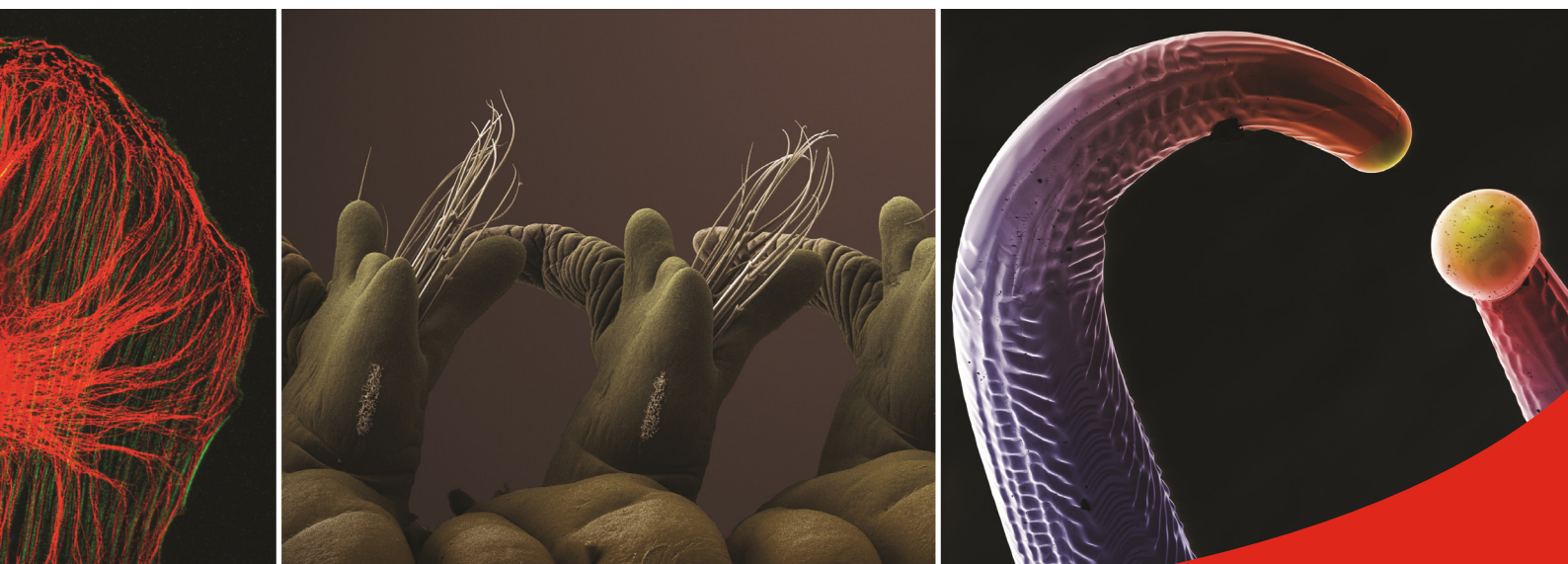


30 June - 3 July 2014  
Manchester Central, United Kingdom

# Congress Programme





# Executive Scientific Organising Committee

The role of this committee has been to collectively agree and finalise the scientific programme. The committee consists of two Congress Chairs, supported by eight Congress Vice Chairs from a range of disciplines. They are:

- Prof Rik Brydson (University of Leeds)** *Chair (Physical Sciences)*
- Dr Peter O'Toole (University of York)** *Chair (Life Sciences)*
- Dr Debbie Stokes (FEI Company)** *Vice Chair (Physical Sciences)*
- Prof Michelle Peckham (University of Leeds)** *Vice Chair (Life Sciences)*
- Dr Terry McMaster (University of Bristol)** *Vice Chair (SPM)*
- Prof Pete Nellist (University of Oxford)** *Vice Chair (RMS President)*
- Dr Spencer Shorte (Institut Pasteur, Paris)** *Vice Chair (Life Science)*
- Prof Valeria Nicolosi (Trinity College, Dublin)** *Vice Chair*
- Dr Cate Ducati (University of Cambridge)** *Vice Chair (EMAG)*
- Dr Ian MacLaren (University of Glasgow)** *Vice Chair (EMAG)*



# List of Sessions

## Physical Sciences

### Microscopy for Biomaterials and Tissue Engineering

**Session Organisers:** Dr Julie Gough (University of Manchester), Prof Thomas Scheibel (Bayreuth University) and Dr Sarah Cartmell (University of Manchester)

*Tuesday 1 July: 1000 - 1215 and 1415 - 1615*

The fields of biomaterials and tissue engineering involve a plethora of microscopical techniques to study both the materials themselves and also the cells within them. These techniques enable characterisation of material/scaffold structure and hierarchical architecture as well as visualisation of cells and their behaviour when cultured on surfaces or within 3D porous scaffolds and gels. With ever advancing techniques, the world of the living cell on a substrate or within a 3D structure is becoming clearer and we are able to further understand the niche which cells create for themselves.

This session is endorsed by the UK Society for Biomaterials (UKSB) and the Tissue and Cell Engineering Society (TCES).

---

### In Situ and Dynamic Microscopy

**Session Organisers:** Dr Roland Kroeger (University of York) and Prof Fabrizio Carbone (École Polytechnique Fédérale de Lausanne)

*Tuesday 1 July: 1000 - 1215*

Current developments in transmission electron microscopy are giving access to dynamic processes with unprecedented precision in Materials Science. New approaches regarding imaging techniques and/or sample holders allow for the detailed time resolved study of particle growth and assembly, strain field evolution, magnetic domain wall and spin wave propagation as well as the dynamics of surface plasmons and polaritons with nanometer or even atomic resolution.

This session provides a platform for the discussion of most recent developments in the field of *in situ* and dynamic transmission electron microscopy and their application to cutting edge research in materials science and gives an outlook for the future perspective of this exciting area of research.

### SPM: Nanoscale Analysis and Characterisation

**Session Organisers:** Dr Colin Grant (University of Leeds) and Dr Adriana Klyszejko (University of Leeds)

*Tuesday 1 July from 1000 - 1215 and 1415 - 1615 and  
Wednesday 2 July 1000 - 1200*

In tandem with the annual UK SPM meeting, this is a dedicated session for the presentation of the latest research and developments in the field of Scanning Probe Microscopy, comprising advances in instrumentation, and new applications to functional materials, polymers, composites, biological systems and biomedicine. Themes include the application of AFM measurements of the probe-tip interaction to yield nanomechanical maps, new modes of local physical property imaging, combinations of SPM with other characterisation techniques, the latest developments in high speed AFM, non-contact SPM, and advances in high resolution molecular and sub-molecular imaging.

---

### Electron Microscopy and Analysis Group: Advances in EM Instrumentation and Techniques

**Session Organisers:** Dr Ian Maclaren (University of Glasgow), Prof Mike Walls (Université Paris-Sud) and Dr Richard Beanland (University of Warwick)

*Wednesday 2 July: 1000 - 1200 and 1345 - 1515*

The last few years have seen major advances in electron microscopy as a result of the practical correction of geometric aberrations in either image or probe formation. Since that time there have been further major developments in correction of chromatic aberration, monochromation, higher speed and higher quantum efficiency imaging detectors, much improved X-ray spectrometers, major developments in electron energy loss spectrometry, and incorporation of novel and non-standard detectors into STEM instruments including secondary electron detectors and cathodoluminescence spectrometers.

Such developments have also enabled a range of novel data analysis techniques to be developed to make the most of the new possibilities available to provide a fuller atomic scale or nanoscale description of nanostructures in materials than ever before. This session highlights the very latest progress in instrumentation and techniques across the whole range of electron microscopy, including invited talks from leaders in this field and oral presentations and posters on new developments in instrumentation, techniques and their application to problems in nanoscale science.

# List of Sessions (cont.)

## **Electron Microscopy and Analysis Group: Microscopy of Energy Materials**

**Session Organisers:** Prof Ken Durose (University of Liverpool), Prof Thomas Höche (Fraunhofer Institute for Mechanics of Materials IWM), Prof Pratibha Gai (University of York) and Dr Cate Ducati (University of Cambridge)

*Wednesday 2 July: 1345 - 1515 and*

*Thursday 3 July: 0945 - 1200*

This session will report on both advances in the understanding of materials for energy applications and in microscopy techniques for energy materials. Applications include; materials for photovoltaics, batteries and energy storage, thermoelectrics, fuel cells, nano and novel materials for energy. We also encourage papers on advanced microscopy methods, including TEM, STEM and HRTEM, diffraction and analysis methods, SEM, CL, EBIC, optical and scanning optical microscopy and scanning probe microscopy methods.

---

## **Functional and Nano-Structured Materials**

**Session Organisers:** Dr Steve McVitie (University of Glasgow), Dr Gavin Bell (University of Warwick) and Dr Vlado Lazarov (University of York)

*Thursday 3 July: 0945 - 1200 and 1415 - 1615*

This session will concentrate on nano-scale materials and functional materials, including low dimensional systems, semiconductor materials and heterostructures, (multi) functional oxides, quantum structures, magnetic materials and heterostructures, and self-assembled nanostructures. The focus of the sessions will be on the use of microscopy in evaluating structure-property relationships of functional and nano-materials. Applications of multi-modal microscopy in evaluating the full range of material properties (e.g. combining electron microscopy and scanning probe methods) are also encouraged. These aspects include defect characterisation, quantitative structural measurements, true atomic-scale characterisation and spectro-microscopy.

## **Life Sciences**

### **Frontiers in BioImaging: Imaging beyond the Diffraction Limit**

**Session Organisers:** Prof Michelle Peckham (University of Leeds) and Dr Susan Cox (King's College London)

*Tuesday 1 July: 1000 - 1215*

This session will cover the latest developments in approaches to overcome the limitations on resolving objects using light microscopy. The speakers will cover a variety of 'super-resolution' approaches including STimulated Emission Depletion (STED), Structured Illumination and PhotoActivatable Light Microscopy/Stochastic Optical Reconstruction Microscopy (PALM/STORM) and their implementation in imaging beyond the diffraction limit.

---

### **Frontiers in BioImaging: Correlative Light Electron Microscopy (CLEM)**

**Session Organisers:** Dr Paul Verkade (University of Bristol) and Dr Raffaella Carzaniga (London Research Institute)

*Tuesday 1 July: 1415 - 1615*

Correlative Microscopy aims to combine two (or more) techniques in one single experiment. At least one of the techniques in such an experiment will be based on microscopy. Correlative Microscopy techniques have certain strengths over the application of the respective techniques separately. Probably the best-established Correlative Microscopy technique is the combination of light and transmission electron microscopy (CLEM). In this session we will be highlighting the latest developments in the field of CLEM, ranging from probes, sample processing, integrated techniques, and analysis. Other areas of Correlative Microscopy will be highlighted in separate sessions.



## **Frontiers in BioImaging: Emerging 3D Microscopy**

**Session Organisers:** Dr James Swoger (Center for Genomic Regulation) and Dr Emmanuel Reynaud (University College Dublin)

*Wednesday 2 July: 1000 - 1200*

The world is a 3D oyster and no drawing even worth a thousand words will not describe it as well as a three dimensional interactive model. In the past decade, new imaging techniques have emerged to give us the opportunity to fully reveal and share the microscopy world as it is. This session will present a full extent of emerging 3D techniques from human tissues (OCT) imaging to single mitochondria.

---

## **Frontiers in BioImaging: Label-Free Microscopy**

**Session Organisers:** Prof Gail McConnell (University of Strathclyde) and Dr Peter O'Toole (University of York)

*Wednesday 2 July: 1345 - 1515*

Live cell imaging with molecularly specific contrast is a particular strength of fluorescence microscopy, permitting the dynamic observation of events at the subcellular level in four dimensions. However, fluorescence techniques also have limitations due to the size of the probes which can modify biological activity, and their photochemical properties, in particular rapid photo-bleaching, may restrict the period of study and cause unwanted imaging artefacts. Label free imaging strategies are very much gaining traction. This session will focus on two separate label free techniques. Coherent Raman microscopy enables non-invasive tomographic imaging of molecular species in innovative materials and living matter with high specificity at sub-wavelength resolution by probing natural molecular vibrations, whilst phase imaging techniques such as ptychography and holography are enabling quantitative whole cell analysis with multiple applications. Recent innovations in instrumentation have given rise to innumerable applications in label-free biomedical imaging. This session will report on both advances in imaging technologies and application.

---

## **Imaging Flow Cytometry: A Picture is Worth a Thousand Data Points**

**Session Organisers:** Dr Derek Davis (London Research Institute) and Dr Zosia Maciorowski (Institut Curie)

*Wednesday 2 July: 1000 - 1200*

Cytometry and microscopy are well established techniques that go hand in hand. Both are extremely widespread and both have advanced rapidly in recent years. An exciting new area of research is imaging flow cytometry where quantitative information based on fluorescence emission is correlated with morphological information gained on an individual cell as it passes through excitation sources. In this way thousands of cells per second can be analysed leading to robust and statistically reliable information. This session will highlight the advances and importance of this technology in cell biology and nanotechnology.

---

## **Imaging Microbes and Microbe-Host Interactions**

**Session Organisers:** Dr Pippa Hawes (Institute for Animal Health) and Prof Nick Read (University of Manchester)

*Tuesday 1 July: 1415 - 1615*

Recent advances in microscopy are providing researchers with a whole new armamentarium of microscope technologies that are giving extraordinary novel insights into the biology of microbes and microbe-host interactions. The purpose of this session is to showcase state-of-the-art microscopical techniques currently being used in microbiological studies and the exciting results that they are revealing.

---

## **Imaging Cells in 3D – Matrix, Tissue, In Vivo**

**Session Organisers:** Dr Claire Wells (King's College London) and Dr Theresa Ward (London School of Hygiene & Tropical Medicine)

*Wednesday 2 July: 1345 - 1515*

Imaging cells within more complex 3D microenvironments is an exciting and emerging field of cell biology. This session aims to highlight both technical developments at high resolution and novel applications. Contributions to this session will come from any area of research, plant, human or animal, where 3D imaging techniques are being applied.

# List of Sessions (cont.)

## 3D Imaging in the Life and Physical Sciences using Electrons and X-rays

**Session Organisers:** Dr Peter Rosenthal (National Institute for Medical Research), Dr Liz Duke (Diamond Light Source), Dr Paul Mummery (University of Manchester) and Dr Guenther Moebus (University of Sheffield)

*Thursday 3 July: 0945 - 1200 and 1415 - 1615*

The session covers progress in methods and applications of 3D characterisation of samples across biological and medical, as well as across inorganic and polymer materials and other physical sciences. 3D characterisation is meant in the broadest sense, including tomography, but also extending to diffraction and sectioning techniques. Bridging over nano- / micro- and macro-scales, the session includes all types of radiation, such as electron and X-rays, and beyond. New schemes in imaging, diffraction, reconstruction, and feature extraction will be complemented by novel hardware, new acquisition techniques, and new signals, e.g. time resolved or spectroscopic modes, or in-situ tracking of materials changes in 3D.

---

## Emerging and Late Breaking Techniques in Optical Imaging

**Session Organisers:** Dr Alex Sossick (University of Cambridge) and Dr Simon Ameer-Beg (King's College London)

*Thursday 3 July: 0945 - 1200*

This session is primarily intended for emerging topics that may not match directly to other sessions. Papers were encouraged for both applied and tools and techniques-based work. The session has remained open for any late breaking submissions. Many of the latter conference submissions have been accepted as poster presentations. A limited number of oral presentations have been invited from the submissions.

---

## Analysis and Quantitation of Biological Images

**Session Organisers:** Dr Alex Knight (National Physical Laboratory) and Dr Justin Molloy (National Institute for Medical Research)

*Thursday 3 July: 1415 - 1615*

Modern imaging methods allow highly complex biological structures to be visualised with unprecedented resolution: We can obtain dynamic information about organs and tissue

in live animals using magnetic fields; individual molecules within living cells by optical microscopy; and atomic-resolution molecular structures by electron microscopy. Digital images present a major challenge in terms of analysing, quantifying and curating what are often vast data sets. In the most extreme case we might take a data set of a gigabyte and reduce this to a simple, diagnostic, yes/no value. Fast computers and new analytical approaches enable highly complex data to be converted to images, movies, atomic models or simple tabulated values that are meaningful to the clinician or basic research scientist. However as such methods move from research to real-world applications it also becomes increasingly important to understand the robustness and accuracy of these approaches.

---

## 3D Electron Microscopy of Complex Biological Systems

**Session Organisers:** Dr Lucy Collinson (Cancer Research UK) and Dr Graham Knott (École Polytechnique Fédérale de Lausanne)

*Thursday 3 July: 1415 - 1615*

This session will cover the current advances in volume electron microscopy imaging applied to complex biological samples including neural circuits, circulatory systems and subcellular organelle networks. In recent years electron microscopy of biological samples has been transformed by various technologies capable of capturing images through significant volumes, and on a range of length scales.

Block face scanning microscopy, whereby an electron beam scans the face of a sample block mounted inside an SEM, has two methods for serially cutting through the sample. In Serial Block Face Scanning Electron Microscopy (SBF SEM) a slice of material is removed using an ultramicrotome mounted inside the SEM chamber; and in Focused Ion Beam Scanning Electron Microscopy (FIB SEM) this is achieved with a beam of gallium ions. In both cases, the cutting and imaging process is automated and able to collect thousands of aligned and isotropic image series. These vast datasets are now driving the creation of different strategies for image analysis. Much of this development was borne out of neuroscience's need to map complex neural networks with adequate resolution to see individual neuronal connections. The field is now coming-of-age and finding wide application in life sciences.

# Programme Overview

Monday	1700 - 1745	<b>Plenary Lecture:</b> Prof Ondrej Krivanek (President, Nion Co and Adjunct Prof, Arizona State University) [Charter 1]			
	1745 - 1830	<b>Plenary Lecture:</b> Prof Mike Sheetz (Columbia University) [Charter 1]			
Tuesday	0845 - 0930	<b>Plenary Lecture:</b> Dr Jennifer Lippincott-Schwartz (National Institutes of Health) [Charter 1]			
	1000 - 1215	Microscopy for Biomaterials and Tissue Engineering [Charter 1]	SPM: Nanoscale Analysis and Characterisation [Charter 3]	Frontiers in Biolmaging: Imaging Beyond the Diffraction Limit [Charter 2]	In Situ and Dynamic Microscopy [Charter 4]
	1215 - 1415	Exhibition & Lunch			
	1415 - 1615	Microscopy for Biomaterials and Tissue Engineering [Charter 1]	SPM: Nanoscale Analysis and Characterisation [Charter 3]	Frontiers in Biolmaging: Correlative Light Electron Microscopy (CLEM) [Charter 2]	Imaging Microbes and Microbe-Host Interactions [Charter 4]
	1615 - 1800	Exhibition, Poster Session & Drinks			
Wednesday	0845 - 0930	<b>Plenary Lecture:</b> Prof Flemming Besenbacher (Aarhus University) [Charter 1]			
	1000 - 1200	Electron Microscopy & Analysis Group: Advances in EM Instrumentation and Techniques [Charter 1]	SPM: Nanoscale Analysis and Characterisation [Charter 3]	Frontiers in Biolmaging: Emerging 3D Microscopy [Charter 2]	Imaging Flow Cytometry: A Picture is Worth a Thousand Data Points [Charter 4]
	1200 - 1345	Exhibition & Lunch			
	1345 - 1515	Electron Microscopy & Analysis Group: Advances in EM Instrumentation and Techniques [Charter 1]	Electron Microscopy & Analysis Group: Microscopy of Energy Materials [Charter 3]	Frontiers in Biolmaging: Label Free Microscopy [Charter 2]	Imaging Cells in 3D - Matrix, Tissue, In Vivo [Charter 4]
	1515 - 1730	Exhibition, Poster Session & Drinks			
	1715 - 1830	<b>175<sup>th</sup> Anniversary Lectures:</b> Dr John Hutchison (University of Oxford) & Prof Ernst Stelzer (Buchmann Institute for Molecular Life Sciences) [Charter 1]			
Thursday	0945 - 1200	Functional and Nano-Structured Materials [Charter 1]	Electron Microscopy & Analysis Group: Microscopy of Energy Materials [Charter 3]	3D Imaging in the Life and Physical Sciences using Electrons and X-rays [Charter 2]	Emerging and Late Breaking Techniques in Optical Imaging [Charter 4]
	1200 - 1415	Exhibition & Lunch			
	1415 - 1615	Functional and Nano-Structured Materials [Charter 1]	Analysis and Quantitation of Biological Images [Charter 3]	3D Imaging in the Life and Physical Sciences using Electrons and X-rays [Charter 2]	3D Electron Microscopy of Complex Biological Systems [Charter 4]
	1630 - 1715	<b>Plenary Lecture:</b> Prof Mildred Dresselhaus (Massachusetts Institute of Technology) [Charter 1]			

# Session Schedule

## Tuesday 1 July

Session Title	Microscopy for Biomaterials and Tissue Engineering
Session Organisers	<b>Dr Julie Gough (University of Manchester), Prof Thomas Scheibel (Bayreuth University) and Dr Sarah Cartmell (University of Manchester)</b>
Room	Charter 1
I000	<b>Invited:</b> <i>Shedding New Light on Biomaterial: Non-linear vibrational contrast in biological microscopy.</i> <b>Dr Julian Moger</b> University of Exeter
I015	
I030	<b>Invited:</b> <i>Processed structural proteins as new biomaterials.</i> <b>Prof Thomas Scheibel</b> Bayreuth University
I045	
I100	<i>Investigation of acellular mineralisation in 3D nanoparticle/collagen scaffolds using a combinatorial TEM-SEM-μCT approach.</i> <b>Ms Lucia Melita</b> Eastman Dental Institute - University College London
I115	<i>Multi-scale mechanical characterisation of highly-swollen collagen-based hydrogels.</i> <b>Dr Giuseppe Tronci</b> School of Dentistry, University of Leeds
I130	<i>Method for study of antibody - antigen binding on cells with AFM.</i> <b>Miss Ellie Pulleine</b> University of Glasgow
I145	<i>Measuring tissue mechanics with atomic force microscopy.</i> <b>Ms Kathrin Holtzmann</b> University of Cambridge
I200	

Session Title	Microscopy for Biomaterials and Tissue Engineering
Session Organisers	<b>Dr Julie Gough (University of Manchester), Prof Thomas Scheibel (Bayreuth University) and Dr Sarah Cartmell (University of Manchester)</b>
Room	Charter 1
I415	<b>Invited:</b> <i>Microstructured composites inspired by nature.</i> <b>Prof Andre Studart</b> University of Warwick
I430	
I445	<b>Invited:</b> <i>The use of optical imaging in tissue engineering and regenerative medicine.</i> <b>Dr Stephen Matcher</b> University of Sheffield
I500	
I515	<i>Characterizing collagen photo-degradation mechanism using multimodal optical imaging approach.</i> <b>Miss Arunthathi Manickavasagam</b> King's College London
I530	<i>High-throughput ion-beam modified micronozzles to probe live cells.</i> <b>Prof Eva Campo</b> Bangor University/ University of Texas at San Antonio
I545	<i>Quantifying cellular uptake of semiconductor quantum dot nanoparticles using electron microscopy.</i> <b>Dr Nicole Hondow</b> University of Leeds
I600	

SPM: Nanoscale Analysis and Characterisation
<b>Dr Colin Grant (University of Leeds) and Dr Adriana Klyszejko (University of Leeds)</b>
Charter 3
<b>Invited:</b> Title TBC. <b>Prof Franz Giessibl</b> Massachusetts Institute of Technology
<i>Integrating 3D Surface Imaging with FIB/SEM Microscopy.</i> <b>Dr Andrew Smith</b> Kleindiek Nanotechnik
<i>Quantitative Correlation of Charge Carrier Mobility and Physical Morphology by C-AFM.</i> <b>Ms Dawn Wood</b> University of Warwick
<i>Size Dependence of Shape and Stiffness of Individual Sessile Oil Droplets.</i> <b>Dr Martin Munz</b> National Physical Laboratory
<i>Repurposing Scanning Ion Conductance Microscopy as a Tool for Surface Charge Mapping.</i> <b>Ms Sophie Kinnear</b> University of Warwick
<i>Using High Speed Atomic force Microscopy to image millimetre sized areas in minutes.</i> <b>Dr Oliver Payton</b> University of Bristol
<i>Colocalized nanoscale mechanical, electrical and infrared mapping of Graphene.</i> <b>Dr Gregory Andreev</b> Bruker Nano Inc.
<i>Development of a Scanning Thermal Microscopy (SThM) Based Approach for the Measurement of Size and Distribution of Thermally Conducting Particles in Thin Film Polymeric Coatings.</i> <b>Miss Angela Dawson</b> National Physical Laboratory

SPM: Nanoscale Analysis and Characterisation
<b>Dr Colin Grant (University of Leeds) and Dr Adriana Klyszejko (University of Leeds)</b>
Charter 3
<b>Invited:</b> <i>Advances in quantitative and three-dimensional mapping of soft matter by force microscopy.</i> <b>Prof Ricardo Garcia</b> Madrid Institute of Material Sciences
<i>Magnetic Force Microscopy imaging in liquid.</i> <b>Mr Pablo Ares</b> Nanotec Electrónica SL
<i>Extracting Quantitative Nanomechanical Properties from Tapping Mode AFM Measurements.</i> <b>Dr Jonathan Moffat</b> Oxford Instruments Asylum Research
<i>A non-contact, thermal noise based method for the calibration of lateral deflection sensitivity in atomic force microscopy.</i> <b>Dr Nic Mullin</b> The University of Sheffield
<i>Scanning thermal microscopy: Accurate measurements of temperature.</i> <b>Dr Phillip Dobson</b> University of Glasgow
<i>On-line Scanned Probe Microscopy Transparently Integrated with DualBeam SEM/FIB Systems.</i> <b>Dr Judy Ernstoff</b> Nanonics Imaging Ltd.
<i>Bias Modulated Scanning Ion Conductance Microscopy (SICM).</i> <b>Mr David Perry</b> University of Warwick



Frontiers in Biolmaging: Imaging beyond the Diffraction Limit	In Situ and Dynamic Microscopy	Session Title
<b>Prof Michelle Peckham (University of Leeds) and Dr Susan Cox (King's College London)</b>	<b>Dr Roland Kroeger (University of York) and Prof Fabrizio Carbone (École Polytechnique Fédérale de Lausanne)</b>	Session Organisers
<b>Charter 2</b>	<b>Charter 4</b>	Room
<b>Invited:</b> Super-resolution Imaging At 100 Frames Per Second. <b>Dr Hari Shroff</b> National Institutes of Health	<b>Invited:</b> Magnetic dynamics studied by time-resolved electron microscopy. <b>Dr Yoshie Murooka</b> École Polytechnique Fédérale de Lausanne	I000
Multimodal structured illumination microscopy for the study of amyloid fibril growth. <b>Mr Laurence Young</b> University of Cambridge	<b>Invited:</b> Investigation of crystal growth and dissolution dynamics using fluid cell TEM and atmospheric SEM, old title: New approaches for the nanoscale study of processes in liquids by electron microscopy. <b>Dr Roland Kroeger</b> University of York	I015
Septin complexes assemble end-over-end in cells. <b>Dr Helge Ewers</b> King's College London	Dynamical motion of carbon nanoparticles imaged in-situ by TEM tribology. <b>Prof Beverley Inkson</b> University of Sheffield	I030
Site-specific protein labelling using genetically encoded unnatural amino acids: applications in super-resolution microscopy. <b>Dr Jonathan Howe</b> MRC Laboratory of Molecular Biology	Probing atomic scale dynamics with scanning transmission electron microscopy. <b>Dr Timothy Pennycook</b> SuperSTEM	I045
<b>Invited:</b> Adaptive optics from microscopy to nanoscopy. <b>Dr Martin Booth</b> University of Oxford	in situ Nanoscale Hyperspectral XEDS Elemental Mapping in Liquids. <b>Mr Edward Lewis</b> University of Manchester	I100
Using single-molecule images to determine EGF receptor oligomerisation states using nanoscale inter-receptor separation measurements. <b>Dr Stephen Webb</b> Science & Technology Facilities Council	in-situ observation of graphene growth dynamics by environmental scanning electron microscopy. <b>Dr Marc Willinger</b> Fritz-Haber-Institut der Max-Planck-Gesellschaft	I115
Fluorescence Imaging of Nanoscale Structures in Cardiac and Skeletal Muscle Cells. <b>Prof Christian Soeller</b> University of Exeter	Liquid cell STEM microscopy of calcium carbonate precipitation from micro emulsions. <b>Dr Teresa Roncal-Herrero</b> University of York	I130
		I145
		I200
Frontiers in Biolmaging: Correlative Light Electron Microscopy	Imaging Microbes and Microbe-Host Interactions	Session Title
<b>Dr Paul Verkade (University of Bristol) and Dr Raffaella Carzaniga (London Research Institute)</b>	<b>Dr Pippa Hawes (Institute for Animal Health) and Prof Nick Read (University of Manchester)</b>	Session Organisers
<b>Charter 2</b>	<b>Charter 4</b>	Room
<b>Invited:</b> Modeling Brain Circuitry over a Wide Range of Scales. <b>Prof Pascal Fua</b> École Polytechnique Fédérale de Lausanne	<b>Invited:</b> Membrane acquisition of Nucleo-cytoplasmic large DNA viruses: Membrane rupture, not disruption. <b>Dr Jacomine Krijnse Locker</b> Heidelberg University	I415
Four-wave mixing imaging for correlative light-electron microscopy. <b>Dr Francesco Masia</b> Cardiff University	The interplay between the mechanical properties of viral fibers and the strength of virus-host links during early infection stages. <b>Mr Pablo Ares</b> Nanotec Electrónica SL	I430
Correlative Light and Electron Microscopy – on the way from 2D towards 3D. <b>Dr Alexandra Elli</b> Carl Zeiss Microscopy GmbH	Intravital Imaging Of The Meningeal Immune Response During Trypanosomiasis In Mice. <b>Prof James Brewer</b> University of Glasgow	I445
<b>Invited:</b> Metallothioneins For CLEM. <b>Dr Cristina Risco</b> National Research Council of Spain	The endophytic lifestyle of Escherichia coli O157:H7: internal localisation. <b>Dr Kathryn Wright</b> The James Hutton Institute	I450
Exploring the potential of 3D CLEM: block face imaging versus array tomography. <b>Dr Miriam Lucas</b> ScopeM ETH Zurich	<b>Invited:</b> A novel coordinator complex that controls bi-directional motility of early endosomes. <b>Prof Gero Steinberg</b> University of Manchester	I515
A fast and accurate solution for CLEM. <b>Mr Sander den Hoedt</b> DELMIC BV		I530
		I545
		I600

# Session Schedule

## Wednesday 2 July

Session Title	Electron Microscopy & Analysis Group:Advances in EM Instrumentation and Techniques
Session Organisers	Dr Ian Maclaren (University of Glasgow), Prof Mike Walls (Université Paris-Sud) and Dr Richard Beanland (University of Warwick)
Room	Charter I
1000	<b>Invited:</b> Strategies for controlling radiation induced transformations in low-dimensional materials in a transmission electron microscope <b>Dr. Ossi Lehtinen</b> Ulm University
1015	
1030	<i>THE NANOWORKBENCH:Automated Nanorobotic System Inside of Scanning Electron or Focused Ion Beam Microscopes</i> <b>Dr Volker Klocke Klocke</b> Nanotechnik GmbH
1045	<i>cryogenic FIB lift-out as a preparation method for damage-free soft matter TEM imaging</i> <b>Dr Christopher Parmenter</b> University of Nottingham
1100	<b>Invited:</b> Strain Analysis from Nano-beam Electron Diffraction Patterns Recorded on Direct Electron Charge-coupled Devices <b>Dr Knut Müller</b> Universität Bremen
1115	
1130	<i>Visualising the Three-dimensional Morphology and Surface Structure of Metallic Nanoparticles at Atomic Resolution by Automated HAADF STEM Atom Counting</i> <b>Dr Lewis Jones</b> University of Oxford
1145	<i>Developments in Lorentz microscopy of magnetic materials in an aberrated scanning transmission electron microscope</i> <b>Dr Stephen McVitie</b> University of Glasgow

SPM: Nanoscale Analysis and Characterisation
Dr Colin Grant (University of Leeds) and Dr Adriana Klyszejko (University of Leeds)
Charter 3
<b>Invited:</b> TBC
<i>Nanodomains of cytochrome b6f and photosystem II complexes in plant membranes studied by functional Atomic Force Microscopy</i> <b>Dr Cvetelin Vasilev</b> University of Sheffield
<i>Nanoscale stiffness topography reveals structure and mechanics of the transport barrier in intact nuclear pore complexes</i> <b>Miss Aizhan Bestembayeva</b> University College London
<i>AFMIR :A powerful tool for Infrared Nanospectroscopy</i> <b>Dr Alexander Dazzi</b> Université Paris-Sud
<i>A new technique in AFM rheology and its applications</i> <b>Dr Jono McKendry</b> University of Glasgow
<i>Using nano-cantilevers to probe molecular motors.</i> <b>Dr Massimo Antognozzi</b> University of Bristol
<i>Single cell elasticity of pancreatic cancer cells: a new insight into ROCK activation</i> <b>Miss Ya Hua Chim</b> University of Glasgow

Session Title	Electron Microscopy & Analysis Group:Advances in EM Instrumentation and Techniques
Session Organisers	Dr Ian Maclaren (University of Glasgow), Prof Mike Walls (Université Paris-Sud) and Dr Richard Beanland (University of Warwick)
Room	Charter I
1345	<b>Invited:</b> Advances in Optical Mapping by Cathodoluminescence in a STEM and its Applications on GaN Quantum Discs in Nanowires <b>Dr Luiz Zagonel</b> Physics Institute / Unicamp
1400	
1415	<i>Magnified pseudo-atomic-column-elemental-map of SrTiO<sub>3</sub> using STEM-moiré method</i> <b>Dr Yukihito Kondo</b> JEOL Ltd.
1430	<i>Inelastic Scattering of Electron Vortex Beams: Mechanism and Optimal Conditions for EMCD Measurements</i> <b>Dr Jan Rusz</b> Uppsala University
1445	<b>Invited:</b> Analysis of multi-dimensional datasets in electron microscopy: challenges and opportunities <b>Dr Francisco de la Peña</b> University of Cambridge
1500	
1515	

Electron Microscopy & Analysis Group: Microscopy of Energy Materials
Prof Ken Durose (University of Liverpool), Prof Thomas Höche (Fraunhofer Institute for Mechanics of Materials IWM), Prof Pratibha Gai (University of York) and Dr Cate Ducati (University of Cambridge)
Charter 3
<b>Invited:</b> In Situ TEM Experiments of Electrochemical Lithiation and Delithiation of Individual Nanostructures <b>Prof Ju Li</b> Massachusetts Institute of Technology
<i>Monte Carlo simulations of electron trajectories for the study of betavoltaic battery configurations</i> <b>Dr Eli Napchan</b> DLM Enterprises
<i>Simulating and Examining Radiation Damage in Graphite with Transmission Electron Microscopy and Electron Energy Loss Spectroscopy</i> <b>Miss Helen Freeman</b> University of Leeds
<i>Investigation of the influence of different substrates on the structure of codeposited pentacene:perfluoropentacene via TEM</i> <b>Dr Katharina Gries</b> Philipps-Universität Marburg
<i>Sub-nanometer Organic Photovoltaics Characterization by Energy Selective Scanning Electron Microscopy</i> <b>Dr Cornelia Rodenburg</b> University of Sheffield

Frontiers in BioImaging: Emerging 3D Microscopy	Imaging Flow Cytometry: A Picture is Worth a Thousand Data Points	Session Title
<b>Dr James Swoger (Center for Genomic Regulation) and Dr Emmanuel Reynaud (University College Dublin)</b>	<b>Dr Derek Davis (London Research Institute) and Dr Zosia Maciorowski (Institut Curie)</b>	Session Organisers
<b>Charter 2</b>	<b>Charter 4</b>	Room
<b>Invited:</b> 3D imagining of vertebrate development <b>Dr Paula Murphy</b> Trinity College Dublin	<b>Invited:</b> Recent advances in Imaging Flow Cytometry <b>Dr Ziv Porat</b> Weizmann Institute of Science	I 000
		I 015
3D multi-slice ptychography: Towards tomographic label-free microscopy <b>Dr Timothy Godden</b> Phasefocus	<b>Invited:</b> Imaging Flow Cytometry: A Cytometric Paradigm <b>Dr Andrew Filby</b> London Research Institute, Cancer Research UK	I 030
Label-free 3D imaging using white-light diffraction tomography <b>Mr Taewoo Kim</b> University of Illinois at Urbana-Champaign		I 045
A model for cell sheet folding – 4D imaging of inversion in <i>Volvox</i> sp <b>Dr Stephanie Hoehn</b> University of Cambridge	Monitoring Pathogen-Immune Cell Interactions by Imaging Cytometry <b>Mr David Onion</b> The University of Nottingham	I 100
Optimising light sheet illumination for live imaging of complex biological samples <b>Mr Aleksander Chmielewski</b> University of Cambridge		I 115
High speed 3D raster scanning with a 2-photon Acousto-Optic lens microscope <b>Dr Paul A Kirkby</b> University College London	Cell cycle and mitotic phase identification using imaging cytometry <b>Prof Paul Rees</b> Swansea University	I 130
<b>Invited:</b> Multimodal and multicolor nonlinear imaging of developing tissue <b>Dr Emmanuel Beaurepaire</b> École Polytechnique		I 145
Frontiers in BioImaging: Label Free Microscopy	Imaging Cells in 3D - Matrix, Tissue, In Vivo	Session Title
<b>Prof Gail McConnell (University of Strathclyde) and Dr Peter O'Toole (University of York)</b>	<b>Dr Claire Wells (King's College London) and Dr Theresa Ward (London School of Hygiene &amp; Tropical Medicine)</b>	Session Organisers
<b>Charter 2</b>	<b>Charter 4</b>	Room
<b>Invited:</b> Phase sensitive coherent Raman microscopy and spectral analysis <b>Dr Hermann Offenhaus</b> University of Twente	<b>Invited:</b> Imaging The Molecular Co-ordination Of Cell Migration <b>Dr Maddy Parsons</b> (RMS Life Sciences Medal) King's College London	I 345
		I 400
<b>Invited:</b> Ptychography - Label-free, High Contrast And Quantitative Imaging Of The Cell Cycle, Cell Proliferation And Apoptosis <b>Prof Wolfgang Langbein</b> Cardiff University	<b>Invited:</b> Imaging zebrafish using ultrahigh field magnetic resonance microimaging <b>Dr A. Alia / Dr Alia Matysik</b> University of Leipzig	I 415
		I 430
Label-free characterization of self-organizing neural networks <b>Dr Peter O'Toole</b> University of York	<b>Invited:</b> Self-Assembly and Morphogenesis of 3D Multi-cellular Microtissues In Vitro <b>Prof Jeffrey Morgan</b> Brown University	I 445
Hyperspectral coherent anti-Stokes Raman scattering microscopy using sparse sampling for fast quantitative chemical imaging <b>Prof Gabriel Popescu</b> University of Illinois at Urbana-Champaign		I 500
Condenser-free Zernike phase contrast microscopy <b>Dr Kevin Webb</b> University of Nottingham	The Histocutter: A revolution in 3D imaging <b>Ms Amanda Wilson</b> Imperial College London	I 515



# Session Schedule

## Thursday 3 July

Session Title	Functional and Nano-Structured Materials
Session Organisers	Dr Steve McVitie (University of Glasgow), Dr Gavin Bell (University of Warwick) and Dr Vlado Lazarov (University of York)
Room	Charter I
0945	<b>Invited:</b> Column-by-column and atom-scale analysis of functional nanostructures and molecular materials <b>Prof Sergio Molina</b> Universidad De Cádiz
1000	
1015	<b>Invited:</b> Exploring the energy landscape of magnetic nanostructures using Lorentz microscopy and magnetic force microscopy <b>Dr Amanda Petford-Long</b> Argonne National Laboratory
1030	
1045	Synthetic Iron Oxide Nanoparticles: Microstructure and Magnetic Properties <b>Dr Leonardo Lari</b> University of York
1100	Structure And Magnetism In Strained GeSnMn Films Grown On Ge(001) By Low Temperature Molecular Beam Epitaxy <b>Dr Eric Prestat</b> University of Manchester
1115	Magnetostructural transitions in iron rhodium thin films <b>Mr Mathew McLaren</b> University of Leeds
1130	High resolution Lorentz microscopy study of La <sub>0.67</sub> Sr <sub>0.33</sub> MnO <sub>3</sub> <b>Dr Kerry O'Shea</b> University of Glasgow
1145	From petals to needles: Structure-function relations in organic field effect transistors <b>Mr Aaron Naden</b> University of Glasgow

Electron Microscopy & Analysis Group: Microscopy of Energy Materials
Prof Ken Durose (University of Liverpool), Prof Thomas Höche (Fraunhofer Institute for Mechanics of Materials IWM), Prof Pratibha Gai (University of York) and Dr Cate Ducati (University of Cambridge)
Charter 3
<b>Invited:</b> Dynamic wet-ETEM observation of deactivation processes of platinum electrode catalysts in a proton exchange membrane fuel cell <b>Dr Kenta Yoshida</b> Institute for Advanced Research
Chemical Imaging Of New Oxides For Energy: STEM-EELS Study Of Pt-CeOx <b>Dr Valérie Potin</b> ICB-CNRS-université de Bourgogne
Microstructure Characterization of Recycled Titanium Alloys from Machining Chips using Equal Channel Angular Pressing (ECAP) <b>Mr Qi Shi</b> Loughborough University
<b>Invited:</b> Microstructure Analyses and Structure-Property Relationships of Ag <sub>1-x</sub> Pb <sub>1.85</sub> b <sub>1+y</sub> Te <sub>20</sub> <b>Dr Susanne Selle</b> Fraunhofer Institute for Mechanics of Materials (IWM)
Investigation of a perovskite-based solar cell using STEM-EDX and EELS ~ <b>Dr Giorgio Divitini</b> University of Cambridge
3-dimensional microstructural characterization of CdTe absorber layers from CdTe/CdS solar cells: comparison between superstrate and substrate configurations <b>Mr Guillaume Stechmann</b> Max-Planck-Institute for Iron Research
Electric field induced band-bending on GaN: in-situ effects of electron beam irradiation on time-resolved cathodoluminescence <b>Miss Laurel Leigh</b> Bangor University

Session Title	Functional and Nano-Structured Materials
Session Organisers	Dr Steve McVitie (University of Glasgow), Dr Gavin Bell (University of Warwick) and Dr Vlado Lazarov (University of York)
Room	Charter I
1415	<b>Invited:</b> Mapping atomic structure and functional properties in two-dimensional materials <b>Dr Neil Wilson</b> University of Warwick
1430	
1445	<b>Invited:</b> Tuning Dirac states by strain in the topological insulator Bi <sub>2</sub> Se <sub>3</sub> <b>Dr Li Lian</b> University of Wisconsin-Milwaukee
1500	
1515	Mechanism Of Twin Suppression In Bi <sub>2</sub> Se <sub>3</sub> Thin Films <b>Dr Nadezda Tarakina</b> University of Würzburg
1530	Characterisation of reverse osmosis and nanofiltration membranes for industrial applications <b>Dr Catriona McGilvery</b> Imperial College London
1545	2D and 3D Chemical and structural in-situ analysis of Boron/Ni composite nanowires <b>Dr Dominique Delille</b> FEI Company
1600	Spatially resolved maps of acid-oxidised carbon nanotubes by electron energy-loss spectroscopy <b>Dr Angela Goode</b> Imperial College London

Analysis and Quantitation of Biological Images
<b>Dr Alex Knight (National Physical Laboratory) and Dr Justin Molloy (National Institute for Medical Research)</b>
Charter 3
<b>Invited:</b> When seeing isn't believing: data analysis in super-resolution microscopy <b>Dr Alex Knight</b> National Physical Laboratory
A Method to Quantify FRET Stoichiometry with Phasor Plots and Acceptor Lifetime In-growth <b>Miss WeiYue Chen</b> University of Cambridge
<b>Invited:</b> 3D structure from electron images of frozen-hydrated specimens <b>Dr Peter Rosenthal</b> MRC National Institute for Medical Research (This talk is dedicated to Stewart Church)
Globally optimal single-molecule tracking <b>Dr Michael Hirsch</b> Science & Technology Facilities Council
<b>Invited:</b> Detection and counting of cells in low and high cell density microscopy images <b>Prof Alison Noble</b> University of Oxford

3D Imaging in the Life and Physical Sciences using Electrons and X-rays
Dr Peter Rosenthal (National institute for Medical Research), Dr Elizabeth Duke (Diamond Light Source), Dr Paul Mummery (University of Manchester) and Dr Guenther Moebus (University of Sheffield)
Charter 2
<b>Invited:</b> Near-atomic Resolution Structure Determination For The Life Sciences By Cryo-EM Single-particle Analysis <b>Prof Sjors Scheres</b> MRC Laboratory of Molecular Biology
<b>Invited:</b> 3D views of nuclear organization and chromatin topology with x-ray tomography <b>Prof Carolyn Larabell</b> University of California
<b>Invited:</b> Cryo Soft X-ray Imaging of Mammalian Cells <b>Dr Elizabeth Duke</b> Diamond Light Source
X-ray ptychographic imaging of human nuclei and chromosomes <b>Dr Joerg Schwenke</b> University College London
Pushing the boundaries of symmetry determination with 'digital' electron diffraction <b>Dr Richard Beanland</b> University of Warwick
Structure Analysis of a Hyper-complex Approximant to Icosahedral Quasicrystal Using 3D Electron Diffraction Tomography <b>Dr Peter Oleynikov</b> Stockholm University

Emerging and Late Breaking Techniques in Optical Imaging	Session Title
Dr Alex Sossick (University of Cambridge) and Dr Simon Ameer-Beg (King's College London)	Session Organisers
Charter 4	Room
<b>Invited:</b> CMOS Single Photon Image Sensors For Microscopy <b>Dr Robert Henderson</b> University of Edinburgh	0945
	1000
A time-resolved multifocal multiphoton microscope for high speed fret imaging in vivo <b>Dr Simon Poland</b> King's College London	1015
Time-resolved fluorescence using CMOS SPAD line sensor <b>Dr Nikola Krstajic</b> University of Edinburgh	1030
Pre-optimization strategies for two-photon signal improvement by adaptive optics <b>Prof Kurt Anderson</b> Beatson Institute for Cancer Research	1045
Fluorescent lifetime imaging of molecular rotors reveals how environmental influences affect atmospheric aerosol viscosity <b>Dr Naveen Hosny</b> Imperial college	1100
Transverse magnetic tweezers and optical tweezers with nanoscale fluorescence imaging to visualize activities on single DNA molecules <b>Mr Jack Zhou</b> University of York	1115
<b>Invited:</b> Nanoscale Imaging of Neurotoxic Proteins <b>Prof Clemens Kaminski</b> University of Cambridge	1130
	1145

3D Imaging in the Life and Physical Sciences using Electrons and X-rays
Dr Peter Rosenthal (National institute for Medical Research), Dr Elizabeth Duke (Diamond Light Source), Dr Paul Mummery (University of Manchester) and Dr Guenther Moebus (University of Sheffield)
Charter 2
<b>Invited:</b> Quantitative 3D imaging: new developments and hidden limitations <b>Dr Heiner Friedrich</b> Eindhoven University of Technology
<b>Invited:</b> Correlative Tomography <b>Prof Philip Withers</b> University of Manchester
<b>Invited:</b> Bragg Coherent Diffraction for 3D Imaging with X-rays <b>Prof Ian Robinson</b> University College London
STEM Optical Sectioning for Imaging Screw Displacements in Dislocation Core Structures <b>Dr Hao Yang</b> University of Oxford
Three dimensional elemental distributions in AgAu nanoparticles and their correlation to catalytic properties <b>Dr Thomas Slater</b> University of Manchester

3D Electron Microscopy of Complex Biological Systems	Session Title
Dr Lucy Collinson (Cancer Research UK) and Dr Graham Knott (École Polytechnique Fédérale de Lausanne)	Session Organisers
Charter 4	Room
<b>Invited:</b> Structural Neurobiology: The Dense Reconstruction Of Neuronal Circuits <b>Dr Moritz Helmstaedter</b> Max Planck Institute of Neurobiology	1415
	1430
<b>Invited:</b> Interplay between endoplasmic reticulum sheets and dynamic actin filament arrays revealed by multi-scale microscopy <b>Dr Eija Jokitalo</b> Institute of Biotechnology, University of Helsinki	1445
	1500
The analysis of adult neuronal plasticity using focussed ion beam scanning electron microscopy <b>Dr Graham Knott</b> École polytechnique fédérale de Lausanne	1515
Genetically encoded probes for light and EM imaging of the Drosophila brain <b>Dr Julian Ng</b> MRC-Laboratory of Molecular Biology	1530
3-D electron microscopy reveals remodeling of the intercalated disc in heart failure <b>Dr Ashraf Kitmitto</b> University of Manchester	1545
Cartographic analyses using SBFSEM of whole cells reveal distinctive changes in the distribution, volume and morphology of organelles during the Trypanosoma brucei cell cycle <b>Dr Louise Hughes</b> Oxford Brookes University	1600

# Pre-Congress Workshops

A number of Pre-Congress Workshops will take place in the Exchange Rooms of Manchester Central. All participants will need to register in advance to attend the Pre-Congress Workshops.

## Using ImageJ/Fiji for Microscope Image Processing and Analysis

Organised by Dr Kees Straatman (University of Leicester)  
Monday 30 June: 1330 - 1630, Exchange Room 6

ImageJ is a very powerful public domain image processing and analysis program written in Java. It is freely available (<http://rsb.info.nih.gov/ij/>) and used by scientists all over the world to analyse their images. Fiji (<http://fiji.sc/Fiji>) is an ImageJ distribution focussed on the visualisation and analysis of microscope images in 2D, 3D, 4D and 5D.

The workshop will give a brief introduction on the use of ImageJ/Fiji and will be a mix of lecture, demonstration and hands-on session. Participants are asked to bring their own laptop with Fiji installed.

## OMERO in Action. What can OMERO do for me?

Organised by Colin Blackburn and Balagi Ramalingam (University of Dundee)  
Monday 30 June: 1330 - 1630, Exchange Room 7

The Open Microscopy Environment (OME) is an open-source software project that develops tools which enable access, analysis, visualisation, sharing and publication of biological image data. OME has three components:

- (i) OME-TIFF, standardised file format and data model;
- (ii) Bio-Formats, a software library for reading proprietary image file formats;
- (iii) OMERO, a software platform for image data management and analysis.

In this workshop, we will demonstrate the OMERO platform, and show how you can use it to work with your microscopy and/or HCS data. We will also demonstrate integration with 3rd party tools e.g. ImageJ, Fiji, Matlab Analysis tools, Cell Profiler, etc., and for advanced users show how to integrate your own tools.

We will demonstrate some new applications - automatic image tagging, FLIM image data analysis, and object tracking - that have been built and released by OMERO. We've designed OMERO to be as flexible as possible, and this has enabled its use in a range of imaging domains, including light and electron microscopy, high content screening.

## Light Sheet Microscopy: Basic Concepts and Sample Preparation for Beginners

Organised by Dr Emmanuel Reynaud (University College Dublin) and Dr Chris Power (Carl Zeiss Ltd UK)  
Monday 30 June: 1330 - 1630, Exchange Room 5

Light Sheet Microscopy is a promising new imaging technology. However, away from the traditional slide/coverslip pair it can be challenging for many users. The Big Data it can generate over days of life imaging of entire embryos could be seen as repulsive. In this workshop, we will explain the different types of light sheet microscopes available including open source systems as well as the Big Data Challenge and the sample preparation with hands on session and testing a light sheet microscope live. Bring your samples if you dare!





# Plenary Speakers

A hugely impressive line-up of Plenary Speakers has been confirmed for mmc2014, and in recognition of their work, each will receive Honorary Fellowships during the event. This is the Royal Microscopical Society's highest award and it is very rare for so many to be made in a single year. However, 2014 is a special year as it is the Society's 175<sup>th</sup> Anniversary.

## Physical Sciences



**Prof Ondrej Krivanek,**  
**President, Nion Co and Adjunct**  
**Prof, Arizona State University, USA**

In 1997 Dr Krivanek founded Nion Co, that designed and built the first correctors for spherical aberration for the scanning transmission electron microscope (STEM)

configuration that showed an improvement over the uncorrected performance. This development is undoubtedly the most important improvement in STEM since its initial invention.

*STEM of Phonons and Very Light Elements by <20 meV Resolution EELS*

Monday 30 June: 1700 - 1745, Charter I



**Prof Flemming Besenbacher,**  
**Aarhus University, Denmark**

Prof Bassenbacher has had an extraordinarily distinguished career in Scanning Probe Microscopy and in developing microscopy tools for the nanoscale characterization of materials. He was one of the pioneers of

Scanning Tunnelling Microscopy in the late 1980s, developing a home-built instrument that was revolutionary in providing some of the very first images of metal surfaces at atomic resolution and at highly elevated temperatures.

*Catalytic Model Systems Studied by High-Resolution, Video-rate Scanning Tunneling Microscopy*

Wednesday 2 July: 0845 - 0930, Charter I



**Dr John Hutchison,**  
**University of Oxford**

Prof Hutchison's research interests are in high resolution electron microscopy for structural characterisation of new materials including: quantum dots, inorganic fullerenes

and complex oxides; development of controlled environment electron microscopy for *in-situ* study of catalysts and of gas-solid reactions and development and applications of aberration-corrected HREM.

Glauert Medal, Royal Microscopical Society, 1975

President, Royal Microscopical Society, 2002

Honorary Fellow, Royal Microscopical Society, 2013

*175<sup>th</sup> Anniversary Lecture, The Royal Microscopical Society – where it came from, how it got here, and where it's going*  
Wednesday 2 July: 1715 - 1745, Charter I



**Prof Mildred Dresselhaus,**  
**Massachusetts Institute of**  
**Technology, USA**

Prof Dresselhaus and her group have extensively employed advanced electron microscopy and Raman micro spectroscopy to nanomaterials, in particular carbon

nanostuctures to relate their structure to their electronic properties. As such she has defined some of the basic concepts of using well-defined nanostructures in electronic devices to achieve a specific functional behaviour which is key for their use in technological applications.

*Enhancing Signals from the Nanoworld*

Thursday 3 July: 1630 - 1715, Charter I

## Life Sciences



**Prof Mike Sheetz,**  
**Columbia University, USA**

Prof Sheetz continues to work at the cutting edge of microscopy and biochemistry developing new tools and protocols for measuring forces at the molecular level in live cells, and recently he set-up the

Institute for Mechanobiology in Singapore. Throughout his distinguished career he has developed and exploited the latest advances in microscopy to answer fundamental biological questions, and in the process he has produced an impressive body of scientific work.

*TITLE TBC*

Monday 30 June: 1745 - 1830, Charter I



**Dr Jennifer Lippincott-Schwartz,  
National Institutes of Health, USA**

Dr Lippincott-Schwartz and her postdoctoral fellow George Patterson developed photoactivatable GFP, enabling activation of fluorescence with a laser flash, and the newly fluorescent molecules could

then be followed through cells. This development also led to 'super-resolution imaging' and the innovation of PALM (photoactivation localization microscopy).

*Navigating the cellular landscape with new optical probes, imaging strategies and technical innovations*

Tuesday 1 July: 0845 - 0930, Charter 1



**Prof Ernst Stelzer,  
Buchmann Institute for Molecular  
Life Sciences, Germany**

Prof Stelzer has been a key player in the development of confocal microscopy, and his academic patents were heavily utilised in the development of the highly successful Carl

Zeiss LSM series. He was also involved with the development of 4Pi microscopy and other multi-lens detection schemes. These contributions have made a profound contribution to the world of microscopy, especially with regards to bioimaging. Beyond these significant inputs, Prof Stelzer also pioneered light sheet-based fluorescence microscopy (LSFM, SPIM, DSLM).

*175<sup>th</sup> Anniversary Lecture, Shifting the Paradigm in Modern Light Microscopy. Light Sheet-based Fluorescence Microscopy (LSFM, SPIM, DSLM)*

Wednesday 2 July: 1745 - 1830, Charter 1



# Poster List

Poster sessions and judging will take place from 1600 - 1800 on Tuesday 1 July and 1515 - 1715 on Wednesday 2 July, Poster presenters are expected to be present next to their poster between these hours on the relevant day.

Posters with 1000 numbers will be judged on Tuesday 1 July, posters with 2000 numbers will be judged on Wednesday 2 July. Late breaking posters will be displayed at the far end of the poster area and will be numbered from 3000 for posters being judged on Tuesday and 4000 for posters being judged on Wednesday. You can collect a list of late breaking posters from the Bag Collection Desk in the Central Foyer

## Physical Sciences

### Microscopy for Biomaterials and Tissue Engineering

1001. Porous structure modulates microfibre stiffness and cell adhesion **Mr Jason Bolderson** University of Glasgow

1002. The Interface Between Bone and Nacre after Implantation in the Sheep **Prof Daniel Chappard** GEROM - University of Angers

1003. Mechanical and microstructural properties of mineralised collagen studied by in situ micro Raman spectroscopy and electron microscopy **Mr Konstantinos Chatzipanagis** University of York

1004. Lower Third Molar Extraction Effects On Adjacent Second Molar Tissues Studied By Confocal Laser Scanning Microscopy (CLSM) **Prof Jose Garcia-Anton** Universidad Politécnica de Valencia

1005. X-ray microanalysis of Walker's carcinosarcoma **Mrs Tetiana Kalinichenko** Institute of Applied Physics, NAS of Ukraine

1006. Bovine Serum Albumin binding CoCrMo nanoparticles: Study on dissolution effect over the elements on alloy **Mr Thiago Simoes** Institute for Materials Research/ University of Leeds

1007. The Dentine-enamel Junction (DEJ): A Critical Natural Interface **Mrs Tan Sui** University of Oxford

1008. Symptomatology of disturbed vaginal flora as bacterial vaginosis and intermediate flora among women of reproductive period **Miss Dolika Vasovic** University of Belgrade

---

### SPM: Nanoscale Analysis and Characterisation

1009. Using nano-cantilevers to probe molecular motors **Dr Massimo Antognozzi** University of Bristol

1010. A novel approach to parchment damage assessment at the nanoscale **Miss Angelica Bartoletti** University College London

1011. Compositional analysis of fine-scale  $\gamma'$  in an advanced Ni-based superalloy **Mr Yiqiang Chen** University of Manchester

1013. Addressing the Inverse Problem of Far-field Imaging: A Noniterative Exact Solution for Phase in Imaging **Mrs Judy Ernstoff** Nanonics Imaging Ltd

1014. PiezoForce and Contact Resonance Microscopy Correlated with Raman Spectroscopy applied to a Non-linear Optical Material and to a Lithium Battery Material **Mrs Judy Ernstoff** Nanonics Imaging Ltd

1015. On-line Scanned Probe Microscopy Transparently Integrated with DualBeam SEM/FIB Systems **Mrs Judy Ernstoff** Nanonics Imaging Ltd

1016. Finite element method in analysis and design of SThM probes **Mr Yunfei Ge** University of Glasgow

1017. A New Technique for Scanning Thermal Conductivity Measurements **Mr Jeremy Goeckeritz** Applied NanoStructures, Inc.

1018. A unique structure of the Na<sup>+</sup>-coupled F<sub>1</sub>V-hybrid ATP synthase rotor from *Acetobacterium woodii* **Dr Adriana Klyszejko** University of Leeds

1019. Exploring new substrates for hydrogen-bonded arrays with Atomic Force Microscopy **Dr Vladimir Korolkov** University of Nottingham

1020. Using High Speed Atomic force Microscopy to image millimetre sized areas in minutes **Dr Oliver Payton** University of Bristol

1022. Closing the Loop on High-Speed Atomic Force Microscopy **Dr Loren Picco** University of Bristol

1023. Atomic-force microscopy in solving problems of experimental mineralogy **Dr Natalia Piskunova** Institute of Geology, Komi Science Center, Ural Branch of RAS

1024. Multimodal microscopy using "half and half" contact mode and ultrasonic force microscopy **Mr Mark Skilbeck** University of Warwick

1025. Magnetic Force Microscopy Investigation of Arrays of Nickel Nanowires and Nanotubes **Mr Muhammad Tabasum** Université catholique de Louvain

1026. Structural properties of nanocrystalline Fe<sub>93</sub>Ga<sub>7</sub>-x thin films for magnetostrictive applications **Mr Matthew Taylor** University of York



1027. Structural and electrostatic properties of layered MoS<sub>2</sub>: influence of the substrate **Miss Yurema Teijeiro** National Physical Laboratory

1028. Thermal characterization on nanocrystalline diamond film using scanning thermal microscopy **Prof Jonathan Weaver** University of Glasgow

1029. Local surface potential measurement of Si nanowire devices on ultrathin SOI **Mr Sheng Ye** University of Southampton

---

### **In Situ and Dynamic Microscopy**

1030. In Situ Measurements of the Relative Density Changes at Phase Transition in Thin Solid Films According to Electron Microscopic Data **Prof Aleksandr Bagmut** National Technical University

1031. Using Definiens Software Analyze Tumor Extracellular PH **Dr Tingan Chen H. Lee** Moffitt Cancer Center & Research Institute

1032. In situ electron microscopy of liquid dispersed 2-dimensional thin-film nanomaterials for electrochemical applications **Dr Evie Doherty** Trinity College Dublin

1033. Use of Confocal Laser Scanning and Scanning Electron Microscopes in the Study of Different Heat Treatments of an Austenitic and a Duplex Stainless Steels **Prof Jose Garcia-Anton** Universidad Politécnica de Valencia

1034. In Situ Characterization Of Aluminum Foam Under Compressive Load With X-ray Microscopy **Mr Jeff Gelb** Carl Zeiss X-ray Microscopy

1035. Simultaneous in situ SEM and STEM Analysis of Gas/ catalyst Reaction in a Cold Field-emission Environmental TEM **Mr Keitaro Watanabe** Hitachi High-Technologies Corporation

1036. Atomic level in-situ ETEM gas reaction study of NiO polar and neutral surfaces **Dr Leonardo Lari** University of York

1037. Imaging and spectroscopy of two-dimensional layered nanomaterials for energy storage by in-situ liquid cell electron microscopy **Mr Edmund Long** Trinity College Dublin

---

### **Electron Microscopy and Analysis Group: Advances in EM Instrumentation and Techniques**

1039. Fast EDS Mapping of Biological Samples with Large Area SDD Detectors **Dr Clair Collins** Oxford Instruments Nanoanalysis

1040. The Application of Negative Stage Bias To Uncoated Radiolarian Specimens Using a Conventional SEM **Mr Shaun Graham** Carl Zeiss Microscopy

1041. Low Voltage (<1 kv) Field Emission Scanning Electron Microscopy Studies of Graphene and Graphene Oxide **Mr Trevor Groves** Agilent Technologies UK Ltd

1042. Getting the Best from an Imperfect Detector - An Alternative Normalisation Procedure for Quantitative HAADF STEM **Dr Lewys Jones** University of Oxford

1043. Designing Robust Procedures for Rigid and Non-rigid Registration of STEM Image Data **Dr Lewys Jones** University of Oxford

1044. Development of high-efficiency DF-STEM detector **Dr Takeshi Kaneko** JEOL Ltd.

1045. Schottky field emission SEMs – multifunctional tool for biological applications **Prof Bohumila Lencová** TESCAN Brno s.r.o.

1046. Solid State Backscattered Electron Detectors with High Sensitivity Providing Improved Contrast and Detection Speed **Mr Andreas Liebel** PNDetector GmbH

1047. High Collection Efficiency EDX Detectors for Minimum Acquisition Time in SEM and TEM Applications **Mr Andreas Liebel** PNDetector GmbH

1048. Quantification of PtIr catalyst nanoparticles using HAADF STEM **Ms Katherine MacArthur** University of Oxford

1049. Channeling effects on HAADF STEM quantification of bimetallic catalyst nanoparticles **Ms Katherine MacArthur** University of Oxford

1050. Maximum efficiency phase contrast imaging in scanning transmission electron microscopy **Dr Timothy Pennycook** SuperSTEM

1051. New Operation Modes with the PNCCD TEM Camera for Versatile, Direct Electron Imaging in Transmission Electron Microscopy Applications **Mr Henning Ryll** PNSSensor GmbH

1052. Overcoming Quantitative Challenges Presented by X-ray Line Interferences in EDS and WDS **Dr Stephen Seddio** Thermo Fisher Scientific

1053. Spectrum-based Phase Mapping of Apatite and Zoned Monazite Grains Using Principal Component Analysis **Dr Stephen Seddio** Thermo Fisher Scientific

1054. Atom Probe Sample Preparation - Liftout and Sharpening **Dr Andrew Smith** Kleindiek Nanotechnik

# Poster List (cont.)

1055. EBSD and EDS Characterisation of Vanadium-Rich Beta Phase Lamella in Advanced Titanium Alloys **Mr Christopher Stephens** Thermo Fisher Scientific

1056. Is Mn K-alpha still a Relevant EDS Specification? **Dr Keith Thompson** Thermo Fisher Scientific

1057. Titan ChemiSTEM helps detect trace Zr in the  $\theta'$ -Al<sub>2</sub>Cu phase in a 2050 aluminium alloy **Dr Dimitrios Tsivoulas** The University of Manchester

1058. Comparison of the silicon/phosphorus ratio in natural and synthetic nagelschmidite for possible use as standard for microanalysis based on X-ray lines of Si and P **Dr Thomas Walther** University of Sheffield

1059. Investigation of the optical properties of silica nano-particles with low refractive index by electron energy-loss spectroscopy **Dr Thomas Walther** University of Sheffield

1060. Towards Sub-ångström Ptychographic Diffractive Imaging of Oxygen Atoms **Prof Peng Wang** Nanjing University

1061. Maximising Phase Contrast in Aberration-corrected STEM using Pixelated Detectors **Dr Hao Yang** University of Oxford

1062. Practical "tricks" for TEM sample preparation using FIB **Ms Xiangli (Shirley) Zhong** University of Manchester

---

## Electron Microscopy and Analysis Group: Microscopy of Energy Materials

2001. FIB-SEM cross-sectional imaging of sputtered CdTe solar cells **Dr Kerry Abrams** University of Liverpool

2002. Analysis of Grain Boundaries in CdTe using Atom Probe Tomography **Mr Peter Clifton** CAMECA Instruments Inc.,

2003. EBIC and quantum efficiency methods for the study of junction position in thin-film solar cells **Prof Ken Durose** University of Liverpool

2004. Identification of organic photovoltaic films and related impurities using secondary electron spectra in the scanning electron microscope **Mr Robert Masters** University of Sheffield

2005. Electron microscopy study of 2-dimensional lithium cobalt oxide **Dr Eva McGuire** Trinity College Dublin

2006. A comparative study of quick and simple methods for thickness measurement of graphene by transmission electron microscopy **Dr Henrik Pettersson** Trinity College Dublin

2007. Structural and spectroscopic analyses of exfoliated 2-D transition metal dichalcogenides nanosheets with special emphasis on TEM **Mr Anuj Pokle** Trinity College Dublin

2008. Electron probing of LaMnO<sub>3</sub> catalysts **Dr Vaso Tileli** Imperial College London

2009. Microstructural characterization of deformed surface layers produced by milling Type 304L stainless steels for nuclear energy applications **Dr Dimitrios Tsivoulas** The University of Manchester

2010. Electron microscopy study of ZnO-based hybrid solar cells **Mrs Florencia Wisnivesky Rocca Rivarola** University of Cambridge

---

## Functional and Nano-Structured Materials

2011. SEM And TEM Investigation Of CuFeS<sub>2</sub> Nanostructures Synthesized By Microwave Illumination Of The Solutions Containing FeCl<sub>3</sub>·6H<sub>2</sub>O And FeCl<sub>2</sub>·4H<sub>2</sub>O As Iron Sources **Miss Kamonwan Aup-Ngoen** Chiang Mai University

2012. Hydrothermal synthesis, FIB-SEM and TEM analysis of nanostructured hexagonal ZnO double rods **Mr Faith Bamiduro** University of Leeds

2013. HAADF image enhancement using Super-Resolution techniques **Mr Guillermo Bárcena González** Universidad de Cádiz

2014. The growth of gold nanoparticles on electron-transparent chemically modified graphene substrates: a comparative theory / experiment study **Dr Gavin Bell** University of Warwick

2015. Synthesis and characterization of a mixed phase of anatase TiO<sub>2</sub> and TiO<sub>2</sub>(B) by low pressure chemical vapour deposition (LPCVD) for high photocatalytic activity **Mr Yothin Chimupala** University of Leeds

2016. Graphoepitaxial Josephson Junctions for Quantum Interferometers **Prof Michael Faley** Forschungszentrum Juelich GmbH

2017. Pushing the limits of qualitative and quantitative element analysis by EDS on the nm-scale **Dr Meiken Falke** Bruker Nano GmbH

2018. Preparation of soot-in-oil samples from gasoline direct injection engines for HRTEM analysis **Dr Michael Fay** University of Nottingham

2019. 3D strain of Bi<sub>2</sub>Se<sub>3</sub> screw dislocation **Dr Maria Guerrero-Lebrero** Universidad de Cádiz

2020. Cross-sectioning heterostructures fabricated from 2D-crystal inks **Dr Sarah Haigh** University of Manchester

2021. Bilayer graphene structures formed by passage of current through graphite: HRTEM and HAADF-STEM studies **Dr Peter Harris** University of Reading
2022. Structural Variation of Size-Selected Clusters in Vapour-Phase Chemical Reaction **Mr Kuo-Juei Hu** University of Birmingham
2023. Electron microscopy study of supercritical fluids electrodeposition of mesoporous silica templates **Dr Reza J Kashtiban** The University of Warwick
2024. Atomic resolution structure study of fluorinated graphene by phase restoration of focal series of images **Dr Reza J Kashtiban** The University of Warwick
2025. Atomic structure investigation of  $\text{Au}_{55}(\text{PPh}_3)_{12}\text{Cl}_6$  the Schmid cluster by High Angle Annular Dark Field Scanning Transmission Electron Microscopy **Mr Nan Jian** NPRL, University of Birmingham
2026. Sn Distribution In Sn-Beta Zeotype **Dr Anna Katerinopoulou** Haldor Topsøe A/S
2027. Atomic Study of Co-based Heusler Alloys for Spintronic Devices **Dr Balati Kuerbanjiang** University of York
2028. Structural analysis of Cu nanowires deposited into porous  $\text{Al}_2\text{O}_3$  via supercritical fluid electrodeposition **Mr Samuel Marks** University of Warwick
2029. Reverse engineering graphene oxide **Mr Alexander Marsden** University of Warwick
2030. Microstructure and Optical Resonances in Semiconducting Oxides Micro-cavities **Prof Bianchi Mendez** Universidad Complutense Madrid
2031. Irradiation induced Zn nanodot pattern formation in borosilicate glasses **Mr Mohammed Mohammed Sabri** The University of Sheffield
2032. Transmission electron microscopy study of  $\text{Yb}_2\text{Ti}_2\text{O}_7$  **Mr Ali Mostaed** University of Warwick
2033. From petals to needles: Structure-function relations in organic field effect transistors **Mr Aaron Naden** University of Glasgow
2034. A TEM Study of Growth Mechanisms in single and multi-layered Graphene **Dr Na Ni** Imperial College London
2035. Exploring the polarity in oxide thin films **Mr Jonathan Peters** University of Warwick
2036. Assessing Graphene Changes by Raman Analysis Before and After Exposure to FIB-SEM Modification Techniques **Mr Daniel Phifer** FEI Company
2037. Investigations of segregation phenomena in highly strained Mn-doped Ge wetting layers and Ge quantum dots embedded in silicon **Dr Eric Prestat** University of Manchester
2038. Precipitation mechanisms in a vanadium microalloyed steel **Prof Mark Rainforth** The University of Sheffield
2039. A TEM study of “inside out”  $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$  sintered at  $800^\circ\text{C}$  **Dr Joanne Sharp** University of Sheffield
2040. Shear Inversion Phase Change Behaviour in Low-Dimensional SnSe Crystals as a Function of Confining Nanotube Diameter **Dr Jeremy Sloan** University of Warwick
2041. Electron Microscopy Investigation of Structural Transformation of Carbon Black Under Influence of High-energy Electron Beam **Dr Mikhail Trenikhin** Institute of Hydrocarbons Processing
2042. Structural and Magnetic Study of Iron Oxide Nanoparticles **Dr Ghulam Uddin** University of York
2043. Reversible switching between non-quenched and quenched states in nanoscale linear arrays of plant light harvesting antenna (LHCII) complexes **Dr Cvetelin Vasilev** University of Sheffield
2044. Copper Surface Effects on Chemical Vapour Deposition of Hexagonal Boron Nitride **Miss Grace Wood** University of Warwick

---

## Life Sciences

### Frontiers in BiolImaging: Imaging beyond the Diffraction Limit

1063. Characterisation of fluorescent labels for gated STED microscopy **Dr Nicholas Barry** MRC Laboratory of Molecular Biology
1064. A novel image analysis technique to study nanoscale conformational transitions in dynamic microtubules **Dr Nic Cade** Cancer Research UK
1065. Characterising the effects of optical aberrations in single molecule and super resolution imaging **Mr Benjamin Coles** STFC
1066. Fixed pattern noise in localization microscopy **Dr Patrick Fox-Roberts** Randall Division of Cell and Molecular Biophysics
1067. Stochastic Super-resolution Microscopy For Imaging Of Live Cellular Processes **Dr Pantelis Georgiades** The University of Manchester



# Poster List (cont.)

1068. Super-resolution, high-speed multiphoton imaging in living cells **Prof Nicholas Hartell** University of Leicester

1069. Optical nanoscopy of Herpes Simplex Virus-1 assembly - a study of the virus structure at the nanometre scale **Dr Romain Laine** Laser Analytics Group

1070. Micro-optical manufacture for white-light super-resolution **Mr Mark Langridge** University of Surrey

1071. Stimulated emission depletion microscopy for the study of amyloid fibril formation **Dr Pierre Mahou** Laser Analytics Group

1072. Bespoke super-resolution optical microscopy methods for single-molecule biophysics **Miss Helen Miller** University of York

1073. Exploration of characteristics affecting the precision of single-molecule localisation using optical vortex beams **Mr Richard Nudd** University of York

1074. Chromatic correction for diffractive based multi-plane four dimensional microscopy **Mr William Pitkeahly** Heriot-Watt University

1075. Analysis of super-resolution images reveals protein arrangement in the podosome ring **Miss Adela Staszowska** King's College London

1076. Calibrating super-resolution dSTORM with organic fluorophore coated polystyrene microspheres **Dr Lin Wang** The University of Sheffield

1077. A comparative study structured illumination microscope performance in quantitative analysis of HIV viral uncoating **Dr Ann Wheeler** Queen Mary University of London

1078. Super-resolution imaging strategies for Cell Biologists using a spinning disk microscope **Dr Ann Wheeler** Queen Mary University of London

---

## Frontiers in BioImaging: Correlative Light Electron Microscopy (CLEM)

1079. Development of a quantitative Correlative Light Electron Microscopy technique to study GLUT4 trafficking **Miss Lorna Hodgson** University of Bristol

1080. Applications of phosphor nanoparticles for CLEM bio-imaging using the JEOL ClairScope Atmospheric Scanning Electron Microscope **Dr Ian Morrison** University of York

## Imaging Microbes and Microbe-Host Interactions

1081. Fluorescence Amplified Detection Of Residual Bacterial Bioburden In The Root Canal Space **Mr Dylan Herzog** King's College London

1082. Single-molecule observation of bacterial replication fork pausing **Dr Adam Wollman** University of York

---

## Frontiers in BioImaging: Emerging 3D Microscopy

1083. Visualising Snf1/Mig1 signal transduction in *Saccharomyces cerevisiae* using high-speed single-molecule 4D astigmatic fluorescence microscopy **Mr Erik Hedlund** University of York

1084. OpenSPIM - open source selective plane illumination microscopy **Mr Peter Pitrone** Max Planck Institute for Molecular Cell Biology and Genetics

---

## Imaging Flow Cytometry: A Picture is Worth a Thousand Data Points

1085. Open source microfluidic fluorescence lifetime cytometer **Dr Jakub Nedbal** King's College London

---

## 3D imaging in the Life and Physical Sciences using electrons and X-rays

2045. BlochSim: A new, free to use, open source Bloch Wave Simulation program **Dr Keith Evans** University of Warwick

2046. Quantitative X-ray Imaging as a Tool for Assessing Bone Mass in Rodents **Dr Guillaume Mabilieu** University of Angers

2047. Optical Sectioning With Atomic Resolution Spectroscopy **Dr Timothy Pennycook** SuperSTEM

2048. 4D Correlative Workflows: Comprehensive sample characterization combining X-Ray- and Electron- Microscopy **Mr Ingo Schulmeyer** Carl Zeiss Microscopy GmbH

2049. Structures and Transitions in Vanadium Dioxide **Miss Kerrie Smith** University of Warwick

2050. Scanning electron microscopy with X-ray spectroscopy and focused ion beam (FIB-SEM-EDX), an innovative tool for non-destructive analysis of Gold jewellery **Mr Francisco Torres** Policía de Investigaciones de Chile

2051. Photometric stereo technique for enhancing composition maps in SEM micrographs **Mr Jaroslav Valach** Institute of Theoretical and Applied Mechanics

2052. Optimisation of 3D EBSD/EDS data acquisition **Dr Geoff West** Loughborough University

2053. 3D FIB-SEM tomography of complex flocculated sedimentary materials consisting of inorganic and organic phases in an aqueous medium **Mr Jonathan Wheatland** Queen Mary, University of London

2054. X-ray Modulation Coherent Imaging **Dr Fucui Zhang** University College London

---

### Imaging Cells in 3D – Matrix, Tissue, In Vivo

2055. Differences in dynamics of cell activity in 3D collagen gel as visualized with coherence-controlled holographic microscope **Mrs Aneta Krizova** Central European Institute of Technology

2056. Imaging neuronal synaptic components in a coculture – What we can learn from super resolution microscopy **Dr Mathias Pasche** MRC - LMB

2057. The Histocutter: A revolution in 3D imaging **Miss Amanda Wilson** Imperial College London

---

### Frontiers in BioImaging: Label-Free Microscopy

2058. Hyperspectral coherent anti-Stokes Raman imaging with optical non-resonant background removal **Mr Thomas Kavanagh** King's College London

2059. Quantitative phase imaging using programmable illumination patterns **Mr Taewoo Kim** University of Illinois at Urbana-Champaign

2060. High sensitivity cancer cell proliferation assay using quantitative phase imaging **Prof Gabriel Popescu** University of Illinois at Urbana-Champaign

2061. Coherence-controlled holographic microscope **Mr Tomas Slaby** TESCANA Brno, s.r.o

2062. Dynamic phase differences method for the assessment of cellular dynamic processes **Ms Lenka Strbkova** Central European Institute of Technology - Brno University of Technology

### Analysis and Quantitation of Biological Images

2063. The use of environmentally-sensitive fluorescent dyes to probe membrane organization during T cell signaling **Mr George Ashdown** Kings College London

2064. Automated identification and analysis of nanoparticle trafficking through endocytic compartments by single particle tracking microscopy **Mr Kez Cleal** Cardiff University

2065. Semi-automated cell counting in phase contrast images of epithelial monolayers **Miss Rachel Flight** University of Birmingham

2066. The Open Microscopy Environment: Open Source Image Informatics For The Biological Sciences **Dr Helen Flynn** OME consortium, University of Dundee

2067. Cell recognition and targeting at the Surrey microbeam end-station microscopy facility **Mr Antonios Georgantzoglou** University of Cambridge

2068. GPU Enhanced Fluorescence Lifetime Imaging Processors for Solid-State Single-Photon Sensor Arrays **Dr David Li** University of Strathclyde

2069. Phenotyping TILs in situ: automated enumeration of FOXP3+ and CD69+ T cells in Follicular Lymphoma **Miss Roslyn Lloyd** PerkinElmer

2070. Efficient teaching of microscopy based on geometric optics **Dr Volodymyr Nechyporuk-Zloy** Glasgow University

2071. Intracellular single particle tracking, quantifying movement and function **Dr Vincent Recamier** Laboratory Imaging (LIM)

2072. Single Molecule Dynamics Of Gene Expression Measured On Single Genes In Living Cells **Prof Yaron Shav-Tal** Bar-Ilan University

---

### 3D Electron Microscopy of Complex Biological Systems

2073. Three-dimensional Visualization Of Gold Nanoparticles In Lung Cells Using Focused Ion Beam-scanning Electron Microscopy **Prof Boon-Huat Bay** National University of Singapore

2074. Combining serial block face scanning electron microscopy and electron tomography to unravel dyads formation and remodelling in heart failure **Dr Christian Pinali** Institute of Cardiovascular Sciences

2075. Staining and embedding of mitotic human chromosomes for three-dimensional structural characterisation **Dr Mohammed Yusuf** University College London

# Poster List (cont.)

## Emerging and Late Breaking Techniques in Optical Imaging

2076. Gold nanorods: new opportunities in biological imaging and sensing **Dr Yu Chen** Strathclyde University

2077. Temporal Measurement Of Femtosecond Laser Pulses Using Two-Photon Absorption Induced Photoconductivity In GaP Photodiode **Dr EeZhuan Chong** King's College London

2078 FRET measurement at the plasma membrane by acceptor fluorescence anisotropy under evanescent wave excitation **Dr Viviane Devauges** Kings College London

2079 Fascinating world of autofluorescence: confocal microscopy study of natural history specimens **Dr Tomasz Goral** Natural History Museum

2080. Low-cost fluorescence and white-light endoscopic microscopy using fibre bundles and gradient index lenses **Dr Michael Hughes** Imperial College London

2081. Multidimensional imaging platform with fast and high transmission spectral selection for high-throughput protein-protein interaction screening **Dr Romain Laine** Laser Analytics Group

2082. Fast confocal fluorescence lifetime imaging **Dr James Levitt** King's College London

2083 With Photon Patterns Towards Species Selective Microscopy **Mr Uwe Ortmann** PicoQuant GmbH

2084. GFP Compatibility With New Click-iT® Plus EdU Cell Proliferation Assay **Dr Philippa Parsons** Thermo Fisher Scientific

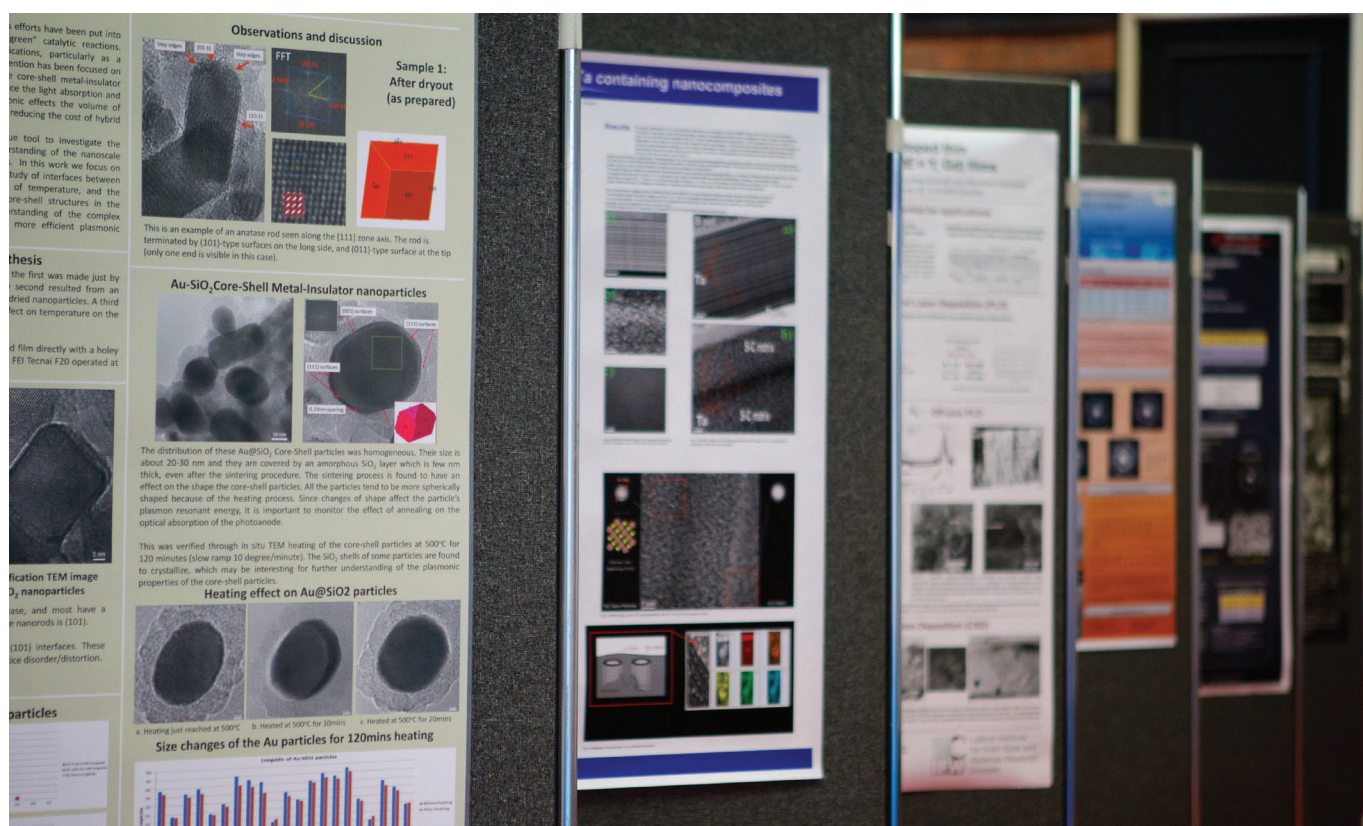
2085. Calcium-sensitive fluorescent lifetime imaging using wide field time-resolved detection of emission from optical sections excited by light sheet illumination **Dr Roger Phillips** University of Sussex

2086. The application of single photon counting arrays for live cell fluorescence lifetime imaging **Miss Rebecca Saleeb** Heriot Watt University

2087. A Simple "all-in-one" Single Track 2PE Microscopy Configuration For Simultaneous Imaging Of Multiple Fluorophores **Prof Jean-Marie Vanderwinden** Université Libre de Bruxelles

2088. Development Of An Active Objective Positioning System With Sub-nanometre Resolution For Living Cell Microscopy **Dr Yingchun Zhang** Elektron Technology

2089. Transverse magnetic tweezers and optical tweezers with nanoscale fluorescence imaging to visualize activities on single DNA molecules **Mr Zhaokun Zhou** University of York





# Associated Meetings

One of the great features of the Microscience Microscopy Congress series is that it embraces established popular meetings to bring together different groups under one roof to network and to enjoy Europe's largest microscopy and imaging exhibition.

## **Cross-Disciplinary EM and LM Meeting: Adventures at the Biology-Materials Interface** **Organised by Prof Ed Boyes (University of York), Dr Lucy Collinson (Cancer Research UK) and Prof Jason Swedlow (University of Dundee)**

Monday 30 June: 1100 - 1640, Central Rooms 5 - 7

This Cross-Disciplinary Imaging and BioImagingUK Meeting will bring a wide variety of imaging scientists together, enabling them to meet to agree joint initiatives. The goal of the meeting is to report on advances across a broad range of imaging domains and applications and identify opportunities for strategic collaboration between the biological and material imaging communities.

Invited speakers include:

Dr Andy Brown (University of Leeds)  
Dr Andy Bushby (Queen Mary University of London)  
Dr Roland Kroger (University of York)  
Dr Jennifer Le Blond (Imperial College London)  
Luis Pizarro (University College London)  
Dr Alex Porter (Imperial College London)

---

## **Scanning Probe Microscopy (SPM) Meeting**

The annual SPM Meeting is being held as part of mmc2014. It will cover a wide range of topics associated with Scanning Probe Microscopy including main techniques such as atomic force microscopy and scanning tunnelling microscopy as well as more specialised versions.

There are three sessions entitled SPM: Nanoscale Analysis and Characterisation over the three day congress, all are in Charter 3:

- Tuesday 1 July: 1000 - 1215
- Tuesday 1 July: 1415 - 1615
- Wednesday 2 July: 1000 - 1200

There will be a special dinner for SPM session attendees on Tuesday 1 July from 1900 at Don Giovanni's. More information can be found in the Social Events and Awards section. The dinner is generously sponsored by Asylum Research Ltd.

## **Frontiers in BioImaging**

This meeting will be the fourth in the successful Frontiers in BioImaging series. Focusing on the latest optical imaging developments, it brings together technology developers and application specialists to share their work and future vision. The aim of the meeting is to create a network of multidisciplinary scientists focused on aspects of advanced imaging.

This is an ideal event for new and established postdoctoral researchers to engage with a broad range of image approaches and to make useful contacts with key groups using similar technologies. We hope that this will lead to many future collaborations and ensure that recent funding awards are well promoted and benefits maximised.

The Frontiers in BioImaging sessions taking place during mmc2014 are:

- Frontiers in BioImaging: Imaging Beyond the Diffraction Limit (Tuesday 1 July: 1000 - 1215) (sponsored by Andor Technology and Hamamatsu Photonics UK Ltd)
- Frontiers in BioImaging: Correlative Light Electron Microscopy (CLEM) (Tuesday 1 July: 1415 - 1615)
- Frontiers in BioImaging: Emerging 3D Microscopy (Wednesday 2 July: 1000 - 1200)
- Frontiers in BioImaging: Label-Free Microscopy (Wednesday 2 July: 1345 - 1515)

To enable further networking and audience participation, there will be an extended poster session and Frontiers in BioImaging dinner on the evening of Tuesday 1 July. The poster session is being extended to 1900 with an accompanying wine reception, followed by a buffet dinner at Yang Sing from 1930.

More information can be found in the Social Events and Awards section. The organisers would like to thank Andor Technology and Carl Zeiss Ltd for their support of this meeting.

---

## **FIB & EM Prep User Group Meeting**

Tuesday 1 July: 1000 - 1215 and 1415 - 1615, Central Foyer

Following the tremendous success of the first FIB & Prep (FIB & Preparation UK User Group) meeting which took place in October 2013, the FIB & EM Prep Group is hosting the 2nd FIB & Prep (Focus Ion Beam and EM Sample preparation) UK User Group Meeting at mmc2014.

The UK FIB & Prep User Group has been organised to provide an open forum for FIB users and EM sample preparation equipment users to share technique information,



# Associated Meetings (cont.)

discuss best practices, exchange tips for difficult materials and learn about new developments in both instrumentation and techniques, as well meet colleagues.

This meeting is aimed at researchers, failure analysis engineers, PhD students, and anyone having a need to understand today's FIB and EM sample preparation technologies.

Invited speakers include:

Prof Marty Gregg (Queen's University Belfast)  
Dr Richard M Langford (University of Cambridge)  
Dr Cornelia Rodenburg (University of Sheffield)  
Dr Tiehan Shen (University of Salford)

The organisers would like to thank the following companies for their generous support of this meeting: Carl Zeiss Ltd, FEI, Gatan UK, Hitachi High Technologies and Quorum Technologies.

---

## Electron Microscopy and Analysis Group (EMAG)

To continue on from the success of EMAG 2013, the Electron Microscopy and Analysis Group of the Institute of Physics will be hosting sessions at mmc2014.

These sessions are:

- Electron Microscopy and Analysis Group: Advances in EM Instrumentation and Techniques (Wednesday 2 July: 1000-1200 and 1345-1515)
- Electron Microscopy and Analysis Group: Microscopy of Energy Materials (Wednesday 2 July: 1345 - 1515 and Thursday 3 July: 0945 - 1200)

---

## Advanced Measurement Technology in the 21st Century

Meeting Chairs: Dogan Ozkaya (Johnson Matthey) and Eric Bennett (National Physical Laboratory)

This meeting and exhibition is free to attend and will take place in Central Rooms 5-7 in the foyer of Manchester Central on Wednesday 2 July and Thursday 3 July.

The industrial marketplace for engineered products and components presents critical measurement challenges. Outperforming your competitors and optimising product quality, requires innovative microscopy and metrology methods. Advanced Measurement Technology in the 21st Century provides the ideal opportunity to see and hear

about these modern optical and electron microscopy techniques.

The meeting will focus on how the latest techniques in optical and electron microscopy can aid organisations in developing and manufacturing their products to exceed end-user expectations, improve product yield, and meet new regulations.

Invited speakers include:

Daniel O'Connor (National Physical Laboratory)  
Manfred Prantl (Alicona Imaging GmbH)  
Aiden Lockwood (Sandvik Coromat)  
Jon Petzing (Loughborough University)  
Eric Bennett (National Physical Laboratory)  
Mike Ashton (Intertek)

The meeting is aimed at research, design and development engineers, research scientists, production managers, quality engineers, research directors, and anyone having a need to understand today's measurement technologies.

The organisers would like to thank GTMA for their generous support of this meeting.

---

## Satellite Meeting - SuperSTEM Summer School

Friday 4 – Monday 7 July 2014, The Superstem Laboratory, Daresbury

The Summer School builds on the established series of schools and workshops held at SuperSTEM every two years. This year's school moves its focus to Advanced Topics in Aberration-Corrected Scanning Transmission Electron Microscopy. It is organised as a post-conference satellite event to mmc2014 and is part funded by ESTEEM2.

The talks and practicals will cover topics including: principles of aberration correction and diagnosis, advanced imaging theory, instrumentation design and advanced optics, quantitative image analysis, spectroscopies, simulation of images and EELS spectra.

Lectures will be complemented by practicals in small groups (5-6 people), including hands on operation of the SuperSTEM instruments and introduction to advanced analysis software such as HyperSpy and Jitterbug.

The workshop is intended for PhD students, post-doctoral researchers as well as academics that have an existing background in electron microscopy.

The SuperSTEM Summer School was made possible in part through the generous support of the ESTEEM2 network, Nion Co. and HREM Research Inc.

## **Super-Resolution Workshop**

**Organised by Prof Michelle Peckham (University of Leeds) and Dr Susan Cox (King's College London)**

Friday 4 July, University of Leeds

The workshop will discuss the current challenges in developing and using super-resolution microscopy, including the potential for and feasibility of 'home-built' set-ups, and the types of analyses used to process and scrutinise the data. We hope that discussions at the workshop will help us define what is good/best practice around these challenging techniques, and that there will be insight into future potential developments.

Invited speakers and topics include:

*Home built 'super-resolution' and other specialist light microscopes*

Dr Hari Shroff (National Institutes of Health)

Dr Martin Booth (University of Oxford)

Prof David Towers (University of Warwick)

Dr Ashley Cadby (University of Sheffield)

*Technobytes*

Steven Coleman (Visitech International)

*Analysis of Super-resolution Images*

Dr Susan Cox (King's College London)

Dr Alex Knight (National Physical Laboratory)

Dr Ian Dobbie (University of Oxford)

Dr Ricardo Henriques (University College London)

Dr Bernd Rieger (Delft University of Technology)

*Labelling Approaches*

Dr Helge Ewers (King's College London)

This workshop is generously sponsored by MRC Next Generation Imaging.

## RMS Medals and Awards

### Honorary Fellowships

As part of the 175<sup>th</sup> Anniversary celebrations of the Society, a number of Honorary Fellowships are being presented at mmc2014. Honorary Fellowships are bestowed by the Society for eminence in microscopy or related branches of science or for exceptional service to science.

The recipients of the Honorary Fellowships are:

- Professor Mildred Dresselhaus FRMS
- Dr Jennifer Lippincott-Schwartz FRMS
- Professor Ernst Stelzer FRMS
- Professor Michael Sheetz FRMS
- Dr Ondrej Krivanek FRMS
- Professor Flemming Besenbacher FRMS
- Dr Richard Paden FRMS

### The RMS Life Sciences Medal

The 2014 RMS Life Sciences Medal is being presented to Dr Maddy Parsons (King's College London). The presentation will take place during the Imaging Cells in 3D – Matrix, Tissue, *In Vivo* session on Wednesday 2 July: 1345 - 1515, where Dr Parsons is an invited speaker.

### Medals Launch

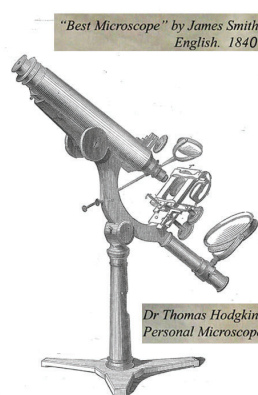
The following medals are being launched at mmc2014, with the first awards being made at mmc2015 next year.

- RMS Electron Microscopy Section Medal
- RMS Light Microscopy Section Medal
- RMS Life Sciences Section Medal
- RMS Materials Sciences Section Medal
- RMS Scanning Probe Microscopy Section Medal
- RMS Flow Cytometry Section Medal
- RMS Outreach & Education Committee Medal

## Early Days for Microscopy and for the Royal Microscopical Society

### J.S. Ploem, Leiden University, the Netherlands

When the Royal Microscopical Society was founded (1839), it contracted with the three major microscope makers of the time, Smith, Ross, and Powell, to each construct an instrument for the society. Smith's was the first, and ordered on August 19 1840. <sup>1</sup>



In 1840 Dr. Thomas Hodgkin (Guy's Hospital, London) bought Smith's large best microscope. Hodgkin, like Thomas Addison (who described Addison's disease), an early member of the RMS, is most famous for his description (without microscopy) of Hodgkin's disease, a malignant lymphoma. His work on cancer pathology (1843) using his early English Smith microscope was a giant step in the history of medical microscopy,

26 years later, around 1866, Ernst Abbe at Zeiss, Jena, Germany, initiated a revolution in microscopy by defining for the first time the resolution of light microscopy. A more recent revolution in microscopy took place around 1970.

*A glow in the Dark: The Revolutionary Science of Bio fluorescence* (Vincent Pieribone, David F. Gruber 2005 Science): "The popularity of immune fluorescence drove the production of high grade light microscopes capable of fluorescent imaging. In 1970, three major microscope manufacturers made significant advances in fluorescent microscope design. Major microscope innovations would dramatically increase the quality of fluorescent images. First, Johan Ploem's development of the epi fluorescent microscope"<sup>2</sup>.

A recent major development, that was difficult to predict, was that Stefan Hell showed that using epi illumination and dichromatic mirrors for stimulated emission depletion, STED microscopy, Abbe's resolution barrier could be broken and so realised for the first time super resolution fluorescence microscopy.

1. [www.microscope-antiques.com/smith22.htm](http://www.microscope-antiques.com/smith22.htm)

2. [www.ploem-fluorescence-microscopy.com](http://www.ploem-fluorescence-microscopy.com)

# Exhibition Workshop Programme

The Exhibition Workshops are FREE to attend to all visitors at mmc2014 and take place in Workshops 1 - 4 on the exhibition floor. Abstracts for all the workshops can be found in the accompanying booklet. Workshop details are subject to change at the last minute, please check the website for up to date details.

## Tuesday 1 July

	Workshop 1	Workshop 2	Workshop 3	Workshop 4
1100 - 1145	<b>Andor Technology</b> <i>Active Illumination Solutions: Diverse Applications from Cell Damage to Optogenetics</i>	<b>VisiTech International</b> <i>Super Resolution in Multi Point Confocal</i>	<b>Oxford Instruments</b> <i>Cracking cell biology wide open with advanced SEM microanalysis</i>	
1145 - 1230	<b>GE Healthcare</b> <i>Practical Approaches and Considerations for Super-resolution Imaging</i>	<b>Bitplane</b> <i>Imaris 7.7 – Built for speed</i>		<b>Andor Technology</b> <i>Spinning Disk Confocal: Breaking the Norm</i>
1230 - 1315	<b>FEI</b> <i>Correlative microscopy made easy: From live cell functional imaging to electron microscopy ultrastructure</i>	<b>Carl Zeiss Ltd</b> <i>Fast, Gentle Imaging for Living Samples – The Lightsheet Z1</i>	<b>Asylum Research, An Oxford Instruments Company</b> <i>The MFP-3D Infinity AFM - Higher Performance and New Features</i>	<b>Olympus</b> <i>Digital Microscopy - Making the difference</i>
1315 - 1400	<b>HORIBA</b> <i>Quantitative Fluorescence Ratio Imaging in Biosciences</i>	<b>Lumen Dynamics</b> <i>How LEDs can provide a Stable and Kind Environment for Live Cell Imaging</i>	<b>Gatan UK</b> <i>Sample stages and control for in situ TEM and SEM</i>	<b>Thermo Scientific</b> <i>How to specify an EDS Detector</i>
1400 - 1445	<b>Leica Microsystems</b> <i>3D Super-resolution Techniques</i>	<b>Hitachi High Technologies</b> <i>Next-generation CFE-SEM: a step change in high-end imaging and analysis</i>	<b>JEOL UK</b> <i>Imaging &amp; Analysis at low kV</i>	<b>E.A. Fischione Instruments</b> <i>Concentrated Ar ion milling for ultra- high resolution TEM imaging and analysis of conventional or FIB samples used in materials science</i>
1445 - 1530	<b>Laser 2000</b> <i>Diode laser technology in life sciences</i>	<b>Andor Technology</b> <i>Fast and Sensitive Cameras for Microscopy</i>	<b>Indigo Scientific Ltd</b> <i>Discusses Jenoptik colour cameras - mac or pc? and Okolabs exciting new ideas on live cell incubation</i>	
1530 - 1615			<b>Hamamatsu Photonics UK Ltd</b> <i>Versatile by Design: Cameras for Life Science</i>	
1630 - 1715		<b>Bruker Nano Surfaces</b> <i>Opterra : the New Way of Multipoint Confocal Imaging</i>		



# Exhibition Workshop Programme (cont.)

Wednesday 2 July

	Workshop 1	Workshop 2	Workshop 3	Workshop 4
1100 - 1145	<b>Andor Technology</b> <i>A simple laser-free confocal offering flexibility with high performance.</i>	<b>Bitplane</b> <i>Imaris software for 3D/4D image analysis applications: confocal, Multi-photon, Super Res. Microscopy</i>	<b>Linkam Scientific Instruments</b> <i>Introduction to CLEM</i>	<b>NanoMEGAS SPRL / LOT QuantumDesign Ltd</b> <i>TEM orientation and strain mapping at nm scale with precession diffraction</i>
1145 - 1230	<b>FEI</b> <i>Cutting-edge DualBeam™ sample prep and TEM analysis for material science</i>	<b>Bruker &amp; Hitachi High Technologies</b> <i>Applications of a novel annular EDS detector</i>	<b>TVIPS GmbH</b> <i>Multi-Purpose CMOS Cameras for TEM Data Acquisition Software and Automation</i>	<b>GE Healthcare</b> <i>Early testing of Drug Toxicology using Cytell™ Imaging Cytometer- A Simplified Solution for Automated Cell Imaging and Analysis</i>
1230 - 1315	<b>Excelitas Technologies (X-Cite®)</b> <i>How LEDs can provide a Stable and Kind Environment for Live Cell Imaging</i>	<b>Carl Zeiss Ltd</b> <i>Correlative Light and Electron Microscopy – on the way from 2D towards 3D</i>	<b>Gatan UK</b> <i>Cathodoluminescence for TEM-the resolution breakthrough</i>	<b>Asylum Research, An Oxford Instruments Company</b> <i>blueDrive™ photothermal excitation for fast, reliable and quantitative AFM</i>
1315 - 1400	<b>HORIBA</b> <i>Cathodoluminescence Imaging and Spectroscopy: A Powerful Technique for Advanced Materials Characterisation at the Nanoscale</i>	<b>EDAX (Ametek BV)</b> <i>Advanced (Image) Analysis with an EBSD system</i>	<b>Agilent Technologies</b> <i>Revolutionary New 7500 Extends Forefront of Atomic Force Microscopy!</i>	<b>Bruker Nano Surfaces</b> <i>Mapping receptor over living cell by PeakForce Tapping</i>
1400 - 1445	<b>HORIBA</b> <i>Raman Imaging: More Than a Nice Picture</i>	<b>Hitachi High Technologies</b> <i>"Clever little SEM": how benchtop SEM makes advanced analysis and detection accessible to all</i>	<b>Hamamatsu Photonics UK Ltd</b> <i>Spatial Light Modulators: Expanding the Concepts of Light Control</i>	<b>Bruker Nano Surfaces</b> <i>High resolution and mechanical mapping over polymer by AFM</i>
1445 - 1530	<b>EDAX (Ametek BV)</b> <i>Recent advances in interferometry, thin films and steep slopes</i>	<b>Andor Technology</b> <i>Fast and Sensitive Cameras for Microscopy</i>	<b>Deben UK Ltd</b> <i>CMOS cameras for TEM don't have to break the bank</i>	
1530 - 1615	<b>Leica Microsystems</b> <i>High resolution Cryo transfer</i>			

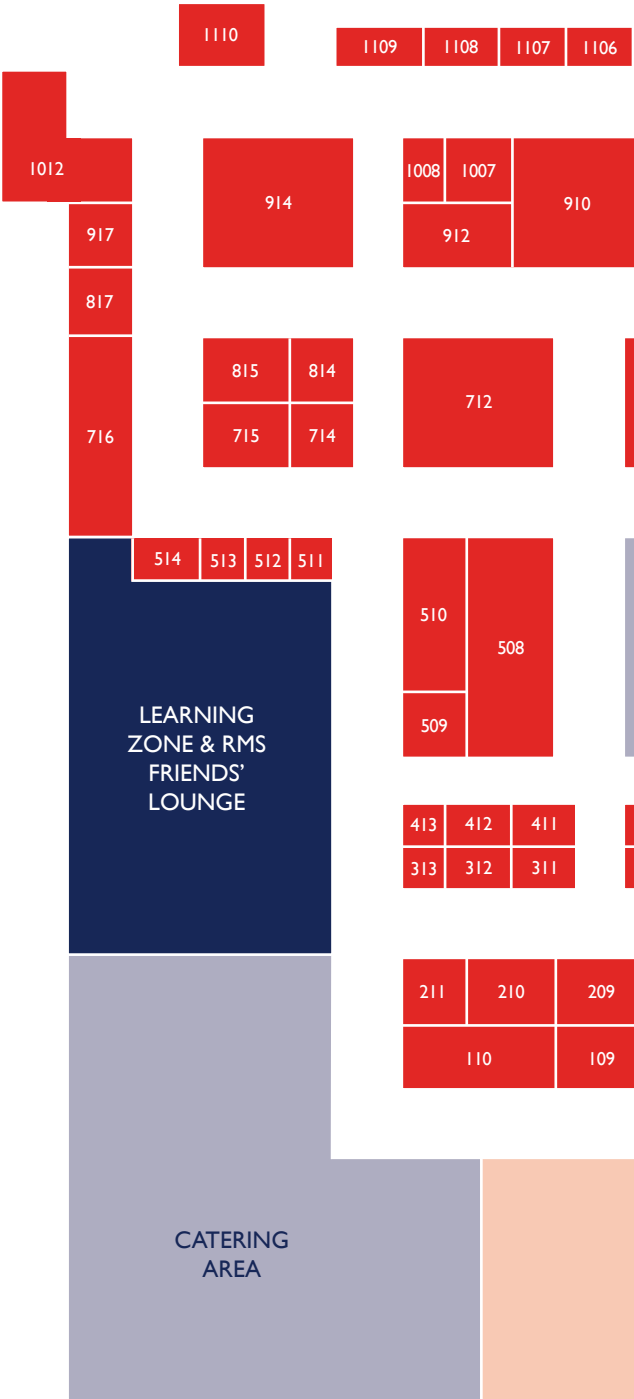
## Thursday 3 July

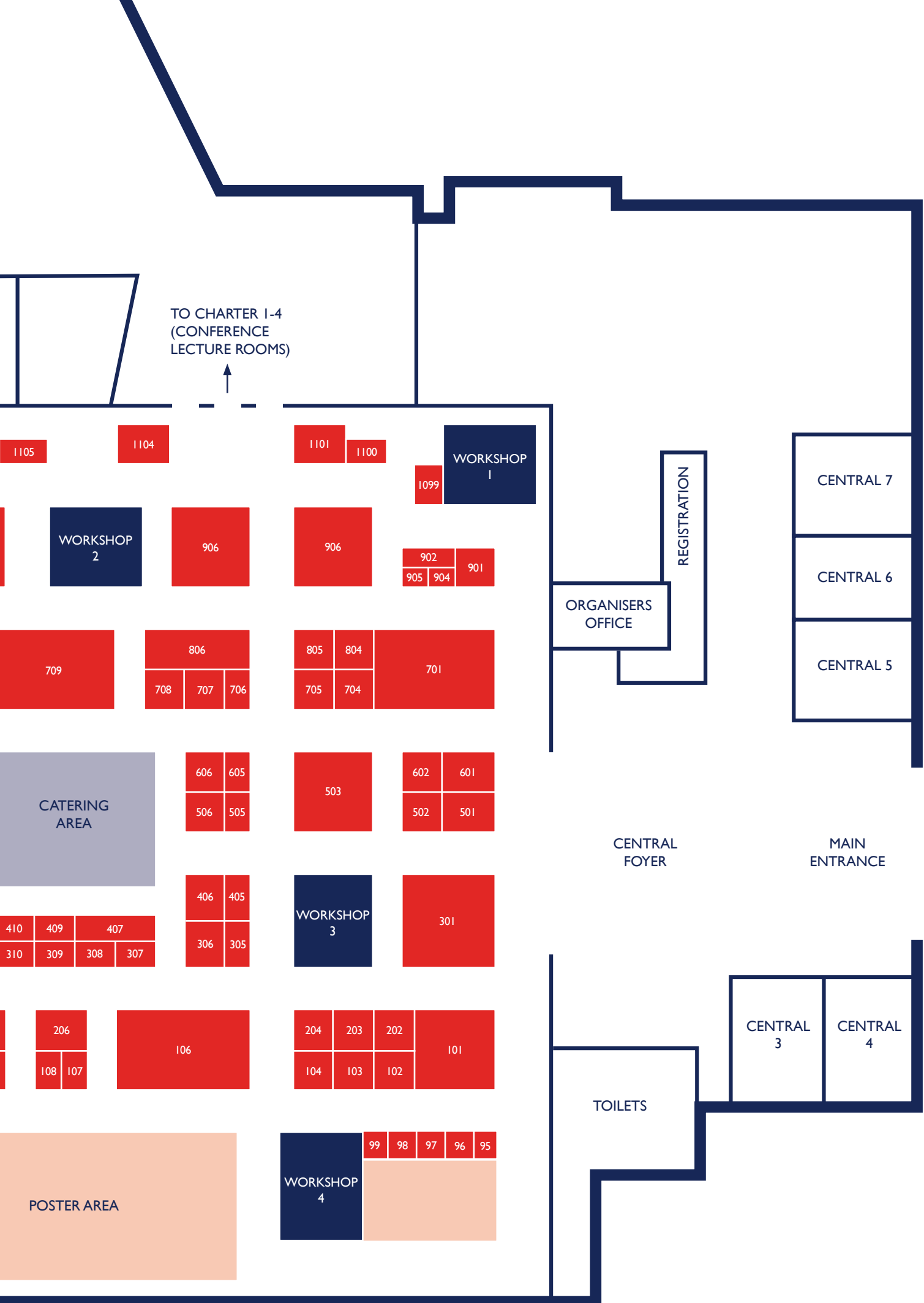
	Workshop 1	Workshop 2	Workshop 3	Workshop 4
1100 - 1145			<b>Linkam Scientific Instruments</b> <i>Introduction to Linkam</i>	
1145 - 1230		<b>Bitplane</b> <i>Imaris software for non-fluorescence 3D/4D images analysis ie. Bright-field, EM, MicroCT, OPT</i>	<b>Hamamatsu Photonics UK Ltd</b> <i>Virtual Microscopy for Cellular Pathology Applications</i>	<b>Surface Measurement System Ltd</b> <i>Critical Humidity Control in Light, Raman, FTIR and other microscopies</i>
1230 - 1315	<b>EDAX (Ametek BV)</b> <i>WDS: where EDS hits the limits</i>	<b>Carl Zeiss Ltd</b> <i>X-ray Tomography as a Correlative Imaging Technique</i>	<b>JEOL UK</b> <i>Atomic Resolution Microanalysis in HRTEM</i>	<b>E.A. Fishione Instruments</b> <i>Optimised sample preparation using Argon ion polishing for SEM, EBSD and TKD</i>
1315 - 1400	<b>Conaptic</b> <i>Taking Control of your projects and booking schedule</i>	<b>HORIBA</b> <i>AFM-TERS: Nanoscale Raman Chemical Imaging with the HORIBA AIST-NT System.</i>	<b>Gatan UK</b> <i>SEM 3D resolution over huge volumes-the 3view data factory using serial block face SEM</i>	

# Exhibition Floorplan

TO CHARTER 1-4  
(CONFERENCE  
LECTURE ROOMS)

TOILETS







# List of Exhibitors

<b>Company</b>	<b>Stand</b>	<b>Company</b>	<b>Stand</b>
Acutance Scientific	110	HIDEN Analytical	98
Agar Scientific	209	Hitachi High Technologies	1012
Agilent Technologies	1110	HORIBA UK Ltd	817
Alicona	706	Hysitron Inc	211
Andor Technology	806	ibss Group, Inc and Kammrath & Weiss GmbH	204
ASI/Applied Scientific Instrumentation, Inc	405	Indigo Scientific Ltd	203
Asylum Research, an Oxford Instruments Company	508	International Labmate	1007
Bitplane	806	ISS Group Services	210
Blue Scientific	514	JEOL UK	301
Bruker	914	Keyence	406
Bruker Nano Surfaces Division	705	Kleindiek Nanotechnik GmbH	311
CAMECA	110	Klocke Nanotechnik GmbH	110
Carl Zeiss Ltd	709	Lambda Photometrics	715
Chroma Technology Ltd	1108	Laser 2000 UK	716
Clear View Imaging	814	Laser Lines Ltd	412
CN Technical Services	306	Laser Quantum	1100
Conaptic Ltd	905	Leica Microsystems	906
CoolLED	505	Life Technologies	1104
Cosmos Biomedical Ltd	313	Linkam Scientific Instruments	411
Deben UK Ltd	407	LOT-Quantum Design Ltd	308
DELMIC BV	104	Lumen Dynamics	708
DENSsolutions	103	Lumenera Corporation	1106
Digital Surf	305	Lumintek	513
Direct Electron	96	Märzhäuser Wetzlar GmbH & Co. KG	510
E.A Fischione Instruments	707	Media Cybernetics	506
EDAX (Ametek BV)	910	Medline Scientific Ltd	95
Edwards Vacuum	206	Merck Millipore	97
Electron Microscopy Sciences/Diatome US	307	Micron Optical	704
EM Resolutions Ltd	107	Microscopy & Analysis	109
Excelitas Technologies (X-Cite®)	708	Mi-Net Technology Ltd	312
FEI	701	NanoMEGAS	309
Gatan UK	106	Nanotec Electronica S.L.	108
GE Healthcare UK Ltd	1008	Nanovea	312
Hamamatsu Photonics UK Ltd	601	NT-MDT	502

<b>Company</b>	<b>Stand</b>
Olympus	712
Olympus SIS	805
Oxford Instruments	508
PerkinElmer	917
Pfeiffer Vacuum Ltd	310
Phasefocus	804
Photometrics and QImaging	606
Photon Lines	901
Photonic Optics	410
PNDetector	902
Prior Scientific Instrument Ltd	102
Protechips	202
Quekett Microscopical Club	509
Queensgate	209
Quorum Technologies	503
Renishaw plc	1107
SGX Sensortech (MA) Ltd	413
SmarAct GmbH	602
Solent Scientific	501
SPECS Surface Nano Analysis GmbH	605
Speirs Robertson Ltd	714
SPI Supplies	815
Stratech Scientific	511
Stratocore	512
Surface Measurement Systems	904
Tescan, a.s	101
Thermo Scientific	1100
Thorlabs Ltd	912
Toptica Photonics	1109
TVIPS GmbH	409
VisiTech International	1105
Windsor Scientific	1099
Zurich Instruments AG	99



