出國報告（出國類別：出席國際會議）

參與第七屆感測技術國際會議報告

服務機關：國立中正大學 機械系
姓名職稱：謝文馨教授
派赴國家：紐西蘭 威靈頓
出國期間：102 年 12 月 3 日至 102 年 12 月 5 日
報告日期：102 年 12 月 8 日

目次

一、內容摘要

　　本報告說明參與第七屆感測技術研究會之目的、經過、心得與建議。第七屆感測技術研究會共有 28 個 sessions（會議場次）約 200 篇論文發表，300 多人左右參加，300 篇論文裡約有 150 篇論文是口頭發表，50 篇論文是 poster（海報論文），報告者的論文是口頭發表。　報告者在參加分組討論時，除了仔細聆聽各論文宣導外，更與到場人士相互討問，發表問題，獲益良多，對目前各項感測技術的研究方向與重點也有更深一步的體認與了解，尤其以 Photonic crystal（光子晶體）的研究方面及法國 CERN superconducting　（司壹恩超導設施）　測試設施的運用方面收穫最大，也更深入了解這些技術的關鍵點及運用性，日後將可應用於個人之研究上及教導學生。在此次會議上，已見到 Photonic crystal（光子晶體）研究方面的大量成果及未來的發展性，而國內在這方面的研究，才剛開始進行，希望日後國內有更多的學者、專家能投入於這方面的研究。

二、目的

　　參加第七屆感測技術研究會之目的，首在瞭解及收集各類感測器之相關技術及資訊，參訪時除了仔細聆聽各論文報告外，更與到場人士相互討論，發表問題，以求對目前各項感測技術的研究方向與重點也有更深一步的體認與了解；此外，此行的目的也在進行報告者的論文發表，並跟與會者進行討論及交流，以增進國內在此領域之國際地位；此行另外一個目的是瞭解國際發展之重點，目前國際發展的方向以 Photonic crystal（光子晶體）的研究方面及法國 CERN superconducting （司壹恩超導設施） 測試設施的運用方面最值得注意；此次參加第七屆感測技術研究會的最終整體目的在強化在感測技術之學術基礎及產學合作實力。

三、過程

　　報告者自桃園國際機場，搭乘紐西蘭航空公司，於 12 月 2 日下午到達 Wellington（威靈頓），即在旅館入住，並於 12 月 3 日早上到 Massy University（梅西大學）會議會場註冊並開始三天的會議行程。

　　本次會議共三天，計有 28 個 sessions（會議場次）約 200 篇論文發表，300 多人左右參加，300 篇論文裡約有 150 篇論文是口頭發表，50 篇論文是 poster。

　　第一天的議程為：開幕儀式、Keynote speach（主演講），及 9 個會議場次，含 Gas and Chemical Sensors 1 （氣體與化學感測器 1）、 Novel Applications 1（創新運用 1）、 Wireless Sensors Networks 1（無線感測網路 1）、 Invited Session 1（邀請演講 1）、 Gas and Chemical Sensors 2（氣體與化學感測器 2）、 Image, Vision and Range Sensors 1 （影像、視覺及範圍感測器 1）、 Biosensors 2（生物感測器 2）、 Wireless Sensors Networks 2（無線感測網路 1）。

　　第二天的議程為： Keynote speech（主演講），及 10 個會議場次，含 Temperature, Humidity and Flow Sensors（溫度、濕度及流體感測器）、 Signal Analysis （信號分析）、 Biosensors 3 （生物感測器 3）、 Mechanical Sensors（機械感測器）、 Combined Lunch and Short Oral 1 （午餐與短報告 1）、Invited Session 2（邀請演講 2）、 Gas and Chemical Sensors 3（氣體與化學感測器 3）、 Image, Vision and Range Sensors 2（影像、視覺及範圍感測器 2）、 Sensor Interfacing

（感測介面）、 Healthcare Applications 1 （健康運用 1）

第三天的議程為： Optical Sensors 1 （光學感測器 1）、Magnetic Sensors 1 （磁感測器 1）Mechanical Sensors 2 （機械感測器 2）、Healthcare Applications 2 （健康運用 2）、Optical Sensors 2（光學感測器 2)Novel Applications 2（創新運用 2）、Environmental Monitoring 1（環境監控 1）、Network Protocols（網路協定）、Combined Lunch and Short Oral 2 （午餐與短報告 2）Built Environment（環境建造） Magnetic Sensors 2 （磁感測器 2）Environmental Monitoring 2 （環境監控 2）Dielectric Measurement（介電量測）。

詳細的議程附於附件中，以下是會議時的相片。

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圖一報告者在會場註冊處	圖 2. 同行老師學生合影
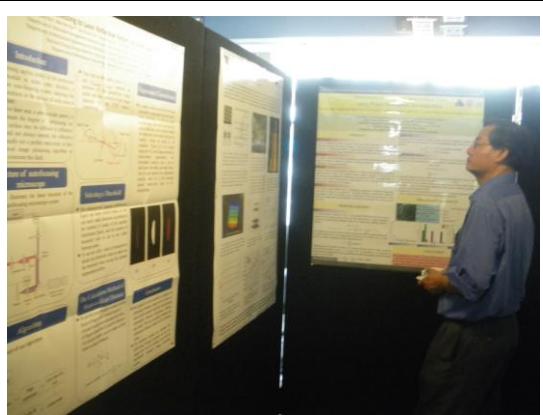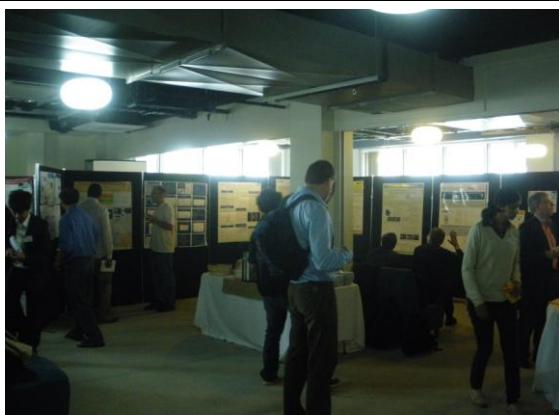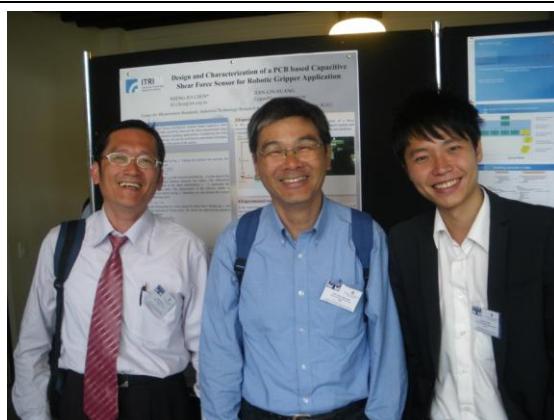
| 圖 3. 會場一角 | 圖 4. 會場一角 |
| 圖 5. 會場一角 | 圖 6. 主演講者 |

本次會議計共有 28 個 sessions（會議場次）約 200 篇論文發表，分 4 組同時進行，報告者無法參加每一分組，所以在此會議報告者主要參加了下列分組的討論與報告： Keynote speeches（主講）, Biosensors （生物感測器） 1, Biosensors （生物感測器）2,Biosensors （生物感測器）3, Healthcare Applications（健康運用） 1, Mechanical Sensors （機械感測器）2, Optical Sensors（光學感測器） 2, Environmental Monitoring（環境監控） 2。報告者在參加分組討論時，除了仔細聆聽各論文宣

導外，更與到場人士相互討問，發表問題，收穫極大。

在主演講方面，，Keynote speaker（主講者），Prof. Arapia （阿匹冶教授）仔細說明了在法國 CERN superconducting（司壹恩超導設施） 測試設施，運用各項先進感測技術於 Higgs boson（海格子）的探索研究中，這些先進感測技術包含磁場、超導電流、影像觀察、及低溫電流量測等技術。報告者在聆聽這個報告之後，也更深入了解這些技術的關鍵點及運用性，日後將可應用於個人之研究上及教導學生。此外在 Photonic crystal（光子晶體）的研究方面，美國 University of Illinois at Urbana-Champaign（伊力諾大學香檳分校）的 Cunningham（克寧漢）教授，在 keynote speech（主講者） 中說也明 Friendly Optics（友善光學） (主要 Photonic crystals（光子晶體）的運用，主講者也介紹大量的先進成果及未來的發展性，而國內這方面的研究，才剛開始進行，希望日後國內有更多的學者、專家能投入於這方面的研究。

報告者的論文則於 12 月 3 日下午的 Biosensors（生物感測器） 1 session（會議場次）發表，論文的題目為”A microflow cytometer chip driven by the absorbent force of on-chip superabsorbent materials (一種吸收力驅動的微流細胞儀晶片)”。摘要如下：The objective of our study was to develop an absorbent-force-driven microflow cytometer chip (AMCC) that used superabsorbent materials as the fluid-driving source to allow chip operation without external power and easy miniaturization. In our study, the fluid flow characteristics inside the AMCC, and the impact of the microstructure size on

the flow velocity and hydrodynamic focusing width of AMCC were investigated. Results

showed that superabsorbent materials allowed stable microchannel flow and hydrodynamic

focusing and that the flow rate and hydrodynamic focusing width of the AMCC could be

controlled by varying the microchannel dimensions (the mean flow velocity was

approximately 1.6 mm/s to 18.5 mm/s, and the hydrodynamic focusing width was

approximately 3 μ m to 20 μ m). In addition, the fluorescent test results of AMCC were

noted to be consistent with those of a large-scale flow cytometer (BD, FACSCalibur),

thereby confirming the feasibility of using superabsorbent materials as the fluid-driving

source in microfluidic chips. AMCC can effectively reduce the amount of test solution

used, has the advantage of easy miniaturization, and provides a low-cost fluid actuation

method that can be conveniently obtained, fabricated, and miniaturized. (本研究之目的

是開發一種吸收力驅動的微流細胞儀晶片(AMCC)，使用高吸水性材料之吸收力

作為流體驅動源，使晶片運作，具有不需外部電源即能運作及易於微型化等優

勢。本研究探討了 AMCC 內部流體流動特性、微結構尺寸對 AMCC 流速及流體

聚焦寬度的影響。實驗結果顯示，在 AMCC 中，高吸水性材料可造成相當穩定

之微流道流速及流體聚焦現象，並可經由不同的微流道尺寸設計以控制 AMCC

內流體流速與流體聚焦寬度(平均流速約由 1.6 mm/s 到 18.5 mm/s、流體聚焦寬度

約由 3 μ m 到 20 μ m)。此外， AMCC 之螢光檢測結果與現行大型流式細胞儀

檢測結果符合，證實了以高吸水性材料做為微流體晶片流體驅動源的可行性。

AMCC 可以有效地減少試樣液的使用量，具有易於微型化的優點，提供了一個低成本、可方便得到、製造的流體驅動方法。)

在發表時中約有 30 人左右在會場聆聽，並對報告者的論文極感興趣，會後，並有聽眾私下提出一些問題，這些問題大多集中晶片製程及感測流程及原理。報告者對這些問題一一回答並深入解釋，對增進國內在此方面之國際地位極有助益。

四、心得

本次參加第第七屆感測技術研究會，收穫極多，最大的心得可分為下面兩點說明：

1. Photonic crystal（光子晶體）在生醫感測之運用技術：

在本次會議中，邀請到美國 University of Illinois at Urbana-Champaign（伊力諾大學香檳分校）的 Cunningham（克寧漢）教授，在 keynote speech（主講者） 中說明 Friendly Optics（友善光學） (主要 Photonic crystals（光子晶體）的運用) 在生醫感測技術的研究現況及運用，使報告者對此領域，更加瞭解其重要性及技術困難點。

2. 先進感測技術運用於 superconducting（超導設施） 測試設施：

在本次會議中，Keynote speake（主講者）r, Prof. Arapia（阿匹冶教授）仔細說明了在法國 CERN superconducting （司壹恩超導設施）測試設施，運用各項先進感測技術於 Higgs boson（海格子）的探索研究中，這些先進感測技術包含磁場、超導電流、影像觀察、及低溫電流量測等技術。報告者在聆聽這個報告之後，也更深入了解這些技術的關鍵點及運用性，日後將可應用於個人之研究上及教導學生。

五、建議

1. 報告者在參加此次會議後，獲益良多，對目前各項感測技術的研究方向與重點也有更深一步的體認與了解，尤其是 Photonic crystal（光子晶體）在光學檢測的基礎及運用研究方面，已見到大量的成果及未來的發展性，而國內在這方面的研究，才剛開始進行，建議日後國內有更多的學者、專家能投入於這方面的研究。

2. 未來定時參加感測器相關國際會議及參觀全球重要的感測技術研究室，以瞭解世界主要感測技術之研發重點及趨勢，做為國內感測技術研發及相關人才培育之依據。

3. 第七屆 ICST 國際研討會幾乎包含所有與量測相關的研究領域，明年 2014 在英國 Liverpool 舉行，建議國內主動派員前往參加。

4. 建議將光學量測及介電性質量測技術等，相關技術教材更新與彙整。

5. 舉辦國際性感測器研討會，以增進國內相關技術的推廣。

附件一 會議議程

2013 Seventh International Conference on Sensing Technology (ICST) Program

09:00 - 09:30

S0: Opening Ceremony

Chairs: Subhas Mukhopadhyay, Massey University, New Zealand

Alex Mason, Liverpool John Moores University, United Kingdom

10:00 - 11:30

S1: Keynote 1

Chair: Subhas Mukhopadhyay, Massey University, New Zealand

10:00 – 10:45 Friendly Photons: Optical Sensors in Life Science and Medicine

Brian Cunningham, University of Illinois at Urbana-Champaign

10:45 – 11:30 Science with Mars Rover Curiosity

Goutam Chattopadhyay, CalTech, JPL, USA

11:30 - 11:40

Interval

11:40 - 13:10

S2A: Gas and Chemical Sensors 1

Chair: Satoshi Ikezawa, Waseda University, Japan

11:40 *Selectivity of organic nanocomposite sensor for detection of aldehydes*

Ashwini Mallya (Indian Institute of Science, India); Praveen Ramamurthy (Indian Institute of Science, India)

11:58 *Integration of ZnO Nanoflakes with MEMS Platform and its Application as Gas Sensor*

Partha Bhattacharyya (Bengal Engineering and Science University, Shibpur, India)

12:16 *Tuning the Bias Sensing Layer: A New Way to Greatly Improve Metal-Oxide Gas Sensors Selectivity*

Nicolas Dufour (LAAS-CNRS, France); Audrey Chapelle (LAAS-CNRS, France); Chabane Talhi (LAAS-CNRS, France); Frederic Blanc (LAAS-CNRS, France); Bernard Franc (LAAS-CNRS, France); Philippe Menini (LAAS-CNRS, France); Khalifa Aguir (IMN2P, France)

12:34 *Soft-sensing of Liquid Desiccant Concentration Based on ELM*

Zhongtian Chen (Zhejiang University of Technology, P.R. China); Wenjian Cai (Nanyang Technological University, Singapore); Xiong Xiong He (Zhejiang University of Technology, P.R. China); Xinli Wang (Zhejiang University, P.R. China); Lei Zhao (Nanyang Technological

University, P.R. China)

12:52 *Ovarian Hormone Estrone Glucuronide (E1G) Quantification- Impedimetric Electrochemical Spectroscopy Approach*

Asif Iqbal Zia (Massey University & COMSATS Institute of Information Technology, New Zealand); Anton Yudhana (Ahmad Dahlan University, Indonesia); Subhas Mukhopadhyay (Massey University, New Zealand); Pak Yu (Massey University, New Zealand); Ibrahim Al-Bahadly (Massey University, New Zealand); Chinthaka Gooneratne (King Abdullah University of Science and Technology, Saudi Arabia); Jürgen Kosel (King Abdullah University of Science and Technology, Saudi Arabia)

S2B: Novel Applications 1

Chair: Kevin J Stevens, Quest Integrity NZL Ltd, New Zealand

11:40 *A digital delivery system of scent for video game application*

Ibrahim Al-Bahadly (Massey University, New Zealand)

11:58 *Identification of Single Bacteria using Micro Raman Spectroscopy*

Martin De Biasio (Carinthian Tech Research AG, Austria); Raimund Leitner (CTR AG, Austria); Gerald McGunnigle (Cartinthian Tech Research AG, Austria); Dirk Balthasar (TOMRA Sorting Solutions GmbH, Austria); Jürgen Popp (Friedrich-Schiller-Universität Jena, Germany); Petra Rösch (Friedrich-Schiller-University, Germany)

12:16 *A Novel and Cost Effective Resistive Rain Sensor for Automatic Wiper Control: Circuit Modelling and Implementation*

Mukul Joshi (College of Engineering Pune, India); Kaustubh Jogalekar (College of Engineering, Pune, India); Dayanand Sonawane (College of Engineering, Pune, India); Vinayak Sagare (Automotive Research Institute of India, India); Madhuri Arunkumar Joshi (College of Engineering, Pune, India)

12:34 *Automated Monitoring of Foraging Behaviour in Free Ranging Sheep Grazing a Biodiverse Pasture*

Alex Mason (Liverpool John Moores University, United Kingdom); Jenny Sneddon (Liverpool John Moores University, United Kingdom)

12:52 *Development of Anal Position Detecting System for New-Toilet system*

Koshi Tokoro (Tokyo University of Science, Japan); Hiroshi Kobayashi (Tokyo University of Scisence, Japan)

S2C: Biosensors 1

Chair: Jagadeesh Kumar, Indian Institute of Technology Madras, India

11:40 *Developing Non-Parametric Density Estimation on Genetic Evolution Computing as a Cloud Based Sensor Fusion Method*

Tsu-Wang Shen (Tzu Chi University, Taiwan)

11:58 *Performance Optimization of Temperature Compensated Surface Acoustic Wave Biosensors*

Shuangming Li (Nanjing University of Science & Technology, P.R. China); Yan Su (Nanjing

University of Science & Technology, P.R. China); Ying Wan (Nanjing University of Science & Technology, P.R. China); Zheng Tang (Nanjing University of Science & Technology, P.R. China)

12:16 *Biochemical Sensing Assays based on Coalescence-induced Self-propulsion Digital Microfluidics*

Volker Nock (University of Canterbury & MacDiarmid Institute for Advanced Materials and Nanotechnology, New Zealand); Mathieu Sellier (University of Canterbury, New Zealand); Yannick Muller (University of Canterbury, New Zealand); Claude Verdier (CNRS and University Joseph Fourier, France)

12:34 *Electrochemical Biosensing of Organophosphates using Vertically Aligned Multiwall Carbon Nanotubes*

Saroja Mantha (Research Associate, USA); Bryan Chin (Auburn University, USA); Aleksandr Simonian (Auburn University, USA)

12:52 *An A.N.N. Model of the Perception of Sound by the Human Auditory System*

Daniel Riordan (Institute of Technology, Tralee, Ireland); Pat Doody (ITTralee, Ireland); Joseph Walsh (Institute of Technology, Tralee, Ireland)

S2D: Wireless Sensors Networks 1

Chair: Yueh-Min Huang, National Cheng Kung University, Taiwan

11:40 *Intellectus: Multi-Hop Fault Detection Methodology Evaluation*

Tiziana Campana (University College of Dublin, Ireland); Gregory O'Hare (University College Dublin, Ireland)

11:58 *Light-Weight History-Based Medium Access Control (MAC) Protocol for Body Area Networks*

Nesa Mouzehkesh (Charles Sturt University, Australia); Tanveer A Zia (Charles Sturt University, Australia); Saman Shafigh (Charles Sturt University, Australia); Lihong Zheng (Charles Sturt University, Australia)

12:16 *Wireless Sensor Network Attacks:An Overview and Critical Analysis*

Arash Tayebi (University of Auckland, New Zealand); Stevan Mirko Berber (University of Auckland, New Zealand); Akshya Kumar Swain (University of Auckland, New Zealand)

12:34 *AWSAM-3: A low power miniaturised wireless sensor mote*

Ameer Ivoghlian (The University of Auckland, New Zealand); Kevin I-Kai Wang (The University of Auckland, New Zealand); Zoran Salcic (The University of Auckland, New Zealand)

12:52 *Secured Multimedia Authentication System for Wireless Sensor Network Data related to Internet of Things*

Jyotsna Suryadevara (Malla Reddy Institute of Engineering & Technology- & JNTU-Hyderabad, India); Bollam Sunil (Malla Reddy Institute of Engineering & Technology-, India); Nagender Kumar Suryadevara (Massey University, New Zealand)

14:00 - 16:00

S3: Invited Session 1

Chair: Alex Mason (Liverpool John Moores University, United Kingdom)

14:00 – **14:30** Advanced sensing technologies for superconducting devices test at CERN

Pasquale Arpia, European Organization for Nuclear Research (CERN) and University of Sannio, Italy.

14:30 – 15:00 Proposal of a sub-cent RFID using metal-patch - Problems and ways to overcome them

Goutam Chakraborty, Iwate Prefectural University, Japan

15:00 – 15:30 Feature selection for pattern analysis and mining of sensors' data

Basabi Chakraborty Iwate Prefectural University, Japan

15:30 – 16:00 Imaging Dielectric Structure Using Transmission Line Waveguides

Ian Platt, Lincoln Ventures Ltd, New Zealand

16:20 - 17:50

S4A: Gas and Chemical Sensors 2

Chair: Tayeb Mohammed-Brahim, University Rennes 1, France

16:20 *Combination of tailored acid-base and red/ox properties of nanocrystalline SnO2 for optimal gas sensor performance*

Valeriy Krivetskiy (M. V. Lomonosov Moscow State University, Russia); Roman Rozhik (M. V. Lomonosov Moscow State University, Russia); Marina Rumyantseva (M. V. Lomonosov Moscow State University, Russia); Alexander Gaskov (M. V. Lomonosov Moscow State University, Russia)

16:38 *Ethanol Sensor Based on ZnO Nanoporous Prepared via Microwave Oven*

Noor Ridha (Universiti Kebangsaan Malaysia (UKM), Malaysia)

16:56 *Highly Sensitive and Stable MOSFET-Type Hydrogen Sensor with Dual FETs*

Jung-Sik Kim (University of Seoul, Korea); Bum-Joon Kim (University of Seoul, Korea)

17:14 *Semiconductor gas sensing coupled with pre-sampling system for toxic compounds and chemical threat agents detection*

Valeriy Krivetskiy (M. V. Lomonosov Moscow State University, Russia); Alexander Gaskov (M. V. Lomonosov Moscow State University, Russia); Andrey Smirnov (M. V. Lomonosov Moscow State University, Russia); Maksim Panteleev (M. V. Lomonosov Moscow State University, Russia); Leonid Logvin (M. V. Lomonosov Moscow State University, Russia)

17:32 *Fast and Low-Cost Online Detection of Critical Micelle Concentration based on Impedance Spectroscopy*

Roman Gruden (Seuffer GmbH & Co. KG & TU Chemnitz, Germany); Olfa Kanoun (Chemnitz University of Technology, Germany)

S4B: Image, Vision and Range Sensors 1

Chair: Joseph Walsh, Institute of Technology, Tralee, Ireland

16:20 *Fully Integrated Vision Based Localization in Low Cost Robot Using Kinect*

Alexandre This (ECE Paris School of Engineering, France); Badis Bouchilaoun (ECE Paris School of Engineering, France); Ronan Guyomard (ECE Paris School of Engineering, France); Charles Lahaye (ECE, France); Thomas Lange (ECE Paris School of Engineering, France)

16:38 *Image Quality and Image Resolution*

Ralf Reulke (Humboldt-Universität zu Berlin, Germany)

16:56 *Optics and Radar Image Fusion*

Ralf Reulke (Humboldt-Universität zu Berlin, Germany)

17:14 *Hyper-spectral video endoscopy system for intra-surgery tissue classification*

Thomas Arnold (Carinthian Tech Research AG & University of Klagenfurt, Austria); Martin De Biasio (Carinthian Tech Research AG, Austria); Raimund Leitner (CTR AG, Austria)

17:32 *Ultrasonic Range Measurements on the Human Body*

Dirk Weenk (University of Twente, The Netherlands); Bert-Jan van Beijnum (University of Twente, The Netherlands); Ed Droog (University of Twente, The Netherlands); Hermie Hermens (University of Twente, The Netherlands); Peter Veltink (University of Twente, The Netherlands)

S4C: Biosensors 2

Chair: Aime' Lay-Ekuakille, University of Salento, Italy

16:20 *Label-free Capacitance DNA Sensing*

Yi Jia (University of Puerto Rico, Mayaguez, USA); Phillip Rivera Ortiz (University of Puerto Rico – Mayaguez, Puerto Rico); Carlos Cabrera (University of Puerto Rico – Rio Piedras, Puerto Rico); Nella Vargas (University of Puerto Rico – Rio Piedras, Puerto Rico)

16:38 *Wireless Magnetoelastic Biosensors for the Detection of Salmonella on Fresh Produce*

Bryan Chin (Auburn University, USA)

16:56 *A microflow cytometer chip driven by the absorbent force of on-chip superabsorbent materials*

Yan-Chang Lee (National Chung Cheng University, Taiwan); Wen-Hsin Hsieh (National Chung Cheng University, Taiwan)

17:14 *Magnetotactic Bacteria as Dispatched Oxygen Sensors*

Sylvain Martel (Polytechnique Montreal, Canada); Mahmood Mohammadi (Polytechnique Montreal, Canada); Dominic de Lanauze (Polytechnique Montreal, Canada); Ouajdi Felfoul (Polytechnique Montreal, Canada)

17:32 *Human Sensing Using Wearable Wireless Sensors for Smart Environments*

Chika Sugimoto (Yokohama National University, Japan)

S4D: Wireless Sensors Networks 2

Chair: Nagender Kumar Suryadevara, Massey University, New Zealand

16:20 *A Energy Efficient WSN System for Limited Power Source Environments*

Rodrigo Semente (Universidade Federal do Rio Grande do Norte, Brazil); Felipe Oliveira (Universidade Estadual do Rio Grande do Norte, Brazil); Alberto Lock (Universidade Federal da Paraíba, Brazil); Alexandre Silva (Universidade Federal do Rio Grande do Norte, Brazil); Andres Salazar (Federal University of Rio Grande do Norte, Brazil)

16:38 *An Ultra Low Energy 8-bit Charge Redistribution ADC for Wireless Sensors*

Antonio J López-Martín (Public University of Navarra, Spain); Iñigo Cenoz Villanueva (UPNA, Spain)

16:56 *An Adaptive Approach to Information Discovery in Multi-Dimensional Wireless Sensor Networks*

Menik Tissera (Deakin University, Australia); Robin Doss (Deakin University, Australia); Gang Li (Deakin University, Australia); Lynn M Batten (Deakin University, Australia)

17:14 *Comparative Study of Routing Protocols for Opportunistic Networks*

Majeed Alajeely (Deakin University, Australia); Asma'a Ahmad (Deakin University, Australia); Robin Doss (Deakin University, Australia)

17:32 *Effect of Distributed Backoff mechanism to Simple Autonomous Active Period Selection Control in Cluster-tree type IEEE 802.15.4 WSNs with Cluster Mobility*

Kazuo Mori (Mie University, Japan); Katsuhiro Naito (Mie University, Japan); Hideo Kobayashi (Mie University, Japan)

09:00 - 10:20

S5: Keynote 2

Chair: Subhas Mukhopadhyay (Massey University, New Zealand)

09:00 – 9:45 Sensors for Non-invasive Diagnostics

Jagadeesh Kumar V (Indian Institute of Technology Madras, India)

09:45 -10:05

Technic (Industry Sponsor)

10:05 – 10:25

Micron Optics (Industry Sponsor)

10:45 - 12:15

S6A: Temperature, Humidity and Flow Sensors

Chair: Stoyan Nihtianov, Technical University - Delft, The Netherlands

10:45 *Fluid Flow Rate Estimation using Acceleration Sensors*

Laura Fabbiano (Polytechnic of Bari, Italy); Gaetano Vacca (Politecnico di Bari, Italy); Giuseppe Dinardo (Politecnico di Bari, Italy)

11:03 *Mach-Zehnder interferometer as a temperature sensor based on the nested fiber ring resonator*

Yun Dong Zhang (Harbin Institute of Technology, P.R. China); Changqiu Yu (Harbin Institute of Technology, P.R. China); Kaiyang Wang (Harbin Institute of Technology, P.R. China); Chi Xu (Harbin Institute of Technology, P.R. China); Haiping Wang (Ice Training Base in HeiLongJiang Province, P.R. China); Yuhua Zhang (Harbin Normal University, P.R. China)

11:21 *Development of polymer coated fibre Bragg gratings for relative humidity sensing*

Adam Swanson (Massey University, New Zealand)

11:39 *In-vitro measurement of pulp chamber temperature increase with light cured composite resins using fiber Bragg grating thermal sensor*

Sharath Umesh (Indian Institute of Science, India); Aadarsh Koratagere (M S Ramaiah Dental College and Hospital, India); Adarsh Bhat (KLE Society's Institute of Dental Sciences and Hospital, India); Jayanth Ravi (M S Ramaiah Dental College and Hospital, India); Sundarrajan Asokan (IIsc, India)

11:57 *Noncontact Temperature Profiling of Rotating Cylinder by Laser-Ultrasonic Sensing*

Ikuo Ihara (Nagaoka University of Technology, Japan); Akira Kosugi (Nagaoka University of Technology, Japan); Iwao Matsuya (Nagaoka University of Technology, Japan); Yasuhiro Ono (Nagaoka University of Technology, Japan)

S6B: Signal Analysis

Chair: David Frakes, Arizona State University, USA

10:45 *Circularly Moving Sensor for Use of Modulation Effect*

Masako Kishida (University of Canterbury, New Zealand); Yusuke Hioka (University of Canterbury, New Zealand)

11:03 *Scale Factor in MEMS Gyroscopes - The Effect of Power Supply Voltage*

Martin Vágner (Brno University of Technology, Czech Republic); Petr Beneš (Brno University of Technology & FEEC, Czech Republic)

11:21 *Noise Analysis of a Capacitor-to-Voltage Converter With a Zoom-in Technique*

Stoyan Nihtianov (Technical University - Delft, The Netherlands); Ali Heidary (Guilan University, Iran); Reza Taherkhani (Iran University of Science and Technology, Iran)

11:39 *Wave Intensity Estimation Over Broad Wavelengths Based On Diffused Sensing*

Kenta Niwa (NTT Media Intelligence Laboratories, Japan); Yusuke Hioka (University of Canterbury, New Zealand); Kazunori Kobayashi (NTT Media Intelligence Laboratories, Japan)

11:57 *A Novel Signal Reconstruction Strategy of Multifunctional Self-validating Sensor*

Qi Wang (Harbin Institute of Technology, P.R. China); Shen Zhengguang (Harbin Institute of Technology, P.R. China); Kai Song (Harbin Institute of Technology, P.R. China); Fengyu Zhu (Harbin Institute of Technology, P.R. China)

S6C: Biosensors 3

Chair: Bryan Chin, Auburn University, USA

10:45 *Brain activity measurement in the occipital region of the head using a magneto-impedance sensor*

Shingo Tajima (Nagoya University, Japan)

11:03 *Using Wearable Near-field Radar Sensor for Non-contact Heartbeat Signal Detection*

Hong-Dun Lin (Industrial Technology Research Institute, Taiwan)

11:21 *Higher throughput of optical detection of bacteria concentrated by negative dielectrophoresis*

Ryoji Obara (Kyushu University, Japan); Ding Zhenhao (Kyushu University, Japan); Kenta Shinzato (Kyushu University, Japan); Michihiko Nakano (Kyushu University, Japan); Junya Suehiro (Kyushu University, Japan)

11:39 *Wirelessly Powered Microfluidic Sensor and Actuator Systems*

Dulsha Kularatna-Abeywardana (The University of Auckland, New Zealand); Patrick Hu (University of Auckland, New Zealand); Zoran Salcic (The University of Auckland, New Zealand)

11:57 *Apnea Sensing Using Photoplethysmography*

Gaurav Gaurav (IIT Madras, India); Mohanasankar Sivaprakasam (IIT Madras, India); Jagadeesh Kumar V (Indian Institute of Technology Madras, India)

S6D: Mechanical Sensors 1

Chairs: Ikuo Ihara, Nagaoka University of Technology, Japan

10:45 *Force Based Pain Sensing in Animals Using Stepping Motor*

Ibrahim Al-Bahadly (Massey University, New Zealand)

11:03 *Design and Analysis of a Triple-Axis Thermal Accelerometer*

Thien Dinh (Ritsumeikan University, Japan); Yoshifumi Ogami (Ritsumeikan University, Japan)

11:21 *Reducing the Probe Ball Diameters of 3D Silicon-Based Microprobes for Dimensional Metrology*

Nelson Ferreira (Technische Universität Braunschweig & Institut für Mikrotechnik, Germany); Alexander Brennecke (Technische Universität Braunschweig, Germany); Thomas Krah (Physikalisch-Technische Bundesanstalt, Germany); David Metz (Technische Universität Braunschweig, Germany); Karin Kniel (Physikalisch-Technische Bundesanstalt, Germany); Frank Härtig (Physikalisch-Technische Bundesanstalt, Germany); Andreas Dietzel (Technische Universität Braunschweig, Germany); Stephanus Büttgenbach (Technische Universität Braunschweig, Germany)

11:39 *An experimental study of the fluids mechanism and effects of liquid for capacitive pressure sensor*

Mohd Norzaidi Mat Nawi (Universiti Sains Malaysia & Underwater Robotic Research Group, Malaysia); Asrulnizam Abd Manaf (Universiti Sains Malaysia, Malaysia); Mohd Rizal Arshad (Universiti Sains Malaysia, Malaysia); Mohamad Faizal Abd Rahman (Universiti Sains Malaysia & Universiti Teknologi Mara Malaysia, Malaysia)

11:57 *Magnetic tactile sensing method with Hall element for artificial finger*

Jun-ichiro Yuji (Kumamoto National College of Technology, Japan)

12:15 - 14:00

S7: Combined Lunch and Short Oral 1

Chairs: Michael J. Haji-Sheikh (Northern Illinois University, USA), Ian G Platt (Lincoln Ventures Ltd, New Zealand)

An add-drop ring resonator interferometer sensor with high sensitivity

Yun Dong Zhang (Harbin Institute of Technology, P.R. China); Xiaoqi Liu (Harbin Institute of Technology, P.R. China); Kaiyang Wang (Harbin Institute of Technology, P.R. China); Xuenan Zhang (Harbin Institute of Technology, P.R. China)

RF Capacitive Piezoelectric Displacement Extraction

Mahmoud Alahmad (UAEU, UAE)

Glucose Detection Using an Electro-Optical Fluidic Device Based on Pulse Width Modulation

Jing-Yau Tang (National Cheng Kung University, Taiwan); Ming-Kun Chen (National Cheng Kung University, Taiwan); Min Haw Wang (Chinese Culture University, Taiwan); Ling-Sheng Jang (National Cheng Kung University, Taiwan)

Recent evolution of smart force transducers -

Dan Mihai Stefanescu (Romanian Measurement Society, Romania)

Detection of Snail Tracks on Photovoltaic Modules using a Combination of Raman and

Fluorescence Spectroscopy

Martin De Biasio (Carinthian Tech Research AG, Austria); Raimund Leitner (CTR AG, Austria); Christina Hirschl (Carinthian Tech Research AG, Austria)

MobiDriveScore - A System for Mobile Sensor Based Driving Analysis

Chirabrata Bhaumik (Tata Consultancy Services & TCS Innovation Labs, India); Tapas Chakravarty (Tata Consultancy Services, India); Avik Ghose (Tata Consultancy Services, India); Arijit Chowdhury (Tata Consultancy Services, India)

Compressed Sensing for Wireless Pulse Wave Signal Acquisition

Kan Luo (Southeast University, P.R. China); Jianfeng Wu (Southeast University, P.R. China); Jianqing Li (Southeast University, P.R. China); Hua Yang (Southeast University, P.R. China); Zhipeng Cai (Southeast University, P.R. China)

Measurement of Wireless Power Transfer

Andi Sudjana Putra (National University of Singapore, Singapore); Sriharsha Bhat (National University of Singapore & National University of Singapore, Singapore); Vinithra Raveendran (National University of Singapore, Singapore)

Develop a reading tracking function on e-book reading system by using sensing and cloudized storage technologies

Chia-Hung Lai (National Cheng Kung University, Taiwan); Lu-Chun Pan (National Cheng Kung University, Taiwan); Chia-Cheng Hsu (National Cheng Kung University, Taiwan); Yen-Ning Su (National Cheng Kung University, Taiwan); Yu-Lin Cheng (Institute for Information Industry, Taiwan); Chia-Ju Liu (National Kaohsiung Normal University, Taiwan); Yueh-Min Huang (National Cheng Kung University, Taiwan)

Contactless Potentiometers for Automotive Applications

Antonio J López-Martín (Public University of Navarra, Spain); Alffonso Carlosena (Public University of Navarra, Spain)

Coupled add-drop ring resonator for highly sensitive sensing

Yun Dong Zhang (Harbin Institute of Technology, P.R. China); Xiaoqi Liu (Harbin Institute of Technology, P.R. China); Xuenan Zhang (Harbin Institute of Technology, P.R. China); Ping Yuan (Harbin Institute of Technology, P.R. China)

Temperature resilient measurement of refractive index for liquids

Vijaya Kumar Narayanan (Government Engineering College, Thiruvananthapuram, India)

Detection of norovirus and rotavirus by dielectrophoretic impedance measurement

Michihiko Nakano (Kyushu University, Japan); Ryoji Obara (Kyushu University, Japan); Ding Zhenhao (Kyushu University, Japan); Junya Suehiro (Kyushu University, Japan)

Direct Integration of Field Effect Transistors as Electro Mechanical Transducer for Stress

Sven Haas (Chemnitz University of Technology & Center for Microtechnologies, Germany); Michael Schramm (TU Chemnitz, Germany); Danny Reuter (Chemnitz University of Technology, Germany); Kay-Uwe Loebel (TU Chemnitz, Germany); Andreas Bertz (University of Chemnitz, Germany); John T Horstmann (Chemnitz University of Technology, Germany); Thomas Gessner (Chemnitz University of Technology, Germany)

Sensing and actuating applications of potassium sodium niobate

Asha Dahiya (University of Delhi & NSIT, India); Om Thakur (NSIT, Delhi University & Faculty of Technology, India)

Graphene pattern by gravure printing for wireless strain sensor

Lei Huang (Shanghai Normal University, P.R. China)

CHLAC based Vision Sensing Method for Bicycle Rider Detection to Avoid Confusing Similar Shape Pedestrian

Yuki Ishii (Tokyo University of Science, Japan); Hiroshi Hisahara (Tokyo University of Science, Japan); Masahito Ota (Tokyo University of Science, Japan); Takeki Ogitsu (Tokyo University of Science, Japan); Hiroshi Takemura (Noda Tus, Japan); Hiroshi Mizoguchi (Tokyo University of Science, Japan)

Quantum Tunneling Composite (QTC) based tactile sensor array for dynamic pressure distribution measurement

Asitha L. Kulasekera (University of Moratuwa, Sri Lanka); Ranjith Amarasinghe (University of Moratuwa, Sri Lanka); Peshala Priyadarshana (University of Moratuwa, Sri Lanka)

Low Temperature Low ppm Acetone Detection by Pd/TiO2/p-Si Metal-Insulator-Semiconductor Devices

Arnab Hazra (Bengal Engineering and Science University, India); Basanta Bhowmik (Bengal Engineering and Science University, India); Koushik Dutta (Bengal Engineering and Science University, India); Partha Bhattacharyya (Bengal Engineering and Science University, Shibpur, India)

Feedback Control of Outer Rotor Spherical Actuator Using Adaptive Neuro-Fuzzy Inference System

Junghyun Chu (Osaka University, Japan); Noboru Niguchi (Osaka University, Japan); Katsuhiro Hirata (Graduate School of Engineering, Osaka University, Japan)

Common-path Heterodyne Interferometric and Magnetic Sensitivity-enhanced Surface Plasmon Resonance Carbon Monoxide gas sensor

Kai-Pian Huang (Department of Mechatronics Engineering National Changhua University of Education, Taiwan); Shen Chih-Hsiung (National Changhua University of Education, Taiwan); Jing-Heng Chen (Feng Chia University, Taiwan)

A Review of Sensor Technology for In-field Phosphate monitoring

Sheetal Mapare (Massey University, New Zealand); Pak Yu (Massey University, New Zealand); Abhimanyu Sarkar (AgResearch, Grasslands Research Centre, New Zealand); Subhas Mukhopadhyay (Massey University, New Zealand)

Highly Sensitive Magnetic-Catalytic Gas Sensor

Shen Chih-Hsiung (National Changhua University of Education, Taiwan); Shu-Jung Chen (National Changhua University of Education, Taiwan)

Design and Analysis of a GMR Eddy Current probe for NDT

Rodrigo W Porto (UFRGS, Brazil); Valner Brusamarello (UFRGS, Brazil); Ricardo de Azambuja (Plymouth University, United Kingdom); Osmar Frison Jr. (UCS, Brazil)

Error in mathematical modelling and enhancement of sensing performance of electrostrictive capacitive sensors

Om Thakur (NSIT, Delhi University & Faculty of Technology, India); Nidhi Agrawal (Netaji Subhas Institute of Technology, University of Delhi, India)

Practicable Camera Modeling Technique Applying Fuzzy Modeling for 3D Sensing Based on Stereo Vision

Toshihiko Watanabe (Osaka Electro-Communication University, Japan); Yuichi Saito (DACS, Japan)

Sensors for Evaluation of Thermodynamical Model of pMA

Lukas Kopecny (Brno University of Technology, Czech Republic); Ludek Zalud (Brno University of Technology, Czech Republic)

14:00 - 15:30
S8: Invited Session 2

Chair: Krishanthi Jayasundera, Massey University, New Zealand

14:00 – 14:30 Edge Mining: Making sense of sensor data

James Brusey, Coventry University, UK

14:30 – 15:00 A miniaturised silicon biosensor system for the detection of triglycerides and urea

Enakshi Bhattacharyya , Indian Institute of Technology Madras, India

15:00 – 15:30 *<INSERT TITLE>*

John Kennedy, GNS Science, New Zealand

15:50 - 17:20

S9A: Gas and Chemical Sensors 3

Chair: Veronica Sberveglieri, University of Modena and Reggio Emilia, Italy

15:50 *SERS from ZnO Nanorod Arrays and its Application for detecting N719*

Wensheng Shi (Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, P.R. China)

16:08 *Gas-Phase Biosensor with High Sensitive & Selective for Formaldehyde Vapor*

Kohji Mitsubayashi (Tokyo Medical and Dental University, Japan)

16:26 *In2O3:Ga-based Ceramics: Advantages and Shortcoming for Application in One-electrode Gas Sensors*

Beongki Cho (Gwangju Institute of Science and Technology, Korea); Songhee Han (Mokpo Nationl Maritime University, Korea)

16:44 *ISFET with Built-in Gold Electrode and Readout Circuit with Frequency-Adjustable Pulse Output*

Ruey-Lue Wang (National Kaohsiung Normal University, Taiwan); Hsin-Hao Liao (National Chip Implementation Center, Taiwan); Hann-Huei Tsai (National Chip Implementation Center, Taiwan); Ying-Zong Juang (Chip Implementation Center, National Applied Research Laboratories, Taiwan); Chien-Cheng Fu (National Kaohsiung Normal University, Taiwan); Chi Yu (National Kaohsiung Normal University, Taiwan)

17:02 *Electronic nose for the early detection of different types of indigenous mold contamination in green coffee*

Veronica Sberveglieri (University of Modena and Reggio Emilia, Italy); Elisabetta Comini (University of Brescia, Italy); Dario Zappa (University of Brescia, Italy); Estefania Nunez Carmona (University of Modena and Reggio Emilia, Italy); Andrea Pulvirenti (University of Modena and Reggio Emilia, Italy)

S9B: Image, Vision and Range Sensors 2

Chair: Goutam Chattopadhyay, CalTech, JPL, USA

15:50 *A 3D vision system for high resolution surface reconstruction*

Roberto Marani (National Research Council (CNR), Italy); Giuseppe Roselli (National Research Council (CNR), Italy); Massimiliano Nitti (Consiglio delle Ricerche - ISSIA, Italy); Grazia Cicirelli (National Research Council, Italy); Tiziana D'Orazio (National Research Council, Italy); Ettore Stella (Consiglio delle Ricerche - ISSIA, Italy)

16:08 *Analysis of Indoor Environments by Range Images*

Roberto Marani (National Research Council (CNR), Italy); Giuseppe Roselli (National Research Council (CNR), Italy); Massimiliano Nitti (Consiglio delle Ricerche - ISSIA, Italy); Grazia Cicirelli (National Research Council, Italy); Tiziana D'Orazio (National Research

Council, Italy); Ettore Stella (Consiglio delle Ricerche - ISSIA, Italy)

16:26 *Soil Backscatter Measurement with Impulse (Ultra-Wideband) Radar*

Adrian Tan (Lincoln Agritech Limited & Lincoln University, New Zealand); Sean Richards (Lincoln Agritech Limited, New Zealand); Ian G Platt (Lincoln Ventures Ltd, New Zealand); Ian M Woodhead (Lincoln, New Zealand)

16:44 *Compton Camera Imaging*

Shiro Ikeda (The Institute of Statistical Mathematics, Japan); Hirokazu Odaka (Japan Aerospace Exploration Agency, Japan); Makoto Uemura (Hiroshima University, Japan); Tadayuki Takahashi (Japan Aerospace Exploration Agency, Japan); Shin Watanabe (Japan Aerospace Exploration Agency, Japan); Shin-ichiro Watanabe (Japan Aerospace Exploration Agency, Japan)

17:02 *Unsupervised Saliency Detection and A-Contrario based Segmentation for Satellite Images*

Junbo Zhao (Wuhan University, P.R. China); Shuoshuo Chen (Wuhan University, P.R. China); Diyang Zhao (University of Macau, P.R. China); Hailun Zhu (Wuhan University, P.R. China); Xiaoxiao Chen (Wuhan University, P.R. China)

S9C: Sensor Interfacing

Chair: Adriana Wilde, University of Southampton, United Kingdom

15:50 *Multi-sensor Information Processing and Fusion Module*

Jiebing Yan (Xi'an Jiaotong University, P.R. China); Xiaoxin Wang (Xi'an Jiaotong University, P.R. China); Hongli Hu (Xi'an Jiaotong University, P.R. China); Hongmei Wang (Xi'an Jiaotong University, P.R. China)

16:08 *A Resistive Potentiometric Type Transducer with Contactless Slide*

Supriya V Thathachary (Indian Institute of Technology, Madras, India); Boby George (Indian Institute of Technology Madras, India); Jagadeesh Kumar V (Indian Institute of Technology Madras, India)

16:26 *Energy-Efficient Inertial Sensor Fusion on Heterogeneous FPGA-Fabric / RISC System on Chip*

Hans-Peter Brückner (Leibniz Universität Hannover & Institut of Microelectronic Systems, Germany); Christian Spindeldreier (Leibniz Universität Hannover, Germany); Holger Blume (Leibniz Universitaet Hannover, Germany)

16:44 *A Simple Signal Conditioning Scheme for Inductive Sensors*

Piyush Kumar (Indian Institute of Technology Madras, India); Boby George (Indian Institute of Technology Madras, India); Jagadeesh Kumar V (Indian Institute of Technology Madras, India)

17:02 *A Direct-Digital Converter for Resistive Sensor Elements in Bridge Configuration*

Ramanathan Ponnalagu (IIT Madras, India); Boby George (Indian Institute of Technology Madras, India); Jagadeesh Kumar V (Indian Institute of Technology Madras, India)

S9D: Healthcare Applications 1

Chairs: Shubhajit Roy Chowdhury, Centre for VLSI and Embedded Systems Technology, IIIT Hyderabad, India

15:50 *Design and Development of a Feedback Mechanism and Approach for Patient-Instrument Stabilization during Office-based Medical Procedures*

Kok Kiong Tan (National University of Singapore, Singapore); Wenyu Liang (National

University of Singapore, Singapore); Tong-Heng Lee (National University of Singapore, Singapore); Chee Hoe Choy (National University of Singapore, Singapore); Zheming Shen (National University of Singapore, Singapore)

16:08 *Implementing Sensor-Actor Networks with the Elastic Network Model for Laparoscopic Training*

Christopher C Chiu (University of Technology, Sydney, Australia); Zenon D Chaczko (University of Technology, Sydney & SoCC, Australia); Lulwah Alqarni (University of Technology, Sydney, Australia); Amna Almarwani (University of Technology Sydney, Australia)

16:26 *Investigation of Bone Resonance during Femoral Reaming in Hip Replacement Surgery*

Paul O Donoghue (Institute of Technology Tralee, Ireland); Bob Jackson (ITTralee, Ireland); Daniel Riordan (Institute of Technology, Tralee, Ireland); Joseph Walsh (Institute of Technology, Tralee, Ireland); Ali Abdulkarim (Kerry General Hospital, Ireland); John Rice (Kerry General Hospital, Ireland)

16:44 *Thick Film Flow Sensor for Respirator Applications*

Michael J. Haji-Sheikh (Northern Illinois University, USA)

17:02 *TailGait: A Light-Weight Wearable Gait Analysis System*

Jirapong Manit (King Mongkut's University of Technology Thonburi, Thailand); Prakarnkiat Youngkong (King Mongkut's University of Technology Thonburi, Thailand)

09:00 - 10:30

S10A: Optical Sensors 1

Chairs: Satoshi Ikezawa, Waseda University, Japan

09:00 *Novel Bent-Tapered Mode Converting Multimode Optical Fiber Sensor based on Evanescent Wave Absorption*

Nirmal Punjabi (Indian Institute of Technology Bombay, India); Jitendra Satija (IIT Bombay, India); Soumyo Mukherji (Indian Institute of Technology Bombay, India)

09:18 *Towards Building a Miniaturized Shape Sensor - Building process of a Shape Sensor for Use in Single Port Surgery*

Hendrikje Pauer (Karlsruhe Institut for Technology (KIT) & IPR, Germany); Christoph Ledermann (Karlsruhe Institute of Technology & Institute for Process Control and Robotics, Germany); Oliver Weede (Karlsruhe Insitute of Technology (KIT), Germany); Heinz Wörn (Karlsruhe Institute of Technology (KIT), Germany)

09:36 *Highly Accurate Refractive Index Sensor Based on Fourier-Transformed Phase Acquisition in Fiber-Optic Interferometer*

Young Ho Kim (Gwangju Institute of Science and Technology, Korea); Kwan Seob Park (Gwangju Institute of Science and Technology, Korea); Byeong Ha Lee (Gwangju Institute of Science and Technology, Korea); Seok Lee (Korea Institute of Science and Technology, Korea); Deok Ha Woo (Korea Institute of Science and Technology, Korea); Young-Tak Chough (Gwangju University, Korea)

09:54 *Tapered Plastic Optical Fiber Sensor for Detection of Ethanol Concentration in H2O*

Hasnida Saad (Universiti Teknologi MARA, Malaysia, Malaysia); Mohd. Kamil Abd. Rahman (Universiti Teknologi MARA Malaysia, Malaysia); Mohd Tarmizi Ali Ali (Universiti Teknologi Mara, Malaysia)

10:12 *Feasibility Evaluation of Multi-point Sensing for Hetero-core Spliced Optical Fiber Sensor Using Internet-based Protocol*

Lee See Goh (Soka University Japan & Graduate School of Engineering, Japan); Kazuhiro Watanabe (Soka University Japan, Japan); Norihiko Shinomiya (Soka University, Japan)

S10B: Magnetic Sensors 1

Chair: Ian M Woodhead, Lincoln Agritech, New Zealand

09:00 *Prototype Instrument for Sheet Resistance Measurement by Pulse Voltage Excitation*

Hideo Saotome (Chiba University, Japan); Hiroaki Kaneko (Chiba University, Japan)

09:18 *Development of Multi Core Magneto-Impedance Sensor for Stable pico-Tesla Resolution*

Tsuyoshi Uchiyama (Nagoya University, Japan)

09:36 *Design of liquid detection sensor with low-frequency electromagnetic field*

K. Tashiro (Shinshu University, Japan); Hiroyuki Wakiwaka (Shinshu University, Japan); Takeshi Mori (Shinshu University, Japan); Ryo Nakano (Shinshu University, Japan); Noor Harun (Universiti Kuala Lumpur, Malaysia); Misron Norhisam (Universiti Putra Malaysia, Malaysia)

09:54 *Nondestructive Evaluation of Hardness using AC Permeability and Impedance Analysis*

Hiroaki Kikuchi (Iwate University, Japan)

10:12 *Self-Sensing Active Magnetic Bearing Using 2-Level PWM Current Ripple Demodulation*

Wolfgang Gruber (Johannes Kepler University Linz & Institute for Electrical Drives and Power Electronics, Austria); Manuel Pichler (Johannes Kepler University Linz, Austria); Michael Rothböck (Johannes Kepler University Linz, Austria); Wolfgang Amrhein (ACCM GmbH, Austria)

S10C: Mechanical Sensors 2

Chair: Dan Mihai Stefanescu, Romanian Measurement Society, Romania

09:00 *Analysis and compensation of MEMS gyroscope drift*

Zhanlin Diao (BMTI, P.R. China)

09:18 *Intentionally imperfect sensors for measuring mechanical parameters*

Norbert Schwesinger (Technische Universität München, Germany)

09:36 *Design and Characterization of a PCB based Capacitive Shear Force Sensor for Robotic Gripper Application*

Sheng-Jui Chen (Industrial Technology Research Institute, Taiwan); Jian-Lin Huang (Industrial Technology Research Institute, Taiwan)

09:54 *Novel High-resolution Sidewall Imaging using Standard Atomic Force Microscopy Equipment*

Florian Krohs (University of Oldenburg & Div. Microrobotics and Control Engineering, Germany); Sergej Fatikow (University of Oldenburg, Germany)

10:12 *Coordinate measurement on wafer level - from single sensors to sensor arrays*

Thomas Krah (Physikalisch-Technische Bundesanstalt, Germany); Achim Wedmann

(Physikalisch-Technische Bundesanstalt, Germany); Karin Kniel (Physikalisch-Technische Bundesanstalt, Germany); Frank Härtig (Physikalisch-Technische Bundesanstalt, Germany); Nelson Ferreira (Technische Universität Braunschweig & Institut für Mikrotechnik, Germany); Stephanus Büttgenbach (Technische Universität Braunschweig, Germany)

S10D: Healthcare Applications 2

Chair: Soami Daya Krishnananda, Dayalbagh Educational Institute & Microwave Physics Lab, India

09:00 *Wearable Textile Sensor Sock For Gait Analysis*

Oren Tirosh (Victoria University & Motion3D, Australia); Rezaul Begg (Victoria University, Australia); Elyse Passmore (Victoria University, Australia); Nili Knopp-Steinberg (Zinman College of Physical Education and Sport Sciences at the Wingate Institute, Australia)

09:18 *Assessment of Local Muscle Fatigue by NIRS*

Yoshiki Muramatsu (Tokyo University of Scisence, Japan); Hiroshi Kobayashi (Tokyo University of Scisence, Japan)

09:36 *Non Invasive Estimation of Blood Glucose using Near Infra red Spectroscopy and Double Regression Analysis*

Swathi Ramasahayam (IIIT-H, India); Sri Haindavi Koppuravuri (IIITH, India); Bharat Kavala (IIT Guwahati, India); Shubhajit Roy Chowdhury (Centre for VLSI and Embedded Systems Technology, IIIT Hyderabad, India)

09:54 *Ambient Assisted Living Framework for Elderly Wellness Determination through Wireless Sensor Scalar Data*

Nagender Kumar Suryadevara (Massey University, New Zealand); Chia-Pang Chen (National Taiwan University, Taiwan); Subhas Mukhopadhyay (Massey University, New Zealand); Ramesh Kumar Rayudu (Victoria University of Wellington, New Zealand)

10:12 *A GMR Sensor based Guiding Tool for Location of Metal Shrapnel during Surgery*

Mithun Sakthivel (Indian Institute of Technology Madras, India); Boby George (Indian Institute of Technology Madras, India); Mohanasankar Sivaprakasam (IIT Madras, India)

10:50 - 12:20

S11A: Optical Sensors 2

Chairs: Joseph Walsh (Institute of Technology, Tralee, Ireland),

10:50 *New detectors and detector architectures for high resolution optical sensor systems*

Andreas Eckardt (DLR German Aerospace Center & Institute of Optical Sensor Systems, Germany); Ralf Reulke (Humboldt-Universität zu Berlin, Germany)

11:08 *Design and Test of Prototype Attitude Control System as Telescope Stabilizer with Fiber Optic Gyroscopes*

Yongxiao Li (Peking University & China Unicom, P.R. China); Yunfeng Zhang (Peking University, P.R. China); Zinan Wang (Peking University, P.R. China); Zhengbin Li (Peking University, P.R. China); Ming Liu (Peking University, P.R. China); Liangfu Ni (Peking University, P.R. China); Chenglong Liu (Peking University, P.R. China)

11:26 *Nitrogen dioxide sensor based on optical fiber coated with a porous silica matrix incorporating lutetium bisphthalocyanine*

Marc Debliquy (University of Mons, Belgium); Driss Lahem (Materia Nova, Belgium); Antonio Bueno Martinez (Universite de Mons, Belgium); Christophe Caucheteur (Faculté Polytechnique de Mons (F.P.Ms), Belgium); Marcel Bouvet (Universite de Bourgogne, France); Patrice Mégret (University of Mons (UMONS) & Faculté Polytechnique, Belgium);

Marie-Georges Olivier (Universite de Mons, Belgium)

11:44 *Lithium Niobate (LiNbO3) Optical Retarders Used as Electric Field Sensors*

Celso Gutierrez-Martínez (Instituto Nacional de Astrofisica, Optica y electrónica (INAOE), Mexico)

12:02 *Improving sensing properties of the long-period gratings by reactive ion etching*

Mateusz Smietana (Warsaw University of Technology, Poland); Marcin Koba (Université du Québec en Outaouais, Poland); Saurabh Tripathi (University du Quebec en Outaouais, Canada); Predrag

Mikulic (Université du Québec en Outaouais, Canada); Wojtek J. Bock (Université du Québec en Outaouais, Canada)

S11B: Novel Applications 2

Chair: Joe-Air Jiang, National Taiwan University, Taiwan

10:50 *Novel Application of Ultrasonic Sensors and Kinect Sensors to Identify People and Measure Their Location -Realization of "Human SUGOROKU", A Large Scale Board Game in which People Play as Pieces-*

Tomohiro Nakayama (Tokyo University of Science, Japan); Takayuki Adachi (Tokyo University of Science, Japan); Takeki Ogitsu (Tokyo University of Science, Japan); Hiroshi Takemura (Noda Tus, Japan); Hiroshi Mizoguchi (Tokyo University of Science, Japan); Fusako Kusunoki (Tama Art University, Japan); Masanori Sugimoto (Hokkaido University, Japan); Etsuji Yamaguchi (Kobe University, Japan); Shigenori Inagaki (Kobe University, Japan); Yoshiaki Takeda (Kobe University, Japan)

11:08 *Microfluidic-based Capacitive Sensor for Underwater Acoustic Application*

Mohamad Faizal Abd Rahman (Universiti Sains Malaysia & Universiti Teknologi Mara Malaysia, Malaysia); Asrulnizam Abd Manaf (Universiti Sains Malaysia, Malaysia); Mohd Rizal Arshad (Universiti Sains Malaysia, Malaysia); Mohd Norzaidi Mat Nawi (Universiti Sains Malaysia & Underwater Robotic Research Group, Malaysia)

11:26 *Low Cost Contour Check of Loading Units using PMD Sensors*

Christian Prasse (Fraunhofer Institute for Material Flow and Logistics, Germany); Jonas Stenzel (Fraunhofer Institute for Material Flow and Logistics, Germany); Bartholomäus Rudak (TU Dortmund, Germany); Frank Weichert (TU Dortmund, University of Technology, Germany); Heinrich Mueller (TU Dortmund, University of Technology, Germany); Michael ten Hompel (TU Dortmund, University of Technology & Fraunhofer-Institut Materialflow and Logistics, Germany)

11:44 *RFID assisted Flexible Manufacturing System*

Dinesh Herath (University of Moratuwa, Sri Lanka); Sahan Vindika (University of Moratuwa, Sri Lanka); Chanuka Prasanna (University of Moratuwa, Sri Lanka); Ranjith Amarasinghe (University of Moratuwa, Sri Lanka); Dzung Viet Dao (Griffith School of Engineering, Australia); George Mann (Memorial University of Newfoundland, Canada)

12:02 *Developing a low-cost general-purpose device for the Internet of Things*

Adriana Wilde (University of Southampton, United Kingdom); Richard Oliver (University of Southampton, United Kingdom); Ed Zaluska (University of Southampton, United Kingdom)

S11C: Environmental Monitoring 1

Chair: Takehito Azuma, Utsuminiya University, Japan

10:50 *Low-Cost Sensor Array Design Optimization Based on Planar Electromagnetic Sensor Design for Detecting Nitrate and Sulphate*

Mohd Amri Bin Md Yunus (Faculty of Electrical Engineering & Universiti Teknologi Malaysia,

Malaysia)

11:08 *Detection of Microorganisms in Water and different Food Matrix by Electronic Nose*

Estefania Nunez Carmona (University of Modena and Reggio Emilia, Italy); Veronica Sberveglieri (University of Modena and Reggio Emilia, Italy); Andrea Pulvirenti (University of Modena and Reggio Emilia, Italy)

11:26 *UAV-based measurement of vegetation indices for environmental monitoring*

Thomas Arnold (Carinthian Tech Research AG & University of Klagenfurt, Austria); Martin De Biasio (Carinthian Tech Research AG, Austria); Andreas Fritz (Carinthian Tech Research AG, Austria); Raimund Leitner (CTR AG, Austria)

11:44 *Basic Research on an Environmental Monitoring System for Assaying Cesium and Barium Using Laser-Induced Breakdown Spectroscopy*

Satoshi Ikezawa (Waseda University, Japan)

12:02 *Improving leak detection sensing in pipelines: A multidimensional approach with FDM*

Aime' Lay-Ekuakille (University of Salento, Italy); Giuseppe Griffo (University of Salento, Italy); Patrizia Vergallo (University of Salento, Italy)

S11D: Network Protocols

Chair: Ibrahim Al-Bahadly, Massey University, New Zealand

10:50 *µMobile IPv6 in Wireless Sensor Networks*

Ricardo Custódio (University of Coimbra, Portugal); Ricardo Silva (University of Coimbra, Portugal); Jorge Sá Silva (University of Coimbra, Portugal); David Nunes (University of Coimbra, Portugal); Fernando Boavida (University of Coimbra, Portugal); Carlos Herrera (Escuela Politécnica Nacional, Ecuador)

11:08 *Storage Node based Routing Protocol for Wireless Sensor Networks*

Shah Ahsanul Haque (University of South Australia, Australia); Syed Mahfuzul Aziz (University of South Australia, Australia)

11:26 *Adaptive Coverage-Preserving Routing Protocol for Wireless Sensor Network*

Che-Shen Cheng (National Taipei University of Technology, Taiwan); Chwan-Lu Tseng (National Taipei University of Technology, Taiwan); Joe-Air Jiang (National Taiwan University, Taiwan); Yi-Jhang Lin (National Taiwan University, Taiwan)

11:44 *The Study of 6LoWPAN with SCTP Multi-homing in Smart Grid*

Yang-Wen Chen (National Chi Nan University, Taiwan); Arak Sae Yuan (National Chi Nan University, Taiwan); Kuan-Ta Lu (National Chi Nan University, Taiwan); Quincy Wu (National Chi Nan University, Taiwan)

12:02 *An Infrastructure for Integrating Heterogeneous Embedded 6LoWPAN Networks for Internet of Things Applications*

Samuel Catapang (The University of Auckland, New Zealand); Zachary Roberts (The University of Auckland, New Zealand); Kevin I-Kai Wang (The University of Auckland, New Zealand); Zoran Salcic (The University of Auckland, New Zealand)

12:20 - 14:00

S12: Combined Lunch and Short Oral 2

Chairs: Michael J. Haji-Sheikh (Northern Illinois University, USA), Ian G Platt (Lincoln Ventures Ltd, New Zealand)

An Ultralow-Noise Ag/AgCl Electric Field Sensor with Good Stability for Marine EM

Applications

Zhendong Wang (China University of Geosciences, P.R. China); Ming Deng (China University of Geosciences, P.R. China); Kai Chen (China University of Geosciences, P.R. China); Meng Wang (China University of Geosciences, P.R. China)

Microcrystalline silicon gauges for the measure of very high deformation with less than one mm resolution

Yannick Kervran (University of Rennes 1, France); Sabri Janfaoui (University of Rennes 1, France); Olivier De Sagazan (University Rennes 1, France); Samuel Crand (University of Rennes 1, France); Nathalie Coulon (University of Rennes 1, France); Jean-Philippe Gauthier (University of Rennes 1, France); Tayeb Mohammed-Brahim (University Rennes 1, France)

Gasoline-diesel mixtures quantifying using terahertz time-domain waveform

Yinan Li (Tianjin University & Tianjin University, P.R. China); Jian Li (Tianjin University, P.R. China); Zhen Tian (Tianjin University, P.R. China); Nan Zhou (Tianjin University, P.R. China); Lijun Sun (North Automatic Control Technology Institute, P.R. China); Shijiu Jin (Tianjin University, P.R. China); Zhoumo Zeng (Tianjin University, P.R. China)

ZigBee Based Wireless Sensor Networks and Their Use in Medical and Health Care

Zhongwei Zhang (University of Southern Queensland, Australia); Xiaohua Hu (Haikou Normal University, P.R. China)

Application of Image Processing to Laser Reflective Pattern for Multi-layer Auto-focusing System

Wei-Yen Hsu (National Chung Cheng University, Taiwan); Chien-Sheng Liu (National Chung Cheng University, Taiwan)

Design of Automatic Force Application System and Outlier Detection for Force Sensor

Chi He (Changchun University of Science and Technology, P.R. China); Guangling Dong (China Baicheng Ordnance Test Center, P.R. China); Qiang Li (China Baicheng Ordnance Test Center, P.R. China); Hongqiang Wei (China Baicheng Ordnance Test Center, P.R. China); Jihua Zhang (China Baicheng Ordnance Test Center, P.R. China); Jian Lu (China Bicheng Ordnance Test Center, P.R. China)

Second and Subsequent Fragments Headers Compression Scheme for IPv6 Header in 6LoWPAN Network

Samer Adnan Awwad (University Putra Malaysia, Malaysia); Chee Kyun Ng (Universiti Putra Malaysia, Malaysia); Nor K. Noordin (Universiti Putra Malaysia, Malaysia); Borhanuddin B Mohd. Ali (Universiti Putra Malaysia, Malaysia); Fazirulhisyam Hashim (Universiti Putra Malaysia, Malaysia)

Visible Light Photocatalytic Activity of TiO2/MWNTs Nanocomposite Prepared Using Modified Microwave Technique

Firas Alosfur (Universiti Kebangsaan Malaysia (UKM), Malaysia)

A low power environmental wireless radiation monitoring system by using 920MHz frequency band

Yoshinori Matsumoto (Keio University, Japan)

Wavelet Singular Entropy-based Feature Extraction From a Temperature Modulated Gas Sensor

Kai Song (Harbin Institute of Technology, P.R. China); Qi Wang (Harbin Institute of Technology, P.R. China); Bing Wang (No. 49 Institute, China Electronics Technology Group Corporation, P.R. China); Hongquan Zhang (No. 49 Institute, China Electronics Technology Group Corporation, P.R. China)

A Comprehensive Sensor Taxonomy and Semantic Knowledge Representation-Energy Meter Use Case

Ranjan Dasgupta (Tata Consultancy Services Ltd, India); Sounak Dey (TCS, India)

A Feasibility Study of Utilizing Tribo-Acoustics for Mobile User Interface

Leong Yeng Weng (Kanazawa University & Universiti Tenaga Nasional, Japan); Hiroaki Seki (Kanazawa University, Japan); Yoshitsugu Kamiya (Kanazawa University, Japan); Masatoshi Hikizu (Kanazawa University, Japan)

GPS-Guided Modular Design Mobile Robot Platform for Agricultural Applications

Liqiong Tang (Massey University, New Zealand); Samuel J O Corpe (Researcher, New Zealand); Phillip Abplanalp (Researcher, New Zealand)

Bio-Robotic System Using Bio-metric Signals

Christopher Scott (Researcher, New Zealand); Liqiong Tang (Massey University, New Zealand); Gourab Sen Gupta (Massey University, New Zealand)

Determination of Critical Span in Real Time using Proper Orthogonal Decomposition

Jie-Jyun Wan (National Taiwan University, Taiwan); Chia-Pang Chen (National Taiwan University, Taiwan); Cheng-Long Chuang (Intel Labs, Intel Corporation & Intel-NTU Connected Context Computing Center, National Taiwan University, Taiwan); Po-Hsiung Chang (Central Weather Bureau, Taiwan); Hsin-I Ku (Central Weather Bureau, Taiwan); Hsin-Kai Wang (Central Weather Bureau, Taiwan); Wen Chi Huang (National Taipei University of Education, Taiwan); Joe-Air Jiang (National Taiwan University, Taiwan)

An enhanced network management system for 6LoWPAN-based wireless sensor network

Hsiang-Ting Fang (National Chi Nan University, Taiwan); Ya-Ling Wang (National Chi Nan University, Taiwan); Yang-Wen Chen (National Chi Nan University, Taiwan); Quincy Wu (National Chi Nan University, Taiwan)

KIKIWAKE System for Promoting Interest in Sound Source Separation Technique - Novel Application of Microphone Array and Signal Processing -

Tomoki Taguchi (Tokyo University of Science, Japan); Masafumi Goseki (Tokyo University of Science, Japan); Ryohei Egusa (Kobe University, Japan); Miki Namatame (Tsukuba University of Technology, Japan); Masanori Sugimoto (Hokkaido University, Japan); Fusako Kusunoki (Tama Art University, Japan); Etsuji Yamaguchi (Kobe University, Japan); Shigenori Inagaki (Kobe University, Japan); Yoshiaki Takeda (Kobe University, Japan); Hiroshi Mizoguchi (Tokyo University of Science, Japan)

Gain uniformity of trapezoidal triple-GEM detectors

Yasser Maghrbi (Texas A&M University, Qatar)

Development of Upgradable Mobile Platform for Smart Applications

Prabudda Geekiyanage (University of Moratuwa, Sri Lanka); Tharanga Jayarathne (University of Moratuwa, Sri Lanka); Isuru Jayasinghe (University of Moratuwa, Sri Lanka); Ranjith Amarasinghe (University of Moratuwa, Sri Lanka)

Stability analysis of load frequency control systems with real-time pricing and external signals

Takehito Azuma (Utsuminiya University, Japan); Tatsuhiko Watanabe (Utsunomiya University, Japan)

Wireless Underground Sensor Network Design for Irrigation Control: Simulation of RFID Deployment

Vinod Parameswaran (University of Southern Queensland, Australia); Hong Zhou (University

of Southern Queensland, Australia); Zhongwei Zhang (University of Southern Queensland, Australia)

Multi-Source Information Fusion for Drowsy Driving Detection Based on Wireless Sensor Networks

Wei Liang (Changshu Institute of Technology, P.R. China); Subhas Mukhopadhyay (Massey University, New Zealand); Razali Jidin (Universiti Tenaga Nasional, Malaysia); Chia-Pang Chen (National Taiwan University, Taiwan)

Distributed Access Scheme for Body Area Networks

Haoru Su (University of Science and Technology Beijing, P.R. China); Zhiliang Wang (University of Science and Technology Beijing, P.R. China)

An Experimental Study of Temperature Effect on Material Parameters of PZT Ceramic Ring Used in Knock Sensors

Stanislav Klusáček (Brno University of Technology & CEITEC - Central European Institute of Technology, Czech Republic); Jiří Fialka (Brno University of Technology, Czech Republic); Petr

Beneš (Brno University of Technology & FEEC, Czech Republic); Zdeněk Havránek (Brno University of Technology, Czech Republic)

ZnO nanostructures synthesized by arc discharge for optical coating and sensor applications

Fang Fang (GNS Science, New Zealand); John Kennedy (GNS Science, New Zealand); John Futter (GNS Science, New Zealand); Jerome Leveneur (GNS Science, New Zealand)

Individual Nanoparticle Zeta Potential Measurements using Tunable Resistive Pulse Sensing

Eva Weatherall (Victoria University of Wellington, New Zealand); Geoff Willmott (Callaghan Innovation, New Zealand); Ben Glossop (Izon Science, New Zealand)

Geographical monitoring of Electrical Energy Quality determination: the problems of the sensors

Maurizio Caciotta ("Roma Tre" University, Italy); Fabio Leccese ("Roma Tre" University, Italy); Sabino Giarnetti ("Roma Tre" Unbivesity, Italy); Stefano Di Pasquale ("Roma Tre" University, Italy)

14:00 - 15:20

S13A: Built Environment

Chair: Alex Mason (Liverpool John Moores University, United Kingdom)

14:00 *Modeling for gas flow measurement consumed by a boiler. Towards a low-cost sensor for energy efficiency*

Baya Hadid (University of Poitiers & Ecole Nationale Supérieure d'Ingénieurs de Poitiers, France); Régis Ouvrard (University of Poitiers, France); Laurent Le Brusquet (Supelec, France); Thierry Poinot (University of Poitiers, France); Erik Etien (University of Poitiers, France); Frédéric Sicard (EDF R&D, France)

14:20 *Detection of Street Lighting Bulbs Information to Minimize Commercial Losses*

Guilherme Marcio Soares (Federal University of Juiz de Fora, Brazil); Henrique Braga (Federal University of Juiz de Fora, Brazil); Alcindo G. B. Almeida (Federal University of Juiz de Fora, Brazil); Estêvão Teixeira (Federal University of Juiz de Fora, Brazil); Raphael Mendes (Federal University of Juiz de Fora, Brazil); Missael Machado (Federal University of Espírito Santo, Brazil); Raphael Broetto (Federal University of Espírito Santo, Brazil); Murillo Castro (Federal University of Espírito Santo, Brazil); Helder Gomes Filho (Federal University of Espírito Santo, Brazil); Flávio Miguel Varejão (Federal University of Espírito Santo, Brazil); José Pereira Filho (Federal University of Espírito Santo, Brazil); André Candeia (EDP Escelsa, Brazil); Rafael Sousa (EDP Bandeirante, Brazil)

14:40 *Conductor Damage Inspection System for Overhead Power Cables*

Kevin J Stevens (Quest Integrity NZL Ltd, New Zealand); Keith Lichti (Quest Integrity NZL Ltd, USA); Ian Minchington (Quest Integrity NZL Ltd, New Zealand)

15:00 *Implementation of Transducer Electronic Data Sheet for Zigbee Wireless Sensors*

in Smart Building

Harikrishnan Vijayadharan Suseelakumari (Centre for Development of Advanced Computing, India); Sabarimuthu Irene (Ubiquitous Computing & CDAC, India); Pitchiah R (Centre for Development of Advanced Computing, India)

S13B: Magnetic Sensors 2

Chair: Keith Jones, Callaghan Innovation & Measurement Standards Laboratory, New Zealand

14:00 *A New Eddy Current Sensor Composed of Three Circumferential Gradient Winding Coils*

Peng Xu (Nanjing University of Aeronautics and Astronautics, P.R. China); Jun Huang (Nanjing University of Aeronautics and Astronautics, P.R. China)

14:20 *Effect of annealing on magnetic properties and Giant magnetoimpedance effect of amorphous microwires*

Ahmed Talaat (Basque Country University, UPV/EHU, Spain); Valentina Zhukova (Basque Country University, UPV/EHU, Spain); Mihail Ipatov (Basque Country University, UPV/EHU, Spain); Juan Blanco (Basque Country University, UPV/EHU, Spain); Arcady Zhukov (Basque Country University, UPV/EHU & Ikerbasque, Science Foundation, Spain)

14:40 *Effect of nanocrystallization on Giant magnetoimpedance effect of microwires*

Ahmed Talaat (Basque Country University, UPV/EHU, Spain); Valentina Zhukova (Basque Country University, UPV/EHU, Spain); Mihail Ipatov (Basque Country University, UPV/EHU, Spain); Lorena Gonzalez-Legarreta (Universidad de Oviedo, Spain); Blanca Hernando (Universidad de Oviedo, Spain); Arcady Zhukov (Basque Country University, UPV/EHU & Ikerbasque, Science Foundation, Spain)

15:00 *Soft Magnetic Amorphous Ribbons with High Frequency Magnetoimpedance for Sensors*

Ahmed Talaat (Basque Country University, UPV/EHU, Spain); Mihail Ipatov (Basque Country University, UPV/EHU, Spain); Valentina Zhukova (Basque Country University, UPV/EHU, Spain); Lorena Gonzalez-Legarreta (Universidad de Oviedo, Spain); Victor Prida (University of Oviedo, Spain); Blanca Hernando (Universidad de Oviedo, Spain); Julian Gonzalez (Basque Country University, Spain); Arcady Zhukov (Basque Country University, UPV/EHU & Ikerbasque, Science Foundation, Spain)

S13C: Environmental Monitoring 2

Chair: Hideo Saotome, Chiba University, Japan

14:00 *Effects of Environmental Conditions on Photovoltaic Module Measurements*

Patrizia Vergallo (University of Salento, Italy); Aime' Lay-Ekuakille (University of Salento, Italy); Claudio De Capua (University of Reggio Calabria, Italy); Rosario Morello (University Mediterranea of Reggio Calabria, Italy)

14:20 *Measurement of Ultrafine Exhaust Particles Using Light Scattering*

Harald Axmann (AVL DiTEST Fahrzeugdiagnose GmbH, Austria); Alexander Bergmann (AVL List GmbH, Austria); Bernd Eichberger (Graz University of Technology, Austria)

14:40 *Planar Electromagnetic Wave Sensor for Instantaneous Assessment of Pesticides in Water*

Olga Korostynska (Liverpool John Moores University, United Kingdom); Ismini Nakouti (Liverpool John Moores University, United Kingdom); Alex Mason (Liverpool John Moores University, United Kingdom); Ahmed I Al-Shamma'a (Liverpool John Moores University, United

Kingdom)

15:00 *Using Motion Sensor for Landslide Monitoring*

Kuo-Lung Wang (National Chi Nan University, Taiwan); Yo-Ming Hsieh (National Taiwan University of Science and Technology, Taiwan)

S13D: Dielectric Measurement

Chair: K. Tashiro, Shinshu University, Japan

14:00 *Microwave Sensing of pM Concentration of Insulin in Buffer solution using WGM-DR*

Ritika Verma (Dayalbagh Educational Institute, India); Soami Daya Krishnananda (Dayalbagh Educational Institute & Microwave Physics Lab, India)

14:20 *Development of a Predictive Water-Holding Capacity Method in Postmortem Longissimus Dorsi Muscle*

Badr M Abdullah (Liverpool John Moores University, United Kingdom); Alex Mason (Liverpool John Moores University, United Kingdom); Jeff Cullen (Liverpool John Moores University, United Kingdom); Ahmed I Al-Shamma'a (Liverpool John Moores University, United Kingdom)

14:40 *Moisture Content Estimation of Wet Sand from Free-Space Microwave Techniques*

Sean Richards (Lincoln Agritech Limited, New Zealand); Adrian Tan (Lincoln Agritech Limited & Lincoln University, New Zealand); Ian G Platt (Lincoln Ventures Ltd, New Zealand); Ian M Woodhead (Lincoln, New Zealand)

15:00 *Utilisation of an Embedded Resonant Structure to Differentiate Lipomyces Yeast Cultures based upon Lipid Content and Cell Concentration*

Richard Blakey (Liverpool John Moores University, United Kingdom); Alex Mason (Liverpool John Moores University, United Kingdom); Ahmed I Al-Shamma'a (Liverpool John Moores University, United Kingdom); Carole Rolph (University of Central Lancashire, United Kingdom); Gary Bond (University of Central Lancashire, United Kingdom)

出國報告電子檔規格

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項目③：細明體 14 號，置中對齊

四、內文設定

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六、附件處理

國外攜回之重要文件相關資料，不涉著作權的部分，得影印掃描成 pdf 檔，附加於正文之後成為完整之電子文書，同時上載至資訊網。

七、其他注意事項

- 結構依序為封面、摘要（200-300 字）、目次、本文、(附錄)。並加註頁碼。
- 本文必須包含「目的」、「過程」、「心得及建議」。
- 出國報告題目名稱應能表達出國計畫主旨。
- 出國人員眾多無法於封面盡列時，得以代表人員等表示，但必須另詳列清單於報告內。