER
Zhenyuan Sun, Deyong Chen, Junbo Wang, Tao Deng, Guanglei Li, Jian Chen
Chinese Academy of Sciences, China

B-6-190
A SINGLE-MASS SELF-RESONATING CLOSED-LOOP CAPACITIVE MEMS ACCELEROMETER
Talha Kose, Yunus Terзиоглу, Kivanç Azgün, Tayfun Akin
Middle East Technical University, Turkey

1:00 PM - 3:00 PM
B3P-N: Sensor Network, Theory & Evaluation
LOCATION: Poster Area
SESSION CHAIR:
Ryutaro Maeda, AIST

B-9-224
EVALUATION OF LORA AND LORAWAN FOR WIRELESS SENSOR NETWORKS
Andrew Wixted(2), Peter Kannard(3), Hadi Larijani(2), Alan Tait(3), Ali Ahmadinia(1), Niall Strachan(3)
(1)California State University San Marcos, United States; (2)Glasgow Caledonian University, United Kingdom; (3)Stream Technologies, United Kingdom

B-9-226
A SIGNAL DETECTION SCHEME FOR WIRELESS SENSOR NETWORKS BASED ON CONVEX OPTIMIZATION
Hongbo Zhao, Lei Chen, Wenquan Feng
Beihang University, China
### Towards WMSN Performance Using Different Packet Size

César Alberto da Silva{2}, Marcelo Alexandre C. Ismael{1}, Cláudio Maximiliano Zaina{1}, Linnyer Beatrys Ruiz{3}

{1}Federal Institute of São Paulo, Brazil; {2}Federal University of Minas Gerais, Brazil; {3}Universidade Estadual de Maringá, Brazil

**Session Details**

- **Time:** 1:00 PM - 3:00 PM
- **Location:** Poster Area
- **Session Chair:** Gijs Krijnen, University of Twente

### Geometric Optimization of a Flexible Arrayed Eddy Current Sensor for Non-Destructive Testing

Dong Cai{2}, Cheng Zou{2}, Zhenguo Sun{2}, Qiang Chen{2}, Junbo Wang{1}

{1}Chinese Academy of Sciences, China; {2}Tsinghua University, China

### Thermal Drift Optimization for Silicon Microgyroscope

Jian Zhou{1}, An-Ping Qi{1}, Yang Zhao{1}, Guo-Ming Xia{1}, Xue-Hao Yu{2}, Zhong-Hai Xue{2}

{1}Nanjing University of Science and Technology, China; {2}Shanghai Aerospace Control Technology Institute, China

### Response Characteristics of a MEMS Resonant Accelerometer to External Acoustic Excitation

Byungsu Park{1}, Sangwoo Lee{1}, Kyungjun Han{1}, Myeong-Jong Yu{1}, Byungsu Chang{2}

{1}Agency for Defense Development, Korea, South; {2}Microinfinity, Korea, South

### A Novel Approach for Weak Magnetic Field Measurement with Magnetoresistive Sensors

Kris Rohrmann, Marvin Sandner, Marcus Prochaska

Ostfalia Hochschule für angewandte Wissenschaften, Germany

### Dynamic Performance of a Novel Tilting Angle Measurement System Using Three Accelerometers

Yinsheng Weng, Hongcai Zhang, Juan Ren, Shudong Wang, Xueyong Wei

Xi'an Jiaotong University, China

### Cap-Less Audio Preamplifiers for Silicon Microphones

Marco Croce{2}, Claudio De Berti{1}, Lorenzo Crespi{1}, Piero Malcovati{2}, Andrea Baschirotto{3}

{1}Conexant System, United States; {2}Università degli Studi di Pavia, Italy; {3}Università degli Studi Milano-Bicocca, Italy


André R. de Miranda{2}, Talles M. G. de A. Barbosa{2}, Rui Araújo{3}, Symone G. S. Alcalá{1}

{1}Federal University of Goiás, Brazil; {2}Pontifícia Universidade Católica de Goiás, Brazil; {3}University of Coimbra, Portugal
B-10-250
CONCEPT FOR PRINTED FERROELECTRIC SENSORS ON COATED METALLIC SUBSTRATES .......... 949
Herbert Enser{1}, Johannes Sell{1}, Markus Krause{1}, Michaela Schatzl-Linder{2}, Bernhard Strauss{2}, Bernhard Jakoby{1}, Wolfgang Hilber{1}
{1}Johannes Kepler University, Austria; {2}voestalpine Stahl GmbH, Austria

B-10-252
IMPACT OF MULTIPLE SOUND TYPES ON ENVIRONMENTAL SOUND CLASSIFICATION ............. 952
Etto Salomons{1}, Henk van Leeuwen{1}, Paul Havinga{2}
{1}Saxon University of Applied Science, Netherlands; {2}Universiteit Twente, Netherlands

B-10-254
DETECTION OF CONDUCTIVE OBJECTS WITH ELECTRICAL CAPACITANCE TOMOGRAPHY .......... 955
Stephan Mühlbacher-Karrer, Hubert Zangl
Alpen-Adria-Universität Klagenfurt, Austria

B-10-256
PERFORMANCE STUDY OF MAGNETIC FIELD CONCENTRATION TECHNIQUES ON MAGNETORESISTOR/ROGOWSKI CONTACTLESS CURRENT SENSOR .......................................................... 958
Shahriar Jalal Nibir, Mehrdad Biglarbegian, Babak Parkhideh
University of North Carolina at Charlotte, United States

1:00 PM - 3:00 PM
B3P-P: Infrastructure Sensing Applications
LOCATION: Poster Area
SESSION CHAIR:
Gijs Krijnen, University of Twente

B-10-260
EKF-BASED STATE ESTIMATION FOR TRAIN LOCALIZATION ................................................. 961
Damien Veillard, Frederick Mailly, Philippe Fraisse
Laboratoire d'Informatique, de Robotique et de Microélectronique de Montpellier / Université de Mont, France

B-10-262
WIRELESS SUBSURFACE SENSORS FOR REMOTE TRANSPORTATION INFRASTRUCTURE MANAGEMENT ....................................................................................................................... 964
Paul Fortier, Benjamin Viall
University of Massachusetts Dartmouth, United States

B-10-264
MOBILE BRIDGE INTEGRITY ASSESSMENT .............................................................................. 967
Maik Benndorf{1}, Maximilian Garsch{2}, Thomas Haenselmann{1}, Norbert Gebbeken{2}, Inna Videkhina{2}
{1}Hochschule Mittweida, Germany; {2}Universität der Bundeswehr München, Germany

B-10-266
REAL TIME ELECTRICITY THEFT DETECTION IN MICROGRIDS THROUGH WIRELESS SENSOR NETWORKS ............................................................................................................. 970
Muhammad Tariq, Vincent Poor
Princeton University, United States

B-10-268
AIRSENSE: OPPORTUNISTIC CROWD-SENSING BASED AIR QUALITY MONITORING SYSTEM FOR SMART CITY ........................................................................................................... 973
Joy Dutta, Firoz Gazi, Sarbani Roy, Chandreyee Chowdhury
Jadavpur University, India
B-10-276
MATERIAL INTEGRATED SENSORS FOR AN OPTIMAL BASELINE SELECTION ON A WIRELESS SHM NETWORK ..........................................................976
Mariugenia Salas(2), Michael Koerdt(1), Martina Hübner(3), Maryam Kahali(3), Walter Lang(3)
(1)Faserinstitut Bremen e.V., Germany; (2)Friedrich-Wilhelm-Bessel-Institut Forschungsgesellschaft mbH, Germany; (3)Universität Bremen, Germany

B-10-270
REAL TIME MEASUREMENT OF THE DYNAMIC DISPLACEMENT FIELD OF A LARGE-SCALE ARCH-TRUSS BRIDGE BY REMOTE SENSING TECHNOLOGY ..........................................................979
Yang Yang, Xiong Yu
Case Western Reserve University, United States

B-10-272
PRELIMINARY RESULTS OF POWERLINE RECONSTRUCTION FROM AIRBORNE LIDAR FOR SAFE AUTONOMOUS LOW-ALTITUDE URBAN OPERATIONS OF SMALL UAS ..............................................982
Corey Ippolito(1), Kalmanje Krishnakumar(1), Sebastian Hening(2)
(1)Ames Research Center, United States; (2)University of California, Santa Cruz, United States

B-10-274
A UNIVERSAL SENSOR DATA PLATFORM MODELED FOR REALTIME ASSET CONDITION SURVEILLANCE AND BIG DATA ANALYTICS FOR RAILWAY SYSTEMS ...............................................985
Tony Lee, May Tso
MTR Corporation Limited, Hong Kong

1:00 PM - 3:00 PM
B3P-Q: Focused Session Posters: Wearable Sensors for Monitoring Human Body Physiological Parameters
LOCATION: Poster Area
SESSION CHAIR:
Rong Zhu, Tsinghua University

B-13-325
DUAL TRI-AXIS ACCELEROMETERS FOR MONITORING PHYSIOLOGICAL PARAMETERS OF HUMAN BODY IN SLEEP .........................................................988
Peng Jiang, Rong Zhu
Tsinghua University, China

B-13-327
ECG MEASUREMENT BY USE OF PASSIVE CAPACITIVELY COUPLED ELECTRODES .................................991
Jens Kirchner, Nils Roth, Andreas Meyer, Georg Fischer
Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

B-13-333
WEARABLE GRAPHENE-BASED SENSOR ARRAY FOR FINGER TRACKING ................................................994
Andrea Rinaldi, Alessandro Proietti, Alessio Tamburrano, Maria Sabrina Sarto
Sapienza - Università di Roma, Italy

B-13-335
FLEXIBLE, SELF-POWERED, VISIBLE-LIGHT DETECTOR CHARACTERIZED USING A BATTERY-OPERATED, 3D-PRINTED MICROPLASMA OPERATED AS A LIGHT SOURCE ........................................997
Ruifeng Yang, Andrei Sazonov, Vassili Karanassios
University of Waterloo, Canada
B-13-329
WIRELESS AND CONTINUOUS INTRAOCULAR PRESSURE SENSORS USING TRANSPARENT GRAPHENE

Peng Zeng{1}, Qingsong Cui{2}, Michael Wu{2}, Pai-Yen Chen{2}, Mark Ming-Cheng Cheng{2}
{1}Wayne Sate University, United States; {2}Wayne State University, United States

B-13-337
ON-BODY SENSOR NODE LOCALIZATION USING REFERENCE RFID TAGS EMBEDDED IN WEARABLE WAVEGUIDE

Akihito Noda, Hiroyuki Shinoda
University of Tokyo, Japan

B-13-331
MICRO-RADAR WEARABLE RESPIRATION MONITOR

Ruthvik Kukkapalli, Nilanjan Banerjee, Ryan Robucci, Dan Kostov
University of Maryland, Baltimore County, United States

1:00 PM - 3:00 PM
B3P-R: Biomedical Interfaces
LOCATION: Poster Area
SESSION CHAIR:
Darrin Young, University of Utah

B-11-299
A 64-CHANNEL WIRELESS IMPLANTABLE SYSTEM-ON-CHIP FOR GASTRIC ELECTRICAL-WAVE RECORDING

Ahmed Ibrahim{2}, Mehdi Kiani{2}, Aydin Farajidavar{1}
{1}New York Institute of Technology, United States; {2}Pennsylvania State University, United States

B-11-301
ENHANCING THE READOUT OF PASSIVE WIRELESS SENSORS BY USING LEFT-HANDED METAMATERIALS

Lei Dong{2}, Li-Feng Wang{1}, Qing-An Huang{2}
{1}Key Laboratory of MEMS of the Ministry of Education, Southeast University, China; {2}Southeast University, China

B-11-303
LOW-ENERGY BIOMARKER DETECTION THROUGH CHARGE-BASED IMPEDANCE MEASUREMENTS

Jun-Rui Zhang{1}, Adrian Ionescu{1}, Marco Mazza{2}
{1}Ecole Polytechnique Federale de Lausanne, Switzerland; {2}University of Applied Science – Western Switzerland, Switzerland

B-11-305
TOWARDS MOBILE HEALTH CARE: NEUROCOGNITIVE IMPAIRMENT MONITORING BY BCI-BASED GAME

Valerio Francesco Annese, Giovanni Mezzina, Daniela De Venuto
Politecnico di Bari, Italy

B-11-307
A NOVEL METHOD BASED ON RF DETECTION ENABLING WIRELESS AND PASSIVE LC SENSING

Qiuxu Wei{2}, Yanshuang Wang{3}, Deyong Chen{1}, Jian Chen{1}, Junbo Wang{1}
{1}Chinese Academy of Sciences, China; {2}Chinese Academy of Sciences / University of Chinese Academy of Sciences, China; {3}University of Chinese Academy of Sciences, China
B-11-309
BCG-MAPPING OF THE THORAX USING DIFFERENT SENSORS: FIRST EXPERIENCES AND SIGNAL QUALITY .................................................................1024
Nico Jähne-Raden{2}, Torsten Märtin{2}, Michael Marschollek{2}, Karsten Heusser{1}, Jens Tank{1}
{1}Medizinische Hochschule Hannover, Germany; {2}Peter L. Reichertz Institut für Medizinische Informatik / Technische Universität Braunschweig, Germany

B-11-311
A PROOF-OF-CONCEPT CLASSIFIER FOR ACOUSTIC SIGNALS FROM THE KNEE JOINT ON A FPAA ..................................................................................................................................................1027
Sahil Shah, Caitlin Teague, Omer Inan, Jennifer Hasler
Georgia Institute of Technology, United States

1:00 PM - 3:00 PM
B3P-T: Focused Session Posters: Low-Power Sensors & Power Conditioning
LOCATION: Poster Area
SESSION CHAIR:
Francesco Orfei, University of Perugia

B-16-351
SELF-POWERED LIGHTNING CURRENT SENSOR.................................................................................................................................1030
Disheng Wang, Lin Du, Shiyong Wang, Liman Ran
Chongqing University, China

B-16-354
DESIGN OF POWER MANAGEMENT ASIC FOR PIEZOELECTRIC ENERGY HARVESTER .................................................................1033
Hua Yu, Han Wu
Chongqing University, China

B-16-357
AN ANT-BASED LOW-POWER BATTERY-FREE WIRELESS CRYOGENIC TEMPERATURE PROBES FOR INDUSTRIAL PROCESS MONITORING ........................................................................................................1036
Nithin Raghunathan{2}, Xiaofan Jiang{2}, Arnab Ganguly{1}, Dimitrios Peroulis{2}
{1}IMA Life North America, United States; {2}Purdue University, United States

B-16-360
VIBRATIONS POWERED LORA SENSOR: AN ELECTROMECHANICAL ENERGY HARVESTER WORKING ON A REAL BRIDGE .................................................................1039
Francesco Orfei, Chiara Benedetta Mezzetti, Francesco Cottone
Università degli Studi di Perugia, Italy

B-16-363
ULTRA-LOW-POWER RADFET SENSING CIRCUIT FOR WIRELESS SENSOR NETWORKS POWERED BY ENERGY HARVESTING ........................................................................................................1042
Andrey Somov{2}, Zheng Jun Chew{2}, Tingwen Ruan{2}, Meiling Zhu{2}, Simon Platt{1}
{1}University of Central Lancashire, United Kingdom; {2}University of Exeter, United Kingdom

B-16-366
SYSTEM-LEVEL MODELLING AND VALIDATION OF A STRAIN ENERGY HARVESTING SYSTEM BY DIRECTLY COUPLING FINITE ELEMENT AND ELECTRICAL CIRCUITS ........................................................................................................1045
Qiang Li, Yang Kuang, Meiling Zhu
University of Exeter, United Kingdom

B-16-369
AN 143NW RELAXATION OSCILLATOR FOR ULTRA-LOW POWER BIOMEDICAL SYSTEMS .................................................................1048
Huan Hu, Subhanshu Gupta, Martin Schiavenato
Washington State University, United States
B-16-372
DEVELOPMENT OF ZERO-ENERGY COMMUNICATION SENSOR TAG SYSTEM USING AMBIENT WI-FI SIGNAL ....................................................................................................................................................1051
Young-Han Kim, Hyun-Seok Ahn, Changseok Yoon, Yongseok Lim, Seung-Ok Lim
KETI (Korea Electronics Technology Institute), Korea, South

3:30 PM - 5:00 PM
B4L-A: Physical Sensors II: Crystalline & CMOS Sensors
LOCATION: Curacao 1-2
SESSION CHAIRS:
Hua Wang, Georgia Institute of Technology
Vikrant Gokhale, University of Michigan

3:30
INVITED: SIMULATION-BASED CHARACTERIZATION OF PIEZOCERAMIC MATERIALS.........................1054
Stefan Rupitsch
Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

4:00
COMPARISON OF REFERENCE SENSORS FOR NOISE CANCELLATION OF MAGNETOELECTRIC SENSORS....................................................................................................................1057
Jens Reermann, Christin Bald, Sebastian Salzer, Phillip Durdaut, André Piorra, Dirk Meyners, Eckhard Quandt,
Michael Höft, Gerhard Schmidt
Christian-Albrechts-Universität zu Kiel, Germany

4:15
CHARACTERIZATION OF BIPOLAR TRANSISTORS FOR CRYOGENIC TEMPERATURE SENSORS IN STANDARD CMOS ........................................................................................................................................1060
Lin Song, Harald Homulle, Edoardo Charbon, Fabio Sebastiano
Technische Universität Delft, Netherlands

4:30
E-SKIN MODULE WITH HETEROGENEOUSLY INTEGRATED GRAPHENE TOUCH SENSORS AND CMOS CIRCUITRY ..............................................................................................................................................1063
Hadi Heidari, Carlos García Núñez, Ravinder Dahiya
University of Glasgow, United Kingdom

4:45
HIGH-DENSITY CMOS MICROELECTRODE ARRAY SYSTEM FOR IMPEDANCE SPECTROSCOPY AND IMAGING OF BIOLOGICAL CELLS ...........................................................................................................1066
Vijay Viswam, Raziyeh Bounik, Amir Shadmani, Jelena Dragas, Julia Alicia Boos, Axel Birchler, Jan Müller, Yihui Chen, Andreas Hierlemann
Eidgenössische Technische Hochschule Zürich, Switzerland
<table>
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<th>Time</th>
<th>Title</th>
<th>Authors</th>
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| 3:30  | INVITED: A 700 KHZ ULTRASONIC LINK FOR WIRELESS POWERING OF IMPLANTABLE MEDICAL DEVICES | Raffaele Guida, Enrico Santagati, Tommaso Melodia  
Northeastern University, United States                                                                                                           |
| 4:00  | ULTRASONICALLY POWERED HYDROGEL-BASED WIRELESS IMPLANTABLE GLUCOSE SENSOR | Hamid Basaeri, David Christensen, Shad Roundy, Yuechuan Yu, Tram Nguyen, Prashant Tathireddy, Darrin Young  
University of Utah, United States                                                                                                                |
| 4:15  | HIGH-RESOLUTION ULTRASONIC SENSOR DEDICATED TO IN-SITU NUCLEAR FUEL SWELLING MEASUREMENTS | Ghita Zaz{2}, Emmanuel Le Clézio{2}, Meriem Chrif Aloufi{2}, Gilles Despaux{2}, Yoann Calzavara{1}  
{1}Institut Laue-Langevin, France; {2}Université de Montpellier, France                                                                             |
{1}MRC Institute of Hearing Research, United Kingdom; {2}MRC Institute of Hearing Research, United Kingdom; {3}University of Strathclyde, United Kingdom |
| 4:45  | IMPROVING EFFICIENCY OF ULTRASONIC DISTANCE SENSORS USING PULSE INTERVAL MODULATION | Seungin Shin, Min-Hyun Kim, Seibum Choi  
Korea Advanced Institute of Science and Technology, Korea, South                                                                                   |
3:30
FIBER LASER SENSOR FOR SIMULTANEOUS ACCELERATION AND MAGNETIC MEASUREMENT ..........1084
Wentao Zhang, Zhaogang Wang, Wenzhu Huang, Fang Li
Chinese Academy of Sciences, China

3:45
HIGHLY SENSITIVE MINIATURE SCALAR OPTICAL GRADIOMETER ..................................................1087
Rui Zhang, Kenneth Smith, Rahul Mhaskar
Geometrics, Inc., United States

4:00
DYNAMIC DISPERSIVE SPECTROMETER USING A FIBER BRAGG GRATING FOR HIGH PRESSURE MEASUREMENTS .................................................................................................1090
Yohan Barbarin, Alexandre Lefrançois, Frédéric Sinatti, Alexandre Bey, Matthieu Balbarie, Antoine Osmont, Jérôme Luc
Commissariat à l’Énergie Atomique et aux Énergies Alternatives, France

4:15
SINGLE-SHOT BRILLOUIN OPTICAL TIME DOMAIN ANALYSIS FOR DISTRIBUTED FIBER SENSING ....1093
Jian Fang(2), William Shieh(2), Pengbai Xu(1)
(1)Harbin Institute of Technology, China; (2)University of Melbourne, Australia

4:30
A MEMS INFRARED THERMOPILE WITH PHONONIC CRYSTAL STRUCTURES AND CARBON NANOTUBE ABSORPTION LAYER ..................................................................................1096
Kory Gray(2), John Muth(2), William Carr(1)
(1)New Jersey Microsystems, United States; (2)North Carolina State University, United States

4:45
EFFECTS OF MAGNETIC FIELD ON AN OPTICAL FIBRE RADIATION DOSIMETER ............................1099
Sinead O’Keeffe(3), Lingxia Chen(3), Elfed Lewis(3), Mark Grattan(2), Alan Hounsell(2), Glenn Whitten(2), Giuseppe Schettino(1)
(1)National Physical Laboratory, United Kingdom; (2)Northern Ireland Cancer Centre, United Kingdom; (3)University of Limerick, Ireland
3:30 PM - 5:00 PM
B4L-D: Medical Sensing Applications
LOCATION: Curacao 7-8
SESSION CHAIRS:
Robert Roberts, University of Hong Kong
Gerald Gerlach, Institut fuer Festkoerperelektronik, Technische Universitaet Dresden

3:30
NON-INVASIVE INTEGRATED WIRELESS BREATHING MONITORING SYSTEM BASED ON A PYROELECTRIC TRANSDUCER
Salvatore Andrea Pullano{1}, Antonino S. Fiorillo{1}, Ifana Mahbub{2}, Syed K. Islam{2}, Mark S. Gaylord{2}, Vichien Lorch{2}
{1}Università degli studi Magna Græcia di Catanzaro, Italy; {2}University of Tennessee, United States; {2}University of Tennessee, United States

3:45
60GHZ VITAL SIGN RADAR USING 3D-PRINTED LENS
Robert Ernst{1}, Emil Nilsson{1}, Per-Arne Viberg{2}
{1}Halmstad University, Sweden; {2}Swedish Adrenaline AB, Sweden

4:00
A NEW CUFFLESS OPTICAL SENSOR FOR BLOOD PRESSURE MEASURING WITH SELF-ADAPTIVE SIGNAL PROCESSING
Yung-Hua Kao, Paul Chang-Po Chao, Tse-Yi Tu, Keng-Yueh Chiang, Chin-Long Wey
National Chiao Tung University, Taiwan

4:15
A LOW-POWER MULTI-PHYSIOLOGICAL MONITORING PROCESSOR FOR STRESS DETECTION
Nasrin Attaran{2}, Justin Brooks{1}, Tinoosh Mohsenin{2}
{1}United States Army Research Laboratory, United States; {2}University of Maryland, Baltimore County, United States

4:30
INTRALUMINAL PRESSURE AND TEMPERATURE SENSOR AIMED AT APPLICATION TO FLEXIBLE ENDOSCOPE OPERATION
Yusaku Maeda, Kohei Maeda, Hideki Kobara, Hirohito Mori, Hidekuni Takao
Kagawa University, Japan

4:45
AN ULTRASENSITIVE MAGNETOELECTRIC SENSOR SYSTEM FOR THE QUANTITATIVE DETECTION OF LIVER IRON
Hao Xi, Meng-Chien Lu, Xiaoshi Qian, Qiming Zhang, Sebastian Rupprecht, Qing Yang
Pennsylvania State University, United States
3:00 PM - 5:00 PM
B4L-E: Focused Session: Resonators
LOCATION: Bonaire 1-2
SESSION CHAIRS:
Peter Hesketh, Georgia Institute of Technology
Oliver Brand, Georgia Institute of Technology

3:30
INVITED: SUBSTRATE-DECOUPLED 3D MICRO-SHELL RESONATORS
Vahid Tavassoli, Benoit Hamelin, Farrokh Ayazi
Georgia Institute of Technology, United States

4:00
PROBING ANCHOR LOSSES IN ALN-ON-SI CONTOUR MODE MEMS RESONATORS THROUGH LASER DOPPLER VIBROMETRY
Cheng Tu{1}, Joshua En-Yuan Lee{1}, Astrid Frank{2}, Christoph Schäffel{2}, Uwe Stehr{3}, Matthias Hein{3}
{1}City University of Hong Kong, Hong Kong; {2}Institut für Mikroelektronik- und Mechatronik-Systeme gemeinnützige GmbH, Germany; {3}Technische Universität Ilmenau, Germany

4:15
AN ALN-ON-SI RESONANT IR SENSOR ARRAY WITH A LARGE TEMPERATURE COEFFICIENT OF FREQUENCY
Milad Moosavifar, Azadeh Ansari, Mina Rais-Zadeh
University of Michigan, United States

4:30
MICROWAVE RESONATOR SENSOR INTEGRATED WITH NANOSTRUCTURED SEMICONDUCTOR MEMBRANES FOR PHOTODETECTION AND CARRIER LIFETIME MEASUREMENT
Najia Mahdi, Ryan Kisslinger, Himani Sharma, Mohammad Hossein Zarifi, Mojgan Daneshmand, Karthik Shankar
University of Alberta, Canada

4:45
ANALYSIS OF THICKNESS AND QUALITY FACTOR OF A DOUBLE PADDLE OSCILLATOR AT ROOM TEMPERATURE
Hamza Shakeel{1}, Thomas Metcalf{2}, Josh Pomeroy{1}
{1}National Institute of Standards and Technology, United States; {2}Naval Research Laboratory, United States
3:30 AMPLIFIED CHEMOMECHANICAL COMB GAS SENSOR .................................................................1135
Rugved Likhite, Shashank S Pandey, Aishwaryadev Banerjee, Hanseup Kim, Carlos H Mastrangelo
University of Utah, United States

3:45 DEVELOPMENT OF A PRINTED IMPEDANCE BASED ELECTROCHEMICAL SENSOR ON PAPER SUBSTRATE ...........................................................................................................1138
Dinesh Maddipatla, Binu Narakathu, Bradley Bazuin, Massood Zandi Atashbar
Western Michigan University, United States

4:00 ROOM TEMPERATURE SENSING OF VOCs BY ATOMIC LAYER DEPOSITION OF METAL OXIDE........1141
Akhilesh Tanneeru, Steven Mills, Michael Lim, Marzana Mantasha Mahmud, James Dieffenderfer, Alper Bozkurt, Troy Nagle, Bongmook Lee, Veena Misra
North Carolina State University, United States

4:15 ROOM TEMPERATURE IONIC LIQUID ELECTROCHEMICAL GAS SENSOR FOR RAPID OXYGEN DETECTION WITH TRANSIENT DOUBLE POTENTIAL AMPEROMETRY .................................................1144
Hao Wan, Heyu Yin, Andrew Mason
Michigan State University, United States

4:30 CARBON DIOXIDE SENSOR FOR MOBILE DEVICES: A NOVEL APPROACH FOR LOW-POWER CONSUMING, HIGHLY SENSITIVE NDIR SENSORS ......................................................................................................................1147
Louisa Scholz, Alvaro Ortiz Perez, Benedikt Bierer, Ponkanok Eaksen, Jürgen Wöllenstein, Stefan Palzer
Albert-Ludwigs-Universität Freiburg, Germany

4:45 TOWARDS A NOVEL OPTICAL TRACE OXYGEN SENSOR FOR COMMERICAL USE ......................1150
Gary McDowell{1}, Francesca Farrow{1}, Mahesh Uttamlal{1}, Sheila Holmes-Smith{1}, Craig Mitchell{2}, Patrick Shannon{2}
{1}Glasgow Caledonian University, United Kingdom; {2}SST Sensing Ltd, United Kingdom
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<tr>
<td>11:00</td>
<td>A FAST DETERMINATION METHOD FOR IDENTIFYING THE SPIN EXCHANGE RELAXATION FREE REGIME OF ATOMIC MAGNETOMETER</td>
<td>Yanzhang Wang, Xue Zhang, Jianan Qin, Chen Chen Jilin University, China</td>
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<td>11:15</td>
<td>A DUAL QUANTIZATION ELECTROMECHANICAL SIGMA-DELTA MODULATOR VIBRATORY WHEEL GYROSCOPE</td>
<td>Bin Sheng{2}, Fang Chen{1}, Chao Qian{2}, Dacheng Xu{2}, Shuwen Guo{2}, Xinxin Li{1} {1}: Shanghai Institute of Microsystem and Information Technology / Chinese Academy of Sciences, China; {2}: Soochow University, China</td>
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<tr>
<td>11:30</td>
<td>A MEMS RESONANT TILT SENSOR WITH HIGH SENSITIVITY MAINTAINED IN THE WHOLE 360° MEASUREMENT RANGE</td>
<td>Shudong Wang, Juan Ren, Tianyi Zhang, Yinsheng Weng, Zhuangde Jiang, Xueyong Wei Xi'an Jiaotong University, China</td>
</tr>
<tr>
<td>11:45</td>
<td>A DAMPING CONSTANT MODEL FOR PROOF-MASS STRUCTURE DESIGN OF MEMS INERTIAL SENSOR BY MULTI-LAYER METAL TECHNOLOGY</td>
<td>Toshifumi Konishi{1}, Teruaki Safu{1}, Katsuyuki Machida{1}, Daisuke Yamane{2}, Masato Sone{2}, Kazuya Masu{2}, Hiroshi Toshiyoshi{3} {1}: NTT Advanced Technology Corporation, Japan; {2}: Tokyo Institute of Technology, Japan; {3}: University of Tokyo, Japan</td>
</tr>
<tr>
<td>12:00</td>
<td>A LOW 1/F-NOISE ACCELEROMETER FRONTEND USING CHOPPER STABILIZATION AT A FREQUENCY MATCHED WITH A NOTCH OF QUANTIZATION NOISE</td>
<td>Kazuo Ono, Daisuke Maeda, Takashi Oshima, Toshiaki Nakamura, Joan Giner, Tomonori Sekiguchi Hitachi Ltd., Japan; Hitachi Ltd., Spain</td>
</tr>
<tr>
<td>12:15</td>
<td>DEVELOPMENT OF 2V SENSITIVITY STATIC ELECTRICITY SENSOR WITH VERTICALLY MOUNTED LARGE ELECTRODE</td>
<td>Atsuya Iima, Yusaku Oka, Kyohei Terao, Fusao Shimokawa, Hidekuni Takao Kagawa University, Japan</td>
</tr>
<tr>
<td>Time</td>
<td>Topic</td>
<td>Authors</td>
</tr>
<tr>
<td>--------</td>
<td>-----------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>11:00</td>
<td>INVITED: CAVITAS SENSORS AND SNIFF-CAM FOR BIOMONITORING: SOFT CONTACT LENS &amp; MOUTHGUARD SENSORS, OPTICAL BIO-SNIFFING OF HUMAN VOCS</td>
<td>Kohji Mitsubayashi, Tokyo Medical and Dental University, Japan</td>
</tr>
<tr>
<td>11:30</td>
<td>ELECTROCHEMICAL DETECTION OF A NOVEL THERAPEUTIC COMPOUND FOR SCHIZOPHRENIA</td>
<td>Tugba Kilic, Sandro Carrara, Valerie Brunner, Laurent Audoly, École Polytechnique Fédérale de Lausanne, Switzerland; Laboratoires Pierre Fabre, France</td>
</tr>
<tr>
<td>11:45</td>
<td>SELF-POWERED GLUCOSE BIOSENSOR OPERATING UNDER PHYSIOLOGICAL CONDITIONS</td>
<td>Tanmay Kulkarni, Gymama Slaughter, University of Maryland, Baltimore County, United States</td>
</tr>
<tr>
<td>12:00</td>
<td>DETECTION OF ROTAVIRUS IN CLINICAL SPECIMENS USING AN IMMUNOSENSOR BASED ON THE PRINCIPLE OF FLUORESCENCE FLUCTUATION SPECTROSCOPY</td>
<td>Makoto Hasegawa, Yuka Inoue, Nanami Kimura, Ernest Wandera, Yoshio Ichinose, Nagahama Institute of Bioscience and Technology, Japan; Nagasaki University, Japan</td>
</tr>
<tr>
<td>12:15</td>
<td>STUDIES OF CELL BEHAVIORS IN 3D MICROTISSUES IN A MICROFLUIDIC DEVICE: GROWTH AND MIGRATION</td>
<td>Xiangchen Che, Shenmin Gong, Long Que, Jacob Nuhn, Ian Schneider, Iowa State University, United States</td>
</tr>
</tbody>
</table>
11:00 AM - 12:30 PM
C2L-C: Machine Olfaction for Environmental Monitoring
LOCATION: Curacao 5-6
SESSION CHAIRS:
Troy Nagle, North Carolina State University
Susan Schiffman, North Carolina State University

11:00
INVITED: SMART SENSORS FOR AIR QUALITY MONITORING: CONCEPTS AND NEW DEVELOPMENTS
Jan Mitrovics
JLM Innovation GmbH, Germany

11:30
A NOVEL MICROPUMP DRIVER USED IN ENVIRONMENTAL SENSOR APPLICATIONS
Bernadette Kinzel{1}, Detlef Bonfert{1}, Florian Lippert{1}, Frank Vanselow{1}, Erkan Isa{1}, Doris Schmitt-Landsiedel{2}, Linus Maurer{3}
{1}Fraunhofer-Einrichtung für Mikrosysteme und Festkörper, Germany; {2}Fraunhofer-Einrichtung für Mikrosysteme und Festkörper / Technische Universität München, Germany; {3}Fraunhofer-Einrichtung für Mikrosysteme und Festkörper / Universität der Bundesw

11:45
A BATTERY-OPERATED WIRELESS MULTICHANNEL GAS SENSOR SYSTEM BASED ON A CAPACITIVE MICROMACHINED ULTRASONIC TRANSDUCER (CMUT) ARRAY
Chunkyun Seok, Marzana Mantasha Mahmud, Oluwafemi Adelegan, Xiao Zhang, Omer Oralkan
North Carolina State University, United States

12:00
DUAL CHANNEL MICROCATLEVER HEATERS FOR SELECTIVE DETECTION AND QUANTIFICATION OF A GENERIC MIXTURE OF VOLATILE ORGANIC COMPOUNDS
Ifat Jahangir{2}, Goutam Koley{1}
{1}Clemson University, United Kingdom; {2}University of South Carolina, United States

12:15
UV EXCITED SNO2 NANOWIRE BASED PRINTED E-NOSE: POTENTIAL APPLICATION AS BURNING SMELL DETECTOR AND EXPLOSIVE DETECTOR
Mustahsin Adib, Martin Sommer
Karlsruher Institut für Technologie, Germany
11:00 AM - 12:30 PM
C2L-D: Electromagnetic Based Sensing Applications
LOCATION: Curacao 7-8
SESSION CHAIRS:
Gijs Krijnen, University of Twente
Cameron Riviere, The Robotics Institute, Carnegie Mellon University

11:00
PULSE INDUCTION PARKING SENSOR
Stefano Guatieri, Giovanni Badaracco, Ivan Defilippis, Diego Barrettino
University of Applied Sciences and Arts of Southern Switzerland, Switzerland

11:15
UHF RFID SENSORS BASED ON FREQUENCY MODULATION
Md. Mazidul Islam{1}, Ville Viikari{1}, Joona Nikunen{3}, Marko Reinikainen{2}
{1}Aalto University, Finland; {2}Espotel Oy, Finland; {3}Metso Automation, Finland

11:30
NON-CONTACT MEASUREMENT OF SILICON THIN WAFER WARPAGE BY THZ TOMOGRAPHY AND LASER TRIANGULATION
Thomas Arnold, Johannes Schicker, Martin Kraft, Christina Hirschl
CTR Carinthian Tech Research AG, Austria

11:45
A BATTERY-FREE RFID SENSOR TAG WITH FIBER-OPTIC TAMPER DETECTION
Alexander Hoang{3}, Kip Coonley{1}, Faranak Nekoogar{2}, Matthew Reynolds{3}
{1}Duke University, United States; {2}Lawrence Livermore National Laboratory, United States; {3}University of Washington, United States

12:00
PLASMA DIAGNOSTICS IN DIELECTRIC DEPOSITION PROCESSES
Christian Schulz, Ilona Rolfes
Ruhr-Universität Bochum, Germany

12:15
A NEW APPROACH FOR VELOCITY PROFILE MEASUREMENTS WITH ELECTROMAGNETIC FLOW TOMOGRAPHY
Jan Christoph Abrolat, Thomas Musch
Ruhr-Universität Bochum, Germany
11:00 PM - 12:30 PM
C2L-E: Sensor Network, Method & Evaluation
LOCATION: Bonaire 1-2
SESSION CHAIRS:
Huseyin Ugur Yildiz, TED University
Jian Lu, AIST

11:00
PRECISE SYNCHRONIZATION TIME STAMP GENERATION FOR BLUETOOTH LOW ENERGY ..........1218
Carl Christian Rheinländer, Norbert Wehn
Technische Universität Kaiserslautern, Germany

11:15
SIMULTANEOUS SENSOR LOCALIZATION VIA SYNTHETIC APERTURE RADAR (SAR) IMAGING ........1221
Xiaojie Fu, Andreas Pedross-Engel, Daniel Amitz, Matthew Reynolds
University of Washington, United States

11:30
SOFTWARE-DEFINED QOS PROVISIONING FOR FOG COMPUTING ADVANCED WIRELESS
SENSOR NETWORKS ........................................................................................................................................1224
Lina Huang{1}, Gaolei Li{1}, Jun Wu{1}, Lan Li{1}, Jianhua Li{1}, Rosario Morello{2}
{1}Shanghai Jiao Tong University, China; {2}Università degli Studi Mediterranea di Reggio Calabria, Italy

11:45
DISTRIBUTED DETECTION OF CRITICAL NODES IN WIRELESS SENSOR NETWORKS
USING CONNECTED DOMINATING SET ........................................................................................................1227
Orhan Dagdeviren{2}, Vahid Khalilpour Akram{2}, Bülent Taylı{4}, Huseyin Ugur Yildiz{3}, Can Atilgan{1}
{1}Dokuz Eylül University, Turkey; {2}Ege University, Turkey; {3}TED University, Turkey; {4}TOBB University of
Economics and Technology, Turkey

12:00
POWER-AWARE CHANNEL-HOPPING MAC MECHANISMS FOR BATTERY-OPERATED
MULTI-HOP NETWORKS ....................................................................................................................................N/A
Arvind Kandhalu, Ariton Xhafa, Ramanuja Vedantham, Xiaolin Lu
Texas Instruments Incorporated, United States

12:15
MINIATURIZATION AND PACKAGING OF IMPLANTABLE WIRELESS SENSOR NODES FOR
ANIMALS MONITORING .....................................................................................................................................1233
Jian Lu{2}, Lan Zhang{2}, Sohei Matsumoto{2}, Hiroshi Hiroshima{2}, Kouichi Serizawa{4}, Masanori Hayase{3},
Takafumi Gotoh{1}
{1}Kyushu University, Japan; {2}National Institute of Advanced Industrial Science and Technology, Japan;
{3}Tokyo University of Science, Japan; {4}Tokyo University of Science / National Institute of Advanced Industrial
Science and Technology, Japan
11:00 AM - 12:30 PM
C2L-F: Focused Session: Energy Harvesting & Low-Power Sensors I
LOCATION: Bonaire 3-4
SESSION CHAIRS:
Zeynep Celik-Butler, University of Texas at Arlington
Yuji Suzuki, The University of Tokyo

11:00
INVITED: DESIGN OF METGLAS/POLYVINYLDENE FLUORIDE MAGNETOELECTRIC LAMINATES
FOR ENERGY HARVESTING FROM POWER CORDS...............................................................1236
Myung-Eun Song{3}, Yongke Yan{3}, Sreenivasulu Gollapudi{3}, Mirza Bichurin{1}, Vladimir Petrov{1}, Mohan Sanghadasa{2}, Shashank Priya{3}
{1}Novgorod State University, Russia; {2}U.S. Army Research, Development and Engineering Command, United States; {3}Virginia Polytechnic Institute and State University, United States

11:30
MEMS COMB-DRIVE ELECTRET ENERGY HARVESTER CHARGED AFTER PACKAGING ....................1239
Seonwoo Kim, Yuji Suzuki
University of Tokyo, Japan

11:45
SELF-POWERED CMOS ACTIVE RECTIFIER SUITABLE FOR LOW-VOLTAGE MECHANICAL
ENERGY HARVESTERS........................................................................................................1242
Abdalrahman Sayed Herbawi, Fabio Velarde, Oliver Paul, Tzeno Galchev
Albert-Ludwigs-Universität Freiburg, Germany

12:00
DESIGN AND OPTIMIZATION OF AN ELECTROSTATIC ENERGY SCAVENGER FOR LOW
POWER ELECTRONICS ...........................................................................................................1245
Shaikh Md Rubayiat Tousif, Donald Butler, Zeynep Çelik-Butler
University of Texas at Arlington, United States

12:15
EMBEDDED ELASTIC WAVE MIRRORS FOR ENHANCED ENERGY HARVESTING .........................N/A
Serife Tol, Fahad Vora, Levent Degertekin, Alper Erturk
Georgia Institute of Technology, United States
### WEDNESDAY, NOVEMBER 2 – POSTER SESSION

**1:30 PM - 3:30 PM**<br>**C3P-G: Sensor Phenomenon, Modeling, & Evaluation III: Sensors & Applications**<br>**LOCATION: Poster Area**<br>**SESSION CHAIR:** Stefan Rupitsch, Friedrich-Alexander-Universität

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-1-2</td>
<td>KEY ASPECTS OF PHOTOPLETHYSMOGRAM SIGNALS FOR APPLICATION TO ALCOHOL-INTAKE DETECTION</td>
<td>Yasuhisa Omura, Hajime Ozaki Kansai University, Japan</td>
</tr>
<tr>
<td>C-1-4</td>
<td>MICRONEEDLE THERMAL FLOW SENSOR</td>
<td>Hojoon Lee{2}, Sangwoong Baek{1}, Eunyong Jeon{1}, Junghoon Lee{1} {1}Seoul National University, Korea, South; {2}Seoul National University / Samsung Electronics Semiconductor R&amp;D Center, Korea, South</td>
</tr>
<tr>
<td>C-1-6</td>
<td>DESIGN, MEASUREMENT AND EVALUATION FOR PLL APPLICATION OF A WIDEBAND MEMS PHASE DETECTOR</td>
<td>Juzheng Han, Xiaoping Liao Southeast University, China</td>
</tr>
<tr>
<td>C-1-8</td>
<td>NOISE AND IMPEDANCE OF THE SIROF UTAH ELECTRODE ARRAY</td>
<td>Mohit Sharma, Avery Gardner, Jason Silver, Ross Walker University of Utah, United States</td>
</tr>
<tr>
<td>C-1-10</td>
<td>SVR BASED DENSE AIR POLLUTION ESTIMATION MODEL USING STATIC AND WIRELESS SENSOR NETWORK</td>
<td>Ke Hu{3}, Vijay Sivaraman{3}, Hari Bhrugubanda{3}, Shiyang Kang{1}, Ashfaqur Rahman{2} {1}Chinese University of Hong Kong, Hong Kong; {2}Commonwealth Scientific and Industrial Research Organisation, Australia; {3}University of New South Wales, Australia</td>
</tr>
<tr>
<td>C-1-12</td>
<td>A PRACTICAL SOLUTION FOR ACCURATE STUDIES OF NDIR GAS SENSOR PRESSURE DEPENDENCE: LAB TEST BENCH, SOFTWARE AND CALCULATION ALGORITHM</td>
<td>Bakhram Gaynullin, Maksym Bryzgalov, Christine Hummelgård, Henrik Rödjegård SenseAir AB, Sweden</td>
</tr>
<tr>
<td>C-1-16</td>
<td>EXPERIMENTAL AND THEORETICAL ANALYSES OF EFFECT OF ZNO NANOWIRE GROWTH ON MECHANICAL PROPERTIES OF MICROCANTILEVERS FOR DYNAMIC SENSING APPLICATIONS</td>
<td>Nikhilendu Tiwary, Arindam Kushagra, Manoj Kandpal, Valipe Ramgopal Rao Indian Institute of Technology Bombay, India</td>
</tr>
<tr>
<td>C-1-18</td>
<td>MODELING AND EXPERIMENTAL CHARACTERIZATION OF FLEXIBLE GRAPHENE COMPOSITE STRAIN SENSORS</td>
<td>Mohamed Serry, Mahmoud Sakr American University in Cairo, Egypt</td>
</tr>
</tbody>
</table>
C-1-20
MICROBIAL FUEL CELL AS A BIOSENSOR AND A POWER SOURCE FOR FLORA HEALTH MONITORING
Davide Brunelli, Pietro Tosato, Maurizio Rossi
Università degli Studi di Trento, Italy

C-1-22
LOW-COST AIR QUALITY MONITORS: MODELING AND CHARACTERIZATION OF SENSOR DRIFT IN OPTICAL PARTICLE COUNTERS
Michael Taylor
Carnegie Mellon University, United States

C-1-24
A SINGLE-CHIP ISFET BASED PH SENSOR
Mst Shawkat, Nicole McFarlane
University of Tennessee, United States

C-1-26
LD-MAC: A LOAD-DISTRIBUTED DATA TRANSMISSION IN BODY AREA NETWORK
Tanmoy Maity, Paramita Mallick, Sarbani Roy
Jadavpur University, India

C-1-28
METAL OXIDE GAS SENSING CHARACTERIZATION BY LOW FREQUENCY NOISE SPECTROSCOPY
Michael Lim, Abhishek Malhotra, Steven Mills, John Muth, Bongmook Lee, Veena Misra
North Carolina State University, United States

C-1-30
FAST METHOD FOR THE CALCULATION OF SURFACE BENDING ON CIRCULAR MULTILAYERED PIEZOELECTRIC STRUCTURES
Thomas Voglhuber-Brunnmaier(2), Erwin K. Reichel(2), Bernhard Jakoby(2), Roman Beigelbeck(1), Patrick Mayrhofer(3), Ulrich Schmid(3)
{1} Danube University Krems / Technische Universität Wien, Austria; {2} Johannes Kepler University, Austria; {3} Technische Universität Wien, Austria

1:30 PM - 3:30 PM
C3P-H: New Materials Platforms & Nanostructures for Sensing
LOCATION: Poster Area
SESSION CHAIR:
Mohammad Zarifi, University of Manitoba

C-2-33
CARBON NANOTUBE FOREST DEVICES WITH NEGATIVE POISSON’S RATIO
Assaf Ya’akobovitz
Ben-Gurion University of the Negev, Israel

C-2-36
SILK PIEZOELECTRIC THIN FILMS: MATERIALS TO DEVICES
Jose Joseph, Sai Yaraj Saraswathi, Anshika Agarwal, Shiv Govind Singh, Siva Rama Krishna Vanjari
Indian Institute of Technology Hyderabad, India

C-2-39
IMPROVING GAS-SENSING PERFORMANCE OF REDUCED GRAPHENE OXIDE USING POLYCRYSTALLINE SNO2 NANOPARTICLES AS SENSITIZER
Jie Sun(1), Xi Yang(1), Guoyuan Xiao(2)
{1} China Academy of Engineering Physics, China; {2} Southwest University of Science and Technology, China
C-2-42
SELECTIVE DEPOSITION OF SILVER NANOWIRES AND ITS APPLICATION FOR WEARABLE PRESSURE SENSOR .................................................................1302
Gui-Shi Liu{2}, Jing-Shen Qiu{2}, Bo-Ru Yang{2}, Han-Ping David Shieh{1}
{1}National Chiao Tung University, Taiwan; {2}Sun Yat-Sen University, China

C-2-45
STRAIN GAUGE PRINTED ON CARBON WEAVE FOR SENSING IN CARBON FIBER REINFORCED PLASTICS ...............................................................1305
Gerrit Dumstorff, Walter Lang
Universität Bremen, Germany

C-2-48
BIOMIMETIC HYDROGEL CUPULA FOR CANAL NEUROMASTS INSPIRED SENSORS .................................................................1308
Meghali Bora{4}, Ajay Giri Prakash Kottapalli{4}, Mohsen Asadnia{1}, Jianmin Miao{3}, Michael S. Triantafyllou{2}
{1}Macquarie University, Australia; {2}Massachusetts Institute of Technology, United States; {3}Nanyang Technological University, Singapore; {4}Singapore-MIT Alliance for Research and Technology, Singapore

C-2-51
FOIL-BASED STRAIN GAUGES WITH NANOGRANULAR PLATINUM STRUCTURES FOR THE INTEGRATION IN ELASTOMER GASKETS ......................................................1314
Daniel Gräbner{1}, Eva-Maria Meyer{2}, Walter Lang{2}
{1}FWBI Friedrich-Wilhelm-Bessel-Institut Forschungs GmbH, Germany; {2}Universität Bremen, Germany

C-2-54
OPTIMIZATION OF METGLAS 2605SA1 AND PZT-5A MAGNETOELECTRIC LAMINATES FOR MAGNETIC SENSING APPLICATIONS .................................................1317
Eugene Freeman, Joshua Harper, Nishit Goel, Steven J. Schiff, Srinivas Tadigadapa
Pennsylvania State University, United States

C-2-56
NANOCELLULOSE ELECTRODES FOR INTERFACING PLANT ELECTROCHEMISTRY ................................................1320
Kevin Keller{1}, Michael Wilkins{1}, James Reynolds{1}, James Dieffenderfer{1}, Charles Hood{1}, Michael Daniele{1}, Alper Bozkurt{1}, Meral Tunc-Ozdemir{2}
{1}North Carolina State University, United States; {2}University of North Carolina, United States
C-3-63
SMARTPHONE-BASED THIN LAYER CHROMATOGRAPHY FOR THE DISCRIMINATION OF FALSIFIED MEDICINES

Hojeong Yu(3), Huy Le(3), Steven Lumetta(3), Brian T. Cunningham(3), Eliangiringa Kaale(1), Thomas Layloff(2)
{1}Muhimbili University of Health and Allied Sciences, Tanzania; {2}Partnership for Supply Chain Management, Inc. / Management Sciences for Health, United States; {3}University of Illinois at Urbana–Champaign, United States

C-3-66
EPOXY EXPOSURE INDUCED ELECTRONIC PROPERTIES CHANGE OF GRAPHENE

Md Ahsan Uddin(1), Ferhat Bayram(1), Goutam Koley(1), Yihao Zhu(2), Amol Singh(2), Ifat Jahangir(2)
{1}Clemson University, United States; {2}University of South Carolina, United States

C-3-69
EXPERIMENTATION OF DIOXAZABOROCANE DERIVATIVE AS FLUORESCENT MATERIAL: APPLICATION TO THE TRACE DETECTION OF HYDROGEN PEROXIDE

Celine Frenois, Thomas Caron, Eric Pasquinet, Pascal Palmas, Franck Pereira, Rodrigue Rousier
Commissariat à l’Énergie Atomique et aux Énergies Alternatives, France

C-3-72
FORMATION OF ORIENTED METAL NANOSTRUCTURES BY POLARIZED LIGHT IRRADIATION FOR OPTICAL SENSING

Masashi Watanabe, Fumihiro Sassa, Kenshi Hayashi
Kyushu University, Japan

C-3-75
CALIXARENE-POLY(METHYL METHACRYLATE) COMPOSITES FOR ATR-IR SENSING OF WATER DISSOLVED AROMATIC COMPOUNDS

Charles Heath, Matthew Myers, Bobby Pejic
Commonwealth Scientific and Industrial Research Organisation, Australia

C-3-78
DEVELOPMENT OF A FIBER-OPTIC CHEMICAL SENSOR FOR THE DETECTION OF CADMIUM

Thu Hien Nguyen, Stephen Wren, Tong Sun, Kenneth Grattan
City University London, United Kingdom

C-3-81
DEVELOPMENT OF A NOVEL MINIATURIZED LTCC-BASED WIRELESS PH SENSING SYSTEM

Houssem Eddine Amor(1), Ammar Kouki(1), Paul Marsh(2), Kyoung Tae Kim(2), Hung Cao(2)
{1}Ecole de Technologie Supérieure, Canada; {2}University of Washington, United States

C-3-84
GLUCOSE SENSING WITH GRAPHENE VARACTORS

Yao Zhang(2), Rui Ma(2), Yogish Kudva(1), Philippe Bühlmann(2), Steven Koester(2)
{1}Mayo Clinic, United States; {2}University of Minnesota, United States
C-3-87
SUSPENDED CHALCOGENIDE MICROCAVITIES FOR ULTRA-SENSITIVE CHEMICAL DETECTION.......1347
Derek Kita{1}, Hongtao Lin{1}, Junying Li{1}, Zhaohong Han{1}, Peter Su{1}, Tian Gu{1}, Anu Agarwal{1},
Anupama Yadav{2}, Kathleen Richardson{2}, Juejun Hu{1}
{1}Massachusetts Institute of Technology, United States; {2}University of Central Florida, United States

C-3-90
PARTS PER MILLION CH4 CHEMORESISTOR SENSORS BASED ON MULTI WALL
CARBON NANOTUBES/METAL-OXIDE NANOPARTICLES.................................................................1350
Michela Sainato{4}, Md Tanim Humayun{4}, Lara Gundel{2}, Paul Solomon{3}, Liliana Stan{1}, Ralu Divan{1}, Igor
Paprotny{4}
{1}Argonne National Laboratory, United States; {2}Lawrence Berkeley National Laboratory, United States;
{3}United States Environmental Protection Agency, United States; {4}University of Illinois at Chicago, United
States

C-3-93
CORROSIVITY SENSOR BASED ON METALLIC NANOWIRES..........................................................1353
Siddhardha Mohan Sakhamuri, Sai Prudhvi Kumar Gummadi, Ryan Toonen, Omar Rosas Camacho
University of Akron, United States

C-4-108
STUDY OF FABRICATION CONDITIONS OF ATP BIOSENSOR BASED ON SCREEN-PRINTED
ELECTRODE..........................................................................................................................1356
Qin Zhu, Bo Liang, Yanchuang Pei, Xuesong Ye, Xiao Liang
Zhejiang University, China

C-4-125
GOLD NANOPARTICLES AMPLIFIED SURFACE ACOUSTIC WAVE BIOSENSORS
FOR IMMUNODETECTION ........................................................................................................1359
Shuangming Li{1}, Ying Wan{1}, Yan Su{1}, Chunhai Fan{2}, Venkat Bhethanabotla{3}
{1}Nanjing University of Science and Technology, China; {2}Nanjing University of Science and Technology /
Chinese Academy of Sciences, China; {3}University of South Florida, United States

C-4-111
FIBER-OPTIC IMMUNOSENSOR BASED ON LOSSY MODE RESONANCES INDUCED BY INDIUM
TIN OXIDE THIN-FILMS ............................................................................................................1362
Abian Socorro, Ignacio Del Villar, Jesus Corres, Francisco Javier Arregui, Ignacio Raul Matias
Universidad Pública de Navarra, Spain

C-4-114
ZINC OXIDE NANOWIRE MODIFIED FLEXIBLE PLASTIC PLATFORM FOR IMMUNOSENSING ..........1365
Brince Paul, R Ranga Reddy, Siva Rama Krishna Vanjari, Shiv Govind Singh
Indian Institute of Technology Hyderabad, India

C-4-117
DIELECTRIC DISPERSION ANALYSIS OF INTERACTION WITH PLURAL PHOSPHOLIPID SPECIES
OF LIPOSOME BY ARRAYED CELL SYSTEM USING SMALL OPEN-ENDED COAXIAL PROBE ..........1368
Masahiro Kawasaki, Kaoru Yamashita, Minoru Noda
Kyoto Institute of Technology, Japan
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-4-120</td>
<td>HIGHLY SELECTIVE DETECTION OF MULTI-PHOSPHORYLATED PEPTIDES VIA ARTIFICIAL RECEPTOR-IMMOBILIZED ON MAGNETIC SPHERES</td>
<td>Se Won Bae, Sangyong Kim, Seung-Han Shin, Dohoon Lee</td>
<td>Korea Institute of Industrial Technology, Korea, South</td>
</tr>
<tr>
<td>C-4-123</td>
<td>HIGH SENSITIVITY FLUORESCENCE DETECTION USING SMART PHONE CAMERAS</td>
<td>Zhendong Cao, Hsiu-Yang Tseng, Katrina Salvante, Pablo Nepomnaschy, Ash Parameswaran</td>
<td>Simon Fraser University, Canada</td>
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<tr>
<td></td>
<td>1:30 PM - 3:30 PM</td>
<td>C3P-L: Acoustic &amp; Ultrasound Sensors</td>
<td>Poster Area</td>
</tr>
<tr>
<td></td>
<td>Session Chair: Vikrant Gokhale, NIST</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-7-215</td>
<td>THE RADAR MICROPHONE: A NEW WAY OF MONITORING HONEY BEE SOUNDS</td>
<td>Herbert Aumann, Nuri Emanetoglu</td>
<td>University of Maine, United States</td>
</tr>
<tr>
<td>C-7-216</td>
<td>ACOUSTOELECTRIC CURRENT RESPONSE TO GAS MOLECULAR DOPING IN GRAPHENE</td>
<td>Shijun Zheng, Daihua Zhang</td>
<td>Tianjin University, China</td>
</tr>
<tr>
<td>C-7-217</td>
<td>CONTINUOUS MEASUREMENT OF LIQUID CONCENTRATION USING SHEAR HORIZONTAL SURFACE ACOUSTIC WAVE SENSORS WITHOUT REFERENCE LIQUID</td>
<td>Jun Kondoh, Kyosuke Tada</td>
<td>Shizuoka University, Japan</td>
</tr>
<tr>
<td>C-7-218</td>
<td>BIO-INSPIRED FREQUENCY AGILE ACOUSTIC SYSTEM</td>
<td>José Guerreiro, Joseph Jackson, James Windmill</td>
<td>University of Strathclyde, United Kingdom</td>
</tr>
<tr>
<td>C-7-219</td>
<td>ANALYSIS OF IMPEDANCE-LOADED SAW SENSORS</td>
<td>Ziwei Liu, Lili Fang, Chuanfang Zhang, Xuan Dai</td>
<td>Beijing Institute of Technology, China</td>
</tr>
<tr>
<td>C-7-220</td>
<td>PACKAGELESS ACOUSTIC WAVE SENSORS FOR WIRELESS BODY-CENTRIC APPLICATIONS</td>
<td>Sami Hage-Ali{2}, Omar Elmazria{2}, Gaël Pierson{2}, Richard Kouilat{2}, Thierry Aubert{4}, Moïse Dero[1], Florian Bartoli{1}, Thierry Aubert{1}, Abdelkrim Talbi{3}</td>
<td>Université de Lorraine, France; Université Lille 1, France; Université Savoie Mont Blanc, France</td>
</tr>
<tr>
<td>C-7-221</td>
<td>INTEGRATED SURFACE ACOUSTIC WAVE BASED SENSORS FOR FLUIDIC APPLICATIONS</td>
<td>Burak Yildirim, Sukru Senveli, Rajapaksha Gajasinghe, Onur Tigli</td>
<td>University of Miami, United States</td>
</tr>
</tbody>
</table>
C-7-222
A LOW-COST ACOUSTIC MICROSENSOR BASED SYSTEM IN PACKAGE FOR AIR QUALITY MONITORING .................................................................1397
Sanju Thomas[2], Marina Cole[2], Farah Villa-Lopez[2], Julian Gardner[2], Jan Peters[1], Jan Theunis[1]
{1}Flemish Institute of Technological Development, Belgium; {2}University of Warwick, United Kingdom

C-7-223
SPEED-OF-SOUND BASED SENSORS FOR ENVIRONMENTAL MONITORING .................................................................1400
Martin Doubek[2], Vaclav Vacek[3], Gregory Hallewell[1], Ben Pearson[4]
{1}Aix-Marseille Université, France; {2}Czech Technical University in Prague, Czech Rep.; {3}Czech Technical University in Prague / Unicom College, Czech Rep.; {4}University of Oklahoma, United States

1:30 PM - 3:30 PM
C3P-M: Physical Sensors VII: Mechanical, Force, Pressure
LOCATION: Poster Area
SESSION CHAIR:
Vikrant Gokhale, NIST

C-6-192
WIRELESS HYDROGEN PRESSURE DOSIMETER FOR NUCLEAR HIGH DOSE MONITORING ...............1403
Emilie Debourg[1], Julien Philippe[1], Hervé Aubert[1], Patrick Pons[1], Izabela Augustyniak[3], Pawel Knapkiewicz[3], Jan Dziuban[3], M. Matusiak[2], Michal Olszacki[2]
{1}Laboratoire d'Analyse et d'Architecture des Systèmes / Université de Toulouse, France; {2}National Centre for Nuclear Research, Poland; {3}Wrocław University of Technology, Poland

C-6-194
HIGH PERFORMANCE PIEZORESISTIVE LOW PRESSURE SENSORS.................................................................1406
Lihua Li, Nickolai Belov, Michael Klitzke, Jong-Seung Park
Amphenol Advanced Sensor, United States

C-6-196
CHARACTERIZATION OF 3D PRINTED PIEZOELECTRIC SENSORS: DETERMINATION OF D33 PIEZOELECTRIC COEFFICIENT FOR 3D PRINTED POLYVINYLIDENE FLUORIDE SENSORS ...............1409
Max Kirkpatrick[2], Joshua Tarbutton[2], Tue Le[2], Chabum Lee[1]
{1}Tennessee Technical University, United States; {2}University of South Carolina, United States

C-6-198
PRINTED CARBON-BASED SENSORS ARRAY FOR MEASURING 2D DYNAMIC STRAIN DISTRIBUTION AND APPLICATION IN STRUCTURAL HEALTH MONITORING .................................................................1412
Daniel Zymelka[3], Kazuyoshi Togashi[2], Takahiro Yamashita[1], Takeshi Kobayashi[1], Seiichi Takamatsu[4], Toshihiko Itoh[4]
{1}National Institute of Advanced Industrial Science and Technology, Japan; {2}NMEMS Technology Research Organization / Dai Nippon Printing, Japan; {3}NMEMS Technology Research Organization / National Institute of Advanced Industrial Science and Techn, Ja

C-6-200
A NOVEL INTEGRATED SENSOR BASED ON MEMS STRAIN GAUGE FOR MONITORING MILLING PROCESS ..................................................................................N/A
Yafei Qin, Yulong Zhao, Yingxue Li, You Zhao, Peng Wang
Xi'an Jiaotong University, China

C-6-202
CAPACITIVE SENSOR NETWORK FOR COMPOSITES PRODUCTION MONITORING ..........................1418
Yang Yang, Bart Plovie, Thomas Vervust, Jan Vanfleteren
Universiteit Gent, Belgium
C-6-204
INTEGRATION OF HIGHLY FLEXIBLE AND SENSITIVE FILMS ON KAPTON WITH GRAPHENE OXIDE–PLATINUM NANOCOMPOSITE FOR STRAIN SENSORS
Nagarjuna Neella, Venkateswarlu Gaddam, Konandur Rajanna, M.M. Nayak
Indian Institute of Science, India

C-6-206
THREE AXIS CAPACITIVE TOUCH SENSOR FOR CLINICAL BREAST EXAMINATION TRAINING.........1424
Jayer Fernandes, Hongrui Jiang
University of Wisconsin-Madison, United States

C-6-208
MECHANICAL STRESS MEASUREMENT USING A SINGLE OCTAGONAL PIEZOTRANSDUCER............N/A
Jose Ramirez, Fabiano Fruett
University of Campinas, Brazil

C-6-210
FREQUENCY OUTPUT MEMS RESONATOR ON MEMBRANE PRESSURE SENSORS...............................1430
Vahid Qaradaghi, Mohammad Mahdavi, Varun Kumar, Siavash Pourkamali
University of Texas at Dallas, United States

C-6-212
NANO-PRECISION MICROMACHINED FREQUENCY OUTPUT PROFILOMETER ................................1433
Amin Abbasalipour, Mohammad Mahdavi, Varun Kumar, Siavash Pourkamali, Soheil Daryadel, Majid Minary
University of Texas at Dallas, United States

C-6-214
SILICON PRESSURE SENSOR WITH 1.5KVAC DIELECTRIC WITHSTAND-VOLTAGE CAPABILITY IN WATER ....................................................................................................................................N/A
Tom Kwa
DunAn Sensing LLC, United States

1:30 PM - 3:30 PM
C3P-N: Sensor Network, Applications
LOCATION: Poster Area
SESSION CHAIR:
Ryutaro Maeda, AIST

C-9-225
SELF-POWERED EVENT-TRIGGERED WIRELESS SENSOR NETWORK FOR MONITORING SABOTAGE ACTIVITIES.................................................................1439
Chuan Dong{2}, Suiqiong Li{2}, Mengyang Li{2}, Qisheng He{1}, Dacheng Xu{2}, Xinxin Li{1}
{1}Shanghai Institute of Microsystem and Information Technology / Chinese Academy of Sciences, China; {2}Soochow University, China

C-9-227
A WIRELESS SENSOR NETWORK PLATFORM FOR WATER QUALITY MONITORING ..................1442
Tomoaki Kageyama{2}, Masashi Miura{2}, Akihiro Maeda{1}, Akihiro Mori{1}, Sang-Seok Lee{2}
{1}Environment Sanitation Research Center, Japan; {2}Tottori University, Japan

C-9-236
OPTIMAL TRANSMISSION POWER LEVEL SETS FOR LIFETIME MAXIMIZATION IN WIRELESS SENSOR NETWORKS ..................................................................................1445
Cagla Tantur{1}, Ugur Yildiz{2}, Sinan Kurt{1}, Bülent Tavlı{3}
{1}ASELSAN Inc. / TOBB University of Economics and Technology, Turkey; {2}TED University, Turkey; {3}TOBB University of Economics and Technology, Turkey
C-9-229
A STUDY ON LOW-LATENCY WIRELESS SENSING IN TIME-CRITICAL SATELLITE APPLICATIONS .....1448
Martin Drobczyk, Hauke Martens
Deutsches Zentrum für Luft- und Raumfahrt e.V., Germany

C-9-235
SPATIAL FOOTSTEP RECOGNITION BY CONVOLUTIONAL NEURAL NETWORKS FOR BIOMETRIC APPLICATIONS..............................................................................................................................1451
Omar Costilla-Reyes{2}, Ruben Vera-Rodriguez{1}, Patricia J. Scully{2}, Krikor B. Ozanyan{2}
{1}Universidad Autónoma de Madrid, Spain; {2}University of Manchester, United Kingdom

C-9-234
LOCALIZATION AND AREA LOCALIZATION IN IMPULSE-RADIO WIRELESS SENSOR NETWORKS .....1454
Haruka Kubota, Jun-Nosuke Teramae, Naoki Wakamiya
Osaka University, Japan

C-9-230
LOW-POWER AND HIGH-SENSITIVE PH SENSOR FOR MONITORING OF COW-RUMEN IN REAL TIME ....................................................................................................................................................................1457
Lan Zhang{3}, Jian Lu{3}, Hironao Okada{3}, Hirofumi Nogami{1}, Toshihiro Itoh{4}, Shozo Arai{2}
{1}Kyushu University, Japan; {2}National Agriculture and Food Research Organization, Japan; {3}National Institute of Advanced Industrial Science and Technology, Japan; {4}University of Tokyo / National Institute of Advanced Industrial Science and Technology

C-9-233
ANALYSIS ON FREQUENCY-DEPENDENCY OF CONDUCTIVE SIGNAL TRANSMISSION CHANNEL FOR BIOSENSOR NETWORK ............................................................................................................................1460
Janghyun Lee, Kunho Park, Min Joo Jeong, Jong Jin Baek, Youn Tae Kim
Chosun University, Korea, South

C-9-231
DRITRI: AN IN-VEHICLE WIRELESS SENSOR NETWORK PLATFORM FOR DAILY HEALTH MONITORING ......................................................................................................................................................1463
Xian Li, Hui Huang, Ye Sun
Michigan Technological University, United States

C-9-232
A MODULAR WIRELESS SENSOR NETWORK FOR ARCHITECTURE OF AUTONOMOUS UAV USING DUAL PLATFORM FOR ASSISTING RESCUE OPERATION ...........................................................................1466
Heekyung Kim, Ken Choi
Illinois Institute of Technology, United States

1:30 PM - 3:30 PM
C3P-O: Sensor Applications II
LOCATION: Poster Area
SESSION CHAIR:
Robert Roberts, University of Hong Kong

C-10-278
RESPONSES OF SILICON PIN DIODE TO LOW ENERGY GAMMA RAYS .................................................................1469
Seungcheol Lee, Hyebin Jeon, Hwanbae Park, Kookhyun Kang, Taehun Kim
Kyungpook National University, Korea, South
C-10-280
QUANTIFYING HEAT PRODUCED DURING SPONTANEOUS COMBUSTION OF H2/O2 NANOBUBBLES..................................................................................................................................................1472
Shourya Jain{2}, Aamer Mahmood{1}, Li Qiao{2}
{1}Hamad Bin Khalifa University, Qatar; {2}Purdue University, United States

C-10-282
EVALUATION OF LYOPHILISATES WITH TASTE-MASKING MICROSPHERES BY ELECTRONIC TONGUE ..............................................................................................................................................................1475
Malgorzata Wesoły{2}, Patrycja Ciosek-Skibińska{2}, Aleksandra Amelian{1}, Katarzyna Winnicka{1}
{1}Medical University of Białystok, Poland; {2}Warsaw University of Technology, Poland

C-10-284
A 4.3µW 28NM-CMOS PIXEL FRONT-END WITH SWITCHED INVERTER-BASED COMPARATOR ............1478
Federica Resta{2}, Alessandra Pipino{2}, Alessandro Pezzotta{2}, Marcello De Matteis{2}, Marco Croce{1}, Andrea Baschirotto{2}
{1}Università degli Studi di Pavia, Italy; {2}Università degli Studi Milano-Bicocca, Italy

C-10-286
DEVELOPMENT OF PARTICLE CONTAMINANTS MONITOR SYSTEM FOR GEARBOX LUBRICANT PROGNOSTICS .............................................................................................................................1481
John Manyala, Massood Zandi Atashbar
Western Michigan University, United States

C-10-288
AN LED-BASED IMAGE SENSOR WITH ENERGY HARVESTING AND PROJECTION CAPABILITIES ......1484
Xiaozhe Fan{1}, Walter Leon-Salas{1}, Thomas Fischer{1}, Angel Perez-Olvera{2}
{1}Purdue University, United States; {2}Universidad Tecnológica de Querétaro / Purdue University, Mexico

C-10-290
TACTILE SENSING METHOD FOR ESTIMATING THE INSERTION STATE OF A CONNECTOR...............1487
Kouji Murakami
Kyushu Sangyo University, Japan

C-10-291
UNSUPERVISED GAS DISCRIMINATION IN UNCONTROLLED ENVIRONMENTS BY EXPLOITING DENSITY PEAKS ................................................................................................................................................1490
Han Fan, Victor Hernandez Bennetts, Erik Schaaffernicht, Achim J. Lilienthal
Örebro Universität, Sweden

C-10-292
LIGHTWEIGHT SECURE SENSING USING HARDWARE ISOLATION ...........................................................1493
Mengmei Ye, Nianhang Hu, Sheng Wei
University of Nebraska-Lincoln, United States
1:30 PM - 3:30 PM  
C3P-P: Medical Sensing Applications II  
LOCATION: Poster Area  
SESSION CHAIR:  
Christian Zorman, Case Western Reserve University

C-10-388  
BIOMIMETIC FLOW SENSORS FOR BIOMEDICAL FLOW SENSING IN INTRAVENOUS TUBES ............................................1496  
Zhiyuan Shen{1}, Ajay Giri Prakash Kottapalli{1}, Vignesh Subramaniam{1}, Jianmin Miao{4}, Michael Triantafyllo{3}, Mohsen Asadnia{2}  
{1}CENSAM, Singapore; {2}Macquarie University, Australia; {3}MIT, United States; {4}Nanyang Technological Univ., Singapore

C-10-293  
COMPARISONS BETWEEN NOVEL APPROACHES IN SILICA OPTICAL FIBRE AND PLASTIC FIBRE FOR USE IN CLINICAL IN-VIVO DOSIMETRY .........................................................................................1499  
Lingxia Chen{2}, Elfed Lewis{2}, Peter Woulfe{1}, Sinead O’Keeffe{2}  
{1}Galway Clinic, Ireland; {2}University of Limerick, Ireland

C-10-294  
WIRELESS PAPER-BASED BIOSENSOR READER FOR THE DETECTION OF INFECTIOUS DISEASES AT THE POINT OF CARE .........................................................................................................1502  
Evdokia Pilavaki, Claudio Parolo, Rachel McKendry, Andreas Demosthenous  
University College London, United Kingdom

C-10-295  
DESIGN AND DEVELOPMENT OF CONTINUOUS CUFF-LESS BLOOD PRESSURE MONITORING DEVICES .................................................................................................................................1505  
Devon Griggs{2}, Manuja Sharma{1}, Arian Naghibi{2}, Colton Wallin{1}, Victor Ho{1}, Karinne Barbosa{2}, Tadesse Ghirmai{1}, Hung Cao{1}, Sandeep K. Krishnan{1}  
{1}University of Washington, United States; {2}University of Washington Bothell, United States

C-10-296  
SELF ASSEMBLED MONOLAYERS VERSUS IRON OXIDE NANOPARTICLES MODIFIED SURFACES: TWO FUNCTIONALIZATION STRATEGIES FOR FEMTOMOLAR DETECTION OF PROSTATE SPECIFIC ANTIGEN .........................................................................................................................1508  
Nesrine Blel{3}, Najla Fourati{1}, Chouki Zerrouki{1}, Mina Souiri{3}, Nourdin Yaakoubi{4}, Asma Omezzine{2}, Ali Othmane{3}  
{1}Conservatoire National des Arts et Métiers, France; {2}Hôpital Universitaire Sahloul, Tunisia; {3}Université de Monastir, Tunisia; {4}Université du Maine, France

C-10-297  
FBG-BASED LARGE DEFLECTION SHAPE SENSING OF A CONTINUUM MANIPULATOR: MANUFACTURING OPTIMIZATION ...........................................................................................................1511  
Shahriar Sefati, Farshid Alambeigi, Iulian Iordachita, Mehran Armand, Ryan Murphy  
Johns Hopkins University, United States

C-10-298  
CLOUD-BASED REAL-TIME HEART MONITORING AND ECG SIGNAL PROCESSING ..................................................................................................................1514  
Fatima Bamarouf, Claire Crandell, Shannon Tsuyuki, Jose Sanchez, Yufeng Lu  
Bradley University, United States
C-13-326
A FULLY-SHIELDED FLEXIBLE AND STRETCHABLE MICROWAVE TRANSMISSION-LINE TACTILE PRESSURE SENSOR ................................................................. 1517
Matthew D’Asaro, Daniel Sheen, Jeffrey Lang
Massachusetts Institute of Technology, United States

C-13-334
AN IR-BASED FACIAL EXPRESSION TRACKING SENSOR FOR HEAD-MOUNTED DISPLAYS ............ 1520
Jaekwang Cha, Jinho Kim, Shiho Kim
Yonsei University, Korea, South

C-13-336
TEXTILE PIEZORESISTIVE SENSORS FOR ON-BODY MEASUREMENT OF SPINAL EXTENSION ........ 1523
Jennifer Deignan{1}, Matthew Jacobs{1}, Larisa Florea{1}, Shirley Coyle{1}, Dermot Diamond{1}, Maria Pacelli{2}, Rita Paradiso{2}
{1}Dublin City University, Ireland; {2}Smartex Srl, Italy

C-13-339
INKJET-PRINTING RAPID PROTOTYPING OF A ROBUST AND FLEXIBLE CAPACITIVE TOUCH PANEL ................................................................. 1526
Lisa-Marie Faller, Stephan Mühlbacher-Karrer, Hubert Zangl
Alpen-Adria-Universität Klagenfurt, Austria

C-13-338
WRIST-WEARABLE BIOELECTRICAL IMPEDANCE ANALYZER WITH CONTACT RESISTANCE COMPENSATION FUNCTION ........................................ 1529
Myoung Hoon Jung, Kak Namkoong, Yeolho Lee, Young Jun Koh, Kunsun Eom, Hyeongseok Jang, Jungmok Bae, Jongae Park
Samsung Advanced Institute of Technology, Korea, South

C-13-328
HIGH ACCURACY WEARABLE BIOMETRIC DEVICES USING MULTI-WAVELENGTH SKIN TISSUE OPTICS ........................................................................................................... N/A
Young Chang Jo{1}, Hae Na Kim{1}, Hyuck Ki Hong{1}, Teon Shik Choi{1}, Suk Won Jung{1}, Jae-Hwan Kang{2}, Sung-Phil Kim{2}
{1}Korea Electronics Technology Institute, Korea, South; {2}Ulsan National Institute of Science and Technology, Korea, South

C-13-330
SOFT, FLEXIBLE 3D PRINTED FIBERS FOR CAPACITIVE TACTILE SENSING ........................................ 1535
Ashish Kapoor, Michael McKnight, Kony Chatterjee, Talha Agcayazi, Hannah Kausche, Tushar Ghosh, Alper Bozkurt
North Carolina State University, United States

C-13-332
A WEARABLE FABRIC-BASED RFID SKIN TEMPERATURE MONITORING PATCH ........................................ N/A
Saisai Wen, Hadi Heidari, Anastasios Vilouras, Ravinder Dahiya
University of Glasgow, United Kingdom
C-11-300
TRANSMISSION CHARACTERISTICS OF RFID SENSOR SYSTEMS EMBEDDED IN CONCRETE
Matthias Bartholmai, Sergej Johann, Michael Kammermeier, Maximilian Mueller, Christoph Strangfeld
Bundesanstalt für Materialforschung und -prüfung, Germany

C-11-302
FREQUENCY-RESPONSE-ASSOCIATED DELAY-DISPERSION ISSUE IN TIME-DELAY MEASURING SENSORS
Gibran Limi Jaya, Shoushun Chen
Nanyang Technological University, Singapore

C-11-304
WIRELESS PRESSURE MEASUREMENT IN AIR BLAST USING PVDF SENSORS
Jérémie Fourmann(2), Antony Coustou(2), Hervé Aubert(2), Patrick Pons(2), Jerôme Luc(1), Alexandre Lefrançois(1), Maylis Lavayssière(1), Antoine Osmont(1)
(1)Commissariat à l’Énergie Atomique et aux Énergies Alternatives, France; (2)Laboratoire d’Analyse et d’Architecture des Systèmes / Université de Toulouse, France

C-11-306
A NODE DEPLOYMENT MECHANISM ACCOUNTING INTO RECEIVED SIGNAL STRENGTH AND FREQUENCY DIVERSITY FOR A WIRELESS SENSOR NETWORK
Mrinmoy Sen(1), Indrajit Banerjee(1), Mainak Chatterjee(2), Tuhina Samanta(1)
(1)Indian Institute of Engineering Science and Technology, Shibpur, India; (2)University of Central Florida, United States

C-11-308
MODULAR SENSOR SYSTEM (MSS) FOR URBAN AIR POLLUTION MONITORING
Wei-Ying Yi(1), Kwong-Sak Leung(1), Yee Leung(1), Mei-Ling Meng(1), Terrence Mak(2)
(1)Chinese University of Hong Kong, Hong Kong; (2)University of Southampton, United Kingdom

C-11-310
A STANDALONE STRUCTURED-LIGHT 3D CAMERA
Kukjin Han, Sukhan Lee
Sung Kyun Kwan University, Korea, South

C-11-312
A WIRELESS SAFETY DETECTION SENSOR SYSTEM
Riad Kanan, Obaidallah Elhassan, Rofaida Bensalem, Abeer Husein
Abu Dhabi University, U.A.E.

C-11-313
ACTIVATION AND IDENTIFICATION OF FULLY PASSIVE WIRELESS SENSORS
Colm Mc Caffrey, Nadine Pesonen, Pekka Pursula
VTT Technical Research Centre of Finland, Finland
A 1.3 MW, 12-BIT LOCK-IN AMPLIFIER BASED READOUT CIRCUIT DEDICATED TO PHOTO-ACOUSTIC GAS SENSING

Franck Badets, Jean-Guillaume Coutard, Patrice Russo, Elisa Dina, Alain Glière, Sergio Nicoletti
Commissariat à l’Énergie Atomique et aux Énergies Alternatives, France

MEDIUM RANGE UNDERWATER COMMUNICATION DEVELOPMENT SYSTEM

Anton Netchaev, Jordan Klein, Clayton Thurmer, Brandon Carver, James Evans
U.S. Army Engineer Research and Development Center, United States

CALIBRATION OF SMARTPHONE LIGHT SENSORS WITH A NEAR FIELD COMMUNICATION ENABLED REFERENCE

Tore Leikanger, Christian Schuss, Juha Häkkinen
University of Oulu, Finland

THE EFFECT OF SHORT BEAM LENGTH AND GAP DISTANCE ON THE RESONANCE FREQUENCIES IN FISHBONE-SHAPED MICROELECTROMECHANICAL SYSTEM RESONATOR

Ryo Takahashi, Hidetoshi Miyashita, Kentaro Kinoshita, Sang-Seok Lee
Tottori University, Japan

A 2D RESONANT MEMS SCANNER WITH AN ULTRACOMPACT WEDGE-LIKE MULTIPLIED ANGLE AMPLIFICATION FOR MINIATURE LIDAR APPLICATION

Liangchen Ye(2), Gaofei Zhang(2), Zhen You(2), Chi Zhang(1)
(1) Beijing Institute of Nanoenergy and Nanosystems, Chinese Academy of Sciences, China; (2) Tsinghua University, China

FULLY-DIFFERENTIAL ALN-ON-SI WINE GLASS MODE RESONATOR FOR ENHANCED CHARACTERIZATION IN WATER

Abid Ali, Joshua En-Yuan Lee
City University of Hong Kong, Hong Kong

DEVELOPMENT OF OPTIMAL ELECTROPLATED PLATINUM-BLACK CATALYST FOR QUARTZ HYDROGEN SENSORS

Hiroshi Oigawa(1), Koichi Harima(1), Fusao Kohsaka(2), Tooru Tsuno(2), Toshitsugu Ueda(2)
(1) KOA Corporation, Japan; (2) Waseda University, Japan

TORSIONAL NANO-RESONATOR: CHARACTERIZATION OF A NONLINEAR HARDENING BEHAVIOR AND NOISE ANALYSIS

Ludovic Laurent, Jean-Jacques Yon, Jean-Sébastien Moulet, Pierre Imperinetti, Laurent Duraffourg
Commissariat à l’Énergie Atomique et aux Énergies Alternatives, France
C-14-344
ALGAN/GAN HFET EMBEDDED GAN MICROCANTILEVERS BASED POTENTIOMETRIC SENSOR ...............1589
Ferhat Bayram, Digangana Khan, Soaram Kim, Goutam Koley
Clemson University, United States

C-14-349
CONTACTLESS ASPHALTENE SOLID PARTICLE DEPOSITION MONITORING USING ACTIVE MICROWAVE RESONATORS ........................................................................................................................1592
Mohammad Abdolrazzaghi(2), Mohammad Hossein Zarifi(2), Mojgan Daneshmand(2), Cedric F. A. Floquet(1)
(1)Schlumberger DBR Technology Center, Canada; (2)University of Alberta, Canada

C-14-345
A NOVEL CHARACTERIZATION METHOD FOR MEMS BASED ELECTROSTATIC RESONATORS FOR Q ENHANCEMENT AND FEEDTHROUGH CURRENT ELIMINATION .........................................................................................................................1595
Eren Aydin(1), Mustafa Kangül(1), Furkan Gökçe(1), özge Zorlu(2), Haluk Külah(1)
(1)Middle East Technical University, Turkey; (2)Mikrobiyo Sistemler Elektronik Sanayi A.Ş., Turkey

C-14-346
AN ACCURATE CONTACTLESS POSITION SENSOR WITH PLANAR RESONATORS .................................................................1598
Bingnan Wang, Koon Hoo Teo, Phil Orlik
Mitsubishi Electric Research Laboratories, United States

C-14-347
BILAYER NANO-WAVEGUIDE RESONATORS FOR SENSING APPLICATIONS .................................................................1601
Mayur Ghatge, Roozbeh Tabrizian
University of Florida, United States

1:30 PM - 3:30 PM
C3P-T: Focused Session Posters: MEMS Energy Harvesting & Devices
LOCATION: Poster Area
SESSION CHAIR:
Qian Zhang, Analog Devices, Inc.

C-16-352
ENERGY HARVESTING FROM MOVING DROPLET BY WATERSOLID SURFACE CONTACT ELECTRIFICATION WITH MEMS COMPATIBLE PROCESS TECHNOLOGY ........................................N/A
Chaoran Liu(2), Xiaofeng Zhou(1), Lufeng Che(1)
(1)Shanghai Institute of Microsystem and Information Technology / Chinese Academy of Sciences, China; (2)Shanghai Institute of Microsystem and Information Technology / University of Chinese Academy of Scie, China

C-16-355
CONFIRMATION OF HIGH EFFICIENCY ON RECTENNA WITH HIGH IMPEDANCE ANTENNA AND OPTIMIZED GATE CONTROLLED DIODE FOR RF ENERGY HARVESTING .................................................................1607
Junpei Iwata, Jiro Ida, Takahiro Furuta, Keisuke Noguchi, Kenji Itoh
Kanazawa Institute of Technology, Japan

C-16-358
ON THE POWER OPTIMIZATION OF THE VIBRATION-BASED ENERGY HARVESTERS UNDER SWEEP INPUT ACCELERATION ........................................................................................................1610
Thuy Le(1), Binh Truong(2), Cuong Le(2), Sebastian Sager(1)
(1)Otto-von-Guericke-Universität Magdeburg, Germany; (2)University College of Southeast Norway, Norway
C-16-361
A MICROSCALE BIOPHOTOVOLTAIC DEVICE ................................................................. 1613
Xuejian Wei, Maedeh Mohammadifar, Weiyang Yang, Seokheun Choi
State University of New York at Binghamton, United States

C-16-364
WIDEBAND MEMS ELECTROSTATIC ENERGY HARVESTER WITH DUAL RESONANT STRUCTURE ..... 1616
Yulong Zhang, Anxin Luo, Yixin Xu, Tianyang Wang, Fei Wang
South University of Science and Technology of China, China

C-16-367
AN ORIGAMI-INSPIRED MULTICELL BIOBATTERY STACK .................................................. 1619
Maedeh Mohammadifar, Yang Gao, Seokheun Choi
State University of New York at Binghamton, United States

C-16-370
NOVEL SCREEN PRINTED AND FLEXIBLE LOW FREQUENCY MAGNETO-ELECTRIC ENERGY HARVESTER .............................................................................................................. 1622
Amer Chlaihawi, Sepehr Emamian, Binu Narakathu, Bradley Bazuin, Massood Zandi Atashbar
Western Michigan University, United States

C-16-373
MICROMACHINED “RANDOM MECHANICAL SWITCHING HARVESTER ON INDUCTOR” TO RECOVERY ENERGY FROM VERY LOW-AMPLITUDE VIBRATIONS WITH ZERO-VOLTAGE THRESHOLD .......... 1625
Carlo Trigona, Salvatore Giuffrida, Bruno Andò, Salvatore Baglio
Università degli Studi di Catania, Italy

C-16-375
KINETIC ENERGY HARVESTING USING IMPROVED ECCENTRIC ROTOR ARCHITECTURE FOR WEARABLE SENSORS ...................................................................................... 1628
Qian Zhang{1}, Lei Gu{1}, Ken Yang{1}, Miah Halim{2}, Robert Rantz{2}, Shad Roundy{2}
{1}Analog Devices, Inc., United States; {2}University of Utah, United States
<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>4:00</td>
<td>DEVELOPING A PASSIVE DC CURRENT SENSOR</td>
<td>Huan Liu{1}, Dingkang Wang{2}, Dong F. Wang{1}</td>
<td>Jilin University, China; University of Florida, United States</td>
</tr>
<tr>
<td>4:15</td>
<td>MICROPLASMA DRAWING OF THERMOCOUPLE SENSORS</td>
<td>Ahmed M. Abdul-Wahed, Anindya Roy, Kenichi Takahata</td>
<td>University of British Columbia, Canada</td>
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<tr>
<td>4:30</td>
<td>FLUORESCENCE-BASED TEMPERATURE SENSOR FOR IN-SITU IMAGING LOCAL TEMPERATURE OF ALUMINUM NAPARTICLES ON PLASMONIC GRATINGS</td>
<td>Biyan Chen, Haisheng Zheng, Junsang Yoon, Sangho Bok, Cherian Mathai, Keshab Gangopadhyay, Shubhra Gangopadhyay, Matthew R. Maschmann</td>
<td>University of Missouri, United States</td>
</tr>
<tr>
<td>4:45</td>
<td>CHARACTERIZATION OF PIEZORESISTIVE AND ELECTROTHERMAL SENSORS IN MEMS DEVICES</td>
<td>Mohammad Maroufi, S. O. Reza Moheimani</td>
<td>University of Texas at Dallas, United States</td>
</tr>
<tr>
<td>5:00</td>
<td>TOWARDS A TRI-AXIAL FLEXIBLE FORCE SENSOR FOR CATHETER CONTACT FORCE MEASUREMENT</td>
<td>Hardik Pandya{1}, Jun Sheng{2}, Jaydev Desai{2}</td>
<td>Brigham and Women's Hospital / Harvard Medical School, United States; Georgia Institute of Technology, United States</td>
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<td>5:15</td>
<td>GRAPHENE OXIDE BASED SENSOR WITH DIFFERENTIAL STRUCTURE FOR HUMIDITY AND TEMPERATURE DETECTION</td>
<td>Xiaohui Leng, Xingwei Chen, Fei Wang</td>
<td>South University of Science and Technology of China, China</td>
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<td>Time</td>
<td>Title</td>
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</tr>
</tbody>
</table>
| 4:00   | A Highly Integratable Microfluidic Biosensing Chip Based on Magnetoelastic-Sensor and Planar Coil | Qiushi Jiang{1}, Ping Chen{1}, Suiqiong Li{1}, Heming Zhao{1}, Yuzhe Liu{2}, Shin Horikawa{2}, Bryan Chin{2}  
{1}Soochow University, China, {2}Auburn University, United States |
| 4:15   | Sensitivity Enhancement of Split Ring Resonator Based Liquid Sensors  | Mohammad Abdolrazzaghi, Mohammad Hossein Zarifi, Mojgan Daneshmand  
University of Alberta, Canada |
| 4:30   | A Novel Screening Platform for Electromicrobiology: A 3-D Paper-Based Sensing Array with Conductive PEDOT:PSS | Yang Gao{1}, Maedeh Mohammadifar{1}, Daniel Hassett{2}, Seokheun Choi{1}  
{1}State University of New York at Binghamton, United States; {2}University of Cincinnati College of Medicine, United States |
| 4:45   | Rapid Detection of Theophylline Using Aptamer-Based Nanopore Thin Film Sensor | Silu Feng, Xiangchen Che, Long Que, Changtian Chen, Wei Wang  
Iowa State University, United States |
| 5:00   | An Automated Microfluidic Assay for the Detection of Cancer Biomarkers in Serum Using Photonic Crystal Enhanced Fluorescence | Lydia Kwon, Caitlin Race, Myles Foreman, Brian T. Cunningham  
University of Illinois at Urbana–Champaign, United States |
| 5:15   | Achieving Uniformity and Reproducibility for Photonic Crystal Fluorescence Enhanced Disease Diagnostic Microarrays | Caitlin Race, Lydia Kwon, Brian T. Cunningham  
University of Illinois at Urbana–Champaign, United States |
4:00 PM - 5:30 PM  
C4L-C: Wireless Sensors & Interfaces  
LOCATION: Curacao 5-6  
SESSION CHAIRS:  
Mehdi Kiani, Penn State University  
Ryutar0 Maeda, AIST

4:00  
INVITED: WIRELESS HYDROGEL-BASED GLUCOSE SENSOR FOR FUTURE IMPLANTABLE APPLICATIONS  
Yuechuan Yu, Tram Nguyen, Prashant Tathireddy, Darrin Young, Shad Roundy  
University of Utah, United States

4:30  
SELF-POWERED AND TRANSPARENT ALL-GRAPHENE BIOSENSOR  
Ali Shahini{2}, Mehdi Hajizadegan{2}, Maryam Sakhdari{2}, Mark Ming-Cheng Cheng{2}, Pai-Yen Chen{2}, Haiyu Huang{1}  
{1}Maxim Integrated Inc., United States; {2}Wayne State University, United States

4:45  
PASSIVELY-POWERED WIRELESS MICROMACHINED QUARTZ MAGNETOFLEXOElastic MAGNETOMETER  
Paul Nordeen{2}, Gregory P. Carman{2}, Eugene Freeman{1}, Gokhan Hatipoglu{1}, Srinivas Tadigadapa{1}  
{1}Pennsylvania State University, United States; {2}University of California, Los Angeles, United States

5:00  
AN EMBEDDED SYSTEM TO CONTROL CONDUCTING INTERPENETRATING POLYMER NETWORKS ACTUATORS  
Tien Anh Nguyen{3}, Luc Chassagne{3}, Barthélemy Cagneau{3}, Adelyne Fannir{2}, Kätlin Rohtlaid{2}, Tran Minh Giao Nguyen{2}, Cedric Plesse{2}, Frédéric Vidal{2}, Chia-Ju Peng{1}, Shih-Jui Chen{1}  
{1}National Central University, Taiwan; {2}Université de Cergy-Pontoise, France; {3}Université de Versailles Saint-Quentin-en-Yvelines, France

5:15  
PROGRAMMABLE MULTIMODE, MULTICHANNEL UNIVERSAL WIRELESS RECEIVER WITH FFT-BASED MULTICARRIER DEMODULATOR FOR BATTERYLESS WIRELESS SENSORS  
Hisashi Nishikawa, Kei Igarashi, Takeshi Nishihashi, Yuya Shimizu, Ryota Suematsu, Ami Tanaka, Takakuni Douseki  
Ritsumeikan University, Japan
4:00 PM - 5:30 PM  
C4L-D: Sensors & Systems for Health Monitoring & Harsh Environments  
LOCATION: Curacao 7-8  
SESSION CHAIR:  
Christian Zorman, Case Western Reserve University

4:00  
INVITED: WIRELESS BLADDER PRESSURE MONITOR FOR CLOSED-LOOP BLADDER NEUROMODULATION .......................................................... 1682  
Steve Majerus{3}, Anisha S. Basu{1}, Iryna Makovey{2}, Peng Wang{1}, Hui Zhui{3}, Christian Zorman{1}, Wen Ko{1}, Margot Damaser{3}  
{1}Case Western Reserve University, United States; {2}Cleveland Clinic, United States; {3}Cleveland VA Medical Center, United States

4:30  
MHEALTH DIPSTICK ANALYZER FOR MONITORING OF PREGNANCY COMPLICATIONS ....................... 1685  
Karthik Konnaiyan{1}, Surya Cheemalapati{1}, Anna Pyat{1}, Michael Gubanov{2}  
{1}University of South Florida, United States; {2}University of Texas at San Antonio, United States

4:45  
ROBUST IMPLANTABLE BLOOD PRESSURE SENSOR PACKAGING FOR LONG-TERM LABORATORY ANIMALS MONITORING .......................................................... 1688  
Xing Chen, Darrin Young  
University of Utah, United States

5:00  
MULTI-SENSOR MODULE FOR A MOBILE ROBOT OPERATING IN HARSH ENVIRONMENTS ............... 1691  
Guangfen Wei{1}, Julian Gardner{2}, Marina Cole{2}, Yuxin Xing{2}  
{1}Shandong Technology and Business University, China; {2}University of Warwick, United Kingdom

5:15  
GLASS MICROBUBBLE ON-CHIP PACKAGED FERROFLUID BASED MAGNETOVISCOUS MAGNETOMETER ........................................................................... N/A  
Chenchen Zhang, Eugene Freeman, Srinivas Tadigadapa  
Pennsylvania State University, United States
4:00
INVITED: ULTRA-THIN PIEZOELECTRIC STRAIN SENSOR ARRAY INTEGRATED ON FLEXIBLE PRINTED CIRCUIT FOR STRUCTURAL HEALTH MONITORING

Takahiro Yamashita{2}, Hironao Okada{2}, Takeshi Kobayashi{2}, Daniel Zymelka{3}, Kazuyoshi Togashi{1}, Seiichi Takamatsu{4}, Toshihiro Itoh{4}
{1}Dai Nippon Printing Co., Ltd., Japan; {2}National Institute of Advanced Industrial Science and Technology, Japan; {3}NMEMS Technology Research Organization / National Institute of Advanced Industrial Science and Technology, Japan; {4}University of Tokyo / N

4:30
VIBRATING BEAM MEMS SEISMOMETER FOR FOOTSTEP AND VEHICLE DETECTION

Raphael Levy, Julien Moras, Benjamin Pannetier
Office National d’Etudes et de Recherches Aérospatiales, France

4:45
INTEGRATION OF HIGH-SPEED VISUAL AND TACTILE SENSORS WITH SYNCHRONIZATION IN A SENSOR NETWORK SYSTEM

Yuji Yamakawa, Masatoshi Ishikawa, Makoto Shimojo, Akihito Noda
University of Tokyo, Japan

5:00
WAGGLE: AN OPEN SENSOR PLATFORM FOR EDGE COMPUTING

Pete Beckman, Rajesh Sankaran, Charlie Catlett, Nicola Ferrier, Robert Jacob, Michael Papka
Argonne National Laboratory, United States

5:15
A NEW DISTRIBUTED ALGORITHM FOR ENVIRONMENTAL MONITORING BY WIRELESS SENSOR NETWORKS WITH LIMITED COMMUNICATION

Jing Wang{1}, In Soo Ahn{1}, Yufeng Lu{1}, Gennady Staskevich{2}
{1}Bradley University, United States; {2}U.S. Air Force Research Laboratory, United States
4:00  WIRELESS VIBRATION SENSING SYSTEM POWERED BY A PIEZOELECTRIC MEMS VIBRATION ENERGY HARVESTER .................................................................1712
Ryohei Takei{2}, Hironao Okada{2}, Takeshi Kobayashi{2}, Daiji Noda{1}, Ryo Ohta{1}, Toshihiro Itoh{3}
{1}Micromachine Center, Japan; {2}National Institute of Advanced Industrial Science and Technology, Japan; {3}University of Tokyo / National Institute of Advanced Industrial Science and Technology, Japan

4:15  FORCE IMPACT EFFECT IN CONTACT-MODE TRIBOELECTRIC ENERGY HARVESTERS: CHARACTERIZATION AND MODELING .................................................................1715
Marco Lasagni, Paolo Pavan, Alessandro Bertacchini, Luca Larcher
Università degli Studi di Modena e Reggio Emilia, Italy

4:30  A FULLY INTEGRATED ELECTROMAGNETIC ENERGY HARVESTING CIRCUIT WITH AN ON-CHIP ANTENNA FOR BIOMEDICAL IMPLANTS IN 180 NM SOI CMOS .................................................................1718
Hamed Rahmani, Aydin Babakhani
Rice University, United States

4:45  SELF-POWERED WIRELESS URINARY-INCONTINENCE SENSOR DETERMINES TIME FOR DIAPER CHANGE FROM SPACING BETWEEN SENSING SIGNALS .................................................................1721
Ami Tanaka, Ryota Suematsu, Hiroya Sakamoto, Takakuni Douseki
Ritsumeikan University, Japan

5:00  TEMPERATURE BEAT: PERSISTENT AND ENERGY HARVESTING WIRELESS TEMPERATURE SENSING SCHEME .................................................................1724
Ryoei Takitoge, Shohei Ishigaki, Tsuyoshi Ishige, Koichiro Ishibashi
University of Electro-Communications, Japan

5:15  HIGH PERFORMANCE PAPER-BASED MICROBIAL FUEL CELLS USING NANOSTRUCTURED POLYMERS .................................................................1727
Maedeh Mohammadifar, Jing Zhang, Idris Yazgan, Victor Kariuki, Omowunmi Sadik, Seokheun Choi
State University of New York at Binghamton, United States

AUTHOR INDEX