

# IEEE SENSORS 2010 Conference Preliminary Program

## Monday, November 1, 2010

16:30 - 20:00      **Conference Registration and Check-In**

18:00 - 19:00      **Wine & Cheese Welcome Reception**

19:00            **Opening Remarks**

19:15            **KEYNOTE PRESENTATION 1**

**A1K-A1      CYBORG BEETLES: THE REMOTE RADIO CONTROL OF INSECT FLIGHT**  
S. Kolev, N. Goehausen, M. Nyi Nyi, T.L. Massey, P. Abbeel, and **M.M. Maharbiz**  
*University of California, Berkeley, USA*

## Tuesday, November 2, 2010

### SPECIAL SESSION I A1L-A High-Performance Gyroscope Technologies

08:00            *Invited*

**A1L-A1      PRECISION NAVIGATION AND TIMING ENABLED BY MICROTECHNOLOGY:  
ARE WE THERE YET?**  
**A.M. Shkel**  
*Defense Advanced Research Project Agency (DARPA), USA*

08:30

**A1L-A3      ULTRA-PRECISE ROTATION SENSING WITH A SUPERLUMINAL RING LASER**  
M.S. Shahriar, H.N. Yum, Y. Wang, J. Yablon, K. Salit, and M. Salit  
*Northwestern University, USA*

08:45

**A1L-A4      ATOM INTERFEROMETRY NAVIGATION SENSORS**  
M. Kasevich  
*Stanford University, USA*

09:00

**A1L-A5      NUCLEAR MAGNETIC RESONANCE GYROSCOPES**  
E.A. Donley  
*National Institute of Standards and Technology (NIST), USA*

09:15

**A1L-A6      MICROMACHINED GYROSCOPES BASED ON A ROTATING MECHANICALLY  
UNCONSTRAINED PROOF MASS**  
M. Kraft<sup>1</sup> and B. Damrongsak<sup>2</sup>  
*<sup>1</sup>University of Southampton, UK and <sup>2</sup>Silpakorn University, THAILAND*

## SESSION A1L-B Nano Bio Sensors

08:00

### **A1L-B1 COMPOSITE NANOMATERIAL THIN FILM-BASED BIOSENSORS**

Z. Gong, S. Karandikar, X. Zhang, V. Kotipalli, Y. Lvov, and L. Que  
*Louisiana Technical University, USA*

08:15

### **A1L-B2 A NOVEL L-LACTATE SENSOR BASED ON ENZYME ELECTRODE MODIFIED BY ZnO NANOPARTICLES AND MULTIWALL CARBON NANOTUBES**

Y.T. Wang, W.J. Du, L. Lou, Z.Q. Zhu, J.Z. Zhu, Y.J. Bao, J.J. Li, and H. Peng  
*East China Normal University, CHINA*

08:30

### **A1L-B3 SURFACE CHARGE SENSITIVE SUSPENDED NANOPARTICLE CRYSTAL**

Y. Lei, W. Wang, W. Wu, and Z. Li  
*Peking University, CHINA*

08:45

### **A1L-B4 A HIGHLY SELECTIVE MEDIATOR LESS GLUCOSE DETECTOR EMPLOYING VERTICALLY ALIGNED CARBON NANOFIBER (VACNF)**

A.B. Islam, S.K. Islam, and T. Rahman  
*University of Tennessee, Knoxville, USA*

09:00

### **A1L-B5 INTEGRATION OF VERTICALLY-ALIGNED CARBON NANOTUBE FORESTS IN MICROFLUIDIC DEVICES FOR MULTISCALE ISOLATION OF BIOPARTICLES**

F. Fachin<sup>1</sup>, G.D. Chen<sup>2</sup>, M. Toner<sup>2</sup>, and B.L. Wardle<sup>1</sup>  
*<sup>1</sup>Massachusetts Institute of Technology, USA and <sup>2</sup>Massachusetts General Hospital, USA*

09:15

### **A1L-B6 HIGH FREQUENCY PIEZOELECTRIC RESONANT NANOCANNEL FOR BIO-SENSING APPLICATIONS IN LIQUID ENVIRONMENT**

C. Zuniga, M. Rinaldi, and G. Piazza  
*University of Pennsylvania, USA*

## SESSION A1L-C Opto Chemical Sensors

08:00

### **A1L-C1 DEVELOPMENT OF A MEMS-BASED RAMAN SPECTROMETER**

T. Russin, M. Fralick, M. Kerber, A. Wang, and R. Waters  
*Space and Naval Warfare Systems Center Pacific, USA*

08:15

### **A1L-C2 MULTIMODE FIBER MACH-ZEHNDER INTERFEROMETER FOR MEASUREMENT OF REFRACTIVE INDEX**

C.-H. Chen<sup>1</sup>, Y.-C. Chen<sup>1</sup>, J.-N. Wang<sup>2</sup>, L.-K. Chau<sup>1</sup>, J.-L. Tang<sup>1</sup>, and W.-T. Wu<sup>3</sup>  
*<sup>1</sup>National Chung Cheng University, TAIWAN, <sup>2</sup>National Yunlin University of Science and Technology, TAIWAN, and <sup>3</sup>National Pingtung University of Science and Technology, TAIWAN*

08:30

### **A1L-C3 MINIATURE INTERFEROMETER WITH CORNER CUBE MIRRORS**

Y.-M. Lee, M. Toda, M. Esashi, and T. Ono  
*Tohoku University, JAPAN*

08:45

**A1L-C4 RAPID AND SENSITIVE OPTOCHEMICAL NITROGEN DIOXIDE DETECTION:  
SILICONE-CONTAINING AMPHIPHILIC CO-NETWORKS AS WELL SUITED  
IMMOBILIZATION MATRICES FOR GAS SENSING**

S. Meskath, G. Urban, and J. Heinze  
*University of Freiburg, GERMANY*

09:00

**A1L-C5 FLUORESCENT GAS SENSORS BASED ON NANOPOROUS OPTICAL RESONATORS  
(MICROCAVITIES) INFILTRATED WITH SENSORY EMISSIVE POLYMERS**

I.A. Levitsky and P.-L. Ong  
*Emitech, Inc., USA*

09:15

**A1L-C6 POLYMER (SU-8) OPTOFLUIDIC DEVICE WITH EMBEDDED HYDROGEL OXYGEN  
SENSING ELEMENTS**

Z. Gao, D.B. Henthorn, and C.-S. Kim  
*Missouri University of Science and Technology, USA*

**SPECIAL SESSION II A1L-D Remote Powering for Biomedical Implants**

08:00

*Invited*

**A1L-D1 A mm-SIZED IMPLANTABLE POWER RECEIVER WITH ADAPTIVE MATCHING**

**S.D. O'Driscoll**  
*University of California, Davis, USA*

08:30

**A1L-D3 A HIGH EFFICIENCY INDUCTIVE POWER LINK AND BACKWARD TELEMTRY FOR  
BIOMEDICAL APPLICATIONS**

Q. Ma<sup>1</sup>, M.R. Haider<sup>1</sup>, and S.K. Islam<sup>2</sup>  
*<sup>1</sup>Sonoma State University, USA and <sup>2</sup>University of Tennessee, USA*

08:45

**A1L-D4 INDUCTIVE POWER LINK FOR A WIRELESS CORTICAL IMPLANT WITH  
BIOCOMPATIBLE PACKAGING**

K.M. Silay, C. Dehollain, and M. Declercq  
*Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND*

09:00

**A1L-D5 OPTIMAL FREQUENCIES FOR INDUCTIVE POWERING OF FULLY IMPLANTABLE  
BIOSENSORS FOR CHRONIC AND ELDERLY PATIENTS**

J. Olivo, S. Carrara, and G. De Micheli  
*Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND*

09:15

**A1L-D6 NOVEL TRIPLE-BAND BIOTELEMTRY SYSTEM WITH MINIATURIZED ANTENNA  
FOR IMPLANTABLE SENSING APPLICATIONS**

C.-L. Chang<sup>1</sup>, F.-J. Huang<sup>1</sup>, C.-M. Lee<sup>1</sup>, W.-C. Ma<sup>1</sup>, H.-Y. Huang<sup>2</sup>, and C.-H. Luo<sup>1</sup>  
*<sup>1</sup>National Cheng Kung University, TAIWAN and <sup>2</sup>National Taipei University, TAIWAN*

## SESSION A1L-E Silicon Photo Sensors

08:00

### **A1L-E1 A NOVEL 3D OPTICAL PROXIMITY SENSOR PANEL AND ITS READOUT CIRCUIT**

T.-Y. Lin, W.-D. Chen, P.C.-P. Chao, and C.-H. Tsai  
*National Chiao Tung University, TAIWAN*

08:15

### **A1L-E2 ARCHITECTURE OF THREE DIMENSIONAL COMPRESSIVE ACQUISITION CMOS IMAGE SENSOR**

M. Zhang, A. Bermak, and P. Xu  
*Hong Kong University of Science and Technology, HONG KONG*

08:30

### **A1L-E3 A 64 x 64 PIXELS 30 $\mu$ W VISION SENSOR WITH BINARY DATA COMPRESSION**

N. Massari, M. De Nicola, N. Cottini, and M. Gottardi  
*Fondazione Bruno Kessler, ITALY*

08:45

### **A1L-E4 A CMOS IMAGE SENSOR WITH CHARGE DOMAIN INTERLACE SCAN**

Y. Xu<sup>1</sup>, A. Mierop<sup>1,2</sup>, and A.J.P. Theuwissen<sup>1,3</sup>  
<sup>1</sup>*Delft University of Technology, THE NETHERLANDS*, <sup>2</sup>*DALSA Professional Imaging, THE NETHERLANDS*, and <sup>3</sup>*Harvest Imaging, BELGIUM*

09:00

### **A1L-E5 SHORT-WAVE INFRARED NANO-INJECTION IMAGING SENSORS**

O.G. Memis, J. Kohoutek, W. Wu, R.M. Gelfand, and H. Mohseni  
*Northwestern University, USA*

09:15

### **A1L-E6 OPTICAL STABILITY INVESTIGATION OF HIGH PERFORMANCE SILICON-BASED VUV PHOTODIODE**

L. Shi<sup>1</sup>, S. Nihtianov<sup>2</sup>, L.K. Nanver<sup>1</sup>, U. Kroth<sup>3</sup>, A. Šakić<sup>1</sup>, and A. Gottwald<sup>3</sup>  
<sup>1</sup>*Delft University of Technology, THE NETHERLANDS*, <sup>2</sup>*ASML Netherlands B.V., THE NETHERLANDS*, and <sup>3</sup>*Physikalisch-Technische Bundesanstalt (PTB), GERMANY*

## SESSION A1L-F Sensors for Human Condition Monitoring

08:00

### **A1L-F1 EXPERIMENTAL EMOTION RECOGNITION SYSTEM AND SERVICES FOR MOBILE NETWORK ENVIRONMENTS**

S. Lee<sup>1</sup>, C.-S. Hong<sup>1</sup>, H.-S. Shin<sup>2</sup>, and Y.K. Lee<sup>2</sup>  
<sup>1</sup>*Kyung Hee University, SOUTH KOREA* and  
<sup>2</sup>*Electronic and Telecommunications Research Institute (ETRI), SOUTH KOREA*

08:15

### **A1L-F2 USE OF WATER CLUSTER DETECTOR FOR PREVENTING DRUNK AND DROWSY DRIVING**

M. Sakairi and M. Togami  
*Hitachi, Ltd., JAPAN*

08:30

### **A1L-F3 EMFi MATERIAL AS WEARABLE HEART RATE SENSOR FOR NIGHT TIME RECORDINGS**

A. Vehkaoja, T. Salpavaara, J. Verho, and J. Lekkala  
*Tampere University of Technology, FINLAND*

08:45

**A1L-F4 ESTIMATING MENTAL STRESS USING A WEARABLE CARDIO-RESPIRATORY SENSOR**

J. Choi and R. Gutierrez-Osuna  
*Texas A&M University, USA*

09:00

**A1L-F5 PLATFORM FOR ALL-POLYMER-BASED PULSE-OXIMETRY SENSOR**

Y. Chuo, B. Omrane, C. Landrock, J.N. Patel, and B. Kaminska  
*Simon Fraser University, CANADA*

09:15

**A1L-F6 "SWEAT-ON-A-CHIP": ANALYSING SWEAT IN REAL TIME WITH DISPOSABLE MICRO-DEVICES**

F. Benito Lopez, S. Coyle, R. Byrne, V.F. Curto, and D. Diamond  
*Dublin City University, IRELAND*

09:30 - POSTER SESSION A4P-1

11:30

**POSTER SESSION T1 - Phenomena, Modeling & Evaluation**

**A2P-G1 MODELING AND CHARACTERIZATION OF A MEMS G-SENSOR WITH ANTI-STICTION RAISED STRIPS FOR VIBRATION MONITORING SYSTEMS**

Z. Yang, G. Ding, H. Shen, H. Wang, and X. Zhao  
*Shanghai Jiao Tong University, CHINA*

**A2P-G2 DESIGN AND APPLICATION OF FLEXIBLE STOPS FOR MEMS DEVICES**

M. Naumann<sup>1</sup>, D. Lin<sup>2</sup>, J. Mehner<sup>1</sup>, and T.F. Miller<sup>2</sup>  
<sup>1</sup>Chemnitz University of Technology, GERMANY and <sup>2</sup>Freescale Semiconductor Inc., USA

**A2P-G3 ROBUST DESIGN OF MICROGYROSCOPE USING TOLERANCE ANALYSIS**

H. Zhou, W. Su, X.X. Liu, and H.L. Tang  
*China Academy of Engineering Physics, CHINA*

**A2P-G4 HIGH EFFICIENCY PASSIVE MAGNETOELECTRIC TRANSDUCER CONSISTING OF PZT AND FE-NI FORK SUBSTRATE WITH HIGH Q VALUE**

P. Li, Y. Wen, C. Jia, and X. Li  
*Chongqing University, CHINA*

**A2P-G5 MAGNETIC MODELING OF A MEMS FLUX CONCENTRATOR**

G.A. Fischer, and A.S. Edelstein  
*US Army Research Laboratory, USA*

**A2P-G6 ELECTROMECHANICAL MODELING AND CHARACTERIZATION OF THE ELECTRICAL BREAKDOWN FOR THE CAPACITIVE MICRO-ARRAYED ULTRASONIC TRANSDUCERS**

T.-I. Chiu, T.-C. Hsiao, and S.-B. Luo  
*Industrial Technology Research Institute, TAIWAN*

**A2P-G7 RELIABLE PIEZOELECTRIC FEM-SIMULATIONS OF MEMS MICROPHONES: BASIS FOR INTRINSIC STRESS REDUCTION**

T. Reutter and G. Schrag  
*Technische Universität München TUM, GERMANY*

- A2P-G8 DIELECTRIC CHARGING EFFECTS IN ELECTROSTATICALLY ACTUATED CMOS MEMS RESONATORS**  
K.L. Dorsey and G.K. Fedder  
*Carnegie Mellon University, USA*
- A2P-G9 PRECISION MEASUREMENT OF HUMIDITY DEPENDENT PERMITTIVITY OF FOAMS**  
B. George<sup>1</sup>, T. Bretterkieber<sup>2</sup>, M. Neumayer<sup>2</sup>, and H. Zangl<sup>2</sup>  
<sup>1</sup>*Indian Institute of Technology, Madras, INDIA* and <sup>2</sup>*Graz University of Technology, AUSTRIA*
- A2P-G10 NOVEL MEMS 900 MHz ELECTROSTATIC SILICON DELAY LINE**  
M. Tabib-Azar<sup>1</sup>, K. Alzoubi<sup>2</sup>, and D. Saab<sup>2</sup>  
<sup>1</sup>*University of Utah, USA* and <sup>2</sup>*Case Western Reserve University, USA*
- A2P-G11 POSITION SENSITIVE RADIATION DETECTOR INTEGRATED WITH AN FPGA FOR RADIATION TOLERANT COMPUTING**  
B. LaMeres<sup>1</sup>, T. Kaiser<sup>1</sup>, E. Gowens<sup>1</sup>, T. Buerkle<sup>1</sup>, J. Price<sup>1</sup>, K. Helsley<sup>1</sup>, B. Peterson<sup>1</sup>, and R. Ray, Jr.<sup>2</sup>  
<sup>1</sup>*Montana State University, USA* and <sup>2</sup>*NASA Marshall Space Flight Center, USA*
- A2P-G12 TOMOGRAPHIC IMAGING IN SPEED-OF-LIGHT CONTRAST**  
K.B. Ozanyan<sup>1</sup>, P. Wright<sup>1</sup>, M. Stringer<sup>2</sup>, and R.E. Miles<sup>2</sup>  
<sup>1</sup>*University of Manchester, UK*, and <sup>2</sup>*University of Leeds, UK*
- A2P-G13 ON-CHIP DETECTION OF BEADS WITH A NEW ELECTRICAL IMPEDANCE SENSOR**  
L. Segerink, A. Sprenkels, J. Bommer, and A. van den Berg  
*University of Twente, THE NETHERLANDS*
- A2P-G14 A WEARABLE EARPAD SENSOR FOR CHEWING MONITORING**  
O. Amft  
*Technische Universiteit Eindhoven, THE NETHERLANDS*
- A2P-G15 THE ANALYSIS OF IgG-PROTEIN A BINDING EFFECT BY QUARTZ CRYSTAL MICROBALANCE BIOSENSOR**  
C.-J. Cheng, C.-T. Feng, and M.Z. Atashbar  
*Western Michigan University, USA*
- A2P-G16 MODEL OF INTEGRATED MICRO PHOTOVOLTAIC CELL STRUCTURES FOR HARVESTING SUPPLIED MICROSYSTEMS IN 0.35- $\mu$ m CMOS TECHNOLOGY**  
M. Ferri, D. Pinna, M. Grassi, E. Dallago, and P. Malcovati  
*University of Pavia, ITALY*
- A2P-G17 MICRO-DEVICES BASED ON SPECTRUM SHAPE DEFORMATION**  
D. Enguang  
*Peking University, CHINA*
- A2P-G18 TRANSITION BEHAVIOR IN LARGE DEFLECTION OF ELASTICALLY-BOSSED SENSOR PLATE UNDER INITIAL TENSION**  
C.-F. Chen, and N.-D. Gao  
*Chung-Hua University, TAIWAN*

## **POSTER SESSION T2 - Sensor/Actuator Systems**

- A2P-H1 EXTENDED LAMB'S MODEL APPLICATION TO HIGH-ORDER RESONANCES OF MICROMACHINED CIRCULAR MEMBRANES WITH INTEGRATED ACTUATION AND SENSING CAPABILITIES**  
T. Alava, F. Mathieu, C. Soyer, D. Remiens, and L. Nicu  
*Centre National de la Recherche Scientifique (CNRS), FRANCE*

- A2P-H2 A CLOSED-LOOP SWITCHED-CAPACITOR INTERFACE FOR HIGH-QUALITY MICROACCELEROMETER**  
Z.-H. Ye, H.-G. Yang, T. Yin, Y. Wang, Q.-S. Wu, C. Zhang, and F. Liu  
*Chinese Academy of Sciences, CHINA*
- A2P-H3 NOVEL DIGITAL MICROFLUIDIC SYSTEM USING A SURFACE ACOUSTIC WAVE DEVICE**  
T. Sugita and J. Kondoh  
*Shizuoka University, JAPAN*
- A2P-H4 A LATERALLY DRIVEN CAPACITIVE RF MEMS SWITCH USING PARYLENE AS DIELECTRIC LAYER**  
X. He<sup>1,2</sup>, Z. Lv<sup>1</sup>, B. Liu<sup>1</sup>, and Z. Li<sup>1</sup>  
<sup>1</sup>*Peking University, CHINA* and <sup>2</sup>*Harbin University of Science and Technology, CHINA*
- A2P-H5 AN ULTRA-LOW INPUT VOLTAGE POWER MANAGEMENT CIRCUIT FOR INDOOR MICRO-LIGHT ENERGY HARVESTING SYSTEM**  
H. Yu, H. Wu, and Y. Wen  
*Chongqing University, CHINA*
- A2P-H6 MICRO-OPTICS ASSEMBLY IN DENTAL DRILL AS A PLATFORM FOR IMAGING AND SENSING DURING SURGICAL DRILLING**  
D.H.B. Wicaksono<sup>1</sup>, E. Margallo-Balbás<sup>2</sup>, G. Pandraud<sup>2</sup>, P.J. French<sup>2</sup>, P. Breedveld<sup>2</sup>, and J. Dankelman<sup>2</sup>  
<sup>1</sup>*Universiti Teknologi Malaysia, MALAYSIA* and <sup>2</sup>*Delft University of Technology, THE NETHERLANDS*
- A2P-H7 LOW-TEMPERATURE ANODIC BONDING OF SILICON AND CRYSTAL QUARTZ WAFERS FOR MEMS APPLICATIONS**  
Y. Zimin and T. Ueda  
*Waseda University, JAPAN*
- A2P-H8 MULTIPHASE FLOW RECONSTRUCTION IN OIL PIPELINES BY PORTABLE CAPACITANCE TOMOGRAPHY**  
E.J. Mohamad<sup>1</sup> and R. Abdul Rahim<sup>2</sup>  
<sup>1</sup>*Universiti Tun Hussien Onn Malaysia, MALAYSIA* and <sup>2</sup>*Universiti Teknologi Malaysia, MALAYSIA*
- A2P-H9 PALM-SIZED FLOW-INJECTION-ANALYSIS FOR DETECTING FERRIC IONS**  
S. Gassmann and L. Pagel  
*University of Rostock, GERMANY*
- A2P-H10 A COMBINED ANGLE OF ATTACK AND ANGLE OF SIDESLIP SMART PROBE WITH TWIN DIFFERENTIAL SENSOR MODULES AND DOUBLED OUTPUT SIGNAL**  
P. Pačes<sup>1</sup>, V. Hanzal<sup>2</sup>, K. Draxler<sup>1</sup>, T. Čenský<sup>1</sup>, and O. Vaško<sup>3</sup>  
<sup>1</sup>*Czech Technical University, Prague, CZECH REPUBLIC*, <sup>2</sup>*Aeronautical Research and Test Institute, CZECH REPUBLIC*, and <sup>3</sup>*MEACONT Praha spol. s r.o., CZECH REPUBLIC*
- A2P-H11 A STUDY ON THE FAULT DIAGNOSIS ANALYSIS OF VARIABLE RELUCTANCE RESOLVER FOR ELECTRIC VEHICLES**  
K.-C. Kim<sup>1</sup>, K.-Y. Sung<sup>1</sup>, S.-J. Hwang<sup>1</sup>, and Y.S. Kim<sup>2</sup>  
<sup>1</sup>*Hanbat National University, SOUTH KOREA* and <sup>2</sup>*Daesung Electric Co., LTD., SOUTH KOREA*
- A2P-H12 A MEMS NANOPositionER WITH THERMAL ACTUATOR AND ON-CHIP THERMAL SENSOR**  
Y. Zhu, O.R. Moheimani, and M.R. Yuce  
*University of Newcastle, AUSTRALIA*

- A2P-H13 HIGH TEMPERATURE VIBRATION ENERGY HARVESTER SYSTEM**  
S. Barker, K.V. Vassilevski, N.G. Wright, and A.B. Horsfall  
*Newcastle University, UK*
- A2P-H14 DETECTION AND REMOVAL OF DROPLETS ON NON-PIEZOELECTRIC SUBSTRATES VIA MODE CONVERSION OF LAMB WAVES**  
M. Schmitt, S. Stich, S. Fromm, F. Fischer, and G. Lindner  
*Coburg University, GERMANY*
- A2P-H15 A MULTI-TOUCH INTERFACE CIRCUIT FOR LARGE-SIZED CAPACITIVE TOUCH PANEL**  
J.-Y. Ruan, P.C.-P. Chao, and W.-D. Chen  
*National Chiao Tung University, TAIWAN*
- A2P-H16 HYDROPHONE BASED ON INTENSITY MODULATED DFB FIBER LASER**  
J. Zhang<sup>1</sup>, X. Li<sup>1</sup>, Q. Chai<sup>1</sup>, Q. Hao<sup>1</sup>, Q. Li<sup>1</sup>, W. Sun<sup>1</sup>, L. Yuan<sup>1</sup>, P. Lu<sup>2</sup>, and G.D. Peng<sup>3</sup>  
<sup>1</sup>Harbin Engineering University, CHINA, <sup>2</sup>Communications Research Centre, CANADA, and <sup>3</sup>University of New South Wales, AUSTRALIA
- A2P-H17 A COMPRESSIVE ELETROENCEPHALOGRAPHY (EEG) SENSOR DESIGN**  
Q. Hao and F. Hu  
*University of Alabama, USA*

### POSTER SESSION T3 - Chemical & Gas Sensors

- A2P-J1 VISUAL DETECTION OF MERCURY VAPOR USING PLASMONIC NANOPARTICLE ARRAY**  
C. Wang, Z. Ma, M. Hossain, and M. Su  
*University of Central Florida, USA*
- A2P-J2 ENHANCING HYDROFLUORIC ACID SENSITIVITY IN SILICON POLYMER COMPOSITES THROUGH TiO<sub>2</sub> BLENDING**  
C.M. Washburn, S.M. Dirk, T.N. Lambert, W.G. Yelton, R.R. Boye, D.A. Scrymgeour, D.R. Wheeler, and B.G. Hance  
*Sandia National Laboratories, USA*
- A2P-J3 EFFECT OF SiO<sub>2</sub> ADDITIVE AS INHIBITOR ON CRYSTALLINE STRUCTURE AND H<sub>2</sub>S SENSING PERFORMANCE OF CuO-Au-SnO<sub>2</sub> THIN FILM PREPARED BY LIQUID PHASE DEPOSITION**  
J.-C. Chiou<sup>1,2</sup>, S.-W. Tsai<sup>1</sup> and C.-T. Huang<sup>3</sup>  
<sup>1</sup>National Chiao Tung University, TAIWAN, <sup>2</sup>China Medical University, CHINA, and <sup>3</sup>Oriental System Technology, TAIWAN
- A2P-J4 A FUZZY ENTROPY BASED NEURAL NETWORK CLASSIFIER FOR ODOR IDENTIFICATION OF ALCOHOLIC BEVERAGES USING TIN OXIDE SENSOR ARRAY**  
R. Kumar, R.R. Das, V.N. Mishra, and R. Dwivedi  
*Banaras Hindu University, Varanasi, INDIA*
- A2P-J5 ODOR SENSING SYSTEM USING BALL SAW DEVICES FUNCTIONALIZED WITH SELF-ASSEMBLED LIPID-DERIVATIVES AND GC MATERIALS**  
B. Wyszynski<sup>1,2</sup>, T. Nakamoto<sup>1</sup>, T. Ohgi<sup>3</sup>, T. Yanagizawa<sup>3</sup>, and N. Nakaso<sup>2</sup>  
<sup>1</sup>Tokyo Institute of Technology, JAPAN, <sup>2</sup>Westpomeranian University of Technology, POLAND, and <sup>3</sup>Toppan Printing Corporation, JAPAN



- A2P-J6 TRIMETHYLAMINE DETECTION USING MICROCANTILEVER CHEMICAL SENSORS FUNCTIONALIZED WITH A SELF-ASSEMBLED MONOLAYER**  
R. Yang, Y. Zhou, Z. Wang, and L. Liu  
*Tsinghua University, CHINA*
- A2P-J7 FABRICATION AND CHARACTERISTICS OF Pt/ZnO NO SENSOR INTEGRATED SiC MICRO HEATER**  
J.-C. Shim and G.-S. Chung  
*University of Ulsan, SOUTH KOREA*
- A2P-J8 PT/MoO<sub>3</sub> NANO-FLOWER/SiC SCHOTTKY DIODE BASED HYDROGEN GAS SENSOR**  
M. Shafiei<sup>1</sup>, J. Yu<sup>1</sup>, M. Breedon<sup>1</sup>, A. Moafi<sup>1</sup>, R.B. Kaner<sup>2</sup>, K. Galatsis<sup>2</sup>, K. Kalantar-Zadeh<sup>1</sup>,  
and W. Wlodarski<sup>1</sup>  
<sup>1</sup>Royal Melbourne Institute of Technology (RMIT), AUSTRALIA and  
<sup>2</sup>University of California, Los Angeles, USA
- A2P-J9 A LOW-HYSTERESIS AND HIGH-SENSITIVITY EXTENDED GATE FET-BASED CHLORIDE ION-SELECTIVE SENSOR**  
C.-H. Hsieh<sup>1</sup>, C.-Y. Wu<sup>2</sup>, and I.-Y. Huang<sup>1</sup>  
<sup>1</sup>National Sun Yat-sen University, TAIWAN and <sup>2</sup>Da-Yeh University, TAIWAN
- A2P-J10 GRAPHENE AS ION SENSITIVE FILM FOR IONIC LIQUIDS**  
A. Kulkarni, H. Kim, H. Zang, J.-B. Choi, B.H. Hong, and T.S. Kim  
*Sungkyunkwan University, SOUTH KOREA*
- A2P-J11 A MICROFABRICATED CARBON DIOXIDE SENSOR FOR PORTABLE APPLICATIONS**  
B.A. Rosen, A. Salehi-Khojin, and R.I. Masel  
*University of Illinois, Urbana-Champaign, USA*
- A2P-J12 GUIDED SH-SAW TOLUENE SENSORS WITH MESOPOROUS SILICA SENSITIVE COATINGS: INCREASED SENSITIVITY THROUGH MESOSTRUCTURATION CONTROL**  
A. Tetelin<sup>1</sup>, G. Tortissier<sup>1</sup>, L. Blanc<sup>1</sup>, C. Boissière<sup>2</sup>, J.-L. Lachaud<sup>1</sup>, C. Dejous<sup>1</sup>, and D. Rebière<sup>1</sup>  
<sup>1</sup>Université de Bordeaux, FRANCE and <sup>2</sup>Université Pierre et Marie Curie, FRANCE
- A2P-J13 MICROCANTILEVER SENSORS APPLICATIONS IN THE PETROLEUM INDUSTRY**  
D.G. Yablon, and A.M Schilowitz  
*ExxonMobil, USA*
- A2P-J14 ORIENTED GRAPHITIC CARBON FILMS FOR HYDROGEN GAS SENSORS**  
A. Moafi<sup>1</sup>, M. Shafiei<sup>1</sup>, A.Z. Sadek<sup>1</sup>, D.W.M. Lau<sup>1</sup>, J.G Partridge<sup>2</sup>, K. Kalantar-Zadeh<sup>1</sup>,  
W. Wlodarski<sup>1</sup>, and D.G. McCulloch<sup>1</sup>  
<sup>1</sup>Royal Melbourne Institute of Technology (RMIT), AUSTRALIA and  
<sup>2</sup>University of Canterbury, NEW ZEALAND
- A2P-J15 A CMOS INTERDIGITAL CAPACITIVE HUMIDITY SENSOR WITH POLYSILICON HEATERS**  
C.-L. Zhao, Q.-A. Huang, M. Qin, and W.-H. Li  
*Southeast University, CHINA*
- A2P-J16 HIGHLY DISPERSED GOLD NANOPARTICLES ON NITROGEN DOPED CARBON NANOTUBES FOR HYDROGEN SENSING**  
A.Z. Sadek<sup>1</sup>, A. Moafi<sup>1</sup>, C. Zheng<sup>1</sup>, D.M. Lau<sup>1</sup>, D.G. McCulloch<sup>1</sup>, Z. Hu<sup>2</sup>, W. Wlodarski<sup>1</sup>, and K.  
Kalantar-Zadeh<sup>1</sup>  
<sup>1</sup>Royal Melbourne Institute of Technology (RMIT), AUSTRALIA, and <sup>2</sup>Nanjing University, CHINA

**A2P-J17 BEHAVIOUR OF A CATALYTIC COMBUSTION METHANE GAS SENSOR WORKING ON PULSE MODE**

L. Xu<sup>1</sup>, T. Li<sup>1</sup>, R. Zheng<sup>2</sup>, L. Xie<sup>2</sup>, L. Lee<sup>2</sup>, X. Gao<sup>1</sup>, and Y. Wang<sup>1</sup>  
<sup>1</sup>Chinese Academy of Science, CHINA and <sup>2</sup>RAE Systems, CHINA

**POSTER SESSION T4 - Biosensors**

**A2P-K1 A VISCOSITY AND C-REACTIVE PROTEIN SENSING TECHNIQUE BASED ON BROWNIAN MOTION MEASUREMENTS BY TOTAL-INTERNAL-REFLECTIVE-FLUORESCENT VELOCIMETRY**

Y.-J. Fan, Y.-H. Liu, T.-H. Wu, H.-J. Sheen, S. Lin, and J.-F. Tsai  
National Taiwan University, TAIWAN

**A2P-K2 PHAGE LANGMUIR-BLODGETT FILMS FOR BIOSENSING APPLICATIONS**

R. Guntupalli<sup>1</sup>, I. Sorokulova<sup>1</sup>, R. Long<sup>1</sup>, E. Olsen<sup>2</sup>, W. Neely<sup>1</sup>, and V. Vodyanoy<sup>1</sup>  
<sup>1</sup>Auburn University, USA and <sup>2</sup>Keesler Air Force Base, USA

**A2P-K3 ELECTROCHEMICAL BIOSENSOR FOR THE DETECTION OF FORMALDEHYDE BASED ON ENCAPSULATION OF AN ENZYME, INTO THE NANOPOROUS-WALLED SILICA NANOTUBE-INORGANIC COMPOSITE MEMBRANE**

T. Itoh<sup>1</sup>, T. Shimomura<sup>2</sup>, T. Hanaoka<sup>1</sup>, M. Ono<sup>2</sup>, and F. Mizukami<sup>1</sup>  
<sup>1</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and  
<sup>2</sup>Funai Electric Advanced Applied Technology Research Institute Inc, JAPAN

**A2P-K4 LABEL-FREE IMMUNOSENSOR USING A GOLD ELECTRODE COVERED WITH CONDUCTIVE SELF-ASSEMBLED MONOLAYER**

K. Takoh, M. Horie, H. Someya, M. Ishida, and K. Kamijo  
NEC Corporation, JAPAN

**A2P-K5 SILICON NANOWIRES FOR HIGH-SENSITIVITY CRP DETECTION**

M.-H. Lee<sup>1</sup>, S.W. Jung<sup>1</sup>, S. Lee<sup>2</sup>, W. Seong<sup>1</sup>, and G. Kim<sup>2</sup>  
<sup>1</sup>Korean Electronics Technology Institute, SOUTH KOREA and <sup>2</sup>IM, SOUTH KOREA

**A2P-K6 CMOS OPEN-GATE ION SENSITIVE FIELD EFFECT TRANSISTORS FOR FEMTOMOLAR DOPAMINE DETECTION**

D.-C. Li and M.S.-C. Lu  
National Tsing Hua University, TAIWAN

**A2P-K7 CONVECTIVE FLOWS IN 3-DIMENSIONAL MICROFLUIDIC NETWORKS INDUCED BY LOCALIZED MICROWAVE HEATING**

W. Hilber, C. Diskus, T. Lederer, and B. Jakoby  
Johannes Kepler University, AUSTRIA

**A2P-K8 DETECTION OF MONOCLONAL ANTIBODIES USING CHEMICALLY MODIFIED GRAPHITE SUBSTRATES**

Z. Tehrani, O.J. Guy, A. Castaing, and S.H. Doak  
Swansea University, UK

**A2P-K9 ULTRA-SENSITIVE CYTOMETRIC DETECTION OF RARE PARTICLE ON MICROFLUIDIC DEVICE**

C. Mu<sup>1</sup>, Z. Zhang<sup>2</sup>, M. Lin<sup>3</sup>, and X. Cao<sup>1</sup>  
<sup>1</sup>University of Ottawa, CANADA, <sup>2</sup>National Research Council, CANADA, and  
<sup>3</sup>Canadian Food Inspection Agency, CANADA

- A2P-K10 DEVELOPMENT OF MICROPACKAGE TECHNOLOGY FOR BIOMEDICAL IMPLANTABLE MICRODEVICES USING PARYLENE C AS WATER VAPOR BARRIER COATINGS**  
H.-I. Kuo, R. Zhang, and W.H. Ko  
*Case Western Reserve University, USA*
- A2P-K11 MICROPIPETTE-BASED THERMAL SENSOR FOR BIOLOGICAL APPLICATIONS**  
R. Shrestha<sup>1</sup>, W.S. Chang<sup>2</sup>, and T.Y. Choi<sup>1</sup>  
<sup>1</sup>*University of North Texas, USA, and* <sup>2</sup>*Korea Institute of Machinery & Materials (KIMM), SOUTH KOREA*
- A2P-K12 A SURFACE PLASMON RESONANCE SENSOR FOR QUANTITATIVE ANALYSIS OF MINERALIZATION OF OSTEOBLAST CELLS**  
S.A. Kim<sup>1</sup>, S. Das<sup>1</sup>, H. Lee<sup>1</sup>, J.H. Kim<sup>1</sup>, Y.M. Song<sup>1</sup>, I.S. Kim<sup>1</sup>, K.M. Byun<sup>2</sup>, S.J. Hwang<sup>1</sup>, and S.J. Kim<sup>1</sup>  
<sup>1</sup>*Seoul National University, SOUTH KOREA and* <sup>2</sup>*Kyung Hee University, SOUTH KOREA*
- A2P-K13 NOVEL NANOSTRUCTURED PLATFORM AND NANOPARTICLES FOR SENSITIVE DETECTION OF BIOLOGICAL MATERIALS**  
S. Bok<sup>1</sup>, V. Korampally<sup>2</sup>, L. Polo-Parada<sup>2</sup>, W. Folk<sup>2</sup>, K. Gangopadhyay<sup>2</sup>, S. Gangopadhyay<sup>2</sup>, and P.K. Dasgupta<sup>3</sup>  
<sup>1</sup>*Nanos Technologies LLC, USA,* <sup>2</sup>*University of Missouri, Columbia, USA, and* <sup>3</sup>*University of Texas, Arlington, USA*
- A2P-K14 INTEGRATION OF PLASMONIC ANTENNA ON QUANTUM CASCADE LASER FACETS FOR CHIP-SCALE MOLECULAR SENSING**  
D. Dey, J. Kohoutek, R.M. Gelfand, A. Bonakdar, and H. Mohseni  
*Northwestern University, USA*
- A2P-K15 8X8 CMOS THERMAL SENSORS FOR ENZYMATIC GLUCOSE DETECTION**  
P.-Y. Wang and M.S.-C. Lu  
*National Tsing Hua University, TAIWAN*
- A2P-K16 A MICROSYSTEM FOR HIGH RESOLUTION MEASUREMENT OF CELL FORCES**  
J. Vázquez<sup>1</sup>, J. Hedley<sup>2</sup>, M. Birch<sup>2</sup>, and C. Redfern<sup>2</sup>  
<sup>1</sup>*Universidad de Castilla-La Mancha, SPAIN and* <sup>2</sup>*Newcastle University, UK*
- A2P-K17 SANDWICH STRUCTURE ELECTROCHEMICAL ASSAY FOR SINGLE STRANDED DNA DETECTION**  
I.-J. Chen and I.M. White  
*University of Maryland, USA*
- A2P-K18 AN OPTICAL MEASUREMENT USING THE DNA HYBRIDIZATION METHOD FOR SPECIFIC SPECIES OF BACTERIA DETECTION**  
Y.-C. Lin, C.-H. Yeh, Y.-H. Chang, H.-P. Lin, and T.-C. Chang  
*National Cheng Kung University, TAIWAN*

## **POSTER SESSION T5 - Optical Sensors**

- A2P-L1 NEW LOW COST ANALOG SELF-MIXING VIBROMETER**  
M. Norgia and A. Pesatori  
*Politecnico di Milano, ITALY*
- A2P-L2 NOVEL FAST LASER-BASED AUTO-FOCUSING MICROSCOPE**  
C.-S. Liu, P.-H. Hu, Y.-H. Wang, S.-S. Ke, Y.-C. Lin, Y.-H. Chang, and J.-B. Horng  
*Industrial Technology Research Institute, TAIWAN*

- A2P-L3 DUAL-CONFOCAL AUTO-FOCUS SENSING SYSTEM IN ULTRAFAST LASER APPLICATION**  
Y.-H. Wang, P.-H. Hu, Y.-C. Lin, S.-S. Ke, Y.-H. Chang, C.-S. Liu, and J.-B. Horng  
*Industrial Technology Research Institute, TAIWAN*
- A2P-L4 NEAR-FIELD GRATING FOR HIGH-SPEED LASER DOPPLER VELOCIMETRY**  
M. Norgia  
*Politecnico di Milano, ITALY*
- A2P-L5 HIGH-PERFORMANCE INSPECTING SYSTEM FOR DETECTING MICRO-CRACK DEFECTS OF SOLAR WAFER**  
S.-S. Ke, K.-W. Lin, Y.-C. Lin, J.-T. Chen, C.-S. Liu, and Y.-H. Wang  
*Industrial Technology Research Institute, TAIWAN*
- A2P-L6 ENHANCING DETECTION SENSITIVITY OF ALCOHOL INTAKE BY DIVIDING PHOTOPLETHYSMOGRAM SIGNALS**  
K. Fukuda, Y. Shimizu, and Y. Omura  
*Kansai University, JAPAN*
- A2P-L7 AN IMPROVED LARGE AREA-TYPE OPTICAL SENSOR USING FROSTED GLASS**  
Y. Kitazono<sup>1</sup>, S. Hossain<sup>1</sup>, S. Nakashima<sup>2</sup>, L. Zhang<sup>1</sup>, and S. Serikawa<sup>1</sup>  
<sup>1</sup>*Kyushu Institute of Technology, JAPAN and* <sup>2</sup>*Ube National College of Technology, JAPAN*
- A2P-L8 IMPROVEMENT IN THE SENSITIVITY OF DYE-DOPED POE-TYPE MOISTURE SENSOR**  
M. Morisawa and H. Yokomori  
*University of Yamanashi, JAPAN*
- A2P-L9 A VARIABLE TOPOLOGY PARTITIONED PIXEL AMPLIFIER FOR LOW AND HIGH LIGHT LEVEL DETECTION IN A CMOS IMAGER**  
Y. Dattner, and O. Yadid-Pecht  
*University of Calgary, CANADA*
- A2P-L10 OPTICAL DISPLACEMENT SENSOR BASED ON NOVEL SELF-MIXING RECONSTRUCTION METHOD**  
A. Magnani, M. Norgia, and A. Pesatori  
*Politecnico di Milano, ITALY*
- A2P-L11 CHARACTERIZATION OF HIGH QUALITY ZnO NANOWIRE SURFACE PLASMON RESONANCE SENSORS ON Si SUBSTRATE WITH PERFORATED ALUMINUM CYLINDRICAL MICROPILLAR ARRAYS**  
J.-C. Wang and T.-E. Nee  
*Chang Gung University, TAIWAN*
- A2P-L12 HIGH SENSITIVITY SAW UV SENSOR BY USING THIRD HARMONIC BASED ON ZNO/SI STRUCTURE**  
D.T. Phan and G.-S. Chung  
*University of Ulsan, SOUTH KOREA*
- A2P-L13 A NOISE PROPAGATION MODEL FOR A 3X3 OPTICAL DEMODULATION SCHEME**  
M.D. Todd  
*University of California, San Diego, USA*
- A2P-L14 APEX - CURRENT STATUS, PERFORMANCE AND VALIDATION CONCEPT**  
M. Jehle<sup>1</sup>, A. Hueni<sup>1</sup>, A. Damm<sup>1</sup>, P. D'Odorico<sup>1</sup>, M. Kneubühler<sup>1</sup>, K. Meuleman<sup>2</sup>, D. Schläpfer<sup>1</sup>, M.E. Schaepman<sup>1</sup>, and J. Weyermann<sup>1</sup>  
<sup>1</sup>*University of Zurich, SWITZERLAND and* <sup>2</sup>*VITO - Flemish Institute for Technological Research, BELGIUM*

- A2P-L15 FIBRE OPTIC PRESSURE AND TEMPERATURE SENSOR FOR GEOTHERMAL WELLS**  
K. Bremer<sup>1</sup>, E. Lewis<sup>1</sup>, G. Leen<sup>1</sup>, B. Moss<sup>1</sup>, S. Lochmann<sup>2</sup>, I. Mueller<sup>2</sup>, T. Reinsch<sup>3</sup>, and J. Schroetter<sup>3</sup>  
<sup>1</sup>University of Limerick, IRELAND, <sup>2</sup>Hochschule Wismar, GERMANY, and  
<sup>3</sup>GFZ German Research Centre for Geosciences, Potsdam, GERMANY
- A2P-L16 NEAR-INFRARED SPECTROSCOPY IN THE ANALYSIS OF FUNCTIONAL BRAIN ACTIVITY DURING COGNITIVE TASKS**  
B. Abibullaev<sup>1</sup>, S.H. Lee<sup>1</sup>, W.-S. Kang<sup>1</sup>, J. An<sup>1</sup>, and H.D. Seo<sup>2</sup>  
<sup>1</sup>Daegu Gyeongbuk Institute of Science and Technology, SOUTH KOREA and  
<sup>2</sup>Yeungnam University, SOUTH KOREA
- A2P-L17 MEASUREMENT AND ANALYSIS ON CHARACTERISTICS OF TRANSMISSION AND POLARIZATION FOR 12ML 65NM CMOS**  
M. Ikeda and Y. Kim  
University of Tokyo, JAPAN
- A2P-L18 A NEW DESIGN OF HIGH PRECISION SOLAR MICROSENSOR FOR SATELLITE APPLICATIONS**  
F.J. Delgado<sup>1</sup>, P. Ortega<sup>2</sup>, C.L. Tarrida<sup>1</sup>, J. García<sup>1</sup>, M. Angulo<sup>3</sup>, and J.M. Quero<sup>1</sup>  
<sup>1</sup>University of Seville, SPAIN, <sup>2</sup>Politechnique University of Cataluña, SPAIN, and  
<sup>3</sup>Instituto Nacional de Técnica Aeroespacial, SPAIN

#### POSTER SESSION T6 - Mechanical & Physical Sensors

- A2P-M1 DESIGN AND CHARACTERIZATION OF A MOBILE FORCE PLATE AND THREE-DIMENSIONAL MOTION ANALYSIS SYSTEM**  
T. Liu<sup>1</sup>, Y. Inoue<sup>1</sup>, K. Shibata<sup>1</sup>, and K. Shiojima<sup>2</sup>  
<sup>1</sup>Kochi University of Technology, JAPAN and <sup>2</sup>TEC GIHAN Co., LTD, JAPAN
- A2P-M2 PIEZORESISTIVE RESPONSE OF FIVE-CONTACT VERTICAL HALL DEVICES**  
T. Kaufmann, D. Kopp, F. Purkl, M. Baumann, P Ruther, and O. Paul  
University of Freiburg - IMTEK, GERMANY
- A2P-M3 ELECTRO-THERMAL MICROCANTILEVER WITH INTEGRATED SOLID-STATE HEATER, CONDUCTIVE TIP, AND SCHOTTKY DIODE**  
N. Maniscalco, and W.P. King  
University of Illinois, Urbana-Champaign, USA
- A2P-M4 HIGH SENSITIVITY SLIP SENSOR USING PRESSURE CONDUCTIVE RUBBER FOR DEXTEROUS GRASP AND MANIPULATION**  
S. Teshigawara<sup>1</sup>, S. Shimizu<sup>1</sup>, T. Tsutsumi<sup>1</sup>, Y. Suzuki<sup>1</sup>, A. Ming<sup>1</sup>, M. Ishikawa<sup>2</sup>, and M. Shimojo<sup>1</sup>  
<sup>1</sup>University of Electro-Communications, JAPAN and <sup>2</sup>University of Tokyo, JAPAN
- A2P-M5 THERMOELECTRIC FLOW SENSORS ON FLEXIBLE SUBSTRATES AND THEIR INTEGRATION PROCESS**  
H. Sturm<sup>1</sup>, E. Brauns<sup>1</sup>, K. Froehner<sup>1</sup>, R. Buchner<sup>2</sup>, and W. Lang<sup>1</sup>  
<sup>1</sup>University of Bremen, GERMANY and <sup>2</sup>Danfoss IXA A/S, DENMARK
- A2P-M6 SMART FLOW SENSOR WITH COMBINED FREQUENCY, DUTY-CYCLE, AND AMPLITUDE OUTPUT**  
S. Cerimovic<sup>1</sup>, S. Dalola<sup>2</sup>, F. Kohl<sup>3</sup>, T. Sauter<sup>3</sup>, V. Ferrari<sup>2</sup>, D. Marioli<sup>2</sup>, and F. Keplinger<sup>1</sup>  
<sup>1</sup>Vienna University of Technology, AUSTRIA, <sup>2</sup>University of Brescia, ITALY, and  
<sup>3</sup>Austrian Academy of Sciences, AUSTRIA

- A2P-M7 COMPARATIVE STUDY OF SAW TEMPERATURE SENSOR BASED ON DIFFERENT PIEZOELECTRIC MATERIALS AND CRYSTAL CUTS FOR PASSIVE WIRELESS MEASUREMENT**  
X. Ye, Q. Wang, L. Fang, X. Wang, and B. Liang  
*Zhejiang University, CHINA*
- A2P-M8 A TACTILE PROXIMITY SENSOR**  
D. Goeger, M. Blankertz, and H. Woern  
*Karlsruhe Institute of Technology, GERMANY*
- A2P-M9 THERMAL ASYMMETRY COMPENSATION OF A WIND SENSOR FABRICATED ON CERAMIC SUBSTRATE**  
Z. Dong, Q.-A. Huang, and M. Qin  
*Southeast University, CHINA*
- A2P-M10 AN EFFICIENT CALIBRATION METHOD FOR A NOVEL 6-DOF ACCELERATION SENSOR SYSTEM AND APPLICATION TO MEASUREMENT OF A VEHICLE MOTION**  
R. Onodera<sup>1</sup>, N. Mimura<sup>2</sup>, and M. Shishido<sup>1</sup>  
*<sup>1</sup>Tsuruoka National College of Technology, JAPAN and <sup>2</sup>Niigata University, JAPAN*
- A2P-M11 PIEZOTRANSISTOR-EMBEDDED MICROCANTILEVER PLATFORM FOR STRAIN SENSING APPLICATIONS**  
P. Singh and J. Miao  
*Nanyang Technological University, SINGAPORE*
- A2P-M12 TWO-FREQUENCY COMBINATION IN ULTRASONIC MEASUREMENT ON A SPARSE PHASED ARRAY USING TUNABLE MICROSENSORS**  
K. Yamashita, K. Yoshikawa, K. Tomiyama, P. Lorchirachoonkul, and M. Noda  
*Kyoto Institute of Technology, JAPAN*
- A2P-M13 DIRECT INTEGRATION OF MAGNETOELECTRIC SENSORS WITH MICROELECTRONICS - IMPROVED FIELD SENSITIVITY, SIGNAL-TO-NOISE RATIO AND FREQUENCY RESPONSE**  
Z. Fang, F. Li, N. Mokhariwale, S. Datta, and Q.M. Zhang  
*Pennsylvania State University, USA*
- A2P-M14 APPROACH FOR SUB PT, ROOM TEMPERATURE MAGNETIC SENSORS**  
A.S. Edelstein<sup>1</sup>, G.A. Fischer<sup>1</sup>, J.E. Fine<sup>1</sup>, D. Viehland<sup>2</sup>  
*<sup>1</sup>US Army Research Laboratory, USA, <sup>2</sup>Virginia Polytechnic Institute and State University, USA*
- A2P-M15 LATERAL FIELD EXCITATION FILM BULK ACOUSTIC RESONATOR AS INFRARED SENSOR**  
X. Qiu, Z. Wang, R. Tang, J. Zhu, J. Oiler, and H. Yu  
*Arizona State University, USA*
- A2P-M16 A LATERAL-AXIS TUNING FORK GYROSCOPE WITH COMBINED SENSING CAPACITORS AND DECOUPLED COMB DRIVE**  
Z.Y. Guo<sup>1</sup>, Z.Y. Chen<sup>2</sup>, Q.C. Zhao<sup>1</sup>, L.T. Lin<sup>1</sup>, J. Cui<sup>1</sup>, Z.C. Yang<sup>1</sup>, and G.Z. Yan<sup>1</sup>  
*<sup>1</sup>Peking University, CHINA and <sup>2</sup>Tsinghua University, CHINA*
- A2P-M17 QUANTITATIVE ANALYSIS AND DECOUPLING OF MASS AND STIFFNESS EFFECTS IN CANTILEVER MASS SENSORS**  
H. Sadeghian, C.-K. Yang, J.F.L. Goosen, A. Bossche, P.J. French, and F. van Keulen  
*Delft University of Technology, THE NETHERLANDS*
- A2P-M18 Z-AXIS CAPACITIVE MEMS ACCELEROMETER WITH MOVING GROUND MASSES**  
C.H. Je, S. Lee, M.L. Lee, J. Lee, W.S. Yang, and C.A. Choi  
*Electronics and Telecommunications Research Institute (ETRI), SOUTH KOREA*

- A2P-M19 COIL-LESS FLUXGATE OPERATED IN FEEDBACK MODE BY MEANS OF DC CURRENT**  
M. Butta, M. Janosek, and P. Ripka  
*Czech Technical University in Prague, CZECH REP.*
- A2P-M20 PHENOMENOLOGICAL THEORY AND EXPERIMENTAL CHARACTERIZATIONS OF PASSIVE WIRELESS EM PRESSURE MICRO-SENSOR PROTOTYPE**  
M.M. Jatlaoui, F. Chebila, T. Idda, P. Pons, and H. Aubert  
*Centre National de la Recherche Scientifique (CNRS), FRANCE and Université de Toulouse, FRANCE*
- A2P-M21 A CARBON NANOTUBE BASED TEMPERATURE INDEPENDENT STRAIN SENSOR ON A FLEXIBLE POLYMER**  
S. Riekeberg, J. Bütter, and J. Müller  
*Hamburg University of Technology, GERMANY*
- A2P-M22 A GATE LEVEL SENSOR NETWORK FOR INTEGRATED CIRCUITS TEMPERATURE MONITORING**  
A. Vahdatpour, S. Meguerdichian, and M. Potkonjak  
*University of California, Los Angeles, USA*

#### **POSTER SESSION T7 - Sensor Networks**

- A2P-N1 DISTRIBUTED NETWORK OF REMOTE SENSORS FOR REAL TIME PREDICTION OF HOT SPOT TEMPERATURE VALUES**  
M. Janicki, Z. Kulesza, and A. Napieralski  
*Technical University of Lodz, POLAND*
- A2P-N2 SIMULATION STUDY ON THE WIRELESS SENSOR-BASED MONITORING SYSTEM FOR RAPID IDENTIFICATION OF AVIAN INFLUENZA OUTBREAKS AT CHICKEN FARMS**  
H. Okada<sup>1</sup>, K. Suzuki<sup>2</sup>, T. Tatsuya<sup>2</sup>, K. Tsukamoto<sup>2</sup>, and T. Itoh<sup>1</sup>  
<sup>1</sup>*National Institute of Advanced Industrial Science and Technology (AIST), JAPAN and*  
<sup>2</sup>*National Institute of Animal Health (NIAH), JAPAN*
- A2P-N3 SENSOR NETWORK TOPOLOGY ESTIMATION USING TIME-SERIES DATA FROM INFRARED HUMAN PRESENCE SENSORS**  
Y. Watanabe<sup>1</sup>, S. Kurihara<sup>2</sup>, and T. Sugawara<sup>1</sup>  
<sup>1</sup>*Waseda University, JAPAN, and* <sup>2</sup>*Osaka University, JAPAN*
- A2P-N4 GRID-SCAN-BASED MULTI-HOP LOCALIZATION ALGORITHM FOR WIRELESS SENSOR NETWORKS**  
X. Guo, N. Yu, R. Feng, Y. Wu, and J. Wan  
*Beijing University of Aeronautics and Astronautics, CHINA*
- A2P-N5 DESIGN AND PROPERTIES OF A SENSOR NETWORK EMBEDDED IN THIN FIBER-REINFORCED COMPOSITES**  
A. Kunadt<sup>1</sup>, A. Heinig<sup>2</sup>, E. Starke<sup>1</sup>, G. Pfeifer<sup>1</sup>, C. Cherif<sup>1</sup>, and W.-J. Fischer<sup>1</sup>  
<sup>1</sup>*Technische Universität Dresden, GERMANY and* <sup>2</sup>*Fraunhofer IPMS, GERMANY*
- A2P-N6 MULTI-TIER MULTI-HOP ROUTING IN LARGE-SCALE WIRELESS SENSOR NETWORKS FOR REAL-TIME MONITORING**  
P. Mahasukhon, H. Sharif, M. Hempel, T. Zhou, T. Ma, and P.L. Shrestha  
*University of Nebraska, Lincoln, USA*

**A2P-N7 FLOATING BEACON-ASSISTED 3-D LOCALIZATION FOR VARIABLE SOUND SPEED IN UNDERWATER SENSOR NETWORKS**

E. Kim, C. Kim, S. Lee, and K. Kim  
*Gwangju Institute of Science and Technology (GIST), SOUTH KOREA*

**A2P-N8 GAAS MMIC-BASED RF ON-CHIP SPIRAL INDUCTORS WITH METAL SHORES AND PATTERNED GROUND SHIELDS**

Z. Zhang and X. Liao  
*Southeast University, CHINA*

**A2P-N9 MOBILE WIRELESS SENSOR NETWORKS APPLIED TO THE SURVEY OF WATER INFRASTRUCTURES**

D. Trincherio<sup>1</sup>, A. Abu-Dayya<sup>2</sup>, L. Cisoni<sup>1</sup>, M.O. Hasna<sup>3</sup>, A. Kadri<sup>2</sup>, T.M. Khattab<sup>3</sup>, and R. Stefanelli<sup>1</sup>  
<sup>1</sup>*Politecnico di Torino, ITALY*, <sup>2</sup>*QUWireless Innovations Center, QATAR*, and <sup>3</sup>*Qatar University, QATAR*

**A2P-N10 PRECISION SOFTWARE DEFINED DSSS RADIO FREQUENCY RANGING**

B.D. Farnsworth, and D.W.A Taylor  
*ENSCO, Inc., USA*

**POSTER SESSION T8 - Applications**

**A2P-P1 A COMPENSATED MAGNETIC PROBE FOR STEEL FIBER REINFORCED CONCRETE MONITORING**

M. Faifer, R. Ottoboni, and S. Toscani  
*Politecnico di Milano, ITALY*

**A2P-P2 ADAPTIVE REDUCTION OF MOTION ARTIFACT IN A PORTABLE ECG SYSTEM**

W.-C. Lee, T.-C. Ke, Y.-S. Ou-Yang, C.-S. Wei, and H.-C. Lee  
*Industrial Technology Research Institute, TAIWAN*

**A2P-P3 OPTIMAL DESIGN OF OVERLAPPED ULTRASONIC SENSOR RING FOR MINIMAL POSITIONAL UNCERTAINTY**

S. Kim and H. Kim  
*Hankuk University of Foreign Studies, SOUTH KOREA*

**A2P-P4 THREE-DIMENSIONAL IMAGING SENSOR SYSTEM USING AN ULTRASONIC ARRAY SENSOR AND A CAMERA**

H. Furuhashi<sup>1</sup>, Y. Kuzuya<sup>1</sup>, Y. Uchida<sup>1</sup>, and M. Shimizu<sup>2</sup>  
<sup>1</sup>*Aichi Institute of Technology, JAPAN* and <sup>2</sup>*Kansai Electric Power Co. Inc., JAPAN*

**A2P-P5 PHOTO-INDUCED SWITCHABLE TiO<sub>2</sub> THIN FILMS FOR DECOMPOSITION OF AIR POLLUTANTS AND MICROORGANISMS, SELF-CLEANING SURFACES AND BIOLOGICAL APPLICATION**

O. Berger, and W.-J. Fischer  
*Technische Universität Dresden, GERMANY*

**A2P-P6 POSITION STABILIZATION OF MICROROBOT USING PRESSURE SIGNAL IN PULSATING FLOW OF BLOOD VESSEL**

J. Choi<sup>1</sup>, S. Jeong<sup>1</sup>, K. Cha<sup>1</sup>, L. Qin<sup>1</sup>, J. Li<sup>1</sup>, B. Kim<sup>2</sup>, J. Park<sup>1</sup>, and S. Park<sup>1</sup>  
<sup>1</sup>*Chonnam National University, SOUTH KOREA* and <sup>2</sup>*Korea Aerospace University, SOUTH KOREA*

**A2P-P7 IMMUNOASSAY DETECTION WITHOUT WASHING BY USING AC MAGNETIC SUSCEPTIBILITY**

R. Kawabata<sup>1</sup>, T. Mizoguchi<sup>1</sup>, A. Tsukamoto<sup>1</sup>, T. Yoshimura<sup>1</sup>, A. Kandori<sup>1</sup>, and K. Enpuku<sup>2</sup>  
<sup>1</sup>*Hitachi, Ltd., JAPAN* and <sup>2</sup>*Kyushu University, JAPAN*



- A2P-P8**     **TEXTILE PRESSURE SENSORS FOR SPORTS APPLICATIONS**  
T. Holleccek, A. Rüegg, H. Harms, and G. Tröster  
*ETH Zurich, SWITZERLAND*
- A2P-P9**     **A QOS ENABLED POSITIONING, SENSING, AND COMMUNICATION SYSTEM FOR FIRST RESPONDERS**  
P. Ho, R.P. Liu, M. Hedley, and X. Yang  
*CSIRO, AUSTRALIA*
- A2P-P10**    **A SMOOTHER FOR ATTITUDE ESTIMATION USING INERTIAL AND MAGNETIC SENSORS**  
Y.S. Suh, T.N. Do, Y.S. Ro, and H.J. Kang  
*University of Ulsan, SOUTH KOREA*
- A2P-P11**    **FLEXIBLE THERMOELECTRIC GENERATOR FOR WEARABLE BIOMETRIC SENSORS**  
L. Francioso<sup>1</sup>, C. De Pascali<sup>1</sup>, A. Perrone<sup>2</sup>, I. Farella<sup>1</sup>, C. Martucci<sup>1</sup>, P. Creti<sup>1</sup>, and P. Siciliano<sup>1</sup>  
<sup>1</sup>Consiglio Nazionale delle Ricerche (CNR), ITALY and <sup>2</sup>University of Salento, ITALY
- A2P-P12**    **BIOFOULING ON PROTECTIVE COATINGS FOR IMPLANTABLE MEMS**  
I. Clausen, T.M. Seeberg, C. Gheorghe, and D.T. Wang  
*SINTEF ICT, NORWAY*
- A2P-P13**    **SENSING IN HARSH CONDITIONS: HOW TO PROTECT SNO2 SENSING LAYER**  
R.M. Prasad<sup>1</sup>, A. Gurlo, R. Riedel<sup>1</sup>, M. Hübner<sup>2</sup>, N. Barsan<sup>2</sup>, and U. Weimar<sup>2</sup>  
<sup>1</sup>Technische Universität Darmstadt, GERMANY and <sup>2</sup>University of Tübingen, GERMANY
- A2P-P14**    **FEASIBILITY OF WIRELESS GAS DETECTION WITH AN FMCW RADAR INTERROGATION OF PASSIVE RF GAS SENSOR**  
H. Hallil, F. Chebila, P. Menini, P. Pons, and H. Aubert  
*Centre National de la Recherche Scientifique (CNRS), FRANCE*
- A2P-P15**    **STUDY OF COFE2 ALLOY NANO THIN FILMS FOR TEMPERATURE SENSING**  
V. Kumar<sup>1</sup>, R.P. Pant<sup>2</sup>, and M.S. Yadav<sup>3</sup>  
<sup>1</sup>Deenbandhu Chhotu Ram University of Science and Technology, INDIA, <sup>2</sup>National Physical Laboratory, INDIA, and <sup>3</sup>Kurukshetra University, INDIA
- A2P-P16**    **VAPOR-PHASE SELF-ASSEMBLED MONOLAYERS FOR IMPROVED MEMS RELIABILITY**  
A. Rissanen<sup>1</sup>, K. Tappura<sup>1</sup>, M. Laamanen<sup>1</sup>, R. Puurunen<sup>1</sup>, E. Färm<sup>2</sup>, M. Ritala<sup>2</sup>, and M. Leskelä<sup>2</sup>  
<sup>1</sup>VTT Technical Research Centre of Finland, FINLAND and <sup>2</sup>University of Helsinki, FINLAND
- A2P-P17**    **APPLICATION OF A PORTABLE ELECTRONIC NOSE DEVICE TO DISCRIMINATE AND IDENTIFY CHEESES WITH KNOWN PERCENTAGES OF COW'S AND GOAT'S MILK**  
Z. Haddi, F. Annanouch, A. Amari, A. Hadoune, N. El Bari, and B. Bouchikhi  
*University of Moulay Ismail, MOROCCO*
- A2P-P18**    **A NOVEL SENSOR FUSION CONCEPT FOR DISTANCE MEASUREMENT IN AUTOMOTIVE APPLICATIONS**  
T. Schlegl, T. Bretterklieber, M. Neumayer, and H. Zangl  
*Graz University of Technology, AUSTRIA*
- A2P-P19**    **CONTROL LOOPS FOR A COUPLED DARK STATE MAGNETOMETER**  
A. Pollinger<sup>1</sup>, R. Lammegger<sup>2</sup>, W. Magnes<sup>1</sup>, M. Ellmeier<sup>2</sup>, W. Baumjohann<sup>1</sup>, and L. Windholz<sup>2</sup>  
<sup>1</sup>Austrian Academy of Sciences, AUSTRIA and <sup>2</sup>Graz University of Technology, AUSTRIA

## POSTER SESSION T9 - Late News

- A2P-Q1 SURFACE ACOUSTIC WAVES IN GRAPHENE STRUCTURES: RESPONSE TO AMBIENT HUMIDITY**  
D. Čiplys<sup>1</sup>, R. Rimeika<sup>1</sup>, V. Chivukula<sup>2</sup>, M.S. Shur<sup>2</sup>, J.H. Kim<sup>3</sup>, and J.M. Xu<sup>3</sup>  
<sup>1</sup>Vilnius University, LITHUANIA, <sup>2</sup>Rensselaer Polytechnic Institute, UK, and <sup>3</sup>Brown University, USA
- A2P-Q2 PORTABLE UREA BIOSENSOR BASED ON THE EXTENDED BASE BIPOLAR JUNCTION TRANSISTOR**  
C.-Y. Chen<sup>1</sup>, H.-L. Shieh<sup>2</sup>, and T.-P. Sun<sup>2</sup>  
<sup>1</sup>Sitronix, TAIWAN and <sup>2</sup>National Chi Nan University, TAIWAN
- A2P-Q3 LCART: A CROSS-LAYERED TRANSPORT PROTOCOL FOR HETEROGENEOUS WSN**  
A. Sharif, V.M. Potdar, and A.J.D. Rathnayaka  
Curtin University of Technology, AUSTRALIA
- A2P-Q4 AN ATMOSPHERIC PRESSURE ULTRAHIGH FREQUENCY PLASMA JET FOR AMBIENT MASS SPECTROMETRY**  
M. Taghioskoui, M. Zaghoul, and A. Montaser  
George Washington University, USA
- A2P-Q5 HYBRID VISION CONTROL APPLY ON AUTOMATIC PNEUMATIC MICROMANIPULATION SYSTEM**  
H.-Y. Chen and M.-C. Shih  
National Cheng-Kung University, TAIWAN
- A2P-Q6 HUMIDITY SENSORS MIMICKING CUTICLE OF HERCULES BEETLES**  
J.H. Kim, S.-Y. Lee, J. Park, and J. Moon  
Sogang University, SOUTH KOREA
- A2P-Q7 A COMBINED HEART RATE AND MOVEMENT INDEX SENSOR FOR ESTIMATING THE ENERGY EXPENDITURE**  
L. Meina, Y.T. Kim, and J.M. Kim  
Chosun University, SOUTH KOREA
- A2P-Q8 ENHANCED WIRELESS SENSOR NETWORK SETUP STRATEGY SUPPORTED BY INTELLIGENT SOFTWARE AGENTS**  
E. Pignaton de Freitas<sup>1,3</sup>, T. Heimfarth<sup>2</sup>, I. Farah Netto<sup>2</sup>, A. Guimarães Cardoso de Sá<sup>2</sup>, C.E. Pereira<sup>3</sup>, A. Morado Ferreira<sup>4</sup>, F. Rech Wagner<sup>1,3</sup>, and T. Larsson<sup>1</sup>  
<sup>1</sup>Halmstad University, SWEDEN, <sup>2</sup>Federal University of Lavras, BRAZIL, <sup>3</sup>Federal University of Rio Grande do Sul, BRAZIL, and <sup>4</sup>Military Institute of Engineering, BRAZIL
- A2P-Q9 LOCALIZATION OF REMOTE ODOR SOURCES BY METAL-OXIDE GAS SENSORS IN TURBULENT PLUMES**  
M.K. Muezzinoglu, A. Vergara, N. Ghods, N.F. Rulkov, and R. Huerta  
University of California, San Diego, USA
- A2P-Q10 SUBMERGED BIOMIMETIC ELECTROSTATIC IMAGING IN SALT WATER**  
J. Friedman<sup>1</sup>, D. Torres<sup>1</sup>, M.B. Srivastava<sup>1</sup>, and Y.H. Cho<sup>2</sup>  
<sup>1</sup>University of California, Los Angeles, USA and <sup>2</sup>University of Southern California, USA
- A2P-Q11 NANOANTENNA USING MECHANICAL RESONANCE**  
C.H. Lee<sup>1</sup>, S.W. Lee<sup>2</sup>, and S.S. Lee<sup>1</sup>  
<sup>1</sup>Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA and <sup>2</sup>Stanford University, USA

- A2P-Q12 INVESTIGATION OF THERMAL TYPE MICROSENSOR WITH INFRARED PHOTONIC CRYSTAL**  
P.-H. Hsu, M.-H. Tsai, C.-H. Shen, and S.-J. Chen  
*National Changhua University of Education, TAIWAN*
- A2P-Q13 ELECTROCHEMICAL SENSING OF PROTEINS AND CARBOHYDRATES**  
E. Paleček, V. Ostatná, M. Trefulka, M. Bartošík, H. Černocká, K. Kurzatowska, and M. Živanovič  
*Academy of Sciences of the Czech Republic, CZECH REP*
- A2P-Q14 ALL POLYMERIC TRANSDUCERS FOR ENERGY HARVESTING**  
G. Di Pasquale, S. Graziani, F. Pagano, and E. Umana  
*Università degli Studi de Catania, ITALY*
- A2P-Q15 VALIDATION OF INVERSE EIGENVALUE TECHNIQUE FOR CHARACTERISATION OF COUPLED MICRO/NANO RESONATORS**  
B. Choubey<sup>1</sup>, M. Ward<sup>2</sup>, C. Anthony<sup>2</sup>, R. Turnbull<sup>3</sup>, and S. Collins<sup>3</sup>  
*<sup>1</sup>University of Glasgow, UK, <sup>2</sup>University of Birmingham, UK, and <sup>3</sup>University of Oxford, UK*
- A2P-Q16 C-MAC: A CONFIGURABLE MEDIUM ACCESS CONTROL PROTOCOL FOR SENSOR NETWORKS**  
R.V. Steiner, T.R. Mück, and A.A. Fröhlich  
*Federal University of Santa Catarina, BRAZIL*
- A2P-Q17 HIGH-RESOLUTION METER READING SYSTEM FOR GAS UTILITY METER**  
M. Tewolde and J.P. Longtin  
*Stony Brook University, USA*
- A2P-Q18 A SENSITIVE ELECTROCHEMICAL MICROSENSOR BASED ON ADSORPTIVE STRIPPING AND ELIMINATION VOLTAMMETRIC TECHNIQUES**  
L. Trnkova<sup>1</sup>, F. Jelen<sup>2</sup>, S. Hason<sup>2</sup>, V. Adam<sup>3</sup>, and R. Kizek<sup>3</sup>  
*<sup>1</sup>Masaryk University, CZECH REP, <sup>2</sup>Academy of Sciences of the Czech Republic, CZECH REP, and <sup>3</sup>Mendel University, CZECH REP*
- A2P-Q19 MULTICORE PHOTONIC CRYSTAL FIBER THERMAL SENSORS**  
J. Coompon, A. Colalillo, S. Twigg, and R. Wynne  
*Villanova University, USA*

11:30 - **Lunch and Exhibit Inspection**  
12:30

## **SESSION A3L-A Rotation and Vibration Sensing**

12:30

- A3L-A1 AN ELECTROSTATICALLY ACTUATED MICROMACHINED VIBRATING RING GYROSCOPE WITH HIGHLY SYMMETRIC SUPPORT BEAMS**  
D. Chen, M. Zhang, and J. Wang  
*Chinese Academy of Sciences, CHINA*

12:45

- A3L-A2 ULTRA-HIGH Q SILICON GYROSCOPES WITH INTERCHANGEABLE RATE AND WHOLE ANGLE MODES OF OPERATION**  
A.A. Trusov, I.P. Prikhodko, S.A. Zotov, A.R. Schofield, and A.M. Shkel  
*University of California, Irvine, USA*

13:00

**A3L-A3 MEMS GYROSCOPE CONTROL SYSTEM USING A BAND-PASS CONTINUOUS-TIME SIGMA-DELTA MODULATOR**

H. Ding<sup>1</sup>, R. Wilcock<sup>2</sup>, Z. Yang<sup>1</sup>, M. Kraft<sup>2</sup>, and G. Yan<sup>1</sup>

<sup>1</sup>Peking University, CHINA and <sup>2</sup>University of Southampton, UK

13:15

**A3L-A4 GAUSSIAN PROCESS BASED STATE ESTIMATION FOR A GYROSCOPE-FREE IMU**

P. Schopp<sup>1</sup>, A. Rottmann<sup>1</sup>, L. Klingbeil<sup>2</sup>, W. Burgard<sup>1</sup>, and Y. Manoli<sup>1,2</sup>

<sup>1</sup>University of Freiburg, GERMANY and

<sup>2</sup>Institute for Micromachining and Information Technology (HSG-IMIT), GERMANY

13:30

**A3L-A5 A NOVEL THREE-AXIS AIM VIBRATION SENSOR FOR HIGH ACCURACY CONDITION MONITORING**

M. Nowack<sup>1</sup>, D. Reuter<sup>1</sup>, A. Bertz<sup>1</sup>, M. Kuechler, T. Aurich<sup>1</sup>, C. Dittrich<sup>2</sup>, and T. Gessner<sup>1</sup>

<sup>1</sup>Chemnitz University of Technology, GERMANY and

<sup>2</sup>Fraunhofer Research Institution ENAS, GERMANY

13:45

**A3L-A6 A HIGH-G ACCELERATION LATCHING SWITCH WITH INTEGRATED NORMALLY-OPEN/CLOSE PATHS INDEPENDENT TO THE PROOF-MASS**

Z.Y. Guo<sup>1</sup>, B. Zhou<sup>2</sup>, X.Y. Zhang<sup>1</sup>, Q.C. Zhao<sup>1</sup>, L.T. Lin<sup>1</sup>, Z.C. Yang<sup>1</sup>, and G.Z. Yan<sup>1</sup>

<sup>1</sup>Peking University, CHINA and <sup>2</sup>Tsinghua University, CHINA

**SPECIAL SESSION III A3L-B Graphene Based Sensors**

12:30

*Invited*

**A3L-B1 HIGHLY SENSITIVE AND SELECTIVE NO<sub>2</sub> SENSING USING EPITAXIAL GRAPHENE ON 6H-SiC**

M.G. Spencer<sup>1</sup>, G. Koley<sup>2</sup>, and Md.W.K. Nomani<sup>2</sup>

<sup>1</sup>Cornell University, USA and <sup>2</sup>University of South Carolina, USA

13:00

**A3L-B3 CARBON NANOTUBE AND GRAPHENE BASED GAS MICRO-SENSORS FABRICATED BY DIELECTROPHORESIS ON SILICON**

S. MacNaughton<sup>1</sup>, S. Surwade<sup>2</sup>, S. Ammu<sup>2</sup>, S. Manohar<sup>2</sup>, and S. Sonkusale<sup>1</sup>

<sup>1</sup>Tufts University, USA and <sup>2</sup>University of Massachusetts, Lowell, USA

13:15

**A3L-B4 TOWARDS OPTIMISATION OF EPITAXIALLY GROWN GRAPHENE BASED SENSORS FOR HIGHLY SENSITIVE GAS DETECTION**

R. Pearce, R. Yakimova, T. Iakimov, M. Andersson, A. Lloyd Spetz, and L. Hultman

Linköping University, SWEDEN

13:30

**A3L-B5 GRAPHENE FIELD-EFFECT TRANSISTORS FOR LABEL-FREE BIOLOGICAL SENSORS**

Y. Ohno, K. Maehashi, and K. Matsumoto

Osaka University, JAPAN

13:45

**A3L-B6 FABRICATION OF ULTRASENSITIVE GRAPHENE NANOBIOSENSORS**

O.J. Guy, Z. Tehrani, A. Castaing, and S.H. Doak

Swansea University, UK

## **SESSION A3L-C Electrochemical & pH Sensors**

12:30

### **A3L-C1 AN ELECTROCHEMICAL-CANTILEVER HYBRID SENSOR FOR METAL IONS**

L.M. Fischer, A.S. Nielsen, S. Dohn, M. Tenje, and A. Boisen  
*Technical University of Denmark, DENMARK*

12:45

### **A3L-C2 DIFFERENTIAL CYCLIC VOLTAMMETRY - A NOVEL TECHNIQUE FOR SELECTIVE AND SIMULTANEOUS DETECTION USING REDOX CYLING BASED SENSORS**

M. Odijk, J. Wiedemair, M.J.J. van Megen, W. Olthuis, and A. van den Berg  
*University of Twente, THE NETHERLANDS*

13:00

### **A3L-C3 ELECTROCHEMICAL MICROSYSTEM FOR CONTINUOUS MONITORING OF NITRIFICATION ACTIVITY OF MICROBIAL COMPLEXES**

K. Toda, Y. Yawata, E. Setoyama, N. Nomura, J. Fukuda, and H. Suzuki  
*University of Tsukuba, JAPAN*

13:15

### **A3L-C4 A WIRELESS PASSIVE PH SENSOR BASED ON PH ELECTRODE POTENTIAL MEASUREMENT**

S. Bhadra, G.E. Bridges, D.J. Thomson, and M.S. Freund  
*University of Manitoba, CANADA*

13:30

### **A3L-C5 MULTI-ANALYTE NEEDLE-TYPE SENSOR FOR MEASUREMENT OF PH, PHOSPHATE, AND REDOX POTENTIAL IN SOIL**

W.-H. Choi, J.R. Shann, and I. Papautsky  
*University of Cincinnati, USA*

13:45

### **A3L-C6 PH SENSOR DEMONSTRATING A LAYOUT PROGRAMMABLE SQUEEZE PUMPED MICROFLUIDIC PLATFORM**

N. Klejwa, J. Provine, and R.T. Howe  
*Stanford University, USA*

## **SESSION A3L-D Wireless Sensor Network Applications**

12:30

### **A3L-D1 A NOVEL, WIRELESS SENSOR/ACTUATOR NETWORK FOR THE FACTORY FLOOR**

G. Gaderer, F. Ring, T. Sauter, and A. Nagy  
*Austrian Academy of Sciences, AUSTRIA*

12:45

### **A3L-D2 DISTRIBUTED MULTIPLE HUMAN TRACKING WITH WIRELESS BINARY PYROELECTRIC INFRARED (PIR) SENSOR NETWORKS**

Q. Hao, F. Hu, and J. Lu  
*University of Alabama, USA*

13:00

### **A3L-D3 REAL TIME CAR DRIVER'S CONDITION MONITORING SYSTEM**

H.-S. Shin, S.-J. Jung, J.-J. Kim, and W.-Y. Chung  
*Pukyong National University, SOUTH KOREA*

13:15

**A3L-D4 A FIELD EXPERIENCE ON DTN-BASED SENSOR DATA GATHERING IN AGRICULTURAL SCENARIOS**

H. Ochiai, H. Ishizuka, Y. Kawakami, and H. Esaki  
*University of Tokyo, JAPAN*

13:30

**A3L-D5 DEVELOPMENT ON TELEMETRY SYSTEM FOR DEEP BOREHOLE SENSOR NETWORK**

M. Kyo, H. Ito, Y. Namba, K. Koseki, and K. Kato  
*Japan Agency for Marine-Earth Science and Technology, JAPAN*

13:45

**A3L-D6 OPTICAL WIRELESS DATA TRANSMISSION WITH A SENSOR NETWORK INTEGRATED IN A TEXTILE-REINFORCED COMPOSITE**

A. Heinig<sup>1</sup>, F. Deicke<sup>1</sup>, A. Kunadt<sup>2</sup>, E. Starke<sup>2</sup>, and W.-J. Fischer<sup>2</sup>  
<sup>1</sup>*Fraunhofer Institute for Photonic Microsystems, GERMANY* and  
<sup>2</sup>*Dresden University of Technology, GERMANY*

**SESSION A3L-E Optical Sensing Systems I**

12:30

**A3L-E1 HIGH TEMPERATURE PHOTONIC CRYSTAL FIBER TIP SENSOR**

B. Park<sup>1</sup>, J. Provine<sup>1</sup>, I.W. Jung<sup>2</sup>, R.T. Howe<sup>1</sup>, and O. Solgaard<sup>1</sup>  
<sup>1</sup>*Stanford University, USA* and <sup>2</sup>*Argonne National Laboratory, USA*

12:45

**A3L-E2 PECVD SIC- SiO<sub>2</sub>-SIC HORIZONTAL SLOT WAVEGUIDES FOR SENSING PHOTONICS DEVICES**

G. Pandraud, E. Margallo-Balbas, A. Barbosa-Neira, P.M. Sarro  
*Delft University of Technology, THE NETHERLANDS*

13:00

**A3L-E3 UV DEFINED NANOPOROUS LIQUID CORE WAVEGUIDES**

M.B. Christiansen, N. Gopalakrishnan, K.S. Sagar, S. Ndoni, and A. Kristensen  
*Technical University of Denmark, DENMARK*

13:15

**A3L-E4 AN ALL-DIELECTRIC, 3-AXIS ELECTRIC FIELD SENSOR USING QUASI-LONGITUDINALLY CONFIGURED ELECTRO-OPTIC CRYSTALS**

A. Garzarella<sup>1</sup>, D.H. Wu<sup>1</sup>, and J.B. Crim<sup>2</sup>  
<sup>1</sup>*Naval Research Laboratory, USA* and <sup>2</sup>*Naval Air Warfare Center, USA*

13:30

**A3L-E5 EMBEDDED FLEXIBLE OPTICAL SHEAR SENSOR**

J. Missinne, E. Bosman, B. Van Hoe, G. Van Steenberge, P. Van Daele, and J. Vanfleteren  
*Ghent University, BELGIUM*

13:45

**A3L-E6 MODELLING AND EXCITATION OF A THERMO-OPTICAL DELAY LINE FOR OPTICAL COHERENCE TOMOGRAPHY**

M. Geljon, E. Margallo-Balbás, G. Pandraud, P.J. French  
*Delft University of Technology, THE NETHERLANDS*

## SESSION A3L-F Sensors for Control of Mobile Platforms

12:30

### **A3L-F1 UAV-BASED MULTISPECTRAL ENVIRONMENTAL MONITORING**

T. Arnold, M. De Biasio, A. Fritz, and R. Leitner  
*CTR Carinthian Tech Research AG, AUSTRIA*

12:45

### **A3L-F2 THE 3D-KERNEL DM+V/W ALGORITHM: USING WIND INFORMATION IN THREE DIMENSIONAL GAS DISTRIBUTION MODELLING WITH A MOBILE ROBOT**

M. Reggente and A.J. Lilienthal  
*Örebro University, SWEDEN*

13:00

### **A3L-F3 NAVIGATING A PORTABLE ROBOTIC DEVICE BY A 3D IMAGING SENSOR**

C. Ye  
*University of Arkansas, USA*

13:15

### **A3L-F4 INERTIAL MEASUREMENT SYSTEM FOR BIPED ROBOTS THAT TAKES SCHEDULED CENTRIFUGAL EFFECT INTO CONSIDERATION**

K. Nishiwaki, and S. Kagami  
*National Institute of Advanced Industrial Science and Technology (AIST), JAPAN*

13:30

### **A3L-F5 AN INTEGRATED SYSTEM FOR PEOPLE FALL-DETECTION WITH DATA FUSION CAPABILITIES BASED ON 3D TOF CAMERA AND WIRELESS ACCELEROMETER**

M. Grassi<sup>1</sup>, A. Lombardi<sup>1</sup>, G. Rescio<sup>1</sup>, M. Ferri<sup>1</sup>, P. Malcovati<sup>1</sup>, A. Leone<sup>2</sup>, G. Diraco<sup>2</sup>, P. Siciliano<sup>2</sup>, M. Malfatti<sup>3</sup>, and L. Gonzo<sup>3</sup>  
*<sup>1</sup>University of Pavia, ITALY, <sup>2</sup>IMM-CNR, ITALY, and <sup>3</sup>Fondazione Bruno Kessler, ITALY*

13:45

### **A3L-F6 LOW-INTERFERENCE SENSING ELECTRONICS FOR HIGH-RESOLUTION ERROR-CORRECTING BIOMECHANICAL GROUND REACTION SENSOR CLUSTER**

M.A. Suster, C. Mastrangelo, and D.J. Young  
*University of Utah, USA*

14:00 -  
14:30

**Break and Exhibit Inspection**

## SESSION A4L-A Resonant and Inertial Sensors

14:30

### **A4L-A1 ZERO-BIAS RESONANT SENSOR WITH AN OXIDE-NITRIDE LAYER AS CHARGE TRAP**

K.K. Park, M. Kupnik, H.J. Lee, O. Oralkan, and B.T. Khuri-Yakub  
*Stanford University, USA*

14:45

### **A4L-A2 A LOW TEMPERATURE-DEPENDENCE GAIN-BOOSTING FRONT-END AMPLIFIER FOR CMOS-MEMS GYROSCOPES**

H. Sun<sup>1</sup>, K. Jia<sup>1</sup>, X. Liu<sup>1,2</sup>, G. Yan<sup>2</sup>, Y.-W. Hsu<sup>3</sup>, and H. Xie<sup>1</sup>  
*<sup>1</sup>University of Florida, USA, <sup>2</sup>Peking University, USA, and <sup>3</sup>Industrial Technology Research Institute, TAIWAN*

15:00

**A4L-A3 A CMOS-MEMS INERTIAL MEASUREMENT UNIT**

B. Alandry, F. Mailly, L. Latorre, and P. Nouet  
*University of Montpellier 2, FRANCE*

15:15

**A4L-A4 ETHOS: MINIATURE ORIENTATION SENSOR FOR WEARABLE HUMAN MOTION ANALYSIS**

H. Harms<sup>1</sup>, O. Amft<sup>2</sup>, R. Winkler<sup>1</sup>, J. Schumm<sup>1</sup>, M. Kusserow<sup>1</sup>, and G. Troester<sup>1</sup>  
<sup>1</sup>*ETH Zurich, SWITZERLAND* and <sup>2</sup>*Technische Universiteit Eindhoven, THE NETHERLANDS*

15:30

**A4L-A5 CHIP-SCALE IMU USING FOLDED-MEMS APPROACH**

S.A. Zotov, M.C. Rivers, A.A. Trusov, and A.M. Shkel  
*University of California, Irvine, USA*

15:45

**A4L-A6 DETECTING THE MOTION OF A MICRORESONATOR VIA MODE-MODE INTERACTION**

H.J.R. Westra, M.S.J. Poot, H. van der Zant, and W.J. Venstra  
*Delft University of Technology, THE NETHERLANDS*

**SESSION A4L-B Surfaces and Films for Biosensing**

14:30

**A4L-B1 ROBUST MICROELECTRODES DEVELOPED FOR IMPROVED STABILITY IN ELECTROCHEMICAL CHARACTERIZATION OF BIOMOLECULAR LAYERS**

Y. Temiz, A. Ferretti, E. Accastelli, Y. Leblebici, and C. Guiducci  
*Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND*

14:45

**A4L-B2 SENSITIVITY ENHANCEMENT OF LEAKAGE CURRENT MICROSENSOR FOR DETECTION OF TARGET PROTEIN BY USING PROTEIN DENATURANT**

P. Lorchorchoonkul<sup>1</sup>, T. Shimanouchi<sup>2</sup>, K. Yamashita<sup>1</sup>, H. Umakoshi<sup>2</sup>, R. Kuboi<sup>2</sup>, and M. Noda<sup>1</sup>  
<sup>1</sup>*Kyoto Institute of Technology, JAPAN* and <sup>2</sup>*Osaka University, JAPAN*

15:00

**A4L-B3 SINGLE MOLECULE PROTEIN BIOPHYSICS USING CHEMICALLY MODIFIED NANOPORES**

K.J. Freedman<sup>1</sup>, M. Jurgens<sup>2</sup>, S.A. Peyman<sup>3</sup>, A. Prabhu<sup>1</sup>, P. Jemth<sup>2</sup>, J. Edel<sup>3</sup>, and M.J. Kim<sup>1</sup>  
<sup>1</sup>*Drexel University, USA*, <sup>2</sup>*Uppsala University, SWEDEN*, and <sup>3</sup>*Imperial College, UK*

15:15

**A4L-B4 DIRECT DETECTION OF SALMONELLA ON FRESH VEGETABLES USING MULTIPLE MAGNETOELASTIC BIOSENSORS**

S. Li, S. Horikawa, W. Shen, B.A. Chin, and Z.-Y. Cheng  
*Auburn University, USA*

15:30

**A4L-B5 ROTATIONAL MODE DISK RESONATORS FOR HIGH-Q OPERATION IN LIQUID**

A. Rahafrooz and S. Pourkamali  
*University of Denver, USA*



15:45

**A4L-B6 INVESTIGATION OF SPONTANEOUSLY ADSORBED GLOBULAR PROTEIN FILMS USING HIGH-FREQUENCY BULK ACOUSTIC WAVE RESONATORS**

P. Kao, M.P. Chang, D. Allara, and S. Tadigadapa  
*Pennsylvania State University, USA*

**SPECIAL SESSION IV A4L-C Active Sensing and Chemosensory Optimization**

14:30

*Invited*

**A4L-C1 BIOMIMETICS AND MATERIALS WITH MULTIPLE PERSONALITIES - THE FOUNDATION OF NEXT GENERATION MOLECULAR SENSING DEVICES**

**D. Diamond**, R. Byrne, F.B. Lopez, J. Cleary, D. Maher, J. Healy, C. Fay, J. Kim, and K.-T. Lau  
*Dublin City University, IRELAND*

15:00

**A4L-C3 MULTI-FREQUENCY INTERROGATION OF NANOSTRUCTURED GAS SENSOR ARRAYS**

R. Calavia<sup>1</sup>, R.M. Vazquez<sup>1</sup>, A. Vergara<sup>2</sup>, and E. Llobet<sup>1</sup>  
<sup>1</sup>*University Rovira i Virgili, SPAIN* and <sup>2</sup>*University of California, San Diego, USA*

15:15

**A4L-C4 AN OVERVIEW OF ACTIVE ODOR SENSING SYSTEM**

T. Nakamoto  
*Tokyo Institute of Technology, JAPAN*

15:30

**A4L-C5 ENERGY-AWARE ACTIVE CHEMICAL SENSING**

R. Gosangi and R. Gutierrez-Osuna  
*Texas A&M University, USA*

15:45

**A4L-C6 OPTIMIZATION OF SURFACE PLASMON RESONANCE FOR ENVIRONMENTAL MONITORING**

D. Wilson and B. Ferguson  
*University of Washington, USA*

**SESSION A3L-D Sensor Networks: Remote Sensing and Circuits**

14:30

**A4L-D1 TRUSTED SENSORS AND REMOTE SENSING**

M. Poktonjak<sup>1</sup>, S. Meguerdichian<sup>1</sup>, and J.L. Wong<sup>2</sup>  
<sup>1</sup>*University of California, Los Angeles, USA* and <sup>2</sup>*SUNY Stony Brook University, USA*

14:45

**A4L-D2 REMOTE EXCITATION AND READOUT OF A HIGH Q SILICON RESONATOR**

D. Vernooy, A. Knobloch, F. Ahmad, and D. Sexton  
*General Electric Global Research, USA*

15:00

**A4L-D3 REMOTE MONITORING OF THE DEGREE OF POLLUTION OF HIGH VOLTAGE INSULATOR STRINGS VIA SATELLITE WITH A SENSOR SYSTEM NETWORK**

R.A. de Lima<sup>1</sup>, E. Fontana<sup>1</sup>, J.F. Martins-Filho<sup>1</sup>, T.L. Prata<sup>1</sup>, F.J.M.M. Cavalcanti<sup>2</sup>, R.B. Lima<sup>1</sup>, S.C. Oliveira<sup>1</sup>, and G.O. Cavalcanti<sup>1</sup>  
<sup>1</sup>*Universidade Federal de Pernambuco, BRAZIL* and <sup>2</sup>*Companhia Hidro Elétrica do São Francisco, BRAZIL*

15:15

**A4L-D4 FIELD TRIALS ON HYPER MULTI-POINT DATA GATHERING SATCOM SYSTEM WITH HIGHLY EFFICIENT CHANNEL ALLOCATION SCHEME FOR SENSOR NETWORK**

Y. Imaizumi, Y. Suzuki, K. Nakahira, K. Kobayashi, Y. Taguchi, and N. Tomimizu  
*Nippon Telegraph and Telephone Corporation, JAPAN*

15:30

**A4L-D5 A LOW-POWER MULTI-STANDARD FRONTEND FOR WIRELESS SENSOR NETWORKS**

J. Essel<sup>1</sup>, D. Brenk<sup>1</sup>, J. Heidrich<sup>1</sup>, G. Hofer<sup>2</sup>, G. Holweg<sup>2</sup>, and R. Weigel<sup>1</sup>  
<sup>1</sup>*University of Erlangen-Nuremberg, GERMANY and* <sup>2</sup>*Infineon Technologies AG, AUSTRIA*

15:45

**A4L-D6 SENSOR DATA ACQUISITION WITH A 79-FJ/CONVERSION-STEP 7.2-ENOB SUCCESSIVE APPROXIMATION ADC FOR LOW-POWER WIRELESS APPLICATIONS**

D. Brenk<sup>1</sup>, J. Essel<sup>1</sup>, J. Heidrich<sup>1</sup>, G. Hofer<sup>2</sup>, G. Holweg<sup>2</sup>, and R. Weigel<sup>1</sup>  
<sup>1</sup>*University of Erlangen-Nuremberg, GERMANY and* <sup>2</sup>*Infineon Technologies AG, AUSTRIA*

**SESSION A4L-E Optical Fiber Sensors**

14:30

**A4L-E1 OPTICAL FIBRE HUMIDITY SENSOR DESIGN FOR BUILDING STONE CONDITION MONITORING**

T. Sun<sup>1</sup>, K.T.V. Grattan<sup>1</sup>, S. Srinivasan<sup>2</sup>, P.A.M. Basheer<sup>2</sup>, B.J. Smith<sup>2</sup>, and H.A. Viles<sup>3</sup>  
<sup>1</sup>*City University London, UK,* <sup>2</sup>*Queens University of Belfast, UK, and* <sup>3</sup>*University of Oxford, UK*

14:45

**A4L-E2 REAL-TIME MONITORING OF AGRICULTURAL AMMONIA EMISSIONS BASED ON OPTICAL FIBRE SENSING TECHNOLOGY**

S. O'Keefe, H. Manap, G. Dooly, and E. Lewis  
*University of Limerick, IRELAND*

15:00

**A4L-E3 A PORTABLE OXYGEN SENSOR BASED ON A CMOS DETECTOR**

L. Shen<sup>1</sup>, M. Ratterman<sup>1</sup>, D. Klotzkin<sup>2</sup>, and I. Papautsky<sup>1</sup>  
<sup>1</sup>*University of Cincinnati, USA and* <sup>2</sup>*Binghamton University, USA*

15:15

**A4L-E4 HIGH-SENSITIVITY THERMALLY STABLE ACOUSTIC FIBER SENSOR**

O.C. Akkaya, O. Kilic, M.J.F. Digonnet, G.S. Kino, and O. Solgaard  
*Stanford University, USA*

15:30

**A4L-E5 WAVELENGTH INTERROGATION OF A TILTED FIBER BRAGG GRATING SENSOR USING SPACE-TO-WAVELENGTH MAPPING OF AN ARRAYED WAVEGUIDE GRATING WITH CLOSED-LOOP PIEZO-ELECTRICAL CONTROL**

H. Guo<sup>1</sup>, G. Xiao<sup>2</sup>, N. Mrad<sup>4</sup>, L. Shao<sup>3</sup>, and J. Yao<sup>1</sup>  
<sup>1</sup>*University of Ottawa, CANADA,* <sup>2</sup>*National Research Council Canada, CANADA,* <sup>3</sup>*Carleton University, CANADA, and* <sup>4</sup>*Defence Research and Development Canada, CANADA*

15:45

**A4L-E6 MOMS TECHNOLOGY FOR FULLY FIBER OPTIC ULTRASONIC PROBES: A PROPOSAL FOR VIRTUAL BIOPSY**

E. Biagi<sup>1</sup>, S. Cerbai<sup>1</sup>, L. Masotti<sup>1</sup>, L. Belsito<sup>2</sup>, A. Roncaglia<sup>2</sup>, G. Masetti<sup>3</sup>, and N. Speciale<sup>3</sup>,  
<sup>1</sup>*University of Florence, ITALY,* <sup>2</sup>*MMI-CNR, ITALY, and* <sup>3</sup>*University of Bologna, ITALY*

## SESSION A3L-F Energy and Power

14:30

**A4L-F1 NOVEL VIBRATION-DRIVEN MICRO-ELECTROSTATIC INDUCTION ENERGY HARVESTER WITH ASYMMETRIC MULTI-RESONANT SPRING**

T. Suzuki, S. Nagasawa, H. Okamoto, and H. Kuwano  
*Tohoku University, JAPAN*

14:45

**A4L-F2 CARBON NANOTUBE FILM-BASED CANTILEVER FOR LIGHT AND THERMAL ENERGY HARVESTING**

V. Kotipalli<sup>1</sup>, Z. Gong<sup>1</sup>, Y. He<sup>1</sup>, S. Yadav<sup>1</sup>, S. Penmetsa<sup>1</sup>, J. Wei<sup>2</sup>, and L. Que<sup>1</sup>  
<sup>1</sup>*Louisiana Technical University, USA* and <sup>2</sup>*CFD Research Corporation, USA*

15:00

**A4L-F3 A FRACTAL-BASED PHOTODIODE FOR ON-CHIP ENERGY HARVESTING**

W.D. Leon-Salas, S. Ghosh, and J. Wrobel  
*University of Missouri, Kansas City, USA*

15:15

**A4L-F4 AN ENERGY AUTONOMOUS SWITCHING CONVERTER FOR HARVESTING POWER FROM MULTIPLE PIEZOELECTRIC TRANSDUCERS**

A. Romani<sup>1</sup>, R.P. Paganelli<sup>2</sup>, M. Tartagni<sup>1</sup>, and E. Sangiorgi<sup>1</sup>  
<sup>1</sup>*University of Bologna, ITALY* and <sup>2</sup>*National Research Council, ITALY*

15:30

**A4L-F5 A NEW MEMS SENSOR FOR AC ELECTRIC CURRENT**

E.S. Leland, C.T. Sherman, P. Minor, P.K. Wright, and R.M. White  
*University of California, Berkeley, USA*

15:45

**A4L-F6 DESIGN OF A SOI MEMS RESONANT ELECTRIC FIELD SENSOR FOR POWER ENGINEERING APPLICATIONS**

C. Peng, P. Yang, H. Zhang, X. Guo, and S. Xia  
*Chinese Academy of Sciences, CHINA*

16:00 - 17:30 **SENSORS Networking Activities**

## Wednesday, November 3, 2010

08:00 **KEYNOTE PRESENTATION 2**

**B1K-A1 THE PERSPECTIVE OF BIOMEDICAL ELECTRONICS**

**C.-Y. Wu**  
*National Chiao Tung University, TAIWAN*

## SESSION B1L-A Accelerometers

08:45

**B1L-A1 A NOVEL SOI-BASED SINGLE PROOF-MASS 3-AXIS ACCELEROMETER WITH GAP-CLOSING DIFFERENTIAL CAPACITIVE ELECTRODES IN ALL SENSING DIRECTIONS**

W. Fang, C.-P. Hsu, Y.-C. Hsu, and M.-C. Yip  
*National Tsing Hua University, TAIWAN*

09:00

**B1L-A2 HIGHLY SENSITIVE TUNNELING ACCELEROMETER FOR LOW ACTUATION VOLTAGE OPERATION**

S. Patra and T.K. Bhattacharyya  
*Indian Institute of Technology, Kharagpur, INDIA*

09:15

**B1L-A3 A MONOLITHIC INERTIAL MEASUREMENT UNIT FABRICATED WITH IMPROVED DRIE POST-CMOS PROCESS**

H. Sun<sup>1</sup>, K. Jia<sup>1</sup>, Y. Ding<sup>1,2</sup>, Z. Guo<sup>1,2</sup>, X. Liu<sup>1,2</sup>, G. Yan<sup>2</sup>, and H. Xie<sup>1</sup>  
<sup>1</sup>University of Florida, USA and <sup>2</sup>Peking University, CHINA

09:30

**B1L-A4 ARRAYS OF SILICON CANTILEVERS FOR DETECTING HIGH-G RAPIDLY VARYING ACCELERATION PROFILES**

N. Raghunathan, E. Nishida, A. Fruehling, W. Chen, and D. Peroulis  
*Purdue University, USA*

09:45

**B1L-A5 NEMS ACCELEROMETERS WITH NANOSCALE SENSING ELEMENTS**

R. Amarasinghe, D.V. Dao, and S. Sugiyama  
*Ritsumeikan University, JAPAN*

10:00

**B1L-A6 MEMS ACCELEROMETERS ON POLYIMIDES FOR FAILURE ASSESSMENT IN AEROSPACE SYSTEMS**

I.E. Gonenli, Z. Celik-Butler, and D.P. Butler  
*University of Texas, Arlington, USA*

**SESSION B1L-B Sensing in Blood**

08:45

**B1L-B1 THEORETICAL BASE OF ALCOHOLIC-INTAKE DETECTION USING BLOOD-PULSE SIGNALS AND NEW FINDINGS**

Y. Shimizu, and Y. Omura  
*Kansai University, JAPAN*

09:00

**B1L-B2 LAB-ON-A-CHIP SENSOR FOR MEASURING ZINC IN BLOOD SERUM**

P. Jothimuthu, R.A. Wilson, S. Sukavasi, J. Herren, H. Wong, F.R. Beyette, W.R. Heineman, and I. Papautsky  
*University of Cincinnati, USA*

09:15

**B1L-B3 IMPLANTABLE SENSOR FOR BLOOD PRESSURE DETERMINATION VIA PULSE TRANSIT TIME**

J. Fiala<sup>1</sup>, P. Bingger<sup>1</sup>, K. Foerster<sup>2</sup>, C. Heilmann<sup>2</sup>, F. Beyersdorf<sup>2</sup>, H. Zappe<sup>1</sup>, and A. Seifert<sup>1</sup>  
<sup>1</sup>University of Freiburg - IMTEK, GERMANY and <sup>2</sup>University Medical Center Freiburg, GERMANY

09:30

**B1L-B4 DIRECT PHOTO-THERMAL DIAGNOSIS OF ANEMIA USING PLATINUM RESISTANCE TEMPERATURE DETECTOR**

B.S. Kwak, H.J. Kim, H.O. Kim, and H.I. Jung  
*Yonsei University, SOUTH KOREA*

09:45

**B1L-B5 MONITORING OF PERI-CELLULAR OXYGEN LEVELS IN TUMOR CELL CULTURES BY AMPEROMETRIC OXYGEN SENSOR ARRAY**

J. Kieninger<sup>1</sup>, J.A. Sandvik<sup>2</sup>, E.O. Pettersen<sup>2</sup>, G. Jobst<sup>3</sup>, K. Aravindalochanan<sup>1</sup>, G.A. Urban<sup>1</sup>  
<sup>1</sup>University of Freiburg - IMTEK, GERMANY, <sup>2</sup>University of Oslo, NORWAY,  
<sup>3</sup>Jobst Technologies GmbH, GERMANY

10:00

**B1L-B6 MONITOR BLOOD GLUCOSE LEVELS VIA BREATH ANALYSIS SYSTEM AND SPARSE REPRESENTATION APPROACH**

D. Guo<sup>1</sup>, D. Zhang<sup>1</sup>, and N. Li<sup>2</sup>  
<sup>1</sup>Hong Kong Polytechnic University, HONG KONG and <sup>2</sup>Harbin Institute of Technology, CHINA

**SESSION B1L-C Chemiresistive Sensors**

08:45

**B1L-C1 THE JPL ELECTRONIC NOSE: MONITORING AIR IN THE U.S. LAB ON THE INTERNATIONAL SPACE STATION**

M.A. Ryan, K.S. Manatt, S. Gluck, A.V. Shevade, A.K. Kisor, H. Zhou, L.M. Lara, and M.L. Homer  
*Jet Propulsion Laboratory, California Institute of Technology, USA*

09:00

**B1L-C2 AEROSOL SYNTHESIS OF CHEMORESISTIVE GAS SENSORS: MATERIALS, STRUCTURES AND PERFORMANCES**

A. Tricoli, M. Righettoni, and S.E. Pratsinis  
*ETH Zurich, SWITZERLAND*

09:15

**B1L-C3 DEVELOPMENT OF A MINIATURIZED NO<sub>2</sub> GAS SENSOR BASED ON NANOPARTICLES WO<sub>3</sub> THIN FILM ON INTERDIGITATED ELECTRODES**

D.V. Dao<sup>1</sup>, T. Hashishin<sup>2</sup>, J. Tamaki<sup>2</sup>, L.-H. Li<sup>2</sup>, K. Shibuya<sup>1</sup>, and S. Sugiyama<sup>1</sup>  
<sup>1</sup>BEANS (Bio Electromechanical Autonomous Nano Systems), JAPAN and <sup>2</sup>Ritsumeikan University, JAPAN

09:30

**B1L-C4 PERFORMANCE OF INDUCTIVELY COUPLED OXYGEN SENSORS**

W. Wu, D.W. Greve, and I.J. Oppenheim  
*Carnegie Mellon University, USA*

09:45

**B1L-C5 A MEMS-BASED APPROACH THAT USES TEMPERATURE-DEPENDENT SENSING RESPONSES TO RECOGNIZE CHEMICAL TARGETS IN UNTRAINED BACKGROUNDS**

B. Raman, R. Shenoy, D.C. Meier, K.D. Benkstein, and S. Semancik  
*National Institute of Standards and Technology (NIST), USA*

10:00

**B1L-C6 INCREASING THE SELECTIVITY OF PT-GATE SIC FIELD EFFECT GAS SENSORS BY DYNAMIC TEMPERATURE MODULATION**

C. Bur<sup>1</sup>, M. Andersson<sup>2</sup>, P. Reimann<sup>1</sup>, A. Schütze<sup>1</sup>, and A. Lloyd Spetz<sup>2</sup>  
<sup>1</sup>Saarland University, GERMANY and <sup>2</sup>Linköping University, SWEDEN

## SPECIAL SESSION V B1L-D Green RFID and RFID-Enabled Wireless Sensors

08:45 *Invited*

**B1L-D1 INKJET-PRINTED PAPER/POLYMER-BASED “GREEN” RFID AND WIRELESS SENSOR NODES: THE FINAL STEP TO BRIDGE COGNITIVE INTELLIGENCE, NANOTECHNOLOGY AND RF**

M.M. Tentzeris, A. Traille, H. Lee, A. Rida, V. Lakafosis, and R. Vyas  
*Georgia Institute of Technology, USA*

09:15

**B1L-D3 CHIPLESS RFID TAG WITH INTEGRATED SENSOR**

S. Preradovic, and N. Karmakar  
*Monash University, AUSTRALIA*

09:30

**B1L-D4 PROTOTYPE IMPLEMENTATION OF AMBIENT RF ENERGY HARVESTING WIRELESS SENSOR NETWORKS**

H. Nishimito, Y. Kawahara, and T. Asami  
*University of Tokyo, JAPAN*

09:45

**B1L-D5 EXPERIMENTAL INVESTIGATION OF DISTRIBUTED DETECTION USING A SENSOR NETWORK BASED ON COUPLED OSCILLATOR ARRAYS**

A. Collado and A. Georgiadis  
*Centre Tecnologic de Telecomunicacions de Catalunya, SPAIN*

10:00

**B1L-D6 ULTRA-LOW-POWER RFID-BASED SENSOR MOTE**

N. Gay and W.-J. Fischer  
*Fraunhofer Institute for Photonic Microsystems, GERMANY*

## SESSION B1L-E Multi-Spectral Systems

08:45

**B1L-E1 DEVELOPMENT OF SENSING SYSTEM FOR CARBONACEOUS PARTICLES USING LIBS COMBINED WITH LII TEMPORAL ANALYTICAL TECHNIQUE**

S. Ikezawa, M. Wakamatsu, Y. Zimin, and T. Ueda  
*Waseda University, JAPAN*

09:00

**B1L-E2 A NOVEL CONTRAST AGENT FOR MULTISPECTRAL MAGNETIC RESONANCE IMAGING**

X. Wang<sup>1</sup>, S.W. Anderson<sup>2</sup>, and X. Zhang<sup>1</sup>  
<sup>1</sup>*Boston University, USA* and <sup>2</sup>*Boston University Medical Center, USA*

09:15

**B1L-E3 SPECTRO-TOMOGRAPHY INTERPRETATION FOR INTEGRATED SENSING OF PROCESS COMPONENT IDENTIFICATION AND DISTRIBUTION**

M. Nahvi<sup>1</sup> and B.S. Hoyle<sup>2</sup>  
<sup>1</sup>*University of Guilan, IRAN* and <sup>2</sup>*University of Leeds, UK*

09:30

**B1L-E4 POSITIVE SIZE-EFFECT ON THE SENSITIVITY OF A PLANAR COUNTER-CURRENT MICRO FLAME IONIZATION DETECTOR**

W.J. Kuipers and J. Müller  
*Hamburg University of Technology, GERMANY*

09:45

**B1L-E5 SOFT SENSOR FOR THE CHARACTERIZATION OF FIBROUS MATERIALS THROUGH MULTIVARIATE AND MULTIREOLUTION IMAGE ANALYSIS**

E. Tomba and P. Facco  
*Università di Padova, ITALY*

10:00

**B1L-E6 2D IMAGE RECONSTRUCTION FROM BLURRED AND DISTURBED MULTI PARAMETER MEASUREMENTS AT THE EXAMPLE OF AN INDUCTIVE METAL DETECTOR**

H. Krüger and H. Ewald  
*University of Rostock, GERMANY*

10:15 - POSTER SESSION B2P-2

12:15

**POSTER SESSION W1 - Phenomena, Modeling & Evaluation**

**B2P-G1 OPTIMIZATION OF AN EXTRAORDINARY MAGNETORESISTANCE SENSOR IN THE SEMICONDUCTOR-METAL HYBRID STRUCTURE**

J. Sun<sup>1</sup>, J. Kosel<sup>1</sup>, C. Gooneratne<sup>1</sup>, and Y.-A. Soh<sup>2</sup>  
<sup>1</sup>King Abdullah University of Science and Technology, SAUDI ARABIA and <sup>2</sup>Imperial College London, UK

**B2P-G2 RESTORATION OF RADially BLURRED IMAGE CREATED BY SPHERICAL SINGLE LENS SYSTEM OF CELL PHONE CAMERA**

Y. Zhang, I. Minema, and T. Ueda  
*Waseda University, JAPAN*

**B2P-G3 FORMATION AND CHARACTERIZATIONS OF POROUS 3C-SiC THIN FILMS FOR MICRO/NANO SYSTEMS**

K.-S. Kim and G.-S. Chung  
*University of Ulsan, SOUTH KOREA*

**B2P-G4 EFFECT OF SUBSTRATE ON RELIABILITY AND ANTENNA INDICATOR PARAMETERS OF CU BASED PATCH ANTENNA**

D. Feili, N. Pagel, V.L. Ngo, and H. Seidel  
*Saarland University, GERMANY*

**B2P-G5 PROPOSAL OF 3 DIMENSION IMAGINARY SPACE TOUCH PANEL USING ULTRASONIC SENSORS**

R. Yasunaka<sup>1</sup>, Y. Kitazono<sup>1</sup>, S. Nakashima<sup>2</sup>, L. Zhang<sup>1</sup>, and S. Serikawa<sup>1</sup>  
<sup>1</sup>Kyushu Institute of Technology, JAPAN and <sup>2</sup>Ube National College of Technology, JAPAN

**B2P-G6 ELASTICITY OF SI CALCULATED WITH A LATTICE DYNAMICS MODEL**

W. Zhang, Q.-A. Huang, and H. Yu  
*Southeast University, CHINA*

**B2P-G7 CHARACTERIZATION OF METAL ELECTRODE-SENSING LAYER INTERFACE IN SENSORS UNDER OPERATION**

A. Gurlo<sup>1</sup>, J. Grattage<sup>2</sup>, and R. Riedel<sup>1</sup>  
<sup>1</sup>Technische Universität Darmstadt, GERMANY, <sup>2</sup>ESRF, FRANCE

**B2P-G8 A TILING-BASED APPROACH FOR DIRECTIONAL SENSOR NETWORK DEPLOYMENT .....**

C.-H. Wu<sup>1</sup> and Y.-C. Chung<sup>2</sup>  
<sup>1</sup>Industrial Technology Research Institute, TAIWAN and <sup>2</sup>National Tsing Hua University, TAIWAN

- B2P-G9 INTEGRATED HYDROPHOBIC AND HYDROPHILIC SUBSTRATE BY NANOPATTERNED SURFACES**  
H. Jin, A. Hsiao, and L. Liu  
*University of Illinois, Urbana-Champaign, USA*
- B2P-G10 SEPARATING RESPIRATION ARTIFACT IN MICROWAVE DOPPLER RADAR HEART MONITORING BY INDEPENDENT COMPONENT ANALYSIS**  
M. Zakrzewski and J. Vanhala  
*Tampere University of Technology, FINLAND*
- B2P-G11 SENSING OF PULSED RADIATION WITH PYROELECTRIC DETECTORS**  
S. Efthymiou and K.B. Ozanyan  
*University of Manchester, UK*
- B2P-G12 MONITORING AND VISUALIZATION OF LARGE WSN DEPLOYMENTS**  
R. ElHakim, M. ElHelw, and A. Orfy  
*Nile University, EGYPT*
- B2P-G13 THERMAL SENSOR VARIATION REDUCTION IN DEEP SUB 100NM PROCESS TECHNOLOGIES**  
D. Duarte, M. Abdelmoneum, and G. Taylor  
*Intel Corporation, USA*
- B2P-G14 A NEW OXYGEN SATURATION IMAGES OF IRIS TISSUE**  
Y.-H. Wang, C.J. Hung, S.J. Chen, and C.-H. Shen  
*National Changhua University of Education, TAIWAN*
- B2P-G15 HIGH PERFORMANCE ATOMIC FORCE MICROSCOPE BASED ON AIR-SPACED PIEZORESISTIVE CANTILEVERS**  
Y. Hu, Q. Zheng, and Y. Xu  
*Wayne State University, USA*
- B2P-G16 ELECTROMECHANICAL SENSING OF CHARGE RETENTION IN FLOATING ELECTRODES**  
D. Elata<sup>1</sup>, V. Leus<sup>1</sup>, J. Provine<sup>2</sup>, A. Hirshberg<sup>1</sup>, and R.T. Howe<sup>2</sup>  
*<sup>1</sup>Technion - Israel Institute of Technology, ISRAEL and <sup>2</sup>Stanford University, USA*
- B2P-G17 AN ANALYTICAL MODEL OF A THERMALLY EXCITED MICROCANTILEVER VIBRATING Laterally IN A VISCOUS FLUID**  
S. Heinrich<sup>1</sup>, R. Maharjan<sup>1</sup>, I. Dufour<sup>2</sup>, F. Josse<sup>1</sup>, L. Beardslee<sup>3</sup>, and O. Brand<sup>3</sup>  
*<sup>1</sup>Marquette University, USA, <sup>2</sup>Université de Bordeaux, FRANCE, and <sup>3</sup>Georgia Institute of Technology, USA*
- B2P-G18 MODELING APPROACH FOR FULL-SYSTEM DESIGN AND RAPID HARDWARE PROTOTYPING OF MICROELECTROMECHANICAL SYSTEMS**  
R. Khalilyulin, T. Steinhuber, T. Reutter, G. Wachutka, and G. Schrag  
*Munich University of Technology, GERMANY*



## POSTER SESSION W2 - Sensor/Actuator Systems

- B2P-H1**     **NOVEL OPTICAL ABSORBANCE-BASED MULTI-ANALYTES DETECTION MODULE USING A TRI-CHROMATIC LED, PDS AND PLASTIC OPTICAL FIBERS AND ITS APPLICATION TO A PALM-SIZED URINE TEST STRIP READER**  
D.-S. Lee<sup>1</sup>, B.G. Jeon<sup>2</sup>, M.-J. Sohn<sup>3</sup>, and M.Y. Jung<sup>1</sup>  
<sup>1</sup>Electronics and Telecommunications Research Institute (ETRI), SOUTH KOREA, <sup>2</sup>Korea Advanced Institute of Science and Technology (KAIST), SOUTH KOREA, and <sup>3</sup>Korea Research Institute of Bioscience and Biotechnology (KRIBB), SOUTH KOREA
- B2P-H2**     **A NOVEL MINIATURE WIND GENERATOR FOR WIRELESS SENSING APPLICATIONS**  
D. Zhu, S. Beeby, J. Tudor, N. Harris, and N. White  
University of Southampton, UK
- B2P-H3**     **CELL MANIPULATION SYSTEM BASED ON A SILICON MICRO FORCE SENSOR WITH SELF-CALIBRATION FROM BACKSIDE**  
T. Beutel, N. Ferreira, A. Balck, M. Leester-Schädel, and S. Büttgenbach  
Technische Universität Braunschweig, GERMANY
- B2P-H4**     **1 VOLT, 1 GHz NEMS SWITCHES**  
M. Tabib-Azar<sup>1</sup>, S.R. Venumbaka<sup>1</sup>, K. Alzoubi<sup>2</sup>, and D. Saab<sup>2</sup>  
<sup>1</sup>University of Utah, USA and <sup>2</sup>Case Western Reserve University, USA
- B2P-H5**     **AN ULTRA LOW-POWER SINGLE CHIP INTELLIGENT SENSING PLATFORM**  
N. Schemm, S. Balkir, and M.W. Hoffman  
University of Nebraska, Lincoln, USA
- B2P-H6**     **A CAPACITANCE-TO-FREQUENCY CONVERTERS COMPARISON FOR A FREQUENCY ACQUISITION PLATFORM**  
R. Aragonés, P. Álvarez, J. Oliver, and C. Ferrer  
Universitat Autònoma de Barcelona, SPAIN
- B2P-H7**     **A WIDE DYNAMIC RANGE SELF-BIASED FULLY DIFFERENTIAL OPERATIONAL AMPLIFIER FOR MICRO MECHANICAL SENSORS AND ACTUATORS CIRCUITRY**  
M. Abdelmoneum, D.E. Duarte, and G. Taylor  
Intel Corporation, USA
- B2P-H8**     **A RELATIVE-STORY DISPLACEMENT SENSOR RESOLVING THE ANGULAR ERROR PROBLEM**  
I. Matsuya<sup>1</sup>, R. Katamura<sup>2</sup>, M. Sato<sup>1</sup>, H. Kondo<sup>1</sup>, M. Iba<sup>1</sup>, K. Kanekawa<sup>1</sup>, T. Tani<sup>1</sup>, A. Nishitani<sup>1</sup>, and I. Ohdomari<sup>1</sup>  
<sup>1</sup>Waseda University, JAPAN, and <sup>2</sup>Kajima Corporation, JAPAN
- B2P-H9**     **SMART ANALOG COMPENSATION OF SPURIOUS SIGNALS FOR A FULLY DIFFERENTIAL INTERFACE FOR RESONATING SENSORS**  
A.O. Niedermayer, T. Voglhuber-Brunnmaier, and B. Jakoby  
Johannes Kepler University, AUSTRIA
- B2P-H10**    **SEMANTIC MULTIMODAL COMPRESSION FOR WEARABLE SENSING SYSTEMS**  
S. Meguerdichian, H. Noshadi, F. Dabiri, and M. Potkonjak  
University of California, Los Angeles, USA
- B2P-H11**    **DISPLACEMENT AMPLIFICATION AND LATCHING MECHANISM USING V-SHAPE ACTUATORS IN DESIGN OF ELECTRO-THERMAL MEMS SWITCHES**  
J.J. Khazaai<sup>1</sup>, M. Haris<sup>1</sup>, H. Qu<sup>1</sup>, and J. Slicker<sup>2</sup>  
<sup>1</sup>Oakland University, USA and <sup>2</sup>MicroStar Technologies, LLC, USA

- B2P-H12 A SYSTEM OF PARALLEL AND SELECTIVE MICROCHANNELS FOR BIOSENSOR SAMPLE DELIVERY AND CONTAINMENT**  
T.L. Edwards  
*Sandia National Laboratories, USA*
- B2P-H13 A MICROMACHINED 2DOF NANOPositionER WITH INTEGRATED CAPACITIVE DISPLACEMENT SENSOR**  
L. Ji, Y. Zhu, S.O.R. Moheimani, and M.R. Yuce  
*University of Newcastle, AUSTRALIA*
- B2P-H14 HAIRCELL-INSPIRED CAPACITIVE ACCELEROMETER WITH BOTH HIGH SENSITIVITY AND BROAD DYNAMIC RANGE**  
Q. Zheng<sup>1</sup>, Y. Zhang<sup>2</sup>, Y. Lei<sup>3</sup>, J. Song<sup>4</sup>, and Y. Xu<sup>1</sup>  
<sup>1</sup>Wayne State University, USA, <sup>2</sup>University of Maryland, USA, <sup>3</sup>Xiamen University, CHINA, and <sup>4</sup>Shanghai Ocean University, CHINA
- B2P-H15 A LOW LOSS SINGLE-POLE TWELVE-THROW RADIO FREQUENCY MICROELECTROMECHANICAL SYSTEMS SWITCH**  
S. Kang<sup>1</sup>, K. Jang<sup>1</sup>, H.C. Kim<sup>2</sup>, and K. Chun<sup>1</sup>  
<sup>1</sup>Seoul National University, SOUTH KOREA and <sup>2</sup>Ulsan University, SOUTH KOREA
- B2P-H16 HIGH RESOLUTION MICRO-PIRANI PRESSURE SENSOR GAUGE WITH TRANSIENT RESPONSE PROCESSING**  
O. Legendre<sup>1</sup>, H. Mathias<sup>1</sup>, J. Juillard<sup>2</sup>, E. Martincic<sup>1</sup>, M. Zhang<sup>1</sup>, and F. Mailly<sup>3</sup>  
<sup>1</sup>Université Paris Sud XI, FRANCE, <sup>2</sup>SUPÉLEC, FRANCE, and <sup>3</sup>Université Montpellier, FRANCE

### POSTER SESSION W3 - Chemical & Gas Sensors

- B2P-J1 MACH-ZEHNDER INTERFEROMETRIC HYDROGEN SENSOR BASED ON A SINGLE MODE FIBER HAVING CORE STRUCTURE MODIFICATION AT TWO SECTIONS**  
Y.H. Kim<sup>1</sup>, M.J. Kim<sup>2</sup>, B.S. Rho<sup>2</sup>, K.H. Kwack<sup>3</sup>, and B.H. Lee<sup>1</sup>  
<sup>1</sup>Gwangju Institute of Science and Technology (GIST), SOUTH KOREA, <sup>2</sup>Korea Photonics Technology Institute, SOUTH KOREA, and <sup>3</sup>Optowon, SOUTH KOREA
- B2P-J2 LOW COST, CALIBRATION-FREE SENSORS FOR *IN SITU* DETERMINATION OF NATURAL WATER POLLUTION**  
A. Radu<sup>1</sup>, S. Anastasova<sup>1</sup>, C. Fay<sup>1</sup>, J. Bobacka<sup>2</sup>, A. Lewenstam<sup>2</sup>, and D. Diamond<sup>1</sup>  
<sup>1</sup>Dublin City University, IRELAND and <sup>2</sup>Åbo Academi University, FINLAND
- B2P-J3 SI: WO<sub>3</sub> SENSORS FOR NONINVASIVE DIABETES DIAGNOSIS BY BREATH ANALYSIS .....**  
M. Righettoni, A. Tricoli, and S.E. Pratsinis  
*ETH Zurich, SWITZERLAND*
- B2P-J4 A NOVEL MICRO PARAMAGNETIC OXYGEN SENSOR BASED ON AN ANISOTROPIC MAGNETO RESISTANCE-DEVICE**  
F. König and J. Müller  
*Hamburg University of Technology, GERMANY*
- B2P-J5 SnO<sub>2</sub>/NiO COMPOSITE THIN FILMS FOR FORMALDEHYDE DETECTION**  
J.L. Dunford, J.J. Tunney, and X. Du  
*National Research Council Canada, CANADA*
- B2P-J6 POLYMER-BASED CARBON MONOXIDE SENSORS**  
M.L. Homer, A.V. Shevade, H. Zhou, A.K. Kisor, L.M. Lara, M.A. Ryan, and S.-P.S. Yen  
*Jet Propulsion Laboratory and California Institute of Technology, USA*

- B2P-J7**      **MODELING OF GAS SENSITIVITY FOR P-TYPE SEMICONDUCTING THIN FILMS**  
R. Jaaniso, I. Kärkkänen, and A. Floren  
*University of Tartu, ESTONIA*
- B2P-J8**      **NITROPHENOL DETECTION USING SUSPENDED SWNT FILMS FOR ENVIRONMENTAL MONITORING**  
T. An, I.-T. Kim, and G. Lim  
*Pohang University of Science and Technology (POSTECH), SOUTH KOREA*
- B2P-J9**      **ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY SENSING OF TOXIC ORGANOPHOSPHORUS COMPOUNDS**  
B.B. Narakathu, W. Guo, S.O. Obare, and M.Z. Atashbar  
*Western Michigan University, USA*
- B2P-J10**     **ACTIVE STEREO NOSE: USING AIR CURTAIN TO ENHANCE THE DIRECTIVITY**  
I. Miyatani, and H. Ishida  
*Tokyo University of Agriculture and Technology, JAPAN*
- B2P-J11**     **SELF-PATTERNED GOLD ELECTROPLATED MULTICAPILLARY SEPARATION COLUMNS**  
H. Zareie, B. Alfeeli, M.A. Zareian-Jahromi, and M. Agah  
*Virginia Polytechnic Institute and State University, USA*
- B2P-J12**     **MICROFABRICATED DIFFERENTIAL-MODE GAS SENSOR UTILIZING TEMPERATURE COMPENSATION**  
R.C. Roberts and N.C. Tien  
*Case Western Reserve University, USA*
- B2P-J13**     **GRAPHENE-BASED ULTRA-SENSITIVE GAS SENSORS**  
I.F. Rivera, R.K. Joshi, and J. Wang  
*University of South Florida, USA*
- B2P-J14**     **MEMS RESONANT SENSORS FOR DETECTION OF GASOLINE VAPOR**  
A. Hajjam, J. Pandiyan, A. Rahafrooz, and S. Pourkamali  
*University of Denver, USA*
- B2P-J15**     **INTEGRATED SENSOR HEAD FOR GAS ANALYSIS VIA ATOMIC EMISSION SPECTROSCOPY**  
M. Gruber, M. Bohling, M. Mogl, H. Knuppertz, and H. Winkelmann  
*University of Hagen, GERMANY*
- B2P-J16**     **ACETONE SENSOR BASED ON FILM BULK ACOUSTIC RESONATOR**  
X. Qiu, R. Tang, J. Zhu, J. Oiler, Z. Wang, and H. Yu  
*Arizona State University, USA*

#### **POSTER SESSION W4 - Biosensors**

- B2P-K1**      **INTEGRATION OF VERTICAL GRATING COUPLERS AND MICROFLUIDIC CHANNELS WITH SILICON PHOTONIC WIRE BIOSENSOR ARRAYS**  
A. Densmore<sup>1</sup>, D.-X. Xu<sup>1</sup>, P. Cheben<sup>1</sup>, M. Vachon<sup>1</sup>, S. Janz<sup>1</sup>, R. Ma<sup>1</sup>, R. Halir<sup>2</sup>, I. Molina-Fernandez<sup>2</sup>, Y. Li<sup>1</sup>, G. Lopinski<sup>1</sup>, A. Deläge<sup>1</sup>, and J.H. Schmid<sup>1</sup>  
<sup>1</sup>National Research Council Canada, CANADA and <sup>2</sup>Universidad de Malaga, SPAIN

- B2P-K2 SENSITIVITY INVESTIGATIONS OF SURFACE STRESS CAPACITIVE DNA SENSOR**  
S. Chatzandroulis<sup>1</sup>, V. Tsouti<sup>1</sup>, M. Ioannou<sup>2</sup>, C. Boutopoulos<sup>3</sup>, I. Zergioti<sup>3</sup>, D. Goustouridis<sup>1</sup>, J. Hue<sup>4</sup>,  
R. Rousier<sup>4</sup>, D. Tsoukalas<sup>3</sup>, P. Normand<sup>1</sup>, and D. Kafetzopoulos<sup>2</sup>  
<sup>1</sup>NCSR Demokritos, GREECE, <sup>2</sup>FORTH, Institute of Molecular Biology and Biotechnology, GREECE,  
<sup>3</sup>National Technical University of Athens, GREECE, and <sup>4</sup>CEA - LETI, FRANCE
- B2P-K3 A PORTABLE IMPEDANCE BIOSENSOR INSTRUMENT FOR RAPID DETECTION OF AVIAN INFLUENZA VIRUS**  
J. Lin<sup>1</sup>, J. Lum<sup>1</sup>, R. Wang<sup>1</sup>, S. Tung<sup>1</sup>, H. Lu<sup>2</sup>, B. Hargis<sup>1</sup>, Y. Li<sup>1</sup>, and L. Berghman  
<sup>1</sup>University of Arkansas, USA, <sup>2</sup>Pennsylvania State University, USA, and <sup>3</sup>Texas A&M University, USA
- B2P-K4 WHOLE FIELD LIVING CELL MAPPING USING DIFFRACTION MOIRÉ SENSOR**  
X. Zheng and X. Zhang  
Boston University, USA
- B2P-K5 A BACTERIAL BIOFILM SURFACE ACOUSTIC WAVE SENSOR FOR REAL TIME GROWTH MONITORING**  
Y.W. Kim, S.E. Sardari, A.A. Iliadis, and R. Ghodssi  
University of Maryland, USA
- B2P-K6 A NOVEL MULTI-WORKING ELECTRODES POTENTIOSTAT FOR ELECTROCHEMICAL DETECTION OF METABOLITES**  
D. De Venuto<sup>1</sup>, M.D. Torre<sup>1,2</sup>, C. Boero<sup>2</sup>, S. Carrara<sup>2</sup>, and G. De Micheli<sup>2</sup>  
<sup>1</sup>Politecnico di Bari, ITALY and <sup>2</sup>Ecole Polytechnique Fédérale de Lausanne (EPFL), SWITZERLAND
- B2P-K7 HIGH SENSITIVE CIRCULAR HALL EFFECT SENSOR FOR MAGNETIC BEAD LABELED IMMUNOASSAY**  
B. Zhang, E. Korman, and M. Zaghloul  
George Washington University, USA
- B2P-K8 MICROPOST ARRAY FOR FORCE MAPPING OF VASCULAR SMOOTH MUSCLE CELLS**  
Q. Cheng, Z. Sun, G.A. Meininger, and M. Almasri  
University of Missouri, Columbia, USA
- B2P-K9 TUNING OF LUMINESCENT SENSOR RESPONSE AND DEGRADATION THROUGH MANIPULATION OF NANOFILM COATING PROPERTIES**  
B. Collier, J. Park, and M. McShane  
Texas A&M University, USA
- B2P-K10 A NEW HYBRID CATHETER-TIP TACTILE SENSOR WITH RELATIVE HARDNESS MEASURING CAPABILITY FOR USE IN CATHETER-BASED HEART SURGERY**  
R. Ahmadi<sup>1</sup>, J. Dargahi<sup>1</sup>, M. Packirisamy<sup>1</sup>, and R. Cecere<sup>2</sup>  
<sup>1</sup>Concordia University, CANADA and <sup>2</sup>McGill University, CANADA
- B2P-K11 PRINTED ELECTROCHEMICAL BASED BIOSENSORS ON FLEXIBLE SUBSTRATES**  
A.S.G. Reddy, B. Narakathu, M. Joyce, M. Rebros, E. Hrehorova, and M.Z. Atashbar  
Western Michigan University, USA
- B2P-K12 FLEXIBLE NEURAL MICROELECTRODE ARRAYS REINFORCED WITH EMBEDDED METALLIC MICRO-NEEDLES**  
A.A. Fomani and R.R. Mansour  
University of Waterloo, CANADA
- B2P-K13 A DISPOSABLE POLYMER WAVEGUIDE LAB-ON-A-CHIP FOR REAL-TIME DETECTION OF PROTEIN C USING EVANESCENT WAVE**  
S.H. Lee, D.J. Oh, J.H. Jung, and J.Y. Kang  
Korea Institute of Science and Technology (KIST), SOUTH KOREA

- B2P-K14 DEVELOPMENT OF A THREE DIMENSIONAL (3-D) SILICON MICRO-ARRAY FOR CELL CAPTURING**  
M. Nikkhah, J.S. Strobl, and M. Agah  
*Virginia Polytechnic Institute and State University, USA*
- B2P-K15 POST-CMOS PARYLENE PACKAGING FOR ON-CHIP BIOSENSOR ARRAYS**  
L. Li and A.J. Mason  
*Michigan State University, USA*
- B2P-K16 DIFFRACTOMETRIC BIOCHEMICAL SENSING WITH SMART HYDROGELS**  
C.-L. Chang, Z. Ding, V.N.L.R. Patchigolla, B. Ziaie, and C.A. Savran  
*Purdue University, USA*
- B2P-K17 MODELING SENSING MECHANISMS IN CARBON NANOTUBE BIOSENSORS**  
G.B. Abadir, K. Walus, and D.L. Pulfrey  
*University of British Columbia, CANADA*
- B2P-K18 A NOVEL MICRODROPLET CASSETTE FOR BIOCHEMICAL SCREENING**  
L.L. Wu<sup>1</sup>, Y. Zhang<sup>1</sup>, W. Xu<sup>2</sup>, G.-P. Li<sup>1</sup>, and M. Bachman<sup>1</sup>  
<sup>1</sup>*University of California, Irvine, USA and* <sup>2</sup>*University of North Carolina, USA*
- B2P-K19 A FULLY MICROFABRICATED COPLANAR SINGLE-WALLED CARBON NANOTUBE THREE-ELECTRODE SYSTEM FOR BIOSENSORS**  
J.H. Kim<sup>1</sup>, J.Y. Lee<sup>1</sup>, C. Park<sup>2</sup>, and N.K. Min<sup>1</sup>  
<sup>1</sup>*Korea University, SOUTH KOREA and* <sup>2</sup>*Kangwon National University, SOUTH KOREA*
- B2P-K20 RAPID DETECTION OF DNA HYBRIDIZATION ON SURFACE PLASMON RESONANCE BASED MICROARRAYS**  
A. Kick<sup>1</sup>, M. Bönsch<sup>1</sup>, A. Herr<sup>2</sup>, W. Brabetz<sup>2</sup>, M. Jung<sup>2</sup>, F. Sonntag<sup>3</sup>, and M. Mertig<sup>1</sup>  
<sup>1</sup>*Technische Universität Dresden, GERMANY,* <sup>2</sup>*Biotype Diagnostic GmbH, GERMANY, and* <sup>3</sup>*Fraunhofer IWS, GERMANY*

## POSTER SESSION W5 - Optical Sensors

- B2P-L1 DIFFUSE-LIGHT ABSORPTION SPECTROSCOPY AND CHEMOMETRICS FOR DISCRIMINATION AND QUANTIFICATION OF EXTRA VIRGIN OLIVE OIL ADULTERANTS**  
A.G. Mignani<sup>1</sup>, L. Ciaccheri<sup>1</sup>, H. Ottevaere<sup>2</sup>, H. Thienpont<sup>2</sup>, L. Conte<sup>3</sup>, M. Marega<sup>3</sup>, A. Cichelli<sup>4</sup>, C. Attilio<sup>1</sup>, and A. Cimato<sup>1</sup>  
<sup>1</sup>*Consiglio Nazionale delle Ricerche (CNR), ITALY,* <sup>2</sup>*Vrije Universiteit Brussel, BELGIUM,* <sup>3</sup>*Università degli Studi di Udine, ITALY, and* <sup>4</sup>*Università degli Studi G. D'Annunzio (DASTA), ITALY*
- B2P-L2 OPTICAL SENSING OF SOLVENTS USING SELECTIVE TENSILE EFFECTS OF A PDMS-COATED FIBER BRAGG GRATING**  
K.-I. Joo<sup>1</sup>, C.-S. Park<sup>1</sup>, Y. Han<sup>1</sup>, Y.W. Lee<sup>2</sup>, S.H. Kong<sup>1</sup>, S.-W. Kang<sup>1</sup>, and H.-R. Kim<sup>1</sup>  
<sup>1</sup>*Kyungpook National University, SOUTH KOREA and* <sup>2</sup>*Pukyung National University, SOUTH KOREA*
- B2P-L3 IN-PIXEL BURIED-CHANNEL SOURCE FOLLOWER IN CMOS IMAGE SENSORS EXPOSED TO X-RAY RADIATION**  
Y. Chen<sup>1</sup>, J. Tan<sup>1</sup>, X. Wang<sup>2</sup>, A.J. Mierop<sup>3</sup>, and A.J.P. Theuwissen<sup>1,4</sup>  
<sup>1</sup>*Delft University of Technology, THE NETHERLANDS,* <sup>2</sup>*CMOSIS nv, BELGIUM,* <sup>3</sup>*DALSA B.V., THE NETHERLANDS, and* <sup>4</sup>*Harvest Imaging, BELGIUM*

- B2P-L4**     **LOW-POWER AND HIGH-SPEED CURRENT-MODE CMOS IMAGER WITH 1T BIASING SCHEME**  
F. Tang and A. Bermak  
*Hong Kong University of Science and Technology, HONG KONG*
- B2P-L5**     **MODELING A PROTOTYPE OPTICAL COLLISION AVOIDANCE SENSOR FOR UNMANNED ARIAL VEHICLES**  
C. Minwalla<sup>1</sup>, M. Tekeste<sup>1</sup>, K. Watters<sup>1</sup>, P. Thomas<sup>2</sup>, R.I. Hornsey<sup>2</sup>, K. Ellis<sup>3</sup>, and S. Jennings<sup>3</sup>  
*<sup>1</sup>York University, CANADA, <sup>2</sup>Topaz Technology Inc., CANADA, and <sup>3</sup>NRC Canada, CANADA*
- B2P-L6**     **OPTICAL FIBRE RADIATION DOSIMETRY FOR LOW DOSE APPLICATIONS**  
D. McCarthy, S. O'Keeffe, G. Leen, and E. Lewis  
*University of Limerick, IRELAND*
- B2P-L7**     **A HYBRID FIBER OPTIC SENSING SYSTEM FOR STRUCTURAL HEALTH MONITORING**  
S.K. Ghorai, S. Sengupta, S. Sidhishwari, and D.R. Roy  
*Birla Institute of Technology, INDIA*
- B2P-L8**     **FIBER-OPTIC TWO-PHOTON FLUORESCENCE CORRELATION SPECTROSCOPY FOR REMOTE CELL FLOW VELOCITY MEASUREMENTS**  
Y.-C. Chang<sup>1</sup>, J.Y. Ye<sup>2</sup>, T.P. Thomas<sup>3</sup>, J.R. Baker, Jr.<sup>3</sup>, and T.B. Norris<sup>3</sup>  
*<sup>1</sup>National Changhua University of Education, TAIWAN, <sup>2</sup>University of Texas, San Antonio, USA, and <sup>3</sup>University of Michigan, USA*
- B2P-L9**     **GROOVED FIBER SENSORS FOR DEFORMATION IMAGING**  
N. Nurgiyatna, P. Scully, and K.B. Ozanyan  
*University of Manchester, UK*
- B2P-L10**    **NEAR-FIELD PROBES USING METAMATERIAL INCLUSIONS FOR ENHANCED SENSITIVITY**  
O.M. Ramahi, Z. Ren, and M.S. Boybay  
*University of Waterloo, CANADA*
- B2P-L11**    **OPTIMIZED MARKS FOR QUALITATIVE MATERIAL DISCRIMINATION**  
O.M. Conde, L. Uriarte, P.B. Garcia-Allende, A.M. Cubillas, and J.M. Lopez-Higuera  
*University of Cantabria, SPAIN*
- B2P-L12**    **DESIGN AND ANALYSIS OF A NOVEL ELECTRO-OPTICAL MEMS GYROSCOPE FOR NAVIGATION APPLICATIONS**  
R. Waters, C. Tally, B. Dick, H. Jazo, M. Fralick, M. Kerber, and A. Wang  
*Space and Naval Warfare Systems Center Pacific, USA*
- B2P-L13**    **MISMATCH REDUCTION FOR DARK CURRENT SUPPRESSION**  
D. Sander and P. Abshire  
*University of Maryland, USA*
- B2P-L14**    **PH SENSING BASED ON THIN FILM HYDROGEL COATED SILICON GRATINGS**  
A.K. Mudraboyina, J. Markowski, and J. Sabarinathan  
*University of Western Ontario, CANADA*
- B2P-L15**    **FLUORESCENT IMAGING AND LOCALIZATION WITH ANGLE SENSITIVE PIXEL ARRAYS IN STANDARD CMOS**  
A. Wang, P.R. Gill, and A. Molnar  
*Cornell University, USA*

**B2P-L16 PD COATED EDGE-EMITTING LASERS FOR HYDROGEN SENSING APPLICATIONS**

B.G. Griffin, C.-L. Chang, A. Arbabi, and L.L. Goddard  
*University of Illinois, Urbana-Champaign, USA*

**B2P-L17 COMPOSITE CAVITY FIBER LASER SENSOR BASED ON FEEDBACK MODULATION**

J. Zhang<sup>1</sup>, Q. Chai<sup>1</sup>, X. Li<sup>1</sup>, Q. Hao<sup>1</sup>, Q. Li<sup>1</sup>, W. Sun<sup>1</sup>, L. Yuan<sup>1</sup>, P. Lu<sup>2</sup>, and G.D. Peng<sup>3</sup>  
<sup>1</sup>Harbin Engineering University, CHINA, <sup>2</sup>Communications Research Centre, CANADA, and <sup>3</sup>University of New South Wales, AUSTRALIA

**POSTER SESSION W6 - Mechanical & Physical Sensors**

**B2P-M1 MAGNETIC SENSOR EMPLOYING PIEZOELECTRIC CERAMIC/RARE-EARTH IRON ALLOY/HIGH-PERMEABILITY FeCuNbSiB COMPOSITE**

P. Li, L. Chen, Y. Wen, D. Wang, and X. Huang  
*Chongqing University, CHINA*

**B2P-M2 DIGITAL CLOSED-LOOP CONTROL BASED ON ADAPTIVE FILTER FOR DRIVE MODE OF A MEMS GYROSCOPE**

D. Liu, N.N. Lu, J. Cui, L.T. Lin, H.T. Ding, Y.L. Hao, Z.C. Yang, and G. Yan  
*Peking University, CHINA*

**B2P-M3 A NOVEL LATERALLY DRIVEN MICROMACHINED RESONANT PRESSURE SENSOR**

D. Chen, Y. Li, M. Liu, and J. Wang  
*Chinese Academy of Sciences, CHINA*

**B2P-M4 OPTICAL MEMS VIBRATION SENSOR**

W. Hortschitz<sup>1</sup>, M. Sachse<sup>1</sup>, H. Steiner<sup>1</sup>, F. Kohl<sup>1</sup>, J. Schalko<sup>2</sup>, F. Keplinger<sup>2</sup>, and T. Sauter<sup>1</sup>  
<sup>1</sup>Austrian Academy of Sciences, AUSTRIA and <sup>2</sup>Vienna University of Technology, AUSTRIA

**B2P-M5 IMPLEMENTATION OF A FLEXIBLE SILICON-BASED TACTILE SENSOR ARRAY**

W. Fang, C.-F. Hu, H.-Y. Huang, C.-C. Wen, and L.-Y. Lin  
*National Tsing Hua University, TAIWAN*

**B2P-M6 A SEMI-NUMERICAL MODEL OF A LATERAL FIELD EXCITED PIEZOELECTRIC FLUID SENSOR**

T. Voglhuber-Brunnmaier, A.O. Niedermayer, and B. Jakoby  
*Johannes Kepler University, AUSTRIA*

**B2P-M7 NO-POWER VACUUM ACTUATED BI-STABLE MEMS SPDT SWITCH**

U.R. Gowrishetty, K.M. Walsh, and D. Jackson  
*University of Louisville, USA*

**B2P-M8 DOUBLE MEMBRANE SENSORS FOR LIQUID VISCOSITY AND MASS DENSITY FACILITATING MEASUREMENTS IN A LARGE FREQUENCY RANGE**

M. Heinisch<sup>1</sup>, E.K. Reichel<sup>2</sup>, T. Voglhuber-Brunnmaier<sup>1</sup>, A. Niedermayer<sup>1</sup>, and B. Jakoby<sup>1</sup>  
<sup>1</sup>Johannes Kepler University, AUSTRIA and <sup>2</sup>Katholieke Universiteit Leuven, BELGIUM

**B2P-M9 CAPACITIVE ICING MEASUREMENT IN A 220 kV OVERHEAD POWER LINE ENVIRONMENT**

M.J. Moser, T. Bretterklieber, H. Zangl, and G. Brasseur  
*Graz University of Technology, AUSTRIA*

**B2P-M10 TIME-GATED TECHNIQUE FOR CONTACTLESS ELECTROMAGNETIC INTERROGATION OF MEMS RESONATORS**

M. Baù, V. Ferrari, D. Marioli, and E. Tonoli  
*University of Brescia, ITALY*

- B2P-M11 ASSESSING MICROMECHANICAL SENSOR CHARACTERISTICS VIA OPTICAL AND ELECTRICAL METROLOGY**  
G. Langfelder<sup>1</sup>, A. Tocchio<sup>1</sup>, M.J. Thompson<sup>2</sup>, G. Jaramillo<sup>2</sup>, and D.A. Horsley<sup>2</sup>  
<sup>1</sup>Politecnico di Milano, ITALY and <sup>2</sup>University of California, Davis, USA
- B2P-M12 SILICON MULTI-STAGE CURRENT-MODE PIEZORESISTIVE PRESSURE SENSOR**  
G. de Oliveira Coraucci and F. Fruett  
University of Campinas, BRAZIL
- B2P-M13 RESONANCE FREQUENCY TUNING METHOD USING CNT WIRE SYNTHESIS**  
J. Sung, J. Kim, T. An, S. Seok, J. Heo, and G. Lim  
Pohang University of Science and Technology (POSTECH), SOUTH KOREA
- B2P-M15 A SURFACE-MICROMACHINED MEMS ACOUSTIC SENSOR WITH 0.8 UM CMOS IMPEDANCE TRANSDUCER**  
J. Lee, C.H. Je, W.S. Yang, Y.S. Yang, and J. Kim  
Electronics and Telecommunications Research Institute (ETRI), SOUTH KOREA
- B2P-M15 SUB-PICOGRAM RESOLUTION MASS SENSING IN A LIQUID ENVIRONMENT USING LOW-LOSS QUARTZ CRYSTAL MICROBALANCE**  
C.R. Kirkendall, and J.W. Kwon  
University of Missouri, Columbia, USA
- B2P-M16 HIGH-PERFORMANCE CAPACITIVE MICROACCELEROMETER USING LARGE PROOF-MASS AND HIGH-AMPLITUDE SENSE VOLTAGE**  
M. Yoo and K.-H. Han  
Inje University, SOUTH KOREA
- B2P-M17 A NOVEL 3D CMOS MICRO-FLUXGATE MAGNETIC SENSOR FOR LOW MAGNETIC FIELD DETECTION**  
W.-S. Huang<sup>1</sup>, J.-T. Jeng<sup>2</sup>, and C.-C. Lu<sup>1</sup>  
<sup>1</sup>National Taipei University of Technology, TAIWAN and  
<sup>2</sup>National Kaohsiung University of Applied Sciences, TAIWAN
- B2P-M18 COMPACT FLUXGATE SENSOR WITH A VECTOR COMPENSATION OF A MEASURED MAGNETIC FIELD**  
V. Petrucha and P. Kaspar  
Czech Technical University in Prague, CZECH REP.
- B2P-M19 METHOD FOR SENSITIVITY IMPROVEMENT AND OPTIMAL DESIGN OF A PIEZORESISTIVE PRESSURE SENSOR**  
W. Fang, H.-S. Hsieh, H.-C. Chang, C.-F. Hu, and C.-P. Hsu  
National Tsing Hua University, TAIWAN
- B2P-M20 SURFACE-SHAPE CAPTURE WITH BOUNDARY ELECTRODES**  
A.G. Kirk<sup>1</sup>, C.C. Ho<sup>1</sup>, and D. Garmire<sup>2</sup>  
<sup>1</sup>University of California, Berkeley, USA and <sup>2</sup>University of Hawaii, Manoa, USA
- B2P-M21 HAIR-LIKE AIRFLOW SENSING WITH PIEZOELECTRIC VIBRATING DIAPHRAGM**  
X.M. Jing<sup>1</sup>, J.M. Miao<sup>1</sup>, T. Xu<sup>1</sup>, and L. Norford<sup>2</sup>  
<sup>1</sup>Nanyang Technological University, SINGAPORE and <sup>2</sup>Massachusetts Institute of Technology, USA



## POSTER SESSION W7 - Sensor Networks

- B2P-N1**     **ADAPTIVE SWARM INTELLIGENCE ROUTING ALGORITHMS FOR WSN IN A CHANGING ENVIRONMENT**  
D. Bruneo<sup>1</sup>, M. Scarpa<sup>1</sup>, A. Bobbio<sup>2</sup>, D. Cerotti<sup>2</sup>, and M. Gribaudo<sup>3</sup>  
*<sup>1</sup>Università di Messina, ITALY, <sup>2</sup>Università del Piemonte Orientale, ITALY, and <sup>3</sup>Politecnico di Milano, ITALY*
- B2P-N2**     **SENSOR AUTHENTICATION SCHEME FOR CLUSTERING ROUTING PROTOCOLS IN WIRELESS SENSOR NETWORKS**  
S. Lee and K. Kim  
*Gwangju Institute of Science and Technology (GIST), SOUTH KOREA*
- B2P-N3**     **ENERGY EFFICIENCY AND PACKET ERROR RATE IN WIRELESS SENSOR NETWORKS WITH COOPERATIVE RELAY**  
L. Shi and A.O. Fapojuwo  
*University of Calgary, CANADA*
- B2P-N4**     **DEPENDABILITY EVALUATION OF WIRELESS SENSOR NETWORKS: REDUNDANCY AND TOPOLOGICAL ASPECTS**  
D. Bruneo, A. Puliafito, and M. Scarpa  
*Università di Messina, ITALY*
- B2P-N5**     **MOBILE TARGETS REGION-OF-INTEREST VIA DISTRIBUTED PYROELECTRIC SENSOR NETWORK: TOWARDS A ROBUST, REAL-TIME CONTEXT REASONING**  
F. Hu, Q. Sun and Q. Hao  
*University of Alabama, USA*
- B2P-N6**     **AN OCEAN OBSERVATORY SENSOR NETWORK APPLICATION**  
R. Herlien<sup>1</sup>, T. O'Reilly<sup>1</sup>, K. Headley<sup>1</sup>, D.R. Edgington<sup>1</sup>, S. Tilak<sup>2</sup>, T. Fountain<sup>2</sup>, and P. Shin<sup>2</sup>  
*<sup>1</sup>Monterey Bay Aquarium Research Institute, USA and <sup>2</sup>University of California, San Diego, USA*
- B2P-N7**     **ENERGY-EFFICIENT MODEL INFERENCE IN WIRELESS SENSING: ASYMMETRIC DATA PROCESSING**  
P.G. Flikkema  
*Northern Arizona University, USA*
- B2P-N8**     **A PROPOSAL OF DISASTER INFORMATION SYSTEM BASED ON THE INTERNET TECHNOLOGIES**  
K. Hiroi, M. Yamanouchi, and H. Sunahara  
*Keio University, JAPAN*
- B2P-N9**     **SMART SPATIALLY-AWARE SENSING AND ACTUATION SYSTEM**  
J.A. Baloch and B.S. Hoyle  
*University of Leeds, UK*

## POSTER SESSION W8 - Applications

- B2P-P1**     **A SYSTEM TO SENSE NEAR-SURFACE ATMOSPHERIC GASES OF POSSIBLE BIOLOGICAL ORIGIN ON MARS**  
E.W. Wilson<sup>2</sup>, J. Tolson<sup>1</sup>, C. Sheesley<sup>1</sup>, E. Tunstel<sup>3</sup>, S. Mohammed<sup>1</sup>, S. Mahdi<sup>1</sup>, I. Mohammad<sup>1</sup>  
*<sup>1</sup>University of Arkansas, USA, <sup>2</sup>Harding University, USA, <sup>3</sup>Johns Hopkins University, USA*

- B2P-P2 PULSE SPECTROSCOPY SYSTEM FOR NON-INVASIVE REAL-TIME MONITORING OF THE HEART BEAT VOLUME**  
S. Andruschenko<sup>1</sup>, U. Timm<sup>2</sup>, S. Koball<sup>1</sup>, M. Hinz<sup>1</sup>, J. Kraitl<sup>1</sup>, E. Lewis<sup>2</sup>, and H. Ewald<sup>1</sup>  
<sup>1</sup>University of Rostock, GERMANY and <sup>2</sup>University of Limerick, IRELAND
- B2P-P3 CHARACTERIZATION AND OPTIMIZATION OF A NOVEL ELECTROMAGNETIC TRANSDUCTION TECHNIQUE FOR ROTATIONAL ENERGY HARVESTING**  
M. Fralick, B. Dick, H. Jazo, T. Russin, and R. Waters  
*Space and Naval Warfare Systems Center Pacific, USA*
- B2P-P4 HIGHLY CATALYTIC MACROPOROUS Au-/nPts HYBRID ELECTRODE FOR NONENZYMATIC GLUCOSE BIOFUEL CELL APPLICATIONS**  
Y.J. Lee and J.Y. Park  
*Kwangwoon University, SOUTH KOREA*
- B2P-P5 POSITION TRACKING SYSTEM FOR COMMODITIES IN AN INDOOR ENVIRONMENT**  
K. Murakami<sup>1</sup>, K. Matsu<sup>1</sup>, T. Hasegawa<sup>1</sup>, Y. Nohara<sup>1</sup>, B.W. Ahn<sup>2</sup>, and R. Kurazume<sup>1</sup>  
<sup>1</sup>Kyushu University, JAPAN and <sup>2</sup>Mokpo Maritime University, SOUTH KOREA
- B2P-P6 COMPUTATIONAL DESIGN OF QUARTZ CRYSTAL NANO BALANCE FOR UNIFORM SENSITIVITY DISTRIBUTION**  
R. Singh<sup>1</sup>, S.K.R.S. Sankaranarayanan<sup>2</sup> and V. Bhethanabotla<sup>1</sup>  
<sup>1</sup>University South Florida, USA and <sup>2</sup>Argonne National Laboratory, USA
- B2P-P7 ADAPTIVE TUNABLE LASER SPECTROMETER FOR SPACE APPLICATIONS**  
G. Flesch and D. Keymeulen  
*California Institute of Technology, USA*
- B2P-P8 DEVELOPMENT OF AN OPTICAL SURFACE CHARACTERIZATION SENSOR FOR SIMULTANEOUSLY MEASURING BOTH 3-D SURFACE TEXTURE AND MECHANICAL PROPERTIES**  
Y. Shen<sup>1</sup>, Y. Wang<sup>2</sup>, and J. Zaklit<sup>1</sup>  
<sup>1</sup>University of Nevada, Reno, USA and <sup>2</sup>Shanghai Jiaotong University, CHINA
- B2P-P9 DESIGN AND FABRICATION OF MEMS TEST SOCKET FOR BGA IC PACKAGES**  
S. Kim<sup>1</sup>, D. Kong<sup>1</sup>, C. Cho<sup>1</sup>, J. Nam<sup>2</sup>, B. Kim<sup>3</sup>, and J. Lee<sup>1</sup>  
<sup>1</sup>Kyungpook National University, SOUTH KOREA, <sup>2</sup>CoreMEMS Inc., USA, and <sup>3</sup>Catholic University of Daegu, SOUTH KOREA
- B2P-P10 A SMART FOREST-FIRE EARLY DETECTION SENSORY SYSTEM: ANOTHER APPROACH OF UTILIZING WIRELESS SENSOR AND NEURAL NETWORKS**  
H. Soliman, K. Sudan, and A. Mishra  
*New Mexico Institute of Mining and Technology, USA*
- B2P-P11 A BROADBAND VIBRATION ENERGY HARVESTER USING MAGNETOELECTRIC TRANSDUCER**  
J. Yang, Y. Wen, P. Li, X. Dai, and M. Li  
*Chongqing University, CHINA*
- B2P-P12 ATMOSPHERIC PLASMA JET FROM A MICRO NOZZLE ARRAY AND ITS BIOLOGICAL EFFECTS ON LIVING CELLS FOR CANCER THERAPY**  
K. Kim<sup>1</sup>, J.D. Choi<sup>2</sup>, G. Kim<sup>1</sup>, J.-S. Lee<sup>1</sup>, and S.S. Yang<sup>1</sup>  
<sup>1</sup>Ajou University, SOUTH KOREA and <sup>2</sup>Seoul University, SOUTH KOREA
- B2P-P13 CANTILEVER-TYPE ELECTRODE ARRAY BASED SORTING SYSTEM**  
Y. Kim<sup>1</sup>, J. Lee<sup>1</sup>, S. Park<sup>2</sup>, and B. Kim<sup>1</sup>  
<sup>1</sup>Korea Aerospace University, SOUTH KOREA and <sup>2</sup>Chonnam National University, SOUTH KOREA

- B2P-P14**    **NANOWATT-POWER-LEVEL AUTOMATIC SWITCH CIRCUIT COMBINING CMOS AND PHOTODIODE**  
F. Utsunomiya and T. Douseki  
*Ritsumeikan University, JAPAN*
- B2P-P15**    **WATCH YOUR HEAD: A WEARABLE COLLISION WARNING SENSOR SYSTEM FOR THE BLIND**  
B. Jameson and R. Manduchi  
*University of California, Santa Cruz, USA*
- B2P-P16**    **VISION-BASED DISPLACEMENT SENSOR FOR MONITORING DYNAMIC RESPONSE USING ROBUST OBJECT SEARCH ALGORITHM**  
Y. Fukuda<sup>1</sup>, Y. Narita<sup>2</sup>, S. Kaneko<sup>2</sup>, M. Feng<sup>1</sup>, and T. Tanaka<sup>2</sup>  
*<sup>1</sup>University of California, Irvine, USA and <sup>2</sup>Hokkaido University, JAPAN*
- B2P-P17**    **FAST CELL IMMOBILIZATION BY USING NON-IMMUNOLOGICAL METHOD FOR CELL BASED BIOSENSOR**  
J. Park<sup>1,4</sup>, M. Müller<sup>1</sup>, E. Jang<sup>2</sup>, J. Kim<sup>1</sup>, L.-Y. Hong<sup>3</sup>, D.-P. Kim<sup>3</sup>, H. Seidel<sup>4</sup>, and W.-G. Koh<sup>2</sup>  
*<sup>1</sup>Korea Institute of Science and Technology Europe GmbH, GERMANY, <sup>2</sup>Yonsei University, SOUTH KOREA, <sup>3</sup>Chungnam National University, SOUTH KOREA, and <sup>4</sup>University of Saarland, GERMANY*
- B2P-P18**    **OBJECT CLASSIFICATION FROM AERIAL VISUAL IMAGERY**  
C. Ippolito, and A. Nefian  
*NASA Ames Research Center, USA and Carnegie Mellon University, USA*

12:15 -    **Lunch and Exhibit Inspection**  
13:15

#### **SPECIAL SESSION VI B3L-A Force Sensing Applications**

- 13:15    *Invited*  
**B3L-A1**    **OPTIMIZATION WITH PROCESS LIMITS AND APPLICATION REQUIREMENTS FOR FORCE SENSORS**  
B.L. Pruitt, S.-J. Park, J.C. Doll, and N. Harjee  
*Stanford University, USA*
- 13:45  
**B3L-A3**    **NONLINEAR PIEZORESISTANCE OF SILICON**  
B. Lemke<sup>1</sup>, M.E. Schmidt<sup>1</sup>, J. Gutmann<sup>1</sup>, P. Gieschke<sup>1</sup>, P. Alpuim<sup>2</sup>, J. Gaspar<sup>1</sup>, and O. Paul<sup>1</sup>  
*<sup>1</sup>University of Freiburg - IMTEK, GERMANY and <sup>2</sup>University of Minho, PORTUGAL*
- 14:00  
**B3L-A4**    **FABRICATION OF POLYMER CANTILEVER INTEGRATED FULL-BRIDGE AS A PIEZORESISTIVE SENSOR**  
J.H. Ahn and D.-W. Lee  
*Chonnam National University, SOUTH KOREA*
- 14:15  
**B3L-A5**    **PIEZORESISTIVE RESONANT CANTILEVER SELF-ASSEMBLED WITH SPECIFIC-GROUP-MODIFIED CNTs FOR DETECTION OF TRACE-LEVEL VOC VAPORS**  
P. Xu, H. Yu, and X. Li  
*Chinese Academy of Science, CHINA*

14:30

**B3L-A6 COAXIAL TIP PIEZORESISTIVE SCANNING PROBES WITH SUB-NANOMETER VERTICAL DISPLACEMENT RESOLUTION**

N. Harjee, A. Haemmerli, D. Goldhaber-Gordon, and B.L. Pruitt  
*Stanford University, USA*

**SESSION B3L-B Bio Sensing Systems and Applications**

13:15

**B3L-B1 MULTI-POINT ATP SENSING FOR RAPID PRECISE FISH FRESHNESS CHECK**

D. Itoh<sup>1</sup>, T. Nishi<sup>2</sup>, S. Murata<sup>3</sup>, and H. Suzuki<sup>1</sup>  
<sup>1</sup>*University of Tsukuba, JAPAN, <sup>2</sup>Fujidenolo Co., Ltd., JAPAN, and*  
<sup>3</sup>*National Research Institute of Fisheries Science, JAPAN*

13:30

**B3L-B2 DIGITAL MICROFLUIDIC CHIP FOR RAPID PORTABLE DETECTION OF MERCURY (II)**

X. Liu, A. Gao, T. Li, Q. Yang, L. Wang, C. Fan, P. Zhou, and Y. Wang  
*Chinese Academy of Science, CHINA*

13:45

**B3L-B3 WIRELESS TRANSMISSION OF SENSOR SIGNALS FOR PHONOCARDIOLOGY APPLICATIONS**

A. Sa-Ngasoongsong and S.T.S. Bukkapatnam  
*Oklahoma State University, USA*

14:00

**B3L-B4 CYLINDRICAL MULTIPHASE INTERFACES IN MICROFLUIDIC CHANNELS FOR LAB-ON-A-CHIP**

D. Cheng and H. Jiang  
*University of Wisconsin, USA*

14:15

**B3L-B5 NOVEL PDMS LEAKY WAVEGUIDE WITH SELF-ASSEMBLED GOLD NANOPARTICLES FOR ssDNA DETECTION**

C.-H. Lin<sup>1</sup>, Y.-C. Chen<sup>1</sup>, C.-H. Tsai<sup>2</sup>, and W.-L. Tseng<sup>1</sup>  
<sup>1</sup>*National Sun Yat-sen University, TAIWAN and <sup>2</sup>National Ping-Tung University, TAIWAN*

14:30

**B3L-B6 NOVEL FLOW CYTOMETRER UTILIZING WAVELENGTH-RESOLVED DETECTION UNDER A DIASCOPIIC ILLUMINATION CONFIGURATION**

S.-W. Lin<sup>1</sup>, C.-H. Chang<sup>1</sup>, C.-Y. Lee<sup>2</sup>, L.-M. Fu<sup>2</sup>, and C.-H. Lin<sup>3</sup>  
<sup>1</sup>*National Cheng Kung University, TAIWAN, <sup>2</sup>National Pingtung University of Science and Technology, TAIWAN, and <sup>3</sup>National Sun Yat-sen University, TAIWAN*

**SESSION B3L-C Resonators**

13:15

**B3L-C1 A MICROMECHANICAL RESONATOR TO REACH THE QUANTUM REGIME**

M. Bahriz<sup>1</sup>, O. Ducloux<sup>1</sup>, S. Masson<sup>1</sup>, D. Janiaud<sup>1</sup>, O. Le Traon<sup>1</sup>, A. Kuhn<sup>2</sup>, A. Heidmann<sup>2</sup>, C. Molinelli<sup>2</sup>, T. Briant<sup>2</sup>, P.-F. Cohadon<sup>2</sup>, C. Michel<sup>3</sup>, L. Pinard<sup>3</sup>, and R. Flaminio<sup>3</sup>  
<sup>1</sup>*ONERA, FRANCE, <sup>2</sup>University Paris et M. Curie, FRANCE, and <sup>3</sup>CNRS, FRANCE*

13:30

**B3L-C2 GEOMETRICAL OPTIMIZATION OF RESONANT CANTILEVERS VIBRATING IN IN-PLANE FLEXURAL MODES**

L.A. Beardslee<sup>1</sup>, A.M. Addous<sup>1</sup>, K.S. Demirci<sup>1</sup>, S.M. Heinrich<sup>2</sup>, F. Josse<sup>2</sup>, and O. Brand<sup>1</sup>  
<sup>1</sup>Georgia Institute of Technology, USA and <sup>2</sup>Marquette University, USA

13:45

**B3L-C3 DETECTION AND MASS MEASUREMENT OF INDIVIDUAL AIR-BORNE PARTICLES USING HIGH FREQUENCY MICROMECHANICAL RESONATORS**

A. Hajjam, J.C. Wilson, A. Rahafrouz, and S. Pourkamali  
University of Denver, USA

14:00

**B3L-C4 DYNAMICS OF IMMERSSED CLAMPED-CLAMPED MICRORESONATORS**

W.J. Venstra, H.J.R. Westra, and H.S.J. van der Zant  
Delft University of Technology, THE NETHERLANDS

14:15

**B3L-C5 GaN-BASED LAMB-WAVE MASS-SENSORS ON SILICON SUBSTRATES**

C.M. Lee, K.M. Wong, P. Chen and K.M. Lau  
Hong Kong University of Science and Technology, HONG KONG

14:30

**B3L-C6 PULSE ACTUATION-READOUT SCHEME FOR BULK DISK RESONATOR BASED MASS SENSOR**

A. Cagliani, M. Tang, and Z.J. Davis  
Technical University of Denmark, DENMARK

**SESSION B3L-D Sensor Network Algorithms**

13:15

**B3L-D1 2D COMMUNICATION SENSOR NETWORKS USING SINGLE FREQUENCY FOR CONCURRENT POWER SUPPLY AND DATA TRANSMISSION**

T. Oota<sup>1</sup>, A.-O. Lim<sup>2</sup>, K. Hattori<sup>3</sup>, Y. Kado<sup>1</sup>, and B. Zhang<sup>1</sup>  
<sup>1</sup>National Institute of Information Communications Technology, JAPAN and <sup>2</sup>Japan Advanced Institute Science Technology (JAIST), JAPAN, <sup>3</sup>University of Electro-Communications, JAPAN

13:30

**B3L-D2 CLOCK SYNCHRONIZATION SIMULATION FOR WIRELESS SENSOR NETWORKS**

F. Ring, G. Gaderer, A. Nagy, and P. Loschmidt  
Austrian Academy of Sciences, AUSTRIA

13:45

**B3L-D3 GENERALIZED VERNIER EFFECT AND ITS APPLICATION TO PRECISE RF TIME-OF-FLIGHT MEASUREMENT FOR WIRELESS SENSOR NETWORKS**

S.-I. Ko, G. Aikawa, J.-Y. Takayama, and S. Ohyama  
Tokyo Institute of Technology, JAPAN

14:00

**B3L-D4 SENSOR NODE LOCALIZATION USING WEIGHTED AND ITERATIVE MAXIMUM LIKELIHOOD**

Y. Endo and T. Miyazaki  
University of Aizu, JAPAN

14:15

**B3L-D5 RF-BASED CONNECTIVITY MANAGEMENT OF AERIAL SENSOR NETWORKS FOR 3D COVERAGE OPTIMIZATION**

K. Daniel, S. Rohde, N. Goddemeier, and C. Wietfeld  
*Technische Universität Dortmund, GERMANY*

14:30

**B3L-D6 THE SPANISH INQUISITION PROTOCOL - MODEL-BASED TRANSMISSION REDUCTION FOR WIRELESS SENSOR NETWORKS**

D. Goldsmith, and J. Brusey  
*Coventry University, UK*

**SESSION B3L-E Optical Sensing Systems II**

13:15

**B3L-E1 CHIP-SCALE WAVELENGTH-DIVISION MULTIPLEXED INTEGRATED SENSOR ARRAYS**

M.W. Pruessner, T.H. Stievater, W.S. Rabinovich, R. Bass, and J.B. Boos  
*Naval Research Laboratory, USA*

13:30

**B3L-E2 HIGH-THROUGHPUT MICROPATTERNING OF OPTICAL OXYGEN SENSORS**

H. Zhu, Y.Q. Tian, S. Bhushan, F. Su, and D.R. Meldrum  
*Arizona State University, USA*

13:45

**B3L-E3 SIMULTANEOUS, SINGLE-DETECTOR FLUORESCENCE DETECTION OF MULTIPLE FLUORESCENT DYES**

V.D. Jangampet<sup>1</sup>, R. Dixit<sup>1</sup>, I. Papautsky<sup>2</sup>, and D. Klotzkin<sup>1</sup>  
*<sup>1</sup>Binghamton University, USA and <sup>2</sup>University of Cincinnati, USA*

14:00

**B3L-E4 DUALFUNCTIONAL MEMS OPTICAL DEVICE WITH COMPOUND ELECTROSTATIC ACTUATORS FOR COMPACT AND FLEXIBLE PHOTONIC NETWORKS**

Q. Chen, W. Wu, H. Mao, B. Du, L. Li, and Y. Hao  
*Peking University, CHINA*

14:15

**B3L-E5 LABEL-FREE BIOSENSING USING A NANOSTRUCTURED FABRY-PEROT INTERFEROMETER**

T. Zhang, S. Karandikar, Z. Gong, R. Giornor, L. Que  
*Louisiana Technical University, USA*

14:30

**B3L-E6 OPTICAL SENSORS FOR A SYNERGISTICALLY CONTROLLED OSTEOTOMY SYSTEM**

A. Korff, A. Follmann, T. Fürtjes, T. Jalowy, and K. Radermacher  
*RWTH Aachen University, GERMANY*

14:45 - **Break and Exhibit Inspection**

15:15

## **SPECIAL SESSION VII B4L-A Piezoresistive Materials and Fundamentals**

15:15 **Invited**

### **B4L-A1 CMOS-INTEGRATED STRESS SENSOR SYSTEMS**

**P. Ruther**, M. Baumann, P. Gieschke, M. Herrmann, K. Seidl, and O. Paul  
*University of Freiburg - IMTEK, GERMANY*

15:45

### **B4L-A3 A ROBUST AND SENSITIVE SILICON TACTILE IMAGER WITH INDIVIDUALLY FORMED SU-8 PROTECTIVE LAYERS ON PIEZORESISTOR PIXELS**

H. Takao<sup>1</sup>, H. Okada<sup>2</sup>, M. Ishida<sup>2</sup>, K. Terao<sup>1</sup>, T. Suzuki<sup>1</sup>, and F. Oohira<sup>1</sup>  
<sup>1</sup>*Kagawa University, JAPAN* and <sup>2</sup>*Toyohashi University of Technology, JAPAN*

16:00

### **B4L-A4 CHARACTERIZATION OF DIESEL INJECTORS USING PIEZORESISTIVE SENSORS**

E. Peiner and L. Doering  
*Technische Universität Braunschweig, GERMANY*

16:15

### **B4L-A5 SKIN-TYPE TACTILE SENSOR USING STANDING PIEZORESISTIVE CANTILEVER FOR MICRO STRUCTURE DETECTION**

K. Noda, K. Matsumoto, and I. Shimoyama  
*University of Tokyo, JAPAN*

16:30

### **B4L-A6 A PIEZORESISTIVE SENSOR FOR PRESSURE MONITORING AT INKJET NOZZLE**

J. Wei<sup>1</sup>, T.C. Duc<sup>2</sup>, and P.M. Sarro<sup>1</sup>  
<sup>1</sup>*Delft University of Technology, THE NETHERLANDS* and <sup>2</sup>*Vietnam National University, VIETNAM*

## **SESSION B4L-B Sensing of Cells**

15:15

### **B4L-B1 A DEP-ASSISTED SINGLE-CELL ELECTROPORATION CHIP WITH LOW OPERATION VOLTAGE**

J. Wang, S.-C. Yang, C. Wang, Q. Wu, and Z. Wang  
*Tsinghua University, CHINA*

15:30

### **B4L-B2 A MEMS COULTER COUNTER FOR CELL MONITORING AND DETECTION**

Y. Wu, J.D. Benson, J.K. Critser, and M. Almasri  
*University of Missouri, Columbia, UNITED STATES*

15:45

### **B4L-B3 SENSING OF ANTIBODIES SECRETED BY MICROFLUIDICALLY TRAPPED CELLS *via* EXTRAORDINARY OPTICAL TRANSMISSION THROUGH NANO HOLE ARRAYS**

S.F. Romanuik<sup>1</sup>, S.M. Grist<sup>1</sup>, B.L. Gray<sup>1</sup>, D. Hohertz<sup>1</sup>, K.L. Kavanagh<sup>1</sup>, N. Gulzar<sup>1</sup>, J.K. Scott<sup>1</sup>, A.G. Brolo<sup>2</sup>, R. Gordon<sup>2</sup>, R. Nirwan<sup>2</sup>, and C. Hui<sup>2</sup>  
<sup>1</sup>*Simon Fraser University, CANADA* and <sup>2</sup>*University of Victoria, CANADA*

16:00

**B4L-B4 IMPEDANCE MEASUREMENT OF NORMAL AND CANCEROUS HUMAN BREAST CELLS USING A MICROFLUIDIC TUNNEL**

G. Kang, J.-H. Lee, S.K. Yoo, S. Yang, and S.-K. Lee  
*Gwangju Institute of Science and Technology (GIST), SOUTH KOREA*

16:15

**B4L-B5 A NOVEL MULTIPARAMETRIC MICROPHYSIOMETRY SYSTEM FOR DYNAMIC CELL CULTURE MONITORING**

A. Weltin<sup>1</sup>, J. Kieninger<sup>1</sup>, I. Moser<sup>2</sup>, G. Jobst<sup>2</sup>, M. Wego<sup>3</sup>, R. Ehret<sup>3</sup>, and G. Urban<sup>1</sup>  
<sup>1</sup>*University of Freiburg - IMTEK, GERMANY*, <sup>2</sup>*Jobst Technologies GmbH, GERMANY*, and <sup>3</sup>*Bionas GmbH, GERMANY*

16:30

**B4L-B6 A SENSITIVE, RAPID AND SPECIFIC TECHNIQUE FOR THE DETECTION OF ANTIGEN-SPECIFIC CELLS ON SHEAR HORIZONTAL SURFACE ACOUSTIC WAVE (SH-SAW) SENSORS**

H.C. Hao, and D.J. Yao  
*Yao Laboratories, TAIWAN and National Tsing Hua University, TAIWAN*

**SESSION B4L-C Resonant Chemical Sensors**

15:15

**B4L-C1 HIGHLY SENSITIVE DETECTION OF DMMP USING A CMUT CHEMICAL SENSOR**

H.J. Lee, K.K. Park, M. Kupnik, O. Oralkan, and B.T. Khuri-Yakub  
*Stanford University, USA*

15:30

**B4L-C2 ORGANOPHOSPHATE SENSING WITH VIC-DIOXIMES USING QCM SENSORS**

Z. Sen<sup>1</sup>, I. Gürol<sup>1</sup>, G. Gümüş<sup>1</sup>, V. Ahsen<sup>2</sup>, Z.Z. Öztürk<sup>2</sup>, E. Musluoglu<sup>1</sup>, and M. Harbeck<sup>1</sup>  
<sup>1</sup>*TÜBITAK Marmara Research Center, TURKEY* and <sup>2</sup>*Gebze Institute of Technology, TURKEY*

15:45

**B4L-C3 DUAL-MODE PIEZO-ON-SILICON RESONANT TEMPERATURE AND HUMIDITY SENSOR FOR PORTABLE AIR QUALITY MONITORING SYSTEMS**

J.L. Fu and F. Ayazi  
*Georgia Institute of Technology, USA*

16:00

**B4L-C4 GUIDED SH-SAW CHARACTERIZATION OF ELASTICITY VARIATIONS OF MESOPOROUS TiO<sub>2</sub> SENSITIVE FILMS DURING HUMIDITY SORPTION**

A. Tetelin<sup>1</sup>, L. Blanc<sup>1</sup>, G. Tortissier<sup>1</sup>, C. Boissière<sup>2</sup>, C. Dejous<sup>1</sup>, and D. Rebière<sup>1</sup>  
<sup>1</sup>*Université de Bordeaux, FRANCE* and <sup>2</sup>*Université Pierre et Marie Curie, FRANCE*

16:15

**B4L-C5 APPLICATION OF ULTRASONIC TO A HYDROGEN SENSOR**

M. Sonoyama<sup>1</sup>, H. Fujita<sup>2</sup>, and Y. Kato<sup>1</sup>  
<sup>1</sup>*Kyushu University, JAPAN* and <sup>2</sup>*Oriimec Corporation, JAPAN*

16:30

**B4L-C6 A NOVEL Pt-Ti-O GATE Si-METAL-INSULATOR-SEMICONDUCTOR FIELD-EFFECT TRANSISTOR HYDROGEN GAS SENSOR**

T. Usagawa and Y. Kikuchi  
*Hitachi, Ltd., JAPAN*



## SPECIAL SESSION VIII B4L-D MEMS Exchange

15:15

- B4L-D1 MEMS APPROACH FOR MAKING A LOW COST, HIGH SENSITIVITY MAGNETIC SENSOR**  
A.S. Edelstein<sup>1</sup>, G.A. Fischer<sup>1</sup>, W. Egelhoff, Jr.<sup>1</sup>, and J.E. Burnette<sup>1</sup>  
<sup>1</sup>*US Army Research Laboratory, USA and*  
<sup>2</sup>*National Institute of Standards and Technology (NIST), USA*

15:30

- B4L-D2 DEVELOPMENT OF A MEMS-BASED THERMAL STABILIZATION TECHNOLOGY**  
S. Davis  
*Forced Physics, LLC, USA*

15:45

- B4L-D3 MEMS TECHNIQUES FOR THE PARALLEL FABRICATION OF CHIP SCALE ATOMIC DEVICES**  
M.A. Perez, S. Knappe, and J. Kitching  
*National Institute of Standards and Technology (NIST), USA*

16:00

- B4L-D4 MEMS MICROHOTPLATE TEMPERATURE SENSOR BIST: IMPORTANCE AND APPLICATIONS**  
M.Y. Afridi and J. Geist  
*National Institute of Standards and Technology (NIST), USA*

16:15

- B4L-D5 THERMAL IR IMAGER UTILIZING A THERMAL-TO-VISIBLE TRANSDUCER**  
A. Flusberg<sup>1</sup>, S. Swartz<sup>1</sup>, M. Huff<sup>2</sup>, M. Pedersen<sup>2</sup>, and P. Suna<sup>2</sup>  
<sup>1</sup>*Science Research Laboratory (SRL), USA and* <sup>2</sup>*CNRI MEMS Exchange, USA*

## SPECIAL SESSION IX B4L-E Sensors Based on Metamaterials

15:15

- Invited*  
**B4L-E1 PLASMONIC METAMATERIALS FOR LABEL-FREE BIOSENSING**  
A.V. Zayats  
*Queen's University, Belfast, UK*

15:45

- B4L-E3 METAMATERIALS IN MICROWAVE SENSING APPLICATIONS**  
M. Puentes, M. Schüßler, A. Penirschke, C. Damm, and R. Jakoby  
*Technische Universität Darmstadt, GERMANY*

16:00

- B4L-E4 NOVEL PLASMONIC SENSOR DESIGN USING PLASMON-INDUCED TRANSPARENCY**  
N. Liu<sup>1</sup>, M. Mesch<sup>1</sup>, T. Weiss<sup>1</sup>, C. Sönnichsen<sup>2</sup>, and H. Giessen<sup>1</sup>  
<sup>1</sup>*Lawrence Berkeley National Laboratory, USA,* <sup>2</sup>*University of Stuttgart, GERMANY,* <sup>3</sup>*Université de Clermont-Ferrand, FRANCE,* and <sup>4</sup>*University of Mainz, GERMANY*

16:15

- B4L-E5 METAMATERIAL-BASED WIRELESS RF-MEMS STRAIN SENSORS**  
R. Melik<sup>1</sup>, E. Unal<sup>1</sup>, N.K. Perkgoz<sup>1</sup>, C. Puttlitz<sup>2</sup>, and H.V. Demir<sup>1</sup>  
<sup>1</sup>*Bilkent University, TURKEY and* <sup>2</sup>*Colorado State University, USA*

16:30

**B4L-E6 OPTICAL HYDROGEN SENSING WITH METALLIC PHOTONIC CRYSTALS AND PLASMONIC METAMATERIALS**

H. Giessen, P. Mai, A. Tittl, N. Liu, C. Grossmann, A. Seidel, R. Orzekowsky, and T. Meyrath  
*University of Stuttgart, GERMANY*

18:00 -  
21:00

**Conference Luau Banquet – Student Paper and Best Poster Awards**

## Thursday, November 4, 2010

08:00 **KEYNOTE PRESENTATION 3**

**C1K-A1 TO INTEGRATE OR NOT TO INTEGRATE**

P. French and PM. Sarro  
*Delft University of Technology, THE NETHERLANDS*

### SPECIAL SESSION X C1L-A Piezoelectric MEMS Sensors

08:45 *Invited*

**C1L-A1 PIEZOELECTRIC THIN FILMS FOR A HIGH FREQUENCY ULTRASOUND TRANSDUCER WITH INTEGRATED ELECTRONICS**

F. Griggio, H. Kim, I.S. Kim, T.N. Jackson, K. Choi, R.L. Tutwiler, and S. Trolier-McKinstry  
*Pennsylvania State University, USA*

09:15

**C1L-A3 TWO-AXIS SCANNING MICROMIRROR BASED ON A TILT-AND-LATERAL SHIFT-FREE PIEZOELECTRIC ACTUATOR**

W. Liu<sup>1</sup>, Y. Zhu<sup>1</sup>, J.P. Li<sup>1</sup>, A. Virendrapal<sup>1</sup>, Y. Tang<sup>2</sup>, B.P. Wang<sup>2</sup>, and H. Xie<sup>1</sup>  
*<sup>1</sup>University of Florida, USA and <sup>2</sup>Southeast University, CHINA*

09:30

**C1L-A4 INTEGRATED PIEZOMEMS ACTUATORS AND SENSORS**

R.G. Polcawich<sup>1</sup>, S. Bedair<sup>1</sup>, J.S. Pulskamp<sup>1</sup>, G. Smith<sup>1</sup>, R. Kaul<sup>1</sup>, C. Kroninger<sup>1</sup>, E. Wetzel<sup>1</sup>, H. Chandralim<sup>2</sup>, and S.A. Bhave<sup>2</sup>  
*<sup>1</sup>US Army Research Laboratory, USA and <sup>2</sup>Cornell University, USA*

09:45

**C1L-A5 MICROMACHINED QUARTZ RESONATOR-BASED HIGH PERFORMANCE THERMAL SENSORS**

M.B. Pisani, K. Ren, P. Kao, and S. Tadigadapa  
*Pennsylvania State University, USA*

10:00

**C1L-A6 NANOSCALED PIEZOELECTRIC ALUMINUM NITRIDE CONTOUR-MODE RESONANT SENSORS**

G. Piazza, M. Rinaldi, and C. Zuniga  
*University of Pennsylvania, USA*

## SPECIAL SESSION XI C1L-B Biomimetics: Learning from Nature

08:45 *Invited*

### C1L-B1 THE SMALL AND SMART SENSORS OF INSECT AUDITORY SYSTEMS

D. Robert<sup>1</sup>, N. Mhatre<sup>1</sup>, and T. McDonagh<sup>2</sup>

<sup>1</sup>University of Bristol, UK and <sup>2</sup>Rockefeller University, USA

09:15

### C1L-B3 BIOMIMETIC LATERAL-LINE SYSTEM FOR UNDERWATER VEHICLES

J.-M.P. Franosch, S. Sosnowski, N. Kuhenuri Chami, K. Kühnlenz, S. Hirche, and J.L. van Hemmen  
Technische Universität München, GERMANY

09:30

### C1L-B4 LEARNING FROM CRICKETS: ARTIFICIAL HAIR-SENSOR ARRAY DEVELOPMENTS

G.J.M. Krijnen, T. Lammerink, and R. Wiegerink  
University of Twente, THE NETHERLANDS

09:45

### C1L-B5 A CAPACITANCE-BASED WHISKER-LIKE ARTIFICIAL SENSOR FOR FLUID MOTION SENSING

J.B. Stocking<sup>1</sup>, W.C. Eberhardt<sup>1</sup>, Y.A. Shakhsheer<sup>1</sup>, J.R. Paulus<sup>2</sup>, M. Appleby<sup>2</sup>, and B.H. Calhoun<sup>1</sup>  
<sup>1</sup>University of Virginia, USA and <sup>2</sup>Mikro Systems Inc., USA

10:00

### C1L-B6 PRINCIPLES AND APPLICATIONS OF ACTIVE TACTILE SENSING STRATEGIES IN THE RAT VIBRISAL SYSTEM

R.B. Towal and M.J.Z. Hartmann  
Northwestern University, USA

## SESSION C1L-C Nanofabrication and Nanosensing

08:45

### C1L-C1 TIP-BASED CHEMICAL VAPOR DEPOSITION OF SILICON

M. Tabib-Azar and W. Yen  
University of Utah, USA

09:00

### C1L-C2 HIGH PRECISION POLYMER DEPOSITION ONTO MICROCANTILEVER SENSORS USING ELECTROHYDRODYNAMIC PRINTING

J.H. Pikul, P. Graf, S. Mishra, K. Barton, Y. Kim, J.A. Rogers, A. Alleyne, P.M. Ferreira, and W.P. King  
University of Illinois, Urbana-Champaign, USA

09:15

### C1L-C3 MICROFABRICATION OF PLASMA NANOTORCH TIPS FOR LOCALIZED ETCHING AND DEPOSITION

Y. Xie, W. Yuan, M. Tabib-Azar, and C.H. Mastrangelo  
University of Utah, USA

09:30

### C1L-C4 A DEVELOPMENT OF AUTOMATED CHEMICAL-SOLUTION-DEPOSITION MACHINE FOR MICRO ACTUATOR WITH MULTILAYERED PZT THICK FILM

Y. Kawai, N. Moriwaki, M. Esashi, and T. Ono  
Tohoku University, JAPAN

10:00

- C1L-C5 ENGINEERING OF BIOMIMETIC HAIR-FLOW SENSOR ARRAYS DEDICATED TO HIGH-RESOLUTION FLOW FIELD MEASUREMENTS**  
A.M.K. Dagamseh, C.M Bruinink, H. Droogendijk, R.J. Wiegerink, T.S.J. Lammerink, and G.J.M. Krijnen  
*University of Twente, THE NETHERLANDS*

### SESSION C1L-D Pressure Sensors

08:45

- C1L-D1 A NOVEL PDMS BASED CAPACITIVE PRESSURE SENSOR**  
X. Riedl<sup>1</sup>, C. Bolzmacher<sup>1</sup>, R. Wagner<sup>1</sup>, K. Bauer<sup>1</sup>, and N. Schwesinger<sup>2</sup>  
<sup>1</sup>EADS Innovation Works, GERMANY and <sup>2</sup>Technical University Munich, GERMANY

09:00

- C1L-D2 PRESSURE SENSORS FOR PRINTED BLAST DOSIMETERS**  
J. Daniel<sup>1</sup>, A.C Arias<sup>1</sup>, T.N. Ng<sup>1</sup>, S. Garner<sup>1</sup>, J. Coleman<sup>2</sup>, J. Liu<sup>2</sup>, and R. Jackson<sup>2</sup>  
<sup>1</sup>Palo Alto Research Center (PARC), USA and <sup>2</sup>Naval Medical Center San Diego, USA

09:15

- C1L-D3 EXCIMER LASER PHOTOABLATION WITH *IN-SITU* MASKING FOR FABRICATION OF STRETCHABLE PRESSURE SENSOR ARRAYS**  
K.L. Lin and K. Jain  
*University of Illinois, Urbana-Champaign, USA*

09:30

- C1L-D4 ZERO OFFSET DRIFT SUPPRESSION IN SiC PRESSURE SENSORS AT 600 °C**  
R.S Okojie<sup>1</sup>, D. Lukco<sup>1</sup>, C. Blaha<sup>1</sup>, V. Nguyen<sup>2</sup>, and E. Savrun<sup>2</sup>  
<sup>1</sup>NASA Glenn Research Center, USA and <sup>2</sup>Sienna Technologies, Inc., USA

09:45

- C1L-D5 SHOCK WAVE PRESSURE SENSORS ON PEN SUBSTRATE**  
N.V. Lakamraju, S.M. Venugopal, D.R. Allee, and S.M. Phillips  
*Arizona State University, USA*

10:00

- C1L-D6 INTRINSIC LOW HYSTERESIS TOUCH MODE CAPACITIVE PRESSURE SENSOR**  
G. Fragiaco, T. Pedersen, O. Hansen, and E.V. Thomsen  
*Technical University of Denmark, DENMARK*

### SESSION C1L-E Optical Biosensing

08:45

- C1L-E1 NONINVASIVE FUNCTIONAL IMAGING OF TISSUE ABNORMALITIES USING OPTICAL COHERENCE TOMOGRAPHY**  
K.V. Larin<sup>1</sup>, M.G. Ghosn<sup>2</sup>, V.V. Tuchin<sup>3</sup>, and J.D. Morrisett<sup>2</sup>  
<sup>1</sup>University of Houston, USA, <sup>2</sup>Baylor College of Medicine, USA, and <sup>3</sup>Saratov State University, RUSSIA

09:00

- C1L-E2 MULTI-COLOR FLUORESCENCE ENHANCEMENT FROM A PHOTONIC CRYSTAL SURFACE**  
A. Pokhriyal<sup>1</sup>, M. Lu<sup>2</sup>, C.S. Huang<sup>1</sup>, S. Schulz<sup>2</sup>, and B.T. Cunningham<sup>1</sup>  
<sup>1</sup>University of Illinois, Urbana-Champaign, USA and <sup>2</sup>SRU Biosystems, USA

09:15

**C1L-E3 A MICROFLUIDIC PLATFORM FOR OPTICAL ABSORBANCE MONITORING OF BACTERIAL BIOFILMS**

M.T. Meyer, V. Roy, W.E. Bentley, and R. Ghodssi  
*University of Maryland, USA*

09:30

**C1L-E4 HIGHLY SENSITIVE SURFACE-ENHANCED RAMAN NANO-PROBING FOR DIRECT PROTEOMIC PROFILING**

Y. Chen<sup>1</sup>, Z. Xu<sup>1</sup>, J.-P. Coppé<sup>2</sup>, and L. Liu<sup>1</sup>  
<sup>1</sup>*University of Illinois, Urbana-Champaign, USA, and* <sup>2</sup>*Lawrence Berkeley National Laboratory, USA*

09:45

**C1L-E5 REDUCTION OF INTERFERENCE BETWEEN pH AND OPTICAL OUTPUT SIGNAL IN A MULTIMODAL BIO-IMAGE SENSOR**

H. Nakazawa, M. Ishida, and K. Sawada  
*Toyohashi University of Technology, JAPAN*

10:00

**C1L-E6 HIGH SENSITIVITY BIOSENSING USING NANO-SLOT NANOLASER**

S. Kita<sup>1</sup>, S. Hachuda<sup>1</sup>, T. Endo<sup>2</sup>, Y. Nishijima<sup>3</sup>, H. Misawa<sup>3</sup>, and T. Baba<sup>1</sup>  
<sup>1</sup>*Yokohamanational University, JAPAN,* <sup>2</sup>*Tokyo Institute of Technology, JAPAN, and* <sup>3</sup>*Hokkaido University, JAPAN*

10:15 **Mini Break**

**SESSION C2L-A Strain Sensors and Structural Monitoring**

10:45

**C2L-A1 SAW SENSOR FOR FASTENER FAILURE DETECTION**

W.C. Wilson<sup>1</sup>, M.D. Rogge<sup>1</sup>, B. Fisher<sup>2</sup>, D.C. Malocha<sup>2</sup>, and G.M. Atkinson<sup>3</sup>  
<sup>1</sup>*NASA Langley Research Center, USA,* <sup>2</sup>*University of Central Florida, USA, and* <sup>3</sup>*Virginia Commonwealth University, USA*

11:00

**C2L-A2 MOEMS ACOUSTIC SENSORS FOR STRUCTURAL HEALTH MONITORING**

Y. Zhang, J. Tsai, G.-P. Li, M.Q. Feng, and M. Bachman  
*University of California, Irvine, USA*

11:15

**C2L-A3 A HIGH RESOLUTION NEUTRON COUNTING SENSORS IN STRAIN MAPPING THROUGH A TRANSMISSION BRAGG EDGE DIFFRACTION**

A.S. Tremsin<sup>1</sup>, J.B. McPhate<sup>1</sup>, W. Kockelmann<sup>2</sup>, A. Steuwer<sup>3</sup>, J.V. Vallerga<sup>1</sup>, O.H.W. Siegmund<sup>1</sup>, and W.B. Feller<sup>4</sup>  
<sup>1</sup>*Univeristy of California, Berkeley, USA,* <sup>2</sup>*Rutherford Appleton Laboratory, UK,* <sup>3</sup>*ESS Scandinavia, SWEDEN, and* <sup>4</sup>*Nova Scientific, USA*

11:30

**C2L-A4 INTEGRATION OF THIN-FILM ZnO STRAIN SENSORS INTO HARD DISK DRIVES**

S. Felix, J. Nie, and R. Horowitz  
*University of California, Berkeley, USA*

11:45

**C2L-A5 SHIMMER: A WIRELESS HARVESTING EMBEDDED SYSTEM FOR ACTIVE ULTRASONIC STRUCTURAL HEALTH MONITORING**

D. Dondi, A. Di Pompeo, C. Tenti, and T. Šimunić Rosing  
*University of California, San Diego, USA*

12:00

**C2L-A6 STIFFNESS READOUT IN MUSCULO-SKELETAL HUMANOID ROBOT BY USING ROTARY POTENTIOMETER**

O. Masahiko, I. Nobuyuki, N. Yato, and I. Masayuki  
*University of Tokyo, JAPAN*

**SPECIAL SESSION XII C2L-B Neuro-Sensors**

10:45

*Invited*

**C2L-B1 NANOTECHNOLOGY BASED POINT-OF-CARE DIAGNOSTICS AND THERAPEUTICS FOR NEUROLOGICAL AND CARDIOVASCULAR DISORDERS**

**V.K. Varadan**

*University of Arkansas and Pennsylvania State University College of Medicine, USA*

11:15

**C2L-B3 INTRA-OPERATIVE CHEMICAL DIAGNOSTICS IN THE BRAIN USING ENZYME-BASED CERAMIC MICROELECTRODE ARRAYS**

G.A. Gerhardt, P. Huettl, F. Pomerleau, G.. Quintero, and J. Burmeister  
*University of Kentucky Medical Center, USA*

11:30

**C2L-B4 DEVELOPMENT OF THREE DIMENSIONAL NEURAL SENSING DEVICE BY STACKING METHOD**

J.-C. Chiou<sup>1,2</sup>, and C.-W. Chang<sup>1</sup>

<sup>1</sup>National Chiao Tung University, TAIWAN and <sup>2</sup>China Medical University, CHINA

11:45

**C2L-B5 AN INTEGRATED FLEXIBLE IMPLANTABLE L-GLUTAMATE SENSOR**

H. Cao, Y.-B. Peng, and J.-C. Chiao  
*University of Texas, Arlington, USA*

12:00

**C2L-B6 SILICON-WAFER BASED ELECTROENZYMATIC GLUTAMATE BIOSENSORS FOR THE NEAR-REAL TIME MONITORING OF GLUTAMATE IN FREELY-BEHAVING RATS**

K.M. Wassum, V.M. Tolosa, T.-C. Tseng, H.G. Monbouquette, and N.T. Maidment  
*University of California, Los Angeles, USA*

**SESSION C2L-C Thermal Sensing**

10:45

**C2L-C1 SIX-FOLD IMPROVEMENT IN NANOTOPOGRAPHY SENSING VIA TEMPERATURE CONTROL OF A HEATED ATOMIC FORCE MICROSCOPE CANTILEVER**

S. Somnath, E.A. Corbin, and W.P. King  
*University of Illinois, Urbana-Champaign, USA*

11:00

**C2L-C2 VANADIUM OXIDE THERMAL MICROPROBES FOR NANOCALORIMETRY**

D. De Bruyker, M.I. Recht, F.E. Torres, A.G. Bell, and R.H. Bruce  
*Palo Alto Research Center (PARC), USA*

11:15

**C2L-C3 RFID TAG ANTENNA BASED TEMPERATURE SENSING USING SHAPE MEMORY POLYMER ACTUATION**

R. Bhattacharyya, C. Di Leo, C. Floerkemeier, S. Sarma, L. Anand  
*Massachusetts Institute of Technology, USA*

11:30

**C2L-C4 A TEMPERATURE SENSOR FROM SELF-ASSEMBLED CARBON NANOTUBE MICROBRIDGES**

M. De Volder<sup>1,2</sup>, D. Reynaerts<sup>2</sup>, C. Van Hoof<sup>1</sup>, S. Tawfick<sup>3</sup>, and A.J. Hart<sup>3</sup>  
<sup>1</sup>IMEC, BELGIUM, <sup>2</sup>Katholieke Universiteit Leuven, BELGIUM, and <sup>3</sup>University of Michigan, USA

11:45

**C2L-C5 ELECTRICAL NOISE CHARACTERISTICS OF A DOPED SILICON MICROCANTILEVER HEATER-THERMOMETER**

E.A. Corbin and W.P. King  
*University of Illinois, Urbana-Champaign, USA*

12:00

**C2L-C6 PERFORMANCE OF A THERMAL MANAGEMENT SYSTEM FOR THERMOPHORESIS BASED SOOT SENSORS - DESIGN, PERFORMANCE AND VERIFICATION**

A. Larsson<sup>1</sup>, O. Storstrom<sup>1</sup>, T.A.T. Seip<sup>1</sup>, M. Hjelstuen<sup>1</sup>, R. Bjorklund<sup>2</sup>, A. Grant<sup>3</sup>, P.E. Fägerman<sup>4</sup>, J. Paaso<sup>5</sup>, A. Lloyd Spetz<sup>2</sup>, P. Jozsa<sup>3</sup>, M.L. Johansson<sup>6</sup>, and L. Hammarlund<sup>7</sup>  
<sup>1</sup>SINTEF ICT, NORWAY, <sup>2</sup>Linköping University, SWEDEN, <sup>3</sup>Volvo Technologies Corp., SWEDEN, <sup>4</sup>Mandalon Technologies AB, SWEDEN, <sup>5</sup>Selmic Oy, FINLAND, <sup>6</sup>Volvo Car Corporation, SWEDEN, and <sup>7</sup>SenSiC, SWEDEN

**SESSION C2L-D IR and Magnetic Sensing**

10:45

**C2L-D1 UNCOOLED IR SENSORS WITH TUNABLE MEMS FABRY-PÉROT FILTERS FOR THE LONG-WAVE INFRARED RANGE**

N. Neumann<sup>1</sup>, M. Ebermann<sup>1</sup>, E. Gittler<sup>2</sup>, M. Meinig<sup>3</sup>, S. Kurth<sup>3</sup>, and K. Hiller<sup>3</sup>  
<sup>1</sup>InfraTec GmbH, GERMANY, <sup>2</sup>Jenoptik LOS GmbH, GERMANY, and <sup>3</sup>Fraunhofer ENAS, GERMANY

11:00

**C2L-D2 COMPARISON OF THE PHOTONIC RESPONSES BETWEEN HORIZONTALLY ALIGNED AND NETWORK CARBON NANOTUBES**

Y. Zhou, T. Li, X. Gao, and Y. Wang  
*Chinese Academy of Science, CHINA*

11:15

**C2L-D3 SWARM ABSOLUTE SCALAR MAGNETOMETER ACCURACY: ANALYSES AND MEASUREMENT RESULTS**

T. Jager<sup>1</sup>, J.-M. Léger<sup>1</sup>, F. Bertrand<sup>1</sup>, I. Fratter<sup>2</sup>, and J.-C. Lalaurie<sup>2</sup>  
<sup>1</sup>CEA-LETI, FRANCE, and <sup>2</sup>Centre National d'Etudes Spatiales, FRANCE

11:30

**C2L-D4 DEVELOPMENT AND SPACE QUALIFICATION OF THE SWARM ABSOLUTE SCALAR MAGNETOMETER**

I. Fratter<sup>1</sup>, J.-M. Léger<sup>2</sup>, F. Bertrand<sup>2</sup>, T. Jager<sup>2</sup>, M. Le Prado<sup>2</sup>, and W. Fourcault<sup>2</sup>  
<sup>1</sup>Centre National d'Etudes Spatiales, FRANCE and <sup>2</sup>CEA-LETI, FRANCE

11:45

**C2L-D5 BACKSCATTER CHANNEL MEASUREMENTS AT 5.8 GHz ACROSS HIGH-VOLTAGE CORONA**

C.R. Valenta<sup>1</sup>, P.A. Graf<sup>1</sup>, M.S. Trotter<sup>1</sup>, G.A. Koo<sup>1</sup>, G.D. Durgin<sup>1</sup>, and B.J. Schafer<sup>2</sup>  
<sup>1</sup>Georgia Institute of Technology, USA and <sup>2</sup>Southern States, LLC, USA

12:00

**C2L-D6 MID-INFRARED THERMOMECHANICAL SENSITIVITY OF MICROCANTILEVERS FOR APPLICATION TO INFRARED SPECTROSCOPY**

B. Kwon, M. Schulmerich, R. Bhargava, and W.P. King  
University of Illinois, Urbana-Champaign, USA

**SESSION C2L-E Acoustic and Optical Sensing Systems**

10:45

**C2L-E1 INTEGRATED MICRO LASER DOPPLER VELOCIMETER WITH 3-D STRUCTURE**

E. Higurashi<sup>1</sup>, T. Suga<sup>1</sup>, and R. Sawada<sup>2</sup>  
<sup>1</sup>University of Tokyo, JAPAN and <sup>2</sup>Kyushu University, JAPAN

11:00

**C2L-E2 TOF RANGE FINDING SENSOR IN 90nm CMOS CAPABLE OF SUPPRESSING 180 klx AMBIENT LIGHT**

M. Davidovic, G. Zach, K. Schneider-Hornstein, and H. Zimmermann  
Vienna University of Technology, AUSTRIA

11:15

**C2L-E3 AN ULTRASONIC RANGEFINDER BASED ON AN AIN PIEZOELECTRIC MICROMACHINED ULTRASOUND TRANSDUCER**

R. Przybyla<sup>1</sup>, S. Shelton<sup>2</sup>, A. Guedes<sup>2</sup>, I. Izyumin<sup>1</sup>, M. Kline<sup>1</sup>, D. Horsley<sup>2</sup>, and B. Boser<sup>1</sup>  
<sup>1</sup>University of California, Berkeley, USA and <sup>2</sup>University of California, Davis, USA

11:30

**C2L-E4 MEMS DIRECTIONAL SOUND SENSOR WITH SIMULTANEOUS DETECTION OF TWO FREQUENCY BANDS**

M. Touse, J. Sinibaldi, and G. Karunasiri  
US Naval Postgraduate School, USA

11:45

**C2L-E5 TOWARDS HIGH FIDELITY HIGH EFFICIENCY MEMS MICROSPEAKERS**

I. Shahosseini<sup>1</sup>, E. Lefeuvre<sup>1</sup>, M. Woytasik<sup>1</sup>, J. Moulin<sup>1</sup>, G. Lemarquand<sup>2</sup>, V. Lemarquand<sup>2</sup>, X. Leroux<sup>1</sup>, S. Edmond<sup>1</sup>,  
E. Dufour-Gergam<sup>1</sup> and A. Bosseboeuf<sup>1</sup>  
<sup>1</sup>University of Paris Sud, FRANCE and <sup>2</sup>University of Maine, FRANCE

12:00

**C2L-E6 CONSTRUCTION OF ILLUMINANCE DISTRIBUTION MEASUREMENT SYSTEM AND EVALUATION OF ILLUMINANCE CONVERGENCE IN INTELLIGENT LIGHTING SYSTEM**

M. Miki, Y. Kasahara, T. Hiroyasu, and M. Yoshimi  
Doshisha University, JAPAN



12:15      **Lunch**

### **SESSION C3L-A Physical Sensors**

13:15

**C3L-A1      MEMS PARTICULATE MATTER (PM) MONITOR FOR CELLULAR DEPLOYMENT**

I. Paprotny, F. Doering, and R.M. White  
*University of California, Berkeley, USA*

13:30

**C3L-A2      MICROCHANNEL-BASED SIZE DETECTOR FOR AIRBORNE PARTICLES**

A. Schaap, W.C. Chu, M.I. Antonio, and B. Stoeber  
*University of British Columbia, CANADA*

13:45

**C3L-A3      A MEMS DEVICE WITH SUB-NANOMETER DISPLACEMENT SENSING USING CARBON NANOTUBES**

A. Ya'akovovitz, S. Krylov, and Y. Hanein  
*Tel Aviv University, ISRAEL*

14:00

**C3L-A4      TWO-AXIS MICRO-TENSILE TESTER CHIP FOR MEASURING PLANT CELL MECHANICS**

S. Muntwyler, B.E. Kratochvil, F. Beyeler, and B.J. Nelson  
*ETH Zurich, SWITZERLAND*

14:15

**C3L-A5      A THERMAL FLOW SENSOR WITH LIQUID CHARACTERIZATION FEATURE**

A.S. Cubukcu, U. Buerklin, and G.A. Urban  
*University of Freiburg - IMTEK, GERMANY*

14:30

**C3L-A6      MINIATURIZED THERMAL FLOW SENSORS WITH THROUGH SILICON VIAS FOR FLIP-CHIP PACKAGING**

C. Sosna<sup>1</sup>, R. Buchner<sup>2</sup>, M. Kropp<sup>1</sup>, and W. Lang<sup>1</sup>  
<sup>1</sup>*University of Bremen, GERMANY* and <sup>2</sup>*Danfoss IXA A/S, DENMARK*

### **SESSION C3L-B Biomedical Applications**

13:15

**C3L-B1      CHARACTERIZATION OF THIN-FILM MICROELECTRODE ARRAY AND SIGNAL CONDITIONING MICROCHIP FOR HIGH SPATIAL RESOLUTION SURFACE LAPLACIAN MEASUREMENT**

H. Dong<sup>1</sup>, D. Jackson<sup>1</sup>, T. Roussel<sup>1</sup>, D. Dosdal<sup>2</sup>, R. Ideker<sup>2</sup>, J. Naber<sup>1</sup>, S. Koenig<sup>1</sup>, and R. Keynton<sup>1</sup>  
<sup>1</sup>*University of Louisville, USA*, and <sup>2</sup>*University of Alabama, USA*

13:30

**C3L-B2      MICRO-POWER IMPLANTABLE TELEMETRY DEVICE FOR THE STUDY OF MICRO-PACKAGE TECHNOLOGY FOR CHRONIC BIOMEDICAL MICRO-SYSTEMS**

R. Zhang<sup>1</sup>, P. Cong<sup>2</sup>, H.-I. Kuo<sup>1</sup>, and W.H. Ko<sup>1</sup>  
<sup>1</sup>*Case Western Reserve University, USA* and <sup>2</sup>*Metronics Inc., CHINA*

13:45

**C3L-B3 A NEW GENERATION OF A REGULATED MICROPUMP FOR MEDICAL APPLICATIONS**

O. Woitschach<sup>1</sup>, C. Sosna<sup>1</sup>, J. Uckelmann<sup>2</sup>, and W. Lang<sup>1</sup>

<sup>1</sup>University of Bremen, GERMANY and <sup>2</sup>Bartels Mikrotechnik GmbH, GERMANY

14:00

**C3L-B4 MICROFABRICATED CALIBRATION TOOL FOR DIRECT SHEAR STIFFNESS MEASUREMENTS WITH APPLICATIONS IN CELL MECHANICS**

G. Higgs, C. Simmons, A. Fried, and B. Pruitt

Stanford University, USA

14:15

**C3L-B5 REAL-TIME TAGLESS MONITORING OF CELL VIABILITY USING PATCH-CLAMP MICRODEVICES**

P. Pathak<sup>1</sup>, H. Zhao<sup>2</sup>, Z. Gong<sup>1</sup>, F. Nie<sup>2</sup>, T. Zhang<sup>1</sup>, S. Wong<sup>2</sup>, and L. Que<sup>1</sup>

<sup>1</sup>Louisiana Technical University, USA and <sup>2</sup>Weill Cornell Medical College, USA

14:30

**C3L-B6 A MICROFLUIDIC ELECTROCHEMICAL SENSOR ARRAY FOR CHARACTERIZING PROTEIN INTERACTIONS WITH VARIOUS SURFACE CHEMISTRIES**

P. Dykstra, V. Roy, W.E. Bentley, and R. Ghodssi

University of Maryland, USA

**SESSION C3L-C Preconcentrators and Thermal Flow Systems**

13:15

**C3L-C1 MICRO PRECONCENTRATOR FOR HANDHELD DIAGNOSTICS OF CANCER BIOMARKERS IN BREATH**

B. Alfeeli<sup>1</sup> and M. Agah<sup>2</sup>

<sup>1</sup>Kuwait Institute for Scientific Research, KUWAIT and <sup>2</sup>Virginia Polytechnic Institute and State University, USA

13:30

**C3L-C2 LOW LEVEL ETHYLENE DETECTION USING PRECONCENTRATOR/SENSOR COMBINATIONS**

A. Sklorz<sup>1</sup>, N. Miyashita<sup>2</sup>, A. Schäfer<sup>1</sup>, and W. Lang<sup>1</sup>

<sup>1</sup>University of Bremen, GERMANY and

<sup>2</sup>FWBI Friedrich-Wilhelm-Bessel-Forschungsgesellschaft mbH, GERMANY

13:45

**C3L-C3 EVALUATION OF ADSORPTION CAPACITY OF SINGLE-WALLED CARBON NANOTUBES FOR APPLICATION TO MICRO GAS PRECONCENTRATORS**

S. Takada<sup>1</sup>, T. Nakai<sup>1</sup>, W. Fujita<sup>1</sup>, T. Thurakitse<sup>1</sup>, J. Shiomi<sup>1</sup>, S. Maruyama<sup>1</sup>, H. Takagi<sup>2</sup>, M. Shuzo<sup>1</sup>, J.-J. Delaunay<sup>1</sup>, and I. Yamada<sup>1</sup>

<sup>1</sup>University of Tokyo, JAPAN and

<sup>2</sup>National Institute of Advanced Industrial Science and Technology (AIST), JAPAN

14:00

**C3L-C4 THERMOSTATED MICRO GAS CHROMATOGRAPHY COLUMN WITH ON-CHIP THERMAL CONDUCTIVITY DETECTOR FOR ELEVATED TEMPERATURE SEPARATION**

S. Narayanan, B. Alfeeli, and M. Agah

Virginia Polytechnic Institute and State University, USA

14:15

**C3L-C5 A NOVEL  $\mu$ THERMAL CONDUCTIVITY DETECTOR CAPABLE OF FLOW RATE MEASUREMENTS**

B.C. Kaanta<sup>1</sup>, A.J. Jonca<sup>1</sup>, H. Chen<sup>2</sup>, and X. Zhang<sup>1</sup>

<sup>1</sup>Boston University, USA and <sup>2</sup>Schlumberger Doll Research, USA

14:30

**C3L-C6 COATING DIAGNOSTICS FOR THERMAL MASS FLOWMETERS**

D. Pape, K. Hencken, D. Schrag, A. Kramer, S. Ott, and A. Bärlocher

ABB Switzerland Ltd., SWITZERLAND

**SESSION C3L-D N/MEMS Material Properties**

13:15

**C3L-D1 MULTI-SENSOR DISTURBANCE FORCE MEASUREMENT FOR COMPLIANT MECHANICAL STRUCTURES**

B. Denkena and F.L. Hackeloeer

Leibniz Universitaet Hannover, GERMANY

13:30

**C3L-D2 SIMULATIONS, ANALYSIS AND CHARACTERIZATION OF THE DEVELOPMENT PROFILES FOR THE THICK SU-8 UV LITHOGRAPHY PROCESS**

Z.-F. Zhou, Q.-A. Huang, W.-H. Li, and Z. Zhu

Southeast University, CHINA

13:45

**C3L-D3 CONFIRMATION ON THE SIZE-DEPENDENCE OF YOUNG'S MODULUS OF SINGLE CRYSTAL SILICON FROM THE TEM TENSILE TESTS**

Q.H. Jin, T. Li, Y.L. Wang, X.L. Gao, and F.F. Xu

Chinese Academy of Sciences, CHINA

14:00

**C3L-D4 MECHANISM OF MECHANICAL DETERIORATION IN SILICON MICROCANTILEVER INDUCED BY PLASMA PROCESS**

M. Tomura<sup>1</sup>, C.-H. Huang<sup>1</sup>, Y. Yoshida<sup>1</sup>, T. Ono<sup>1</sup>, S. Yamasaki<sup>2</sup>, and S. Samukawa<sup>1</sup>

<sup>1</sup>Tohoku University, JAPAN and <sup>2</sup>National Institute of Advanced Industrial Science and Technology, JAPAN

14:15

**C3L-D5 AN ELECTRICAL PROBE FOR MEASURING THERMAL EXPANSION COEFFICIENTS OF MICROMACHINED POLYSILICON THIN FILMS**

H.-Y. Liu, Q.-A. Huang, and W.-H. Li

Southeast University, CHINA

14:30

**C3L-D6 HIGHLY SELECTIVE SENSORS BASED ON CARBON NANOTUBES TRANSISTORS, FABRICATED USING AN ORIGINAL DYNAMIC SPRAY TECHNIQUE, FOR GAS ELECTRONIC FINGERPRINTING**

P. Bondavalli<sup>1</sup>, L. Gorintin<sup>1</sup>, P. Legagneux<sup>1</sup>, J.P. Simonato<sup>2</sup>, and L. Cailler<sup>2</sup>

<sup>1</sup>Thales Research and Technology, FRANCE and <sup>2</sup>CEA, FRANCE

## SESSION C3L-E Late News

13:15

**C3L-E1 MODELING INTERFACE DIFFUSION AS A MECHANISM FOR THRESHOLD VOLTAGE DRIFT IN pH SENSORS**

S. Sundaram and N.N. Sharma

*Birla Institute of Technology and Science, INDIA*

13:30

**C3L-E2 DESIGN OF A GMR SENSOR ARRAY SYSTEM FOR ROBOTIC PIPE INSPECTION**

W. Du, H. Nguyen, A. Dutt, and K. Scallion

*San Jose State University, USA*

14:00

**C3L-E3 MEASURING IN-PLANE OPERATIONAL DEFLECTION SHAPES AT ULTRA-HIGH FREQUENCIES**

F. Ur-Rehman and C. Rembe

*Polytec GmbH, GERMANY*

14:15

**C3L-E4 ANOMALOUS HIGH SENSITIVITY HIGH CAPACITANCE NANO-STRUCTURE INCORPORATED INTERDIGITAL SENSORS**

M. Mehran, S. Mohajerzadeh, and Y. Abdi

*University of Tehran, IRAN*

14:45

**Break**

## SESSION C4L-A Stress Sensing

15:15

**C4L-A1 IN-SITU MEASUREMENT OF CURVATURE AND MECHANICAL STRESS OF PACKAGED SILICON**

H. Husstedt<sup>1</sup>, U. Ausserlechner<sup>2</sup>, and M. Kaltenbacher<sup>1</sup>

<sup>1</sup>*Alps-Adriatic University Klagenfurt, AUSTRIA* and <sup>2</sup>*Infineon Technologies Austria AG, AUSTRIA*

15:30

**C4L-A2 CAPACITIVE SENSING OF INTERFACIAL STRESSES**

K. Sundara-Rajan<sup>1</sup>, A. Bestick<sup>1</sup>, G.I. Rowe<sup>1</sup>, A.V. Mamishev<sup>1</sup>, G.K. Klute<sup>2</sup>, and W.R. Ledoux<sup>2</sup>

<sup>1</sup>*University of Washington, USA* and <sup>2</sup>*VA Puget Sound Health Care System, USA*

15:45

**C4L-A3 STRESS DISTRIBUTION UNDER ELECTROLESS NICKEL BUMPS EXTRACTED USING ARRAYS 7X7 PIEZO-FET**

B. Lemke<sup>1</sup>, R. Baskaran<sup>2</sup>, S. Ganapathysubramanian<sup>2</sup>, and O. Paul<sup>1</sup>

<sup>1</sup>*University of Freiburg - IMTEK, GERMANY* and <sup>2</sup>*Intel Corporation, USA*

16:00

**C4L-A4 MECHANICAL SENSING BASED ON FERROMAGNETIC SHAPE MEMORY ALLOYS**

J.M. Stephan<sup>1</sup>, E. Pagounis<sup>2</sup>, M. Laufenberg<sup>2</sup>, O. Paul<sup>1</sup>, and P. Ruther<sup>1</sup>

<sup>1</sup>*University of Freiburg - IMTEK, GERMANY* and <sup>2</sup>*ETU Magnetic GmbH, GERMANY*

16:15

**C4L-A5 A MEMS TENSILE TESTING DEVICE FOR MECHANICAL CHARACTERIZATION OF INDIVIDUAL NANOWIRES**

Y. Zhang<sup>1</sup>, C. Ru<sup>1,2</sup>, X. Liu<sup>1,3</sup>, Y. Zhong<sup>4</sup>, X. Sun<sup>4</sup>, D. Hoyle<sup>5</sup>, I. Cotton<sup>5</sup>, and Y. Sun<sup>1</sup>

<sup>1</sup>University of Toronto, CANADA, <sup>2</sup>Soochow University, CHINA, <sup>3</sup>Harvard University, USA,

<sup>4</sup>University of Western Ontario, CANADA, and <sup>5</sup>Hitachi High-Technologies Canada Inc., CANADA

16:30

**C4L-A6 STRAIN SENSITIVITY OF A MODIFIED SINGLE-DEFECT PHOTONIC CRYSTAL NANOCAVITY FOR MECHANICAL SENSING**

B.T. Tung<sup>1</sup>, H.M. Nguyen<sup>2</sup>, D.V Dao<sup>1</sup>, S. Rogge<sup>2</sup>, H.W.M. Salemink<sup>2</sup>, and S. Susumu<sup>1</sup>

<sup>1</sup>Ritsumeikan University, JAPAN, and <sup>2</sup>Delft University of Technology, THE NETHERLANDS

**SESSION C3L-B Tactile and Tissue Sensing**

15:15

**C4L-B1 THE DESIGN, FABRICATION AND CHARACTERIZATION OF A PIEZORESISTIVE TACTILE SENSOR FOR FINGERPRINT SENSING**

Z. Zhou<sup>1</sup>, L. Rufer<sup>2</sup>, and M. Wong<sup>1</sup>

<sup>1</sup>Hong Kong University of Science and Technology, CHINA and <sup>2</sup>TIMA Laboratory, FRANCE

15:30

**C4L-B2 TACTILE EDGE DETECTION**

C. Chorley<sup>1</sup>, C. Melhuish<sup>1</sup>, T. Pipe<sup>1</sup>, and J. Rossiter<sup>2</sup>

<sup>1</sup>University of the West of England, UK and <sup>2</sup>University of Bristol, UK

15:45

**C4L-B3 A FLEXIBLE TACTILE SENSING ARRAY FOR ROBOT APPLICATIONS**

Y.-T. Lai, C.-L. Lin, X.-H. Huang, M.-Y. Cheng, and Y.-J. Yang

National Taiwan University, TAIWAN

16:00

**C4L-B4 TOWARDS SELF-POWERING TOUCH-SENSITIVE OLED SYSTEMS**

Y. Chuo, C. Landrock, B. Omrane, J.N. Patel, J. Aristiszabal, and B. Kaminska

Simon Fraser University, CANADA

16:15

**C4L-B5 A MICROSENSOR SYSTEM TO PROBE PHYSIOLOGICAL ENVIRONMENTS AND TISSUE RESPONSE**

M. Kubon<sup>1</sup>, M. Moschallski<sup>1</sup>, G. Link<sup>1</sup>, T. Ensslen<sup>1</sup>, S. Werner<sup>1</sup>, C. Burkhardt<sup>1</sup>, W. Nisch<sup>1</sup>, B. Scholz<sup>1</sup>, B. Schlosshauer<sup>1</sup>, G. Urban<sup>2</sup>, and M. Stelzle<sup>1</sup>

<sup>1</sup>University of Tuebingen, GERMANY and <sup>2</sup>University of Freiburg - IMTEK, GERMANY

16:30

**C4L-B6 HIGH-SENSITIVITY HYPER-SPECTRAL VIDEO ENDOSCOPY SYSTEM FOR INTRA-SURGERY TISSUE CLASSIFICATION**

T. Arnold, M. De Biasio, and R. Leitner

CTR Carinthian Tech Research AG, AUSTRIA

## SESSION C4L-C Nanostructural Chemical Sensors

15:15

### **C4L-C1 EXPLORING SEQUENCE DEPENDENCE IN DNA-DECORATED CNT GAS SENSORS ON CMOS CIRCUITRY**

C.-L. Chen<sup>1</sup>, C.-F. Yang<sup>1</sup>, V. Agarwal<sup>1</sup>, S. Sonkusale<sup>2</sup>, M. Chen<sup>3</sup>, and M.R. Dokmeci<sup>1</sup>  
*<sup>1</sup>Northeastern University, USA, <sup>2</sup>Tufts University, USA, and <sup>3</sup>Simmons College, USA*

15:30

### **C4L-C2 POOLE-FRENKEL CONDUCTION FOR IMPROVED PERFORMANCE OF CARBON NANOTUBE CHEMIREISTORS**

A. Salehi-Khojin, K. Lin, and R. Masel  
*University of Illinois, Urbana-Champaign, USA*

15:45

### **C4L-C3 SENSITIVITY OF POINT DEFECTS IN ONE DIMENSIONAL NANOCIRCUITS**

S.R. Hunt, P.D. Hoang, V.R. Khalap, D. Wan, B.L. Corso, and P.G. Collins  
*University of California, Irvine, USA*

16:00

### **C4L-C4 VIRUS DIRECTED ASSEMBLY OF RECEPTOR PEPTIDES FOR EXPLOSIVE SENSING**

X.Z. Fan, A. Brown, K. Gerasopoulos, N. Siwak, J. Culver, and R. Ghodssi  
*University of Maryland, USA*

16:15

### **C4L-C5 NANOSTRUCTURED SURFACE ENHANCED RAMAN SCATTERING SUBSTRATES FOR EXPLOSIVES DETECTION**

M.S. Schmidt, J.K. Olsen, J. Hübner, and A. Boisen  
*Technical University of Denmark, DENMARK*

16:30

### **C4L-C6 SURFACE-ENHANCED RAMAN SCATTERING NANODOMES FABRICATED BY NANOREPLICA MOLDING**

C.J. Choi, Z. Xu, H.-Y. Wu, G.L. Liu, and B.T. Cunningham  
*University of Illinois, Urbana-Champaign, USA*

## SESSION C4L-D Integrated Sensors and Signal Conditioning

15:15

### **C4L-D1 CMOS-BASED HIGH-PRESSURE SENSOR USING SURFACE TRENCHES FOR SENSITIVITY ENHANCEMENT**

M. Baumann, P. Ruther, and O. Paul  
*University of Freiburg - IMTEK, GERMANY*

15:30

### **C4L-D2 CMOS-INTEGRATED THREE-AXIS FORCE SENSOR FOR COORDINATE MEASUREMENT APPLICATIONS**

M. Herrmann, P. Gieschke, P. Ruther, and O. Paul  
*University of Freiburg - IMTEK, GERMANY*

15:45

### **C4L-D3 EMPLOYING COHERENT DETECTION FOR ON-CHIP SIX-AXIS POSITION SENSORS**

A. Chow, R. Ho, D. Hopkins, and D. Popovic  
*Oracle, USA*

16:00

**C4L-D4 THREE-PHASE CAPACITIVE POSITION SENSING**

R.G. Walmsley<sup>1</sup>, M.A. Hopcroft<sup>1</sup>, G. Corrigan<sup>2</sup>, D. Milligan<sup>2</sup>, and P.G. Hartwell<sup>1</sup>  
<sup>1</sup>*Hewlett-Packard Laboratories, USA* and <sup>2</sup>*Hewlett-Packard Company, USA*

16:15

**C4L-D5 RESPONSE OF PIEZOELECTRIC CIRCULAR MICRODIAPHRAGM SENSORS IN HIGHER FREQUENCY MODES**

M. Olfatnia, V.R. Singh, T. Xu, J. Miao, and L.S. Ong  
*Nanyang Technological University, SINGAPORE*

16:30

**C4L-D6 USE OF A SINGLE MULTIPLEXED CMOS OSCILLATOR AS DIRECT FREQUENCY READ-OUT FOR AN ARRAY OF EIGHT AIN CONTOUR-MODE NEMS RESONANT SENSORS**

M. Rinaldi, C. Zuniga, B. Duick, and G. Piazza  
*University of Pennsylvania, USA*

16:45

**End of Conference**