

Microscopy Society of America

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MESSAGE FROM THE PRESIDENT



William T. Gunning
Microscopy Society of America

The 66th annual meeting of the Microscopy Society of America, held in conjunction with our sponsoring partners of Microscopy & Microanalysis 2008, returns to Albuquerque, New Mexico this year. Much has changed since we met last in this enchanting city in 1986. We have renamed the meeting, now known as Microscopy & Microanalysis and the International Metallurgic Society (IMS) has joined MSA and the Microbeam Analysis Society (MAS) as an annual sponsoring society of M&M. This year we welcome the International Society of Analytical Cytology (ISAC) as a new partner at M&M and co-sponsor of the pre-meeting congress on "Cellular Analysis: Linking Quantitation to Structure and Function." This first collaboration with ISAC brings leading scientists from three areas, fundamental microscopy, flow cytometry and biological imaging, to discuss quantitative aspects of cellular analysis, instrumental design and determination of structure and function of cells.

A new initiative this year, coordinated by the MSA Education Committee, is the establishment of in-meeting courses that will be held from Monday through Thursday in addition to the traditional Sunday Short Courses. These are intended to enhance educational opportunities at M&M to attract new registrants and potentially new Society mem-

MSA CALENDAR OF EVENTS

Friday, August 1, 2008

Council Meeting, 7:30 AM–5:30 PM (San Miguel)

Saturday, August 2, 2008

Council Meeting, 7:30 AM–5:30 PM (San Miguel)

Sunday, August 3, 2008

MAM Editors' Meeting, 3:00–5:00 PM (Zuni)

Sunday Evening Social Event, 6:30–9:30 PM
(Rio Grande Zoo, for details see Page 19)

Monday, August 4, 2008

MSA Awards Committee, 7:00–8:00 AM (Tesuque)

Technologists' Forum Board, 7:00–9:00 AM (Acoma)

MAM Editorial Board Meeting, 7:15–8:15 AM (Zuni)

MSA Presidential Happenings, 12:15–1:15 PM
(Brazos)

M&M 2009 Program Planning, 3:00–5:00 PM (Zuni)

Student Mixer, 5:15–6:15 PM (Centro del Sol)

Tuesday, August 5, 2008

MSA Local Affairs Societies Breakfast, 7:00–8:30 AM
(Santa Ana/Sandia)

M&M 2009 Call for Papers Meeting,
10:00 AM–12:00 PM (Zuni)

MSA Education Committee, 3:30–5:00 PM (San Juan)

Focused Interest Group Business, 3:30–5:00 PM
(Acoma)

MSA International Committee, 3:30–5:00 PM (Zuni)

Wednesday, August 6, 2008

MSA Certification Board, 7:00–9:00 AM (Zuni)

MAM 2009 EXPO Meeting, 9:00–10:00 AM (Acoma)

MSA Business Meeting, 12:15–1:15 PM (Brazos)

Technologists' Forum Business Meeting, 3:00–3:30 PM
(Acoma)

MSA Standards Subcommittee, 3:30–4:30 PM
(Tesuque)

MSA Public Policy Committee, 3:30–5:00 PM (Zuni)

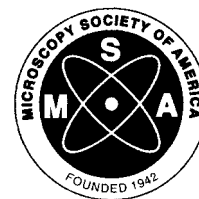
Thursday, August 7, 2008

MSA/MAS Sustaining Members, 7:00–9:00 AM
(Tesuque)

Microscopy & Microanalysis 2008 concludes at
5:00 PM

bers who may be unaware of the benefits of attending such a comprehensive microscopy meeting.

Many interdisciplinary symposia have been organized by the program committee and reflect the increasing trend



of collaboration between scientists in different disciplines. The Program Committee has assembled a diverse and comprehensive scientific program covering recent advances in instrumentation, technology, and methods, as well as applications in both the physical and biological sciences. I'd like to recognize the members of the Program committee, John Henry Scott, Program Chair, Janet Woodward, Program Vice Chair, Paul Carpenter, MAS Program Co-Chair, and Jaret Frafjord, IMS Program Co-Chair, for a tremendous job well done! It is always difficult to mention everyone who has worked hard for a successful meeting without missing some key volunteers. I would like to recognize a few other people that came to the aid of John Henry Scott when he was given a special assignment at the White House this year that came to be known as the program committee "junta." In addition to the afore mentioned program committee chairs, past program chairs Ian Anderson and Mike Marko also played essential roles organizing this year's meeting. As usual, Nestor Zaluzec, Stuart McKernan, John Shields, Richard Edelmann, and Ron Anderson must also be acknowledged with kudos for their continued work behind the scenes that are so important to the organization

of the publicity and production materials for our web page, *Proceedings*, *EXPO* and the call for papers, meeting poster and publicity in *Microscopy Today*.

I'd also like to recognize and thank Joe Michaels, who served as the local arrangements chairman this year. We also have new meeting management teams to conduct the "nuts and bolts" business of a meeting that we hope will improve the meeting experience for everyone. Joe played an essential role educating and helping our new team of managers during the transition period. I would also like to recognize the members of the MSA Council and the numerous committee chairs and committee members that volunteer their time for the benefit of the Microscopy Society of America and who have helped me navigate the business of the Society during a period of real change, much of which is unseen by the membership, that will hopefully lead to continued growth of the membership and Microscopy & Microanalysis. As 1986 was a very memorable annual meeting of the Microscopy Society of America in Albuquerque, this year's Microscopy and Microanalysis 2008 will truly be my most memorable meeting! Welcome to Albuquerque and Microscopy & Microanalysis 2008!

COUNCIL MEMBERS

Executive Council

President William T. Gunning III
President Elect David J. Smith
Past President Michael A. O'Keefe
Secretary Jeanette Killius
Treasurer JoAn S. Hudson

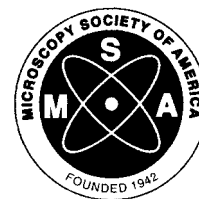
Directors

Caroline A. Miller
Phillip E. Russel
Heide Schatten
Paul E. Fischione
Robert Simmons
Supapan Seraphin

Local Affiliated Societies Director Louis M. Ross

MSA APPOINTED OFFICERS

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Bylaws Committee Chair William T. Gunning III
Certification Board Chair John P. Petrali
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EXPO Editor Richard E. Edelmann
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Microscopy Today Editor Ron Anderson
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Program Committee Chair John Henry Scott
Program Committee Vice-Chair Janet H. Woodward
Public Policy Committee Chair Peter Ingram
Publications Committee Chair William T. Gunning
Sustaining Members Co-Chairs Andree Kraker, Michael Bode, Valerie Woodward
Technologists' Forum
Association Management Managing Director The Drohan Management Group
Meeting Management Peter Doherty, Noreen Burke, Corcoran Expositions, Inc., Nicole Guy, Hachero Hill



MICROSCOPY and MICROANALYSIS Best Paper Awards for 2008

Best Biological Paper

“Primary Cultures of Chick Osteocytes Retain Functional Gap Junctions between Osteocytes and between Osteocytes and Osteoblasts”

Hiroshi Kamioka, Yoshihito Ishihara, Hans Ris, Sakhr A. Murshid, Yasuyo Sugawara, Teruko Takano-Yamamoto, and Soo-Siang Lim
Microsc. Microanal. **13**, 108–117, 2007

Best Materials Paper

“Stability Due to Peripheral Halogenation in Phthalocyanine Complexes”

Masanori Koshino, Hiroki Kurata, and Seij Isoda
Microsc. Microanal. **13**, 96–107, 2007

Best Techniques Paper

“Determination of the Number of Cells in Preimplantation Embryos by Using Noninvasive Optical Quadrature Microscopy in Conjunction with Differential Interference Contrast Microscopy”

Judith A. Newmark, William C. Warger II, ChihChing Chang, Gustavo E. Herrera, Dana H. Brooks, Charles A. DiMarzio, and Carol M. Warner
Microsc. Microanal. **13**, 118–127, 2007

Distinguished Scientist Awards: These Awards recognize preeminent senior scientists from both the Biological and Physical disciplines who have a long-standing record of achievement during their career in the field of microscopy or microanalysis.

Burton Medal: The Burton Medal was initiated to honor the distinguished contributions to the field of microscopy and microanalysis of a scientist who is less than 40 years of age on January 1st of the award year.

Morton D. Maser Distinguished Service Award: This Award was initiated to recognize outstanding volunteer service to the Society as exemplified by Mort Maser, who served the Society for many years with great dedication. This award is made to honor an MSA member who has provided significant volunteer service to the Society over a period of years.

MSA Presidential Student Awards

These awards include registration for the meeting, a copy of the Proceedings, and an invitation to the Sunday social event and the Presidential Reception. MSA provides a substantial contribution towards travel and lodging expenses. Award recipients are bona fide students at a recognized college or university at the time of the meeting. Awards are based on the quality of the paper submitted for presentation at the meeting and recipients must be the first author of the submitted paper. The paper may be submitted for platform or poster presentation. Successful applicants must present their papers personally at the meeting in order to receive the award.

Professional Technical Staff Awards

The Professional Technical Staff Awards (PTSA) were created to stimulate attendance at the Annual Meeting of MSA for professional technical staff who ordinarily might not participate in a national meeting, and to encourage supervisors to support their staff in professional activities. There are up to four awards given, based on the quality of a first authored paper submitted for

presentation at Microscopy and Microanalysis 2008. Papers were judged by the MSA Technologists' Forum.

MSA MEMORIAL AWARDS

Eric Samuel Scholarship

This is a special MSA Presidential Student Award and is open to both students and postdoctorals. The Award is sponsored by Oxford Instruments and is for \$1500. Eligibility is the same as that for the Presidential Student Awards.

Raleigh Miller Student Scholarship Award

This is a special MSA Presidential Student Award to honor Raleigh Miller, the late father of Past President Sara Miller, and has been generously funded by donations from MSA members. The eligibility requirements for this special \$1000 award are identical to those for MSA Presidential Student Awards.

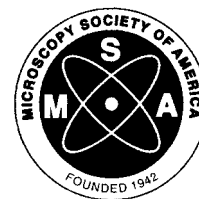
The Outstanding Technologist Awards

These awards, given in memory of Hildegard H. Crowley and Charles E. Fiori, recognize technologists for their significant contributions to the advancement of microscopy and microanalysis through the development of new techniques/instrumentation.

- MSA Hildegard H. Crowley Outstanding Technologist—Biological Sciences
- MSA Charles E. Fiori Outstanding Technologist—Physical Sciences

MSA Citations

These awards are given to non-members who have provided meritorious service to the Society or who have had significant impact in the political or scientific area for the field of microscopy that has benefited the Society indirectly.



MSA 2008 Awards Microscopy Society of America

DISTINGUISHED SCIENTIST AWARDS



Biological Sciences
Alasdair Steven

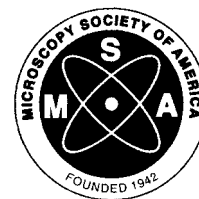
Alasdair Steven received an M.A. in Mathematics and Natural Philosophy at the University of Edinburgh, followed by Part III of the Mathematical Tripos and a Ph.D. in theoretical elementary particle physics at the University of Cambridge. He switched into biology with a postdoctoral fellowship at the University of Basel with Prof. Eduard Kellenberger, a pioneer in quantitative biological electron microscopy. In 1978, Steven came to the NIH in Bethesda, Maryland, where he is now Chief of the Laboratory of Structural Biology. His research investigates the mechanisms that control the assembly of viruses and other macromolecular assemblies, including amyloids and chaperone-assisted proteases, as studied by a variety of EM-based approaches. These include high resolution cryo-electron microscopy; image analysis, classification and reconstruction; time-resolved (“4-dimensional”) cryo-EM; site-specific labeling with antibodies and other tags; electron tomography; and “hybrid approaches” in which EM is integrated with complementary data from other sources.



Physical Sciences
Ondrej Krivanek

Ondrej Krivanek’s forte lies in designing and making electron-optical instruments. The main instruments he has conceived and developed are, in chronological order: serial-detection EELS, parallel-detection EELS, CCD cameras and image analysis software for electron microscopy, imaging filters, aberration correctors, and now whole electron microscopes. These instruments have advanced electron microscopy by introducing capabilities such as directly interpretable sub-Å resolution imaging, single-atom elemental detection sensitivity, and real-time, atomic-resolution EELS elemental mapping.

Ondrej is a co-founder and president of Nion (www.nion.com). He has also worked as Director of Research at Gatan, professor at Arizona State University, researcher at the Lawrence Berkeley Laboratory and visiting professor at the universities of Paris-Sud and Cambridge. He has co-authored over 200 research papers, more than 10 patents, three book chapters, and one book (EELS Atlas). He was born in Prague, Czech Republic, and has a Ph.D. in Physics from Cambridge University in the UK.



MSA 2008 Awards Microscopy Society of America



Burton Medal
Steven J. Ludtke

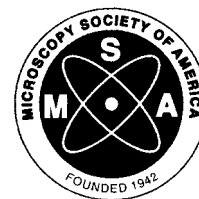
Steven J. Ludtke was born in Chicago, IL in 1968, but spent most of his formative years in Glenwood Springs, CO. Steve completed his undergraduate degree in Physics at Caltech in 1990, and his Ph.D., also in Physics, from Rice University in 1996. His work at Rice, with Huey Huang, involved neutron and X-ray scattering, lamellar X-ray diffraction and circular dichroism studies of antibiotic peptides associated with lipid bilayers in an effort to understand their structural mode of action. This led to a new model for pore formation in such systems. After obtaining his Ph.D. he moved to Baylor College of Medicine and began his work on electron cryomicroscopy at the National Center for Macromolecular Imaging with Wah Chiu. As a postdoc, he developed the EMAN software suite for single particle reconstruction and general cryo-EM image processing, now used by over 1000 electron cryomicroscopists worldwide. He remained at BCM, and was promoted to the faculty in 2000, becoming co-Director of the NCMI in 2002, and is now an Associate Professor in the Verna and Marrs McLean Department of Biochemistry and Molecular Biology. His recent work has focused on improving resolution in single particle processing and extending single particle techniques to characterize nanoscale macromolecular motions. His recent structure of GroEL at ~ 4 Å resolution permitted the first de-novo backbone trace of a protein completed by single particle reconstruction, and these techniques are now being applied to other systems.



Morton D. Maser Distinguished Service Award
Stuart McKernan

Stuart McKernan received his initial education at Bristol University in the UK, earning his B.Sc., M.Sc., and Ph.D. in Physics. His interest in electron microscopy began as a final-year B.Sc. project on the handedness determination of quartz by electron microscopy. Following a postdoctoral fellowship at Bristol he moved to Cornell University in 1986 when he became a member of the Society. In 1991 Stuart moved to the University of Minnesota and also became a member of the Minnesota Microscopy Society where he has been a director, president, and webmaster as well as being involved locally with project MICRO. He now works for 3M in the electron microscopy group at the central research and analytical lab.

Stuart has supported MSA in a number of different capacities; serving on several MSA committees including Program Committee, Nominations Committee, and Education Committee, acting as MSA Bulletin editor and Proceedings editor, Program Chair for the 2000 meeting, and coordinator of the database used to program annual meeting. He was elected to Council as the Local Affiliated Societies Director from 2003–2005.



MSA 2008 Awards Microscopy Society of America



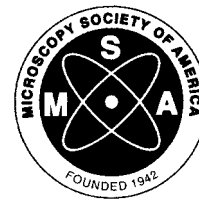
Crowley Technologist Award
Thomas Deerinck

Hildegard H. Crowley Outstanding Technologist Award for Biological Sciences

Thomas Deerinck has worked as a research scientist for nearly 30 years at the National Center for Microscopy and Imaging Research and the Center for Research on Biological Systems at the University of California, San Diego and specializes in the development of methods for confocal, 2-photon and electron microscopic imaging of biological specimens. He has co-authored over 100 scientific papers, abstracts and book chapters and his work has appeared in such prestigious scientific journals as *Nature*, *Science*, and *Cell*. In addition, his images have been featured in various periodicals such as *Scientific American*, *Discover* and *Time* magazine, as well as in museum shows and on the covers of numerous scientific journals.

MSA PRESIDENTIAL SCHOLARS

- W. S. Childers** Emory University, Atlanta, Georgia, USA
"Exploring the Morphological Diversity of Amyloid's Cross- β Structure."
- L. Gunawan** McMaster University, Hamilton, Ontario, Canada
"Direct Structural Investigation of $Bi_{3.25}La_{0.75}Ti_3O_{12}$ Thin Films on $SrRuO_3/(111) SrTiO_3$."
- Timothy Gutu** Portland State University, Portland, Oregon, USA
"Electron Microscopy Analysis of CdS Coated Diatom Cell Walls."
- K. Kane** City University of New York, College of Staten Island, New York, USA
"A Fluorescence Technique for Identifying Distribution of Endophytic Fungi in Perennial Grass."
- D. J. Masiel** University of California at Davis, Davis, California, USA
"Particle Swarm Optimization of Iterative Phase Retrieval Algorithms for Ultrafast Coherent Diffractive Imaging."
- E. S. Moore** Arizona State University, Tempe, Arizona, USA
"In Situ Synthesis of Fe Catalyst and Carbon Nanotubes by Chemical Vapor Deposition."
- A. Narayanaswamy** Rensselaer Polytechnic Institute, Troy, New York, USA
"Robust Adaptive 3-D Segmentation of Vessel Laminae from Fluorescence Confocal Microscope Images & Parallel GPU Implementation."
- C. Phatak** Carnegie Mellon University, Pittsburgh, Pennsylvania, USA
"Reconstruction of 3D Magnetic Induction using Lorentz TEM."
- A. G. Smith** Texas A&M University at College Station, College Station, Texas, USA
"In Vitro Assembly of the Arabidopsis thaliana Plastid Division Proteins FtsZ1 and FtsZ2."
- J. Wang** University of Missouri-St. Louis, St. Louis, Missouri, USA
"Tin Catalyzed Growth of ZnO Nanostructures."



MSA

Microscopy Society of America

ERIC SAMUEL AWARD

L. F. Kourkoutis Cornell University

“Interdiffusion or Beam Spreading? Asymmetric Interface Profiles in LaVO₃/SrTiO₃ Heterostructures.”

MSA SUSTAINING MEMBERS

4pi Analysis, Inc.	EDAX Inc.	Micro Photonics Inc.
Advanced Analysis Technologies	Electron Microscopy Sciences	Micro Star Technologies, Inc.
Advanced MicroBeam, Inc.	Energy Beam Sciences, Inc.	Micron, Inc.
Advanced Microscopy Techniques	Ernest F. Fullam, Inc.	Nikon Instruments, Inc.
Applied Physics Technologies, Inc.	Evex Analytical	Olympus America Inc.
Ascend Instruments, Inc.	ezMicroscopes	Olympus Soft Imaging Solutions
Asylum Research	FEI Company	Omniprobe Inc.
Boeckeler Instruments, Inc.	Grant Scientific Corp.	Oxford Instruments, Inc.
Bruker-AXS Microanalysis	Hitachi High Technologies America	Reindeer Graphics, Inc.
CANMET-Materials Technology Laboratory	IXRF Systems, Inc.	Scientific Inst. Services, Inc.
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College of Microscopy	Leica Microsystems, Inc.	Springer
Columbian Chemicals Co.	M.E. Taylor Engineering, Inc.	Sputter Etch Tech dba Anatech USA
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Eastman Kodak Co.	McCrone Associates, Inc.	VisiTec of America
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