

## MicroscopyAwards

# Microanalysis Society Awards: 2021 Award Recipients

Bradley T. De Gregorio<sup>1\*</sup> and Heather Lowers<sup>2</sup>

<sup>1</sup>U.S. Naval Research Laboratory

<sup>2</sup>U.S. Geological Survey

\*awards@the-mas.org



Each year, the Microanalysis Society bestows several major awards during the Microscopy & Microanalysis annual meeting. Regrettably, there is never enough time on stage to fully explain the reasoning behind their selection for these prestigious recognitions. This series of articles is intended to rectify this situation by detailing the awardees' contributions to the science of microanalysis and the Society. While the President of the MAS makes the selection of the KFJ Heinrich, Presidential Science, and Presidential Service awards, nominations for the Peter Duncumb Award for Excellence in Microanalysis come directly from the MAS membership. 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 activities, and professional activities. The award is sponsored by MAS Sustaining Member Bruker Nano Inc.

#### Peter Duncumb Award: Yimei Zhu



Yimei Zhu, Senior Scientist,  
Brookhaven National Laboratory.

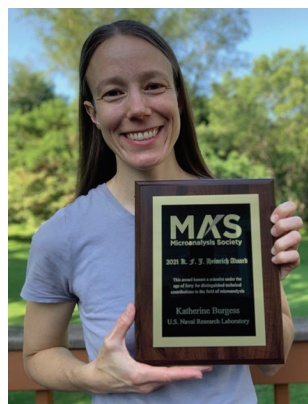
Dr. Zhu began his prestigious career investigating the microstructure of intermetallic compounds and superconductor materials in the laboratory of Professor Toru Imura at Nagoya University. After a brief time as a postdoctoral research associate at the University of Virginia, he was hired as an Assistant Scientist in the Department of Applied Science at Brookhaven National Laboratory. For over 30 years at BNL, Dr. Zhu continued to use transmission electron microscopy to investigate microstructural properties of superconducting oxides, magnetic materials, and energy materials. He also developed various new analytical methods

and technologies for transmission electron microscopy, including pulsed beam microscopy and novel sample holders for concurrent optical excitations, cryogenic microscopy, and MeV ultrafast electron microscopy. He co-founded the Center for Functional Nanomaterials at BNL, one of the premier advanced electron microscopy user facilities in the world, and served as director for its first seven years. More recently, his efforts to promote the needs for research and development funding support from U.S. government agencies like the Department of Energy, through organizing research roadmap workshops and writing reports on research goals and priorities for the field, has helped to define future research directions for electron microscopy and microanalysis. Dr. Zhu was elected as a MAS Fellow in 2020.

### 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: Katherine Burgess



Katherine Burgess, Geologist,  
U.S. Naval Research Laboratory.

Dr. Burgess uses analytical transmission electron microscopy to study the nanoscale effects of space weathering on the surfaces of lunar and asteroid soils. A recipient of a NASA Apollo Next Generation Sample Analysis grant, she is part of a select group of researchers who will be the first to characterize lunar soils that have been kept sealed in cold storage ever since they were returned to earth by Apollo astronauts in 1972. Dr. Burgess earned her undergraduate degree in Geosciences from Earlham College and worked as an intern in the experimental petrology laboratory at NASA Johnson Space Center before beginning her graduate studies on high-pressure mineral physics at Brown University with Professor Reid Cooper. After a postdoc at the University of Hawaii, she joined the research group of Dr. Rhonda Stroud at the U.S. Naval Research Laboratory,

where she used her combined expertise of electron microscopy and geological materials to understand the nanoscale structural and chemical changes that occur on mineral surfaces when bombarded by solar wind ions or micrometeorites. She was awarded the Microscopy & Microanalysis Postdoctoral Scholar Award in 2016.

### 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: Hideyuki Takahashi



Hideyuki Takahashi, Senior Advisor, JEOL.

Hideyuki Takahashi received his Bachelor of Engineering degree in analytical chemistry in 1980 from Chiba University. He joined JEOL Ltd. in 1985 and has worked for the electron microscope manufacturer for over 35 years. Together with Toyohiko Okumura from JEOL, Dr. Takahashi developed novel chemical mapping techniques in the electron probe micro analyzer (EPMA), applied to a variety of mineral and materials applications. While working at JEOL, he earned his Ph.D. in Applied Physics and Engineering in 1997 from Osaka University. More recently, he has been at the forefront of the development of soft X-ray emission spectrometry (SXES) in the EPMA as a comparable alternative to synchrotron-based spectrometers. This effort led to a long collaboration with Professor Masami Terauchi at Tohoku University, developing novel spectrometer designs for TEM and EPMA. Dr. Takahashi's position at JEOL has allowed him to collaborate with many other experts over the years, and his analytical expertise extends to a wide range of materials and applications, such as superconductors, battery materials, minerals, device thin films, and biological specimens. He has authored or co-authored over 80 papers and has been invited to speak at meetings and conferences all over the world. From 2005 until 2012, he contributed to the ISO-TC202 committee to create standards for qualitative, quantitative, and mapping for electron microbeam analyses, and he organized and led a dedicated workshop on SXES analysis, the JEOL SXES School, in 2019 and 2021.

### 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: John Fournelle

Dr. Fournelle is Emeritus Faculty in the Department of Geology and Geophysics at the University of Wisconsin-Madison. While his main research focus centers on applications of EPMA to geological and paleontological



John Fournelle, Emeritus Faculty, University of Wisconsin-Madison.

samples, he has contributed to a wide range of geological, biological, and materials projects, such as hot dogs, cosmetics, and the human brain. After a period of time as a college dropout, arc-welder, and community organizer in the 1960s and 1970s, Dr. Fournelle returned to school and received a B.S. in Geology in 1983 from the University of Maryland. He continued his higher education at Johns Hopkins University, getting his first taste of EPMA on Aleutian volcanic rocks using an old MAC microprobe at the Carnegie Institute of Washington Geophysical Laboratory. He earned his Ph.D. with Prof. Bruce Marsh in 1988. After a postdoc at the Smithsonian Institution with Dr. Bill Melson, Dr. Fournelle was hired to manage the Eugene Cameron Electron Microprobe Laboratory at the University of Wisconsin-Madison, replacing retiring Microbeam Society charter member Everett Glover. There, he oversaw the replacement of an aging Applied Research Laboratory SEMQ instrument with a CAMECA SX51, and more recently with a new CAMECA SXFive FE. In 2020 he stepped down as Director of the facility but continues to be active in research. He taught advanced courses in Geology and microbeam techniques for 26 years, and his online class notes have been used by students and researchers worldwide.

Dr. Fournelle has served as MAS Director and MAS Chair of the organizing committee for the Microscopy & Microanalysis 2020 Annual Meeting. He is currently Chair of the MAS Archivist Committee and has spent countless hours working to preserve historical records of early pioneers in EPMA and other microanalysis techniques. Working closely with fellow archivist Michael Marko at the Microscopy Society of America, Dr. Fournelle has conducted dozens of oral histories with important scientists involved with the development of our modern EPMA instruments, including Peter Duncumb, Kurt Heinrich, Klaus Keil, Joe Goldstein, and several individuals who worked with Raimond Castaing.

### MAS Fellows

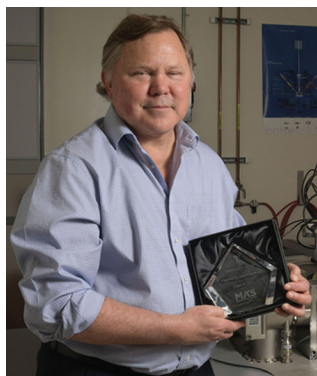
MAS Fellow is a designation that is intended to recognize eminent scientists, engineers, and technologists in the field of microanalysis of materials and related phenomena who have distinguished themselves through outstanding research and service to the microanalysis community. This includes, but is 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.

**2021 MAS Fellows with Nominating Statement**



Alan Sandborg, Principal Scientist, AXTEC.

**Alan Sandborg:** *For pioneering developments of silicon and germanium detectors and electronics systems for EDS on electron beam instruments for over 50 years. Alan co-founded Nuclear Diodes Inc. with Charles Walsh in 1962, which was later renamed EDAX Inc. He helped to design some of the first solid state detectors used for X-rays that became the basis for modern EDS instrumentation.*



Vincent Smentkowski, Senior Scientist, General Electric Global Research.

**Vincent Smentkowski:** *For outstanding leadership and sustained contributions to development of surface science techniques and multivariate statistical analysis methods in microanalysis. Vin specializes in applications of ToF-SIMS for advanced characterization of surfaces and thin films. He has played a leadership role in the MAS for many years and has twice served as the MAS co-chair of the Microscopy & Microanalysis meeting.*

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# Microscopy TODAY

## 2022 Innovation Awards



Entry deadline is  
March 21, 2022

Request application forms  
by email:  
[charles.lyman@lehigh.edu](mailto:charles.lyman@lehigh.edu)

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