RMS Section Award-winners announced!

We are delighted to announce the latest winners of the RMS Section Awards, celebrating outstanding scientific achievements in the field of microscopy.

These prestigious awards are bestowed every two years by each of the Society's Scientific Committees, covering all areas of microscopy, imaging and flow cytometry.

RMS President Peter O'Toole said: "As always, it is a privilege to announce our latest award-winners, who have all made outstanding contributions to their various scientific fields.

"Each winner has been chosen by one of our Scientific Committees - or 'Sections' - which represent all branches of microscopy, imaging and flow cytometry. As such, these awards are about receiving recognition from others working in the same field - which means an enormous amount for the recipients.

"The nominations were of exceptional quality and our committees certainly had a difficult job making their final decisions. My warmest congratulations go to all our winners."

The latest winners are as follows:

Award for AFM & SPM

Dr Yongtao Liu - *Center for Nanophase Materials Science at Oak Ridge National Laboratory, TN, USA*

Yongtao, who is currently based at the Center for Nanophase Materials Science at Oak Ridge National Laboratory, has made major advances in AI/ML-enabled automated and autonomous atomic force microscopy, fundamentally reshaping how AFM experiments are conceived and executed.



Yongtao Liu.

His work has transformed AFM from a predominantly manual characterisation technique into an AI/ML-powered, hypothesis-driven, theory-in-the-loop scientific instrument capable of autonomously uncovering new nanoscale physical phenomena.

Yongtao has introduced new experimental paradigms in AFM, enabling AFM experiments to adapt in real time, dynamically selecting measurement locations, modes, and parameters in response to emerging physical insight rather than relying on predefined experimental scripts. This represents a significant methodological advance in AFM.

His work has culminated in the development of

AEcroscopy, a software–hardware framework that enables automated and autonomous AFM experimentation with Agentic AI–enabled control. AEcroscopy does not merely increase experimental throughput; rather, it redefines the role of AFM as an active participant in scientific discovery.

Beyond individual scientific contributions, Yongtao is also an internationally recognised leader within the AFM community. His publications are widely cited and have become reference points for researchers developing next-generation AFM methodologies, helping to establish best practice in automated and machine-learning-enabled microscopy.

He has given extensive invited presentations, including keynote talks, at major international conferences and institutions, and has contributed significantly to organizing symposia and workshops in advanced and autonomous microscopy.

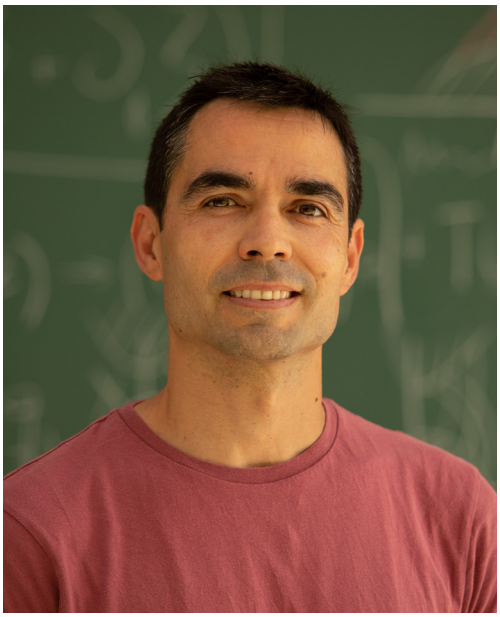
Through the mentorship of postdoctoral researchers, visiting scholars, and students, he has also made a significant contribution to the training of the next generation of scanning probe microscopists.

Award for Data Analysis in Imaging (DAIM)

Dr Ignacio Arganda-Carreras - *University of the Basque Country (UPV/EHU), Biofisika Institute, DIPC and Ikerbasque*

For many years, Ignacio has been at the forefront of developments in Artificial Intelligence (AI) applications to bioimaging. As one of the founders of Fiji, a globally renowned open-source image processing package, he has made huge contributions to the bio-image analysis community. His research lab specialises in image processing and machine learning, with a primary focus on developing open-source computer vision methods tailored for biomedical images.

Ignacio has trained numerous researchers in



Ignacio Arganda-Carreras.

the application of deep and machine learning to bioimage analysis, and has created several Fiji plugins that have been extensively used by the community, and still serve as a solid build for other software developers.

He has more than 87,200 citations for his research work, classifying him as first worldwide for the "bioimage analysis" tag.

Ignacio is an Ikerbasque Research Associate Professor affiliated with the Department of Computer Science and Artificial Intelligence at UPV/EHU, located in Donostia-San Sebastian, Spain. He is also associated with the Donostia International Physics Center (DIPC) and the Biofisika Institute.

Alan Agar Award for Electron Microscopy

Dr Laura Niermann - *Technische Universität Berlin*

As an independent early-career researcher at the Technische Universität Berlin, Laura is a central figure in the emerging field of computational microscopy. She has made



Laura Niermann.

significant contributions to the research areas of dynamical diffraction and 4D-STEM, specifically regarding the reconstruction of 3D strain fields.

Laura's research addresses a key challenge in electron microscopy: extracting depth-resolved strain information. So far, information along the beam direction has been inaccessible due to the tensorial nature of the strain field. She has established that this information is encoded in dynamical diffraction data, and that 3D strain fields can therefore be investigated from 4D-STEM datasets acquired from a single orientation of the specimen. In her latest work, Laura achieved a major breakthrough by demonstrating the reconstruction of a strain field along the beam direction. She accomplished this by the numerical inversion of strain-induced dynamical diffraction effects from experimental data. To further advance her research, the German Research Foundation (DFG) recently awarded her funding to establish her own Emmy Noether Junior Research Group.

Award for Life Sciences

Dr Adam Tyson – *University College London*

Adam is Head Research Engineer and Head of the Neuroinformatics Unit at the Sainsbury Wellcome Centre for Neural Circuits and Behaviour and Gatsby Computational Neuroscience Unit, University College London, UK

He is the co-founder and lead of the BrainGlobe Initiative, and has made significant contributions to the field of neuroscience.

The BrainGlobe Initiative is an ecosystem of tools that help neurobiologists, microscopists, and imaging scientists to understand their data in the accurate neuroanatomical context. In recent years, digital high-resolution 3D brain atlases have been produced for several model organisms providing an invaluable resource for the research community.



Adam Tyson.

Effective use of these atlases depends on the availability of an application programming interface (API) that enables researchers to develop software to access and query atlas data. However, while

some atlases come with an API, these are generally specific for individual atlases, and this hinders the development and adoption of open-source neuroanatomy software. The BrainGlobe Atlas API overcomes this problem by providing a common interface for programmers to download and process data across a variety of model organisms.

By adopting the Atlas API, software can then be developed agnostic to the atlas, increasing adoption and interoperability of packages in neuroscience and enabling direct integration of different experimental modalities and even comparisons across model organisms.

Award for Light Microscopy

Prof. Paul Guichard and Dr. Virginie Hamel – *University of Geneva*

Together, Paul and Virginie have made significant contributions to the development, validation, application, and broad dissemination of Ultrastructure Expansion Microscopy (U-ExM) and its derivatives, including cryo-ExM and iU-ExM.

As co-leaders of the CentrioleLab at the University of Geneva, their work has focused on extending the capabilities of light microscopy to resolve cellular architecture such as centrioles at the nanoscale.

A major objective of their research has been to bridge the longstanding resolution gap between fluorescence light microscopy and electron microscopy in light of understanding organelle architecture. They were among the first to recognise that expansion microscopy could be adapted to faithfully preserve cellular ultrastructure, enabling nanoscale imaging using conventional light microscopes.

They have applied and refined U-ExM across a broad range of biological systems, including human cells[1,4–6], parasites such as Toxoplasma, Trypanosoma, and Plasmodium[7–9], yeast[10], plankton[11], and diverse tissues including retina[12] and glioblastoma samples in collaboration with



Paul Guichard and Virginie Hamel.

clinicians13.These studies illustrated how expansion microscopy can uncover ultrastructural principles that were previously accessible only by electron microscopy,

Building on this foundation, they developed cryo-ExM, combining cryo-fixation with expansion microscopy via established freeze-substitution workflows used in electron microscopy14. This approach significantly improves structural preservation and minimizes fixation-induced artefacts, demonstrating that high-resolution fluorescence imaging can be achieved alongside near-native ultrastructural preservation.

Award for Innovation in Applied Microscopy for Engineering, Physical and Material Sciences (EPMS)

Dr Demie Kepaptsoglou – *University of York*

We are very pleased to announce Dr Demie Kepaptsoglou as winner of the RMS Award for Innovation in Applied Microscopy for Engineering, Physical and Material Sciences (EPMS).

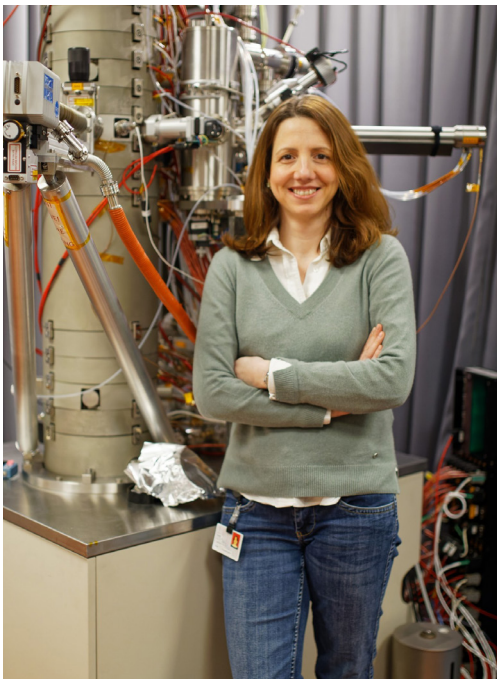
Demie is a Senior Lecturer in the School of Physics, Engineering and Technology at the University of York, and also the Deputy Director of SuperSTEM, the Engineering and Physical Sciences Research Council (EPSRC) National Research Facility for Advanced Electron Microscopy. She has made outstanding contributions to physics and materials science using electron microscopy.

In the last few years Demie has created an entirely new field of research in the form of *magnon spectroscopy* in the scanning transmission electron microscope. She launched this new direction in the midst of the COVID-19 pandemic through an ambitious EPSRC New Horizons project, with the aim of developing electron energy loss spectroscopy (EELS) at ultrahigh energy resolution (<10 meV) to detect and spatially resolve these quasiparticles describing the collective excitations of the spin structure of magnetic solids.

Demie has spearheaded collaborations in theoretical and computational work, successfully making use of the Royal Society's International Exchanges scheme to establish work with Prof. Ján Rusz's group at Uppsala University in Sweden. This approach led to now-seminal theoretical papers.

She has worked exhaustively to develop acquisition and data processing procedures to produce convincing spectral peaks as well as dispersion curves matching calculated response characteristics and even demonstrated the potential for spatially resolved mapping.

Demie's collaborative work spans a vast range of other applications across chemistry, physics, engineering materials science, and earth science. Remarkably, she has accomplished these feats while also teaching at York, supervising PhDs, lecturing at international training schools, leading the SuperSTEM Daresbury Lab open day outreach activities (5,000 site visitors), and organising symposia and conferences.



Demie Kepaptsoglou.

Dr Oliver Burton receives the RMS Award for Flow Cytometry

We are very pleased to announce Dr Oliver Burton as winner of the RMS Flow Cytometry Award.

Oliver has been a senior scientist at the University of Cambridge since 2023, assisting with research in the Liston-Dooley lab on topics such as regulatory T cell biology, neuroinflammation and T cell trafficking to tissues. In recent years, he has focused on technical development for the lab, sharing technical knowhow and tips for cytometry via an informal blog.

Flow cytometry has been central to Oliver's research programme. He has consistently applied high-parameter cytometry approaches to dissect complex immune populations, enabling detailed characterisation of T cell subsets, regulatory networks, and tissue-resident immune cells. His studies have combined rigorous experimental design with advanced multiparameter analysis, contributing to high-quality, reproducible datasets that have informed both basic immunology and translational research.

Oliver has contributed to the wider adoption of robust cytometry practices within his research environment. His work exemplifies how flow cytometry can be effectively integrated with complementary approaches, including in vivo models and molecular immunology, to address biologically meaningful questions. Through his publications and collaborations, he has helped demonstrate the value of cytometry as a core tool in modern immunological research.

Oliver is recognised as a collaborative scientist who actively engages with multidisciplinary teams. His work has contributed to several high-impact immunology studies, and he continues to support the development of early-career researchers and cytometrists through supervision, talks and tutorials with the flow cytometry community.



Oliver Burton.

While his primary identity is as an immunologist rather than a technology developer, Oliver represents an important category of cytometry users whose work drives the field forward through application, innovation in experimental design, and biological discovery.