

## PROGRAMME:

# Vacuum Technology Talks & Training

**Date:** Wednesday 14th June, 2017

**Venue:** Technology & Innovation Centre • University of Strathclyde

11:55 **Introduction and welcome**

**Laurence Devereux**, *Xmark Media*

12:00 **Thin film research – key enabler for novel sensor and imaging applications**

**Professor Des Gibson**, Institute of Thin Films, Sensors & Imaging, *University of the West of Scotland*

New advances in functional thin films and nano-structural control are playing an increasing role in realisation and miniaturisation of sensor and imaging concepts in applications such as medical, environmental and industrial. This presentation provides an overview of thin film research at the Institute of Thin Films, Sensors & Imaging at the University of the West of Scotland, describing a variety of thin film based deposition technologies for control and modification of thin film properties – optical, piezoelectric, nano-structure, optoelectronic – for use in a range of novel sensor and imaging applications.

Described examples include microwave-plasma assisted deposition of linear variable filters for use in multi-gas sensing and hyperspectral imaging, pulsed DC sputter deposition of piezoelectric films for low cost ultrasonic transducers used in various imaging applications and plasma assisted electron beam deposition of high laser damage coating.

12:30 **Considerations for the selection of precision positioners in a vacuum**

**Mike Cottee**, *PI UK*.

Precision positioners and motion systems specifically developed for vacuum operation must meet a number of criteria. The system design needs to consider air pockets, heat generation, duty cycle, along with the fact that vacuum chambers normally offer limited space and therefore require a compact design.

The requirements for vacuum-compatible materials, including any lubricants or cable insulation are; no particle emission, no outgassing, and for the material to be bakeable and temperature resistant. PI have long standing in-house design experience of ultra precision drives and motion systems for use in vacuum classes from 10<sup>-3</sup> to 10<sup>-10</sup> hPa. Critical to designing any precision motion system is understanding the application as well as possible.

This presentation will give an insight into the PI design process using a number of application case studies to highlight considerations for the selection of precision positioners in a vacuum.

13:00 **Nanostructures made by Oblique Angle Deposition for Surface Enhanced Raman Scattering Applications**

**Mr Hin On Chu**, PhD Student, Institute of Thin Films, Sensors & Imaging, *University of the West of Scotland*

Surface enhanced Raman spectroscopy (SERS) is an attractive analytical technique as it enables both quick and sensitive measurements to be taken. SERS surfaces typically use nanostructured metals to generate regions of intense electric fields (also known as hot-spots) that propagate from the metal surface, molecules in these region can have their Raman scattering enhanced by many orders of magnitude, enough so that single-molecule sensitivity has been achieved by SERS.

There are many methods for fabricating SERS substrates, this presentation will focus on a type of physical vapour deposition configuration; oblique angle deposition. Here we review progress in OAD derived SERS substrates, ranging from methods to applications. Then we will present some of our work on SERS, particularly using templates for OAD to make SERS substrates.

13:30-14:00 Break

### TRAINING

14:00 **Basics of Vacuum and Leak Detection:**



**Dr Graham Rogers**, *Leybold UK*.

Introduction to the fundamental theory of vacuum technology and the operating principles behind wet and dry vacuum pumps and leak detectors, with a UK exclusive introduction to Leybold's new ECODRY forevacuum pump and Gamma ion pumps for research and development.

**Please register on-line to attend training (during the registration process select appropriate ticket type) or call us on +44 (0)1372 750555 to book your place.**

16.00—end of training

## ADMINISTRATION AND ORGANISATION

Brenda Hargreaves, Enlighten Meetings/Xmark Media Ltd  
T: +44 (0) 1372 750555 • Email: [brenda@xmarkmedia.com](mailto:brenda@xmarkmedia.com)

**enlighten**  
meetings  
The Xmark Media meetings team

More on the website

[www.vacuumroadshow.com](http://www.vacuumroadshow.com)