

EPIC Members Event Report

MMC 2015

Microscience Microscopy Congress 2015



Manchester, UK
29 June – 2 July 2015

www.mmc2015.org.uk



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About the EPIC Members Event Reports

Initiated by the founder of EPIC Dr. Thomas Pearsall in 2003, these reports are prepared by members of EPIC to the benefit of the wider community. If you did not have a chance to attend the event but would like to know some key highlight, this report is for you. Emphasis is placed on exploring technical and business opportunities for the members of EPIC.

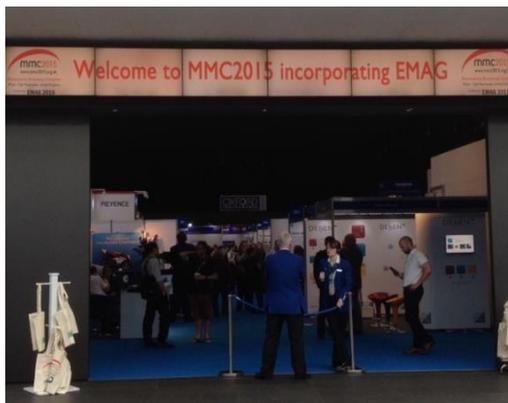


The Microscience Microscopy Congress (MMC) 2015 was held from 29 June – 2 July 2015 in Manchester, UK. It is one of the major events dedicated to microscopy. Its strength lies in the high quality of scientific presentations that are at the forefront of new developments in microscopy science and in the large exhibition of microscope and microscope-related equipment manufacturers.

MMC 2015 was organized by the Royal Microscopical Society (RMS). The RMS is an international society committed to advancing science, developing careers and supporting wider understanding of science and microscopy. The aim of the MMC is to gather together all the microscopy community, from scientists to industrials, to share advances and innovations in all areas of microscopy: electron, light and scanning probe microscopy. For the first time this year, MMC incorporated the Electron Microscopy and Analysis Group (EMAG) conference of the Institute of Physics.

The 3-days congress has a very full program, including:

- A conference
- An exhibition
- Commercial workshops
- Poster sessions
- An imaging competition
- Social events



MMC 2015 in figures:

- More than 1 300 visitors
- Around 100 exhibitors
- 6 parallel sessions
- 6 plenary speakers, 52 invited speakers and 87 contributed oral presentations
- 300 poster presentations
- Around 70 company workshops

The Conference

The conference is split into 6 parallel sessions, two of which are EMAG conference sessions. As MMC wishes to be a conference where all microscopy techniques meet, in addition to talks on electron microscopy, there was a session dedicated to Scanning Probe Microscopy (SPM), a specific session on techniques and applications of X-ray imaging, and several sessions on the different types of optical microscopies: super-resolution microscopy, label-free microscopy, Fluorescence Lifetime imaging, ... Some sessions were also discussing recent developments of new probes and fluorophores.

To emphasize the pluri-disciplinarity of the conference, a popular session called "Advances in Instrumentation and Techniques across the Microscopies" was organized again this year. This meeting aims at covering all microscopy disciplines and sharing recent developments in hardware and software in all fields to enable productive discussions and new ideas and collaborations.



Other sessions were more application-oriented dealing with hot-topics generating a lot of research like "Imaging Cancer" or "Imaging the Immune System" or with emerging topics like the use of microscopy for food research.

Microscopy for food is a topic that is raising more and more interest among the community. The presentations of the "Focus on Food" meeting showed that all kinds of imaging techniques are used:

- X-ray computed tomography or multiscale approach - using confocal microscopy for μm scale and AFM (Atomic Force Microscopy) and SEM for nm scale - to visualize food microstructure enabling determination of its properties, texture, interaction with body, ...
- FRAP / confocal microscopy to follow processes: for example, nutrient release in the digestive systems with the goal to develop slow release nutrients and avoid hyperglycemia and hyperlipidemia or control of water diffusion during the cooking of pastas

In addition to researchers, the sessions gathered industrials like Nestlé which gave an interesting talk explaining where in the process they need imaging and why:

- Raw materials (before any process): imaging is used to observe structure and determine how it will handle the process making it an ingredient
- Ingredients: imaging is used in R&D mainly to understand the change implied by the use of new ingredients in the process; for example, the impact of replacing wheat flour by tamarin flour
- Finished product: imaging structure to understand properties of food: stabilisation of emulsions, texture, ...
- Ingestion/Digestion: before putting a food product on the market, studies using imaging are made to monitor the food behaviour during ingestion and digestion by customers

The Exhibition

The exhibition counts around 100 booths where main players of the microscopy field from all around the world showcase their latest products. Major manufacturers such as Zeiss, Leica, Olympus, Renishaw, JEOL, Tescan stand alongside with smaller players and start-ups such as PicoQuant, LaVision Biotec, Argolight ([complete exhibitor list](#)).

Zeiss, for example, was presenting its new confocal microscope incorporating the Airyscan feature. In Airyscan an array detector is used to collect all light from an airy pattern which improves resolution and speed.

EPIC members exhibiting include:





Demonstration of the LSM 880 with Airyscan at Zeiss booth

One of the trendiest topics was the combination of functional and chemical information with high-resolution structural information:

- For instance, Renishaw exhibited its SEM-SCA that combines Raman spectroscopy with Scanning Electron Microscopy (SEM). Raman and SEM data are simultaneously acquired on the same point without having to move the sample. They have been manufacturing this product for around 10 years and have seen an increased interest for the last 2 to 3 years.
- Moreover, major manufacturers of optical and electron microscopy presented their latest progress in correlative microscopy: Zeiss, Tescan, FEI, ...

Commercial Workshops

The commercial workshops were 45 minutes sessions that were located in small areas of the exhibition in parallel to conferences. In these sessions, more practical details on products and systems being discussed at the conferences are given. Participants can watch examples of images obtained with the equipment, learn about real case studies and ask questions directly to the manufacturer.



Almost 70 training workshops from around 40 manufacturers took place during the 3 days of the congress. Like the rest of the congress, the workshop program is varied: from the secrets of Raman confocal microscopy for life science (Renishaw) to novel method for using electron microscopy with hydrated and insulating materials (Hitachi High Technologies), from understanding which optical camera suits best your application (Photometrics & Qimaging) to discovering the new high speed and high-resolution TEM camera from EMSIS, the workshops cover all main issues and innovations of microscopy.

Poster Sessions

A poster exhibition was present alongside the exhibition, split into 3 categories: physical science, life science, EMAG. More than 300 posters showing the latest advances in all areas of microscopy were displayed over the 3 days.

The Imaging Competition

The scientific imaging competition was located in the entrance hall and showcased impressive images taken by latest microscope developments on the two themes: Physical science and Life Science. It was the occasion to observe very beautiful images from research groups all around the world and to visually become aware of the progresses that have been made in few years.



Awarded images of the scientific imaging competition –First prizes for the category Life Science: Light microscopy (left), Scanning Probe microscopy (right), Electron microscopy (down).

All the 1300 visitors left the congress after 3 days of top-level conferences, fruitful discussions, image observations, ideas sharing, ready to build the future of microscopy! The next edition will take place in Manchester 3-6 July 2017.

For additional information, please contact the author of this:

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EPIC is the industry association that promotes the sustainable development of organisations working in the field of photonics in Europe. We foster a vibrant photonics ecosystem by maintaining a strong network and acting as a catalyst and facilitator for technological and commercial advancement. EPIC publishes market and technology reports, organizes technical workshops and B2B roundtables, coordinates EU funding proposals, advocacy and lobbying, education and training activities, standards and roadmaps, pavilions at exhibitions. www.epic-assoc.com

220 EPIC Members (1 June 2015)

ACAL Bfi, ACREO Research Center, Advanced Fibre Optic Engineering, Advanced Packaging Center, Advanced Vacuum, Agfa Healthcare, AIFOTEC Fiberoptics GmbH, AIM Infrarot-Module GmbH, AIXTRON SE, ALEDIA, Alpes Lasers, ALPHA Route des Lasers, Alphanov, Altechna, ALTER Technology, AMO, Amplitude Systèmes, AMS Technologies, ANDOR, art photonics, ASE Europe, ASE Optics Europe, Australian National University, Avantes, BB Photonics UK, BBright SAS, Berlin Partner für Wirtschaft & Technologie, Boschman Technologies, Bright Photonics, CAILabs, CALIOPA (Huawei), Cambridge Consultants, CD6, CEA-LETI, Centre for Nanophotonics FOM, Centre for Physical Sciences & Technology, Chalmers University of Technology, CIP Centre for Integrated Photonics, CMC Microsystems, Cobolt , COBRA Research School, COHERENT Europe, Convergent Photonics, CSEM, CUDOS, DAS Photonics, Delta Optical Thin Film A/S, DIAFIR, Diamond, Dilas Diodenlaser, DirectPhotonics Industries , Dow-Corning, Dublin Institute of Technology, eagleyard Photonics GmbH, EBARA Precision Machinery Europe, Eblana Photonics Ltd., Edmund Optics GmbH, ElTech, Eolite Systems, ESP KTN, EV Group, EXALOS, ficonTEC Services GmbH, Fogale Nanotech, FOTONIKA - LV, Fraunhofer for Solar Energy Systems ISE, Fraunhofer Institute for Applied Optics and Engineering, Fraunhofer Institute for Laser Technology, Fraunhofer Institute for Material and Beam Technology, Fraunhofer Institute for Reliability and Microintegration, Fraunhofer Institute for Telecommunications, Heinrich Hertz Institute, Glyndwr University Integrated Photonics, Hamamatsu Photonics, Haute Ecole ARC , Heraeus Noblelight, Heriot-Watt University, Hisilicon Technologies (Huawei), Huawei, ICFO - Institute of Photonic Sciences, ICN2 Institut Català de Nanociència i Nanotecnologia , IHP Innovations for High Performance Microelectronics , IKO Science, Imagine Optic, IMT, INL Lyon Institute of Nanotechnology, Innolume, Institut d'Optique Graduate School, INTEC Department of Information Technology, International Laser Center, IPHT Jena , IQE, IREC - Catalonia Institute for Energy Research, ixFiber, JePPIX, Keopsys, KIT, KONICA MINOLTA, Laser & Medical Devices Consulting, LayTec, Lionix BV, Lithuanian Laser Association, Luceda N.V., Luger Research, Lumics GmbH, LUXeXcel, M Squared Lasers, M.U.T., Messe Berlin (micro photonics), Messe Munich International, Microelectronics Institute of Barcelona, CSIC, Mikrocentrum, Modulight, Multiphoton Optics, Multitel, MW Technologies, Nanofoot Finland, Nanoscribe, Nanosystec, Nanovation, Nanyang Technological University, Next Scan Technology, NKT Photonics , nlight, NOVAE , Noxant, OCEAN Optics, Oclaro, Onefive GmbH, OPI Photonics, Oplatek Group, OpTecBB, Opticsvalley, Optitec, Optoelectronics Research Centre Finland, Optoelectronics Research Centre UK, Optoscribe, Phoenix Software, Photon Lines, PhotonExport, Photonics Bretagne, Photonics Cluster NL, Photonics Electronics Technology Research Association PETRA, Photonics Finland, Photonics Marketplace, Photontransfer, PI miCos GmbH, Pilot 3D, Plasma-Therm, PNO Consultants, Politecnico di Torino, PolyPhotonix, Powerlase, Prima Electro, PSA / Peugeot Citroën, Quanta System , Quantel, Raylase, Resolution Spectra Systems, Robert Bosch GmbH, Rofin Sinar Laser GmbH, RP Photonics Consulting GmbH, SABIC Innovative Plastics, SAES Getters, S.p.A, SAFC Hitech, SATRAX, Scuola Superiore Sant'Anna, See Fast Technologies, Sensofar Metrology, SensUp, Seren Photonics , SMART Photonics, SMT Partner, SOFRADIR, SOITEC, SPI Lasers UK Limited, SQS Vlaknova optika, STMICROELECTRONICS, Süss MicroOptics, SWISSPHOTONICS, TE Connectivity, Technical University of Berlin , Technobis Group, Technobis Group, Technospark Nanocenter, TEMATYS, Thorlabs, Thorn Lighting (Zumtobel), Time-Bandwidth Products, Inc., TNO, Toptica, Torbay Development Agency, Tridonic GmbH & Co KG (Zumtobel), Tyndall National Institute, u2t Photonics, University "Mediterranea" of Reggio Calabria, University Carlos III of Madrid, University College London, University of Barcelona, University of Nottingham, University of Nottingham, University of Roma Sapienza, University of Sheffield , University Paderborn, Vario Optics AG, Vertilas, VI Systems GmbH, VLC Photonics, VTT, WJA Electron, WOM World of Medecine GmbH, Workshop of Photonics, Wroclaw University of Technology, XiO Photonics, XL Strategy, YELO, Yenista, Yole Développement, Zumtobel. www.epic-assoc.com/membership