

## Microscopy Awards

# Microanalysis Society Awards: 2022 Award Recipients



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Each year, the Microanalysis Society (MAS) bestows several major awards during the Microscopy & Microanalysis annual meeting. Regrettably, there is never enough time on stage to fully elaborate the recipients' contributions to the science of microanalysis and the Society. The information below is intended to rectify this situation with brief biographies and accomplishments of each awardee. MAS award selections are made through a variety of mechanisms. For example, nominations for the Peter Duncumb Award for Excellence in Microanalysis come directly from the MAS membership, while nominations for the KFJ Heinrich Award come from the MAS Awards Committee via input from the microanalysis community. In addition, nominations for MAS Fellows are also contributed by MAS members. More information on the submission processes and a listing of previous award recipients and MAS Fellows can be found at <https://the-mas.org/awards>.

### Duncumb Award

The Peter Duncumb Award for Excellence in Microanalysis recognizes outstanding achievement by a currently active individual over a sustained period of time in the field of microanalysis through technical accomplishment, leadership, educational, and professional activities. The award is sponsored by MAS Sustaining Member Bruker Nano Inc.

#### Peter Duncumb Award: Colin MacRae



Colin MacRae, Research Director of Characterisation, CSIRO Mineral Resources.

Dr. MacRae is a senior principal research scientist with the Commonwealth Science Industrial Research Organisation (CSIRO), based in Victoria, Australia, where he began his long and prolific career. His earliest research at CSIRO involved using automated mapping of composition using SEM and electron microprobe instruments to solve various industrial and mineral resource problems.

Not one to shy away from technical challenges and complex microanalysis problems, he helped to accomplish the first integration of a field emission microprobe with multiple solid state silicon drift detectors for simultaneous, multi-element mapping. Over the course of his career, he has worked on the microanalysis and description of over 25 new minerals, many of which were technically challenging due to their significant water content. Dr. MacRae has been central to the growth of cathodoluminescence (CL) and soft X-ray emission spectroscopy (SXES) as important microanalytical tools integrated in electron microscopes. He and his team at CSIRO have almost singlehandedly brought back CL spectroscopy to the forefront of microanalysis through innovative technical design and improvement, development of the publicly available CL Luminescence database ([luminescence.csiro.au/luminescence](http://luminescence.csiro.au/luminescence)) and analysis software, and organizing the popular Cathodoluminescence 2011 topical conference for the MAS. Most recently, he has been working to incorporate CL, SXES, and EDS within a single liquid-N<sub>2</sub>-cooled electron microprobe instrument. Dr. MacRae has been heavily involved with microanalysis societies throughout his career, being past president of the Australian Microbeam Analysis Society for over a decade, and he currently sits on the board of the International Union of Microbeam Analysis Societies (IUMAS).

### Heinrich Award

The KFJ Heinrich Award honors a scientist with less than 15 years from their terminal degree who has made distinguished technical contributions to the field of microanalysis.

#### KFJ Heinrich Award: Jordan Hachtel

Jordan Hachtel is a staff scientist at the Center for Nanophase Materials Sciences (CNMS) at Oak Ridge National Laboratory. He received his PhD in Physics from Vanderbilt University in 2016 and subsequently joined the CNMS for his postdoctoral research. He joined the permanent staff at Oak Ridge in 2019. Dr. Hachtel has specialized in nanoscale spectroscopy of novel quasiparticles using transmission electron microscopy (TEM). Using monochromated electron energy-loss spectroscopy (EELS), he has expanded



Jordan Hachtel, Center for Nanophase Material Sciences, Oak Ridge National Laboratory.

the frontier of experimental development and advanced analysis of ultralow-energy excitations, such as phonons, polaritons, plasmons, molecular vibrations, excitons, and shallow electronic states, with nanoscale spatial localizations. To complement these studies, Dr. Hachtel has also been developing sophisticated Python tools to facilitate acquisition and analysis of monochromated EELS hyperspectral datasets.

### Presidential Science Award

The MAS Presidential Science Award honors a senior scientist for outstanding technical contributions to the field of microanalysis over a sustained period of time.

#### Presidential Science Award: John Panitz



John Panitz, Emeritus Professor of Physics, University of New Mexico.

Dr. Panitz is an Emeritus Professor of Physics at the University of New Mexico. He began his microanalytical career at the Pennsylvania State University under the supervision of the esteemed Dr. Erwin Wilhelm Müller, the inventor of the field electron emission and field ion emission microscopes. In 1967, Dr. Panitz and Dr. Müller introduced the concept of the atom-probe field ion microscope at the 14th Symposium of the International Field Emission Society. Dr. Panitz joined the technical staff at Sandia National Laboratory in 1970, where he invented the 10 cm atom probe, the first 3D atom probe and the progenitor of atom probe tomography. In 1975, he received a landmark patent for the field desorption spectrometer, now known as the imaging atom probe. In 1982, Dr. Panitz developed a point-projection microscope technique that obtained the first images of unstained biomolecules on a metal substrate. Four years later, he invented and patented the first liquid field emission detector for immunochemical sensing. Using these new technologies at Sandia, he pushed the boundaries of implantation depth profiling and biomolecule imaging. In 1988, he joined the faculty at UNM, where he was a professor in the Physics and Material Science departments and the School of Medicine. While at UNM, he developed a novel curriculum for his undergraduate electricity and magnetism laboratory

course that encouraged critical thinking and role playing in a structured environment of cooperative learning groups, which is still in use today. In 1993, Dr. Panitz founded High-Field Consultants to provide atom-probe expertise to industrial and academic clients. He is currently organizing a museum to record and display the history of atom probe technology.

### Presidential Service Award

The MAS Presidential Service Award honors a member of the MAS for outstanding volunteer service to the Society over a sustained period of time.

#### Presidential Service Award: Kerry Siebein



Kerry Siebein, Center for Nanoscale Science and Technology, National Institute of Standards and Technology.

Dr. Siebein is a physical scientist in the Center for Nanoscale Science and Technology (CNST) NanoFab user facility at the National Institute of Standards and Technology (NIST). After receiving her undergraduate and master's degrees in Mechanical and Materials Engineering from Worcester Polytechnic Institute, she earned her doctoral degree in 2010 in Materials Science and Engineering from the

University of Florida. Subsequently, she was lab manager of the TEM and field-emission SEM laboratories in the Major Analytical Instrumentation Center at the University of Florida for over ten years. In 2012, Dr. Siebein joined the staff of the CNST NanoFab and oversees the industry-leading SEM/EDS, X-ray diffraction, and atomic force microscopy facilities. She has extensive experience using TEM, SEM, EDS, and X-ray diffraction to analyze microstructural properties and relationships in a wide range of materials. Dr. Siebein has been an active member of the MAS for ten years and has spent much of that time as the Chair of both the Affiliated Regional Societies and Sponsored Speaker Committees.

### MAS Fellows

MAS Fellow is a designation that is intended to recognize eminent scientists, engineers, and technologists in the field of microanalysis of materials and related phenomena who have distinguished themselves through outstanding research and service to the microanalysis community. This includes, but is not limited to, technique development, applications, theory development, and distinguished service to the MAS. Election as a MAS Fellow is highly selective (<0.5% of the MAS membership per year) and represents a broad cross section of members. To be eligible for election as a MAS Fellow, the nominee must be a member of the MAS for a minimum of 10 years and have attended at least 5 MAS or M&M meetings.

## 2022 MAS Fellows with Nominating Statement



Lawrence Allard, Jr., Distinguished Research Staff Member, Oak Ridge National Laboratory.

**Lawrence Allard, Jr.:** *For outstanding leadership and sustained contributions to development of electron microscopy of materials.* Dr. Allard has been a staff member at ORNL for most of his career, aiding and maintaining state-of-the art capabilities in advanced electron microscopy. He is a co-author of the first definitive textbook on electron holography.



Greg Meeker, Geologist, U.S. Geological Survey.

**Greg Meeker:** *For outstanding leadership and sustained contributions to microprobe analysis of geological materials and minerals.* Dr. Meeker's work with the U.S. Geological Survey has had a tremendous impact on our understanding of potential toxic effects of dust inhalation around the world and in urban centers, including modernization of asbestos testing.



Rhonda Stroud, Buseck Center for Meteorite Studies, Arizona State University.

**Rhonda Stroud:** *For outstanding leadership and sustained contributions to analytical microscopy of extraterrestrial materials.* Dr. Stroud has literally gone to the “ends of the Earth” for her research, having traveled to the South Pole to collect extraterrestrial cosmic dust particles. She served as MAS President from 2018–2020.

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