

Sensors & their Applications XVII

Programme

Sunday 15 September

19.00 – 22.00 Welcome reception - RIXOS Hotel, Libertas

Monday 16 September

09.00 – 09.15 **Welcome – V Bilas, University of Zagreb and G McConnell, University of Strathclyde**

09.15 – 10.15 Chair – V Bilas, University of Zagreb, Croatia

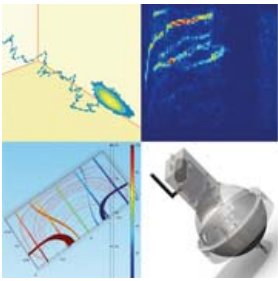
(Keynote) Security applications of magnetic sensors
P Ripka, Czech Technical University in Prague, Czech Republic

10.15 – 10.45 Refreshments

Session 1: Optical sensors

Chair – G McConnell, University of Strathclyde, UK

- 10.45–11.05 **Plastic optical fibre sensor for spine bending monitoring**
M A Zawawi^{1,2}, S O'Keeffe¹ and E Lewis¹, ¹University of Limerick, Ireland, ²Universiti Malaysia Pahang, Malaysia
- 11.05–11.25 **Integration of leaky waveguide detection with electrowetting on dielectric digital microfluidic devices**
R Gupta and N Goddard, University of Manchester, UK
- 11.25–11.45 **Detection and classification of orange peel on polished steel surfaces by interferometric microscopy**
M L Miranda-Medina, P Somkuti and B Steiger, AC²T Research GmbH, Austria
- 11.45–12.05 **Stability comparison between two optical refractometer techniques**
S A Chowdhury, E Chehura, R Correia, D Francis, J Hodgkinson and R P Tatam, Cranfield University, UK
- 12.05–12.25 **Development of dithizone based fibre optic evanescent wave sensor for heavy metal ion detection in aqueous environments**
K Bhavsar, R Prabhu and P Pollard, Robert Gordon University, UK
- 12.25–12.45 **Investigation of finger reflectance photoplethysmography in volunteers undergoing a local sympathetic stimulation**
H Njom and P Kyriacou, City University London, UK
- 12.45–14.00 Lunch



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Session 2: Smart sensors, sensor modelling

Chair - A Tickle, Coventry University, UK

- 14.00-14.20 **Interface electronics for an RF resonance-based displacement sensor**
E Asua¹, V Etxebarria¹, A García-Arribas¹, J Feuchtwanger¹, J Portilla¹, and J Lucas²
¹Universidad del País Vasco (UPV/EHU), Spain, ²Elytt Energy, Spain
- 14.20-14.40 **Sensor interface for multimodal evaluation of capacitive sensors**
 T Schlegl and H Zangl, Graz University of Technology, Austria
- 14.40-15.00 **Detection of the short-circuit faults in the stator winding of induction motors based on harmonics of the neighboring magnetic field**
V Fireteanu, University of Bucharest, Romania
- 15.00- 15.20 **Empowering smartphone users with sensor node for air quality measurement**
D Oletic and V Bilas, University of Zagreb, Croatia
- 15.20-15.50 **Refreshments**
- 15.50-18.00 **Poster Session**
- 18.00 **Free time for delegates**

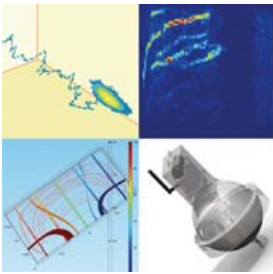
Tuesday 17 September

- 09.15-10.15 **Chair - G McConnell, University of Strathclyde**
- (KEYNOTE) New tricks with old sensors: pervasive technologies for novel application**
G Merrett, University of Southampton, UK
- 10.15-10.45 **Refreshments**

Session 3: Electromagnetic sensors

Chair - V Bilas, University of Zagreb, Croatia

- 10.45-11.05 **Analytical modelling of soil effects on electromagnetic induction sensor for humanitarian demining**
D Vasić, D Ambruš and V Bilas
 University of Zagreb, Croatia
- 11.05-11.25 **Classification of metallic targets using a single frequency component of the magnetic polarisability tensor**
J Makkonen^{1,3}, L A Marsh², J Vihonen¹, A Visa¹, A Järvi³ and A J Peyton²
¹Tampere University of Technology, Finland, ²University of Manchester, UK, ³Rapiscan Systems Oy, Finland



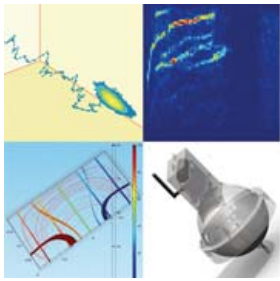
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- 11.25-11.45 **Long range magnetic localization- accuracy and range study**
J Vcelak¹, A Zikmund² and J Kral²
¹CTU-University Center for Energy Efficient Buildings, Czech Republic, ²CTU-Faculty of Electrical Engineering, Czech Republic
- 11.45-12.05 **Active induction balance method for metal detector sensing head utilizing transmitter-bucking and dual current source**
D Ambruš, D Vasić and V Bilas
 University of Zagreb, Croatia
- 12.05-12.25 **Evaluation of uncertainty in AC power calculation with asynchronously sampled data**
D Lindenthaler and H Zangl
 Graz University of Technology, Austria
- 12.25-12.45 **Defect detection of the weld bead based on electromagnetic sensing**
B M Abdullah, A Mason and A Al-Shamma'a
 Liverpool John Moores University, UK
- 12.45-14.00 **Lunch**

Session 4: Magnetic sensors and glacial monitoring

Chair – H Zangl, University of Graz, Austria

- 14.00-14.20 **Magnetic sensing for microstructural assessment of power station steels: Magnetic Barkhausen noise and minor loop measurements**
J W Wilson¹, N Karimian¹, W Yin¹, J Liu², CL Davis², and A J Peyton¹
¹University of Manchester, UK, ²University of Birmingham, UK
- 14.20-14.40 **Magnetic sensing for microstructural assessment of power station steels: Differential permeability and magnetic hysteresis**
N Karimian¹, J W Wilson¹, W Yin¹, J Liu², CL Davis², and A J Peyton¹
¹University of Manchester, UK ²University of Birmingham, UK
- 14.40-15.00 **Enhancing performance of wireless sensor networks in glacial environments using wake-up receivers**
V Jelacic¹, D Cesarini² and V Bilas¹
¹University of Zagreb, Croatia, ²University of Pisa, Italy
- 15.00-15.20 **From single point of measurement to distributed sensing in long-term glacier monitoring**
D Cesarini¹, V Jelacic², V Bilas² and M Avvenuti¹
¹University of Pisa, Italy, ²University of Zagreb, Croatia
- 15.20-15.50 **Refreshments**



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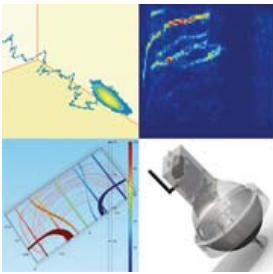
Session 5: Sensors for biology and medicine, fluid sensors

Chair - D Vasic, University of Zagreb, Croatia

- 15.50-16.10 **A fluidic cell embedded electromagnetic wave sensor for online indication of neurological impairment during surgical procedures**
R T Blakey, A Mason and A I Al-Shamma¹
 Liverpool John Moores University, UK
- 16.10-16.30 **Arm and wrist surface potential mapping for wearable ECG rhythm recording devices: a pilot clinical study**
 W D Lynn¹, O J Escalona¹, D J McEaney²
¹University of Ulster, UK, ²Cardiovascular Research Unit, Craigavon Area Hospital, UK
- 16.30-16.50 **Detection of gamma-radiation and heavy metals using electrochemical bacterial-based sensor**
M Al-Shanawa^{1,2}, A Nabok¹, A Hashim¹, T Smith¹, S Forder¹
¹Sheffield Hallam University, UK, ²University of Basra, Iraq
- 16.50-17.10 **Drive system alignment calibration of a microgravity drop tower of novel design**
J Trunins¹, B P Osborne² and A Augousti¹
¹Kingston University, UK, ²The University of New South Wales, UK
- 17.10-17.30 **Improvements to zirconia thick-film oxygen sensors♣**
W C Maskell^{1,2}, D J L Brett² and N P Brandon¹
¹Imperial College London, UK, ²University College London, UK
 ♣ The work was carried out at Sensox Ltd, a company which subsequently went into liquidation
- 17.30-17.55 **NI measurement systems for any sensors in any applications**
 A Drozg, National Instruments, Hungary
- 19.30 **Conference dinner at the Klarisa Restaurant in the Old Town – coach will depart outside hotel**

Wednesday 18 September

- 09.15-10.15 Chair - K Ozanyan, University of Manchester, UK
- (KEYNOTE) From Hemodynamic towards cardiomechanic sensors in implantable devices**
 Dr.sc.Bozidar Ferek-Petric, CCDS, MEDTRONIC CRDM Adriatic Region
- 10.15-10.45 **Refreshments**

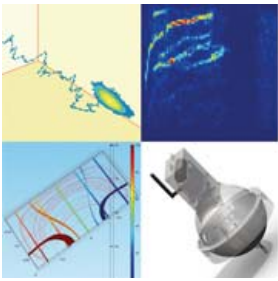


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Session 6: General sensors

Chair - A Peyton, University of Manchester

- 10.45-11.05 **Development of device producing electrolyzed water for home care**
K Umimoto¹, S Nagata¹, and J Yanagida²
¹Osaka Electro-Communication University, Japan, ²Kobe Tokiwa University, Kobe Japan
- 11.05-11.25 **Real-time microwave sensor for KCl, MnCl₂ and CuCl solutions concentration with Ag patterns printed on flexible substrates**
M Ortoneda-Pedrola, O Korostynska, A Mason and A I Al-Shamma'a
Liverpool John Moores University, Liverpool, UK
- 11.25-11.45 **Abilities of Raman sensor to probe pollutants in water**
K Ben Mabrouk^{1,2}, T H Kauffmann^{1,2} and M D Fontana^{1,2}
¹Université de Lorraine, France, ²Supélec, Laboratoire Matériaux Optiques, France
- 11.45 - 12.05 **Hard-field tomography imaging in secondary contrast**
J A Cantoral Ceballos, M P Wood, N Nurgiyatna, M A Banuelos Saucedo, P Wright and K B Ozanyan
University of Manchester, UK
- 12.05-12.25 **Advanced sensors for accurate, broadband AC voltage metrology**
T E Lipe, J R Kinard, D B Novotny, and J E Sims
National Institute of Standards and Technology, USA
- 12.25-12.45 **A matched Bow-tie antenna at 433MHz for use in underwater wireless sensor networks**
A A Abdou, A Shaw, A Mason, A Al-Shamma'a, J Cullen, S Wylie and M Diallo
Liverpool John Moores University, UK
- 12.45 **Lunch**



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Poster programme

The main poster session will take place on Monday 16 September, from 15.50 - 18.00. You can mount your posters from 09.00 on Monday. The posters will be on display throughout the duration of the conference. The dimensions of the boards are 1 metre wide and 2 metres high.

P.1 - Real-time sensing of NaCl solution concentration at microwave frequencies using novel Ag patterns printed on flexible substrates

O Korostynska, Liverpool John Moores University, UK

P.2 - A Study on signal group processing of AUTOSAR COM module

T-M Han, ETRI, South Korea

P.3 - Hydrogen sensing using reduced graphene oxide sheets supported by Pd nanoparticles

R Yatskiv, Institute of Photonics and Electronics, Academy of Sciences CR, v.v.i. Czech Republic

P.4 - Rigorous modelling of light's intensity angular-profile in Abbe refractometers with absorbing homogeneous fluids

A Garcia-Valenzuela, UNAM, Mexico

P.5 - Spectral response analysis of PVDF capacitive sensors

A Garcia-Valenzuela, UNAM, Mexico

P.6 - Investigation of the significance of the 'body effect' on sensitivity to metallic objects in a walk-through metal detector

L Marsh, University of Manchester, UK

P.7 - Optical detection of microcystin produced by cyanobacteria

R Al-Ammar, Sheffield Hallam University, UK

P.8 - A novel optical sensor platform designed for wireless sensor networks

S Yang, City University London, UK

P.9 - A Quasi-Monte Carlo solution for the mutual inductance of misaligned circular coils

L Babić, Končar KET, Croatia

P.10 - The use of nanotechnology in the development of a distributed fibre-optic temperature sensor for subsea applications

G McDowell, Glasgow Caledonian University, UK

P.11 - Low frequency noise of anisotropic magnetoresistors in DC and AC-EXCITED metal detectors

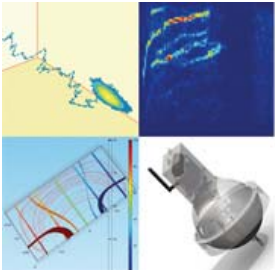
M Janosek, Czech Technical University in Prague, Czech Republic

P.12 - Pervasive sensing: addressing the heterogeneity problem

M O'Grady, University College Dublin, Ireland

P.13 - Calibrations of phase and ratio errors of current and voltage channels of energy meter

P Mlejnek, UCEEB CTU, Czech Republic



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P.14 - Optical sensor for heat conduction measurement in biological tissue

C Sánchez-Pérez, CCADET UNAM, Mexico

P.15 - Channel equalization for indoor lighting communications networks

S Hadjiloucas, University of Reading, UK

P.16 - Smart-phone based electrocardiogram wavelet decomposition and neural network classification

S Hadjiloucas, University of Reading, UK

P.17 - Emotional recognition from the speech signal for a virtual education agent

A Tickle, Coventry University, UK

P.18 - Use of an infrared thermometer with laser targeting in morphological scene change detection for fire detection

A Tickle, Coventry University, UK

P.19 - Wearable sensor network for health monitoring: the case of Parkinson disease

M T Arredondo, Universidad Politécnica de Madrid, Spain

P.20 - Non-invasive measurement of cholesterol in human blood by impedance technique: an investigation by 3D finite element field modelling

E Aristovich, City University London, UK

P.21 - Pilot study: Assessing repeatability of the EcoWalk platform resistive pressure sensors to measure plantar pressure during barefoot standing

M Zequera, Pontificia Universidad Javeriana, Columbia