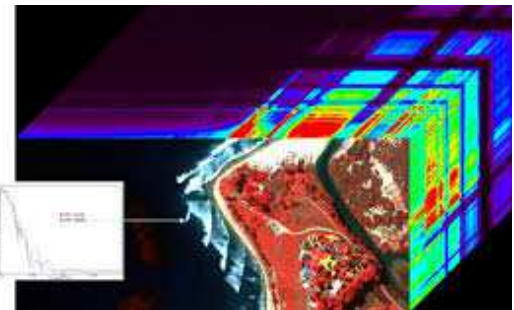




In collaboration with the  
Hyperspectral Imaging Centre



## PROGRAMME

# Hyperspectral Imaging & Applications

**Date: Wednesday 12th & Thursday 13th October 2016**

**Venue: Ricoh Arena Coventry, UK**

### GOLD SPONSOR



### SILVER SPONSOR



## PROGRAMME: DAY 1 : WEDNESDAY

Registration from 08:30 and exhibition is open: 10:00 to 17:00

09:30 **Introduction to meeting**  
Prof Stephen Marshall, *Hyperspectral Imaging Centre*

### SESSION 1 – FOOD & DRINK | Chair: S. Morgan

09:40 **KEYNOTE**  
**Mapping composition in food samples by NIR Hyperspectral imaging**  
Martin Whitworth, *Campden BRI, UK*

10:10 **Rice seed varietal purity inspection using hyperspectral imaging**  
K. Trung<sup>1</sup>, L. Thi<sup>1</sup>, I. Andonovic<sup>2</sup> & S. Marshall<sup>2</sup>,  
<sup>1</sup>MICA, *Hanoi Univ. of Science and Technology, Vietnam*, <sup>2</sup>*University of Strathclyde, Glasgow, UK*

10:30 **Analysis and detection of counterfeit drugs with hyperspectral cameras**  
M. Marmion<sup>1</sup>, S. Wilczynski<sup>2</sup> and B. Parker<sup>3</sup>,  
<sup>1</sup>*SPECIM Spectral Imaging Ltd, Finland*, <sup>2</sup>*Medical University of Silesia in Katowice, Poland*, and <sup>3</sup>*LOT-QuantumDesign Ltd, UK*

10:50 - refreshment break

11:10 **HSI for rapid screening of quality parameters in granular food commodities**  
N. Caporaso<sup>1,2</sup>, M. Whitworth<sup>1</sup> and I. Fisk<sup>2</sup>,  
<sup>1</sup>*Campden BRI, Chepping Campden, UK*, <sup>2</sup>*University of Nottingham, School of Biosciences, Nottingham, UK*

11:30 **Rapid detection and visualization of organic spelt (*Triticum spelta* L.) flour adulteration using HSI and multivariate analysis**  
W-H. Su, D-W. Sun, *Food Refrigeration &*

*Computerised Food Technology, University College Dublin, Ireland*

11:50 **Using NIR HSI for the differentiation of pathogenic bacteria**  
T-L. Kammies, M. Manley, P. Gouws and P. Williams,  
*Stellenbosch University, South Africa*

12:10 - lunch break and exhibition

### SESSION 2 – REMOTE SENSING & DATA ANALYSIS | Chair: J Ren

13:30 **KEYNOTE**  
**Remote HSI activities in the Chester F. Carlson Center for Imaging Science at RIT; phenomenology, algorithms, modeling and simulation, and applications**  
Professor A. Vodacek, *Center for Imaging Science, Rochester Institute of Technology, USA*

14:00 **A new method for supervised optimum multispectral and hyperspectral data subset selection**  
Robert McConnell, *WAY-2C, USA*

14:20 - refreshment break

### SESSION 3 - INDUSTRIAL | Chair: S Marshall

14:55 **Real-time HSI – realising the potential of simultaneous, co-registered, 2D spectral capture at video rates**  
N. Barnett<sup>1</sup> and R. Michels<sup>2</sup>, <sup>1</sup>*Pro-Lite Technology Ltd, UK* and <sup>2</sup>*Cubert GmbH, Germany*

15:10 **Linear variable bandpass filters for HSI**  
O. Pust and H. Farbricius, *Delta Optical Thin Film A/S, Denmark*

15:25 **xiSpec hyperspectral snapshot mosaic and multi-linescan cameras**  
J. Hillmann, *XIMEA GmbH, Germany*

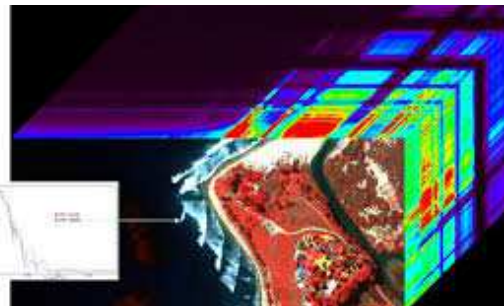
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- 15:40 **State of the art of UV – MIR spectral imaging: Innovated possibilities and applications**  
L. Urbonas, *Inno-spec, Germany*
- 15:55 **Colour chemical imaging – intuitive hyperspectral imaging for the machine vision market**  
R. Webb, *Stemmer Imaging, UK*
- 16:10 - 17:30  
**POSTER SESSION – PAPER LIST | Chair: J Ren**
- P1 **Overview of hyperspectral data processing at the NERC-ARF**  
L. Harris<sup>1</sup>, G. Llewellyn<sup>2</sup>, C. MacLellan<sup>3</sup>, M. Warren<sup>1</sup>, B. Taylor<sup>1</sup>, D. Clewley<sup>1</sup>, A. Mata<sup>1</sup>, S. Goult<sup>1</sup> & S. Groom<sup>1</sup>,  
<sup>1</sup>Plymouth Marine Laboratory, <sup>2</sup>British Antarctic Survey, <sup>3</sup>NERC Field Spectroscopy Facility, UK
- P2 **Close range HSI for mapping salinity stress induced by Red Sea water irrigation in tobacco leaves**  
P. Mishra<sup>1</sup>, H. Shah<sup>2</sup>, M. F McCabe<sup>2</sup>, R. M. Houborg<sup>2</sup> and S. Almashawari<sup>2</sup>, <sup>1</sup>University of Antwerp, Belgium, <sup>2</sup>King Abdullah University of Science and Technology, Saudi Arabia
- P3 **Comparison of methods for the location and correction of bad pixels present in HSI**  
R. Dorrepaal and A. Gowen, *University College Dublin, Ireland*
- P4 **HSI acquisition and analysis for the discrimination of bacterial colonies on blood agar plates images**  
S. Arrigoni<sup>1</sup>, G. Turra<sup>2</sup> and A. Signoroni<sup>1</sup>, <sup>1</sup>University of Brescia, Italy, <sup>2</sup>K Copan SpA - University of Brescia, Italy
- P5 **An iterative procedure for identification of foreign products in powder foods in NIR HSI spectroscopy: frauds and contaminations**  
A. Herrero-Langreo<sup>1</sup>, B. Diezma<sup>2</sup>, L. Lleó<sup>2</sup>, N. Gorretta<sup>1</sup>, M. Boiret<sup>3</sup>, T. Cuadrado<sup>4</sup>, P. Barreiro<sup>2</sup>, and J. Michel Roger<sup>1</sup>, <sup>1</sup>UMR-ITAP, Irstea, Montpellier, France, <sup>2</sup>LPF-TAGRALIA, ETSIAAB, Universidad Politécnica de Madrid, Madrid, Spain, <sup>3</sup>Technologie Servier, Orléans, France, <sup>4</sup>Facultad de Agronomía y Veterinaria, UASLP, San Luis de Potosí, México
- P6 **Hybrid tissues surface HSI and shape recovery**  
J. Lin<sup>1</sup>, N. Clancy<sup>1</sup>, X. Sun<sup>1</sup>, J. Qi<sup>1</sup>, M. Janatka<sup>2</sup>, D. Stoyanov<sup>2</sup> and D. Elson<sup>1</sup>, <sup>1</sup>Imperial College London, UK and <sup>2</sup>University College London, UK
- P7 **Effect of Kernel width on classification accuracy: Using SVM for hyperspectral dataset**  
R. Munsaf Khan, *Institute of Space Technology, Pakistan*
- P8 **High performance snapshot spectral imaging using a generalisation of a Lyot filter**  
J. Fernandez Ramos, L. Brewer and A. Harvey, *University of Glasgow, UK*
- P9 **Enhanced CASSI snapshot imager using dual prism dispersion**  
M. Ding, P.W.T. Yuen, U. Soori, M. Selvagumar and U. Zahidi, *Cranfield University, UK*
- P10 **Discriminative imaging for washing powder production by multispectral sensing**  
U. Soori<sup>1</sup>, P.W.T. Yuen<sup>1</sup>, J. Ren<sup>2</sup>, S. Selvagumar<sup>1</sup>, M. Ding<sup>1</sup>, U. Zahidi<sup>1</sup>, M. Gunes<sup>1</sup> and J. Piper<sup>1</sup>, <sup>1</sup>Cranfield University, UK and <sup>2</sup>University of Strathclyde, UK
- P11 **HSI for monitoring of continuous crystallisation process of fine pharmaceuticals**  
J. Dziewierz, J. McGinty, P. MacFhionnghaile, V. Svoboda, J. Sefcik, A. Gachagan, A. Nordon, S. Marshall, A. Cleary and I. Andonovic, *University of Strathclyde, UK*
- P12 **Introduction of separation boundary in sub-pixel mapping based on a traction model**  
A. Eskandari and A. Karami, *Shahid Bahonar, University of Kerman, Iran*
- P13 **Visible and NIR HSI to early detection of fungal infection in strawberry fruits**  
A. Siedliska, P. Baranowski and M. Zubik, *Institute of Agrophysics Polish Academy of Science, Poland*
- P14 **Hyperspectral imaging and multivariate data analysis as a sensitive determinant of cut flower age**  
Alan P. Gay<sup>1</sup>, Helen J. Ougham<sup>1</sup>, Hilary J. Rogers<sup>2</sup>, Janet Taylor<sup>1</sup>, Carol Wagstaff<sup>2</sup> Anthony D. Stead<sup>3</sup>  
<sup>1</sup>IBERS, Plas Gogerddan, Aberystwyth, <sup>2</sup>Cardiff School of Biosciences, Cardiff University, <sup>3</sup>Royal Holloway, University of London
- 17:30 - end of day  
*There will be a conference dinner within the Ricoh Arena Complex at 19.30pm. Details on website.*

## CONFERENCE ADMINISTRATION

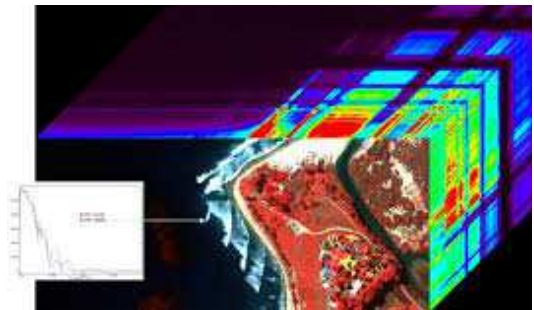
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## PROGRAMME

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### PROGRAMME: DAY 2 : THURSDAY

Registration from 08:30 and exhibition is open: 10:00 to 16:00

#### 09:40 Introduction to day 2

Prof Stephen Marshall, *Hyperspectral Imaging Centre*

#### SESSION 4 – SENSORS & SYSTEMS

| Chairs: A Harvey and P Yuen

#### 09:50 KEYNOTE

##### Real-time detection of human brain tumor using HSI

Dr Himar Fabelo, *Universidad de Las Palmas de Gran Canaria, Spain*

#### 10:20 Multispectral imaging at longwave-infrared wavelengths by a multi-aperture array of low-cost sensors

M. Preciado, G. Carles and A. Harvey, *University of Glasgow, UK*

10:40 - refreshments break

#### 11:00 Hyperspectral reflectance and fluorescence probe for endoscopic imaging

N. Clancy, J. Teare, G. Hanna and D. Elson, *Imperial College London, UK*

#### 11:20 An integrated camera system for effective acquisition, capturing and transmission of hyperspectral data

J. Tschannerl, J. Ren, D. McKee and S. Marshall, *University of Strathclyde, Glasgow, UK*

#### 11:40 Close range hyperspectral imaging for plant phenotyping

P. Mishra<sup>1</sup>, M.S.M. Asaari<sup>1</sup>, S. Mertens<sup>2</sup>, S. Dhondt<sup>2</sup>, N. Wuyts<sup>2</sup> and P. Scheunders<sup>1</sup>, <sup>1</sup>*University of Antwerp, Belgium*, <sup>2</sup>*University of Ghent, Belgium*

#### 12.00 Ensemble feature selection for plant classification using HSI

A. Bin Ghaith Alsuwaidi, H Yin, B Grieve, C Veys and M Hussey, *University of Manchester, UK*

12.20 - lunch break and exhibition

#### SESSION 5 –APPLICATIONS | Chair: N Clancy

#### 14.00 Hyperspectral imaging for erosion detection in wind turbine blades

A. Young, S. Marshall, A. Kay, R. Torr and A. Gray, *University of Strathclyde, Glasgow, UK*

#### 14.20 HSI for textile sorting and recycling in industry

C.B.P. Del Notario<sup>1</sup> and A. Lambrechts<sup>2,1</sup>, <sup>1</sup>*IMEC, Spain* and <sup>2</sup>*IMEC, Belgium*

#### 14.40 Remote oil spill detection and monitoring on ice-covered waters

A. Polak<sup>1</sup>, S. Marshall<sup>1</sup>, J. Ren<sup>1</sup>, B. Hwang<sup>2</sup>, B. Hagan<sup>2</sup> and D. Stothard<sup>3</sup>, Bruce Rafert<sup>4</sup>. <sup>1</sup>*University of Strathclyde, Glasgow, UK*, <sup>2</sup>*Scottish Association for Marine Science, Oban, UK*, <sup>3</sup>*Fraunhofer UK, Glasgow, UK*, <sup>4</sup>*Department of Physics, North Dakota State University, Fargo, USA*

15:00 Closing remarks and end of conference

### PROGRAMME COMMITTEE

**Prof Steve Marshall** (Chair)  
Hyperspectral Imaging Centre,  
University of Strathclyde.

**Dr Jinchang Ren** (Co-Chair)  
Hyperspectral Imaging Centre,  
University of Strathclyde.

**Dr Aoife Gowen**  
(Technical Programme Organiser)  
University College Dublin, Ireland

**Dr Neil Clancy**  
(Technical Programme Organiser)  
Department of Surgery and Cancer,  
Imperial College London.

**Prof Andy Harvey**  
School of Physics & Astronomy,  
University of Glasgow.

**Prof Steve Morgan**  
Faculty of Engineering,  
University of Nottingham.

**Dr Peter Yuen**  
Electro-Optics, Image & Signal  
Processing, Centre for Electronics  
Warfare, Cranfield University.

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