



MicroNews

A Newsletter of the Microanalysis Society

FALL 2013

WWW.MICROANALYSISOCIETY.ORG

INSIDE THIS ISSUE:

Letter from the Editor 2

Meet a Member 2

IUMAS-6 News 3

Candidates 4

AReS Updates 6

IUMAS-6 7

Awards 8

Archivist's Corner 11

Sustaining Member News 12

Sustaining Members 14

President's Corner



Chodos Fund Drive: Bringing Students to IUMAS-6

Dear MAS Members -

I am writing to you in an effort to raise money for the MAS Chodos Fund. The Chodos Fund, formerly the Potter Fund, was started in 1995 and is named in honor of Art Chodos who was a strong supporter of students during his lifetime. The purpose of this fund is to support students at a national level to attend the annual meetings of the Society. Every year, at the time of your annual dues renewal, you have the opportunity to make a donation to this fund. As I indicate below, this year is special, and if you haven't been in the habit of donating, I would encourage you to make this year an exception and donate with your dues renewal this November and December.

Next year, we will be hosting the Sixth Meeting of the International Union of Microbeam Analysis Societies (IUMAS-6) in conjunction with the annual meeting, M&M 2014, that will be held August 2-7 in Hartford, Connecticut. I would like to ask you to contribute money to the Chodos Fund in order to support the maximum number of Early Career Scholars and bring them to the IUMAS-6 and M&M 2014 meeting. This is a special year for MAS and will prove to be a wonderful experience for students and MAS members alike if we can help bring the next generation of microanalysts to this international meeting. In addition to the experience of attending and presenting their work at an international meeting, these scholars will have the opportunity to network with more senior colleagues, gain exposure to disciplines and other fields unrelated to their studies, and feel part of MAS and the larger scientific community.

The cost to subsidize a student to attend the IUMAS-6 and M&M 2014 meeting is \$250. Please consider donating generously to help MAS raise money in the Chodos Fund. We hope to be able to subsidize as many as forty students to attend M&M 2014 / IUMAS-6. This goal can be achieved if 10% of MAS members donate enough for one student subsidy, or if each MAS member donates 10% of a student subsidy – just \$25. I would encourage all members to donate something, so that we all can feel a common stake in enabling strong student participation when we host the international meeting in 2014. As members of MAS, we all place value and importance on student involvement and participation in our society. This year alone, we sponsored 12 students to attend M&M 2013 in Indianapolis, IN. The students were very excited to be at the meeting and to be recognized for their scientific work. One student expressed their thanks in a note to me and stated that "I am extremely grateful and honored to be one of the M&M Meeting Award recipients. I would like to thank you and every member of the Microanalysis Society." This shows the kind of impact we can have on students by providing scholarships to attend the annual M&M meetings of the society.

Please consider donating to the Chodos Fund and having a direct impact on the students and future members of MAS. Your generosity is greatly appreciated.

Sincerely,
Kristin Bunker, President

"Dream came true. Thank you for the award. And it is my great honor to have it. I'll do my best to prepare the presentation for the meeting. I can't wait for it!" – Chenyang Lu, M&M Student Awardee

Letter from the Editor

Hello MAS Members,

This issue of MicroNews contains biographies for the candidates for Director and Secretary. The election will run November 15-December 15. A new section containing news releases from Sustaining Members has been added. Also included is information on the upcoming IUMAS-6 meeting which will be held in conjunction with M&M 2014 in Hartford, CT. The abstract deadline will be here before you know it! If you have material to contribute, or ideas for future MicroNews issues, please email the Editor at micronews@microprobe.org.

-heather lowers



Meet a Member...Gary W. Kagel



Gary is employed with M+P Labs where he brings over 25 years of analytical chemistry experience. Prior to joining M+P Labs, Gary worked for the pharmaceutical, biotech and environmental industries on the West Coast under FDA and EPA regulatory systems.

His expertise includes EPMA, ISO quality systems, field consultation, gas/liquid chromatography, mass spectrometry, IR/UV/VIS spectroscopy, and general analytical chemistry laboratory operations.

He holds a Master of Science in Analytical Chemistry from Montana State University. He is a lifelong member of the American Chemical Society, a 6-year member of ASM International and the Microbeam Analysis Society, and serves on the executive committee of the Greenville (Old South) ASM Chapter.

“I am extremely grateful and honored to be one of the M&M Meeting Award recipients. I would like to thank you and every member of the Micro-analysis Society.” – Mahsa Sina, M&M Student Awardee

IUMAS-6 News

by Ed Vicenzi

IUMAS-6 to be held in Hartford
Next Year!

www.iumas6.org

IUMAS returns to the USA four-
teen years after the memorable

Kona, Hawaii conference in 2000. The meeting, hosted by the Microanalysis Society, is the Sixth Meeting of the International Union of Microbeam Analysis Societies (IUMAS-6) and will be held in conjunction with Microscopy & Microanalysis 2014, August 2–7, 2014 in Hartford, CT. The Organizing Committee has put together an impressively solid and diverse technical program. Program activities commence on Saturday, August 2 with half day workshops led by renowned experts in each subject area with topics ranging from Atom Probe Tomography to Advanced EPMA (www.iumas6.org/workshops.html). Delegates will be able to attend two of these workshops, one in the morning and one in the afternoon with six parallel sessions to cover a total of twelve topics from which delegates may choose. A Saturday evening reception will follow enabling participants from around the globe to reconnect with their long-standing colleagues and to expand their network by making new connections.

On Sunday, August 3 the science program will continue with a plenary session including an opening ceremony followed by a keynote address by Prof. Laurie Leshin, Dean of the School of Science at Rensselaer Polytechnic Institute. She will deliver an exciting and topical presentation entitled “My Lab is on Mars: Geochemical Adventures with the Mars Curiosity Rover” followed by a series of presentations from respected leaders detailing the state-of-the-art and recent advances in important fields of application regarding microanalysis (<http://www.iumas6.org/plenary.html>).

Confirmation has been received that all IUMAS member societies will participate in sending students/early career participants to the meeting. As such, Early Career Scholarships jointly supported by IUMAS-6 and the member societies have been established to provide an opportunity for awardees to showcase their talents. Students and early career microanalysts from around the globe are encouraged to visit the IUMAS-6 website to learn more about these opportunities (<http://www.iumas6.org/students.html>). Students based in the USA may compete for awards made directly by MAS to attend M&M 2014, and by special consideration, all such 2014 M&M Meeting Award winners will also be granted additional funding to attend IUMAS-6. For those who are not selected for awards, the student registration rate is heavily subsidized thanks to MAS’s strong commitment to the next generation of microanalysts, and therefore represents a fantastic opportunity for all degree-seeking parties. So if you are a student (or know someone who is a student) don’t miss out on the chance to be present for a must-attend microanalysis event with an international flavor.

On behalf of the Organizing Committee,

Edward P. Vicenzi

Chair, IUMAS-6



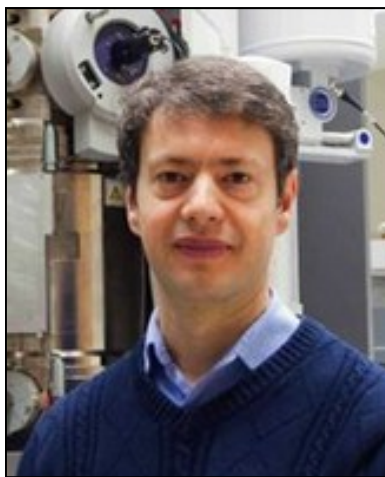
held in conjunction with



“Thank you very much for the notice. I am more than happy to accept this significant award. I am now looking forward to meeting you all at the M&M 2013 Conference this coming August!” – Datong Yuchi,, M&M Student Awardee

MAS Elections

Candidate for Director: Gianluigi Botton



MAS Involvement

- Member since the early 1990's
- Co-organizer of EELS-AEM related symposia at M&M 2002, 2007, 2009, 2011, 2012

Gianluigi obtained a B. Eng. in Engineering Physics at Ecole Polytechnique Montreal and PhD in Materials Engineering in 1992.

He is currently the Canada Research Chair in Microscopy of Nanoscale Materials at McMaster University.

Previously he has served as president of the Microscopical Society of Canada, chaired and organized two national conferences, and was the local organizer of an international conference and

scientific co-chair of an international conference

His interests are related to the development and application of AEM, and EELS in particular, to study the structure and properties of nanoscale structures.

Candidate for Director: Brendan Foran



MAS Involvement

- Member since 2001
- Co-organizer of Several M&M Symposia
- MAS Co-Chair, M&M 2010

Brendan Foran is a Section Manager in the Electronics and Photonics Laboratory at The Aerospace Corporation, responsible for a group focused on microscopy and microanalysis of microelectronic components for failure analysis and assessment of reliability for use in space.

Brendan obtained a B.S. in Chemistry from the Stony Brook in 1990 and a Ph.D. in Inorganic Chemistry from the University of Michigan in 1996. He did a short post-doc in Materials Science doing X-ray and TEM of polymers, also at Michigan before heading to Texas where he spent nearly ten years doing FIB and TEM for semiconductor process development.

For the past seven years, Brendan has been at The Aerospace Corporation in El Segundo, CA.

Despite growing management responsibilities, Brendan still spends a good number of hours per week using FIB, SEM, and TEM conducting research to assess space parts reliability.

MAS Elections

Candidate for Directory: Phil Rice



MAS Involvement

- Member since 1998
- Organized several MAS and MSA symposia

Phil has been active in analytical electron microscopy for 20 years. He has organized several symposia for MSA.

From 2008 to the present he has served as Chair of the External Proposal Review Committee for Lawrence Berkeley National Laboratory's National Center for Electron Microscopy (NCEM)

Prior to that he served as a research board member for the IBM/Alberta CAS (Center for Advanced Studies), where he was the IBM Almaden representative for Nanotechnology.

Philip M. Rice holds 7 US Patents and has authored over 100 Publications.

Candidate for Director: Keana Scott



MAS Involvement

- Lehigh Microscopy School, Lecturer
- Organize the DC area FIB users group for the past 5 years

2011 NIH Site-Visit and Special Emphasis panel member for the Biophysics Collaborative Access Team Research Resource

2011 NSF Chemical Measurement and Imaging Program panel member.

2010 NIH/NCI Advanced Technologies Program Review Panel member for the electron microscopy laboratory.

2008 Biovision Team – participated in the 2010 Bioinitiative for biovision writeup.

2008 NIH/NCI/CCR-NIST Partnership – participated in the initial discussion meetings and proposal writing. Collaboration with Subramaniam Lab resulted in the tech transfer of SIM from NIST to NIH as well as other FIB and SIMS related projects.

2006 CSTL Biomarkers and Systems Biology Planning Committee – develop CSTL action plans for bioscience programs.

This is so exciting and such good news! Thank you for the opportunity to receive this award.” – Andy Yankovich, M&M Student Awardee

MAS Elections

Candidate for Secretary: Heather Lowers



MAS Involvement:

- Member since 2003
- MicroNews Editor since 2009
- MAS Director (2009-2011)
- Secretary (2012-2013)
- Acting Secretary (2011-2012)

Heather Lowers received her B.S. in Geology from Mount Union College in 2000. She received an MS in Geochemistry from the Colorado School of Mines in 2005. She began her career as a student at the U.S. Geological Survey where she now oversees the Denver Microbeam Laboratory. Heather specializes in using SEM/EDS, EBSD, and EPMA to answer questions related to ore deposit models, elements of environmental concern, and geological materials and human health.

AReS Updates



Colorado Microbeam Analysis Society
October 30, 2013

<http://comas.geoloweb.ch/>

Paul PHA Two Chairs Carpenter presented Practical Guidelines for Microanalysis Using EDS and WDS



Oklahoma Microscopy Society
November 8, 2013 at Cameron University

<http://www.ou.edu/research/electron/oms/>



Central States Microscopy and Microanalysis Society
November 13, 2013

<http://www.emc.missouri.edu/csmms/>



Appalachian Regional Microscopy Society
November 15, 2013 at NCSU

http://www.aif.ncsu.edu/mrs_asm_avs_arems/



The Midwest Microscopy and Microanalysis Society
November 22 at Baxter Healthcare, Deerfield, IL

www.midwestmicroscopy.org

Technical presentations will highlight the latest developments in instrumentation and approaches for characterization of materials and life science specimens. Ernie Hall will present, Use of Advanced Characterization Techniques to Accelerate Materials Development in Energy and Transportation. Join us for vendor exhibits and technical talks. and opportunity to meet with your local colleagues.



held in conjunction with



Aug 2 Saturday Two Microanalysis Workshops Included with Registration

EBSD · Advanced EPMA · FIB · LA-ICP-MS · EELS · APT · VPSEM · EDS · SI · SPM · X-ray Spectral Processing and Simulation · He/Ne Ion Microscopy and Microanalysis

Aug 3 Sunday Keynote and Plenary

Keynote lecture by Prof. Laurie Leshin: *"My Lab is on Mars, Geochemical Adventures with the Mars Curiosity Rover"*

Plenary presentations on microanalysis techniques and applications

Aug 4-7 Symposia including

Energy Materials · Cultural Heritage · EPMA · 3D Imaging · Mineral Analysis · Cathodoluminescence · X-ray Imaging · Correlative Microscopy · Biological Microanalysis

Social Events

Saturday vendor lunch, Welcome Reception, Student Mixer, MAS-IUMAS Social

Student Support Available

Sponsorship Opportunities Available

Contact Patrick Camus, pat.camus.wi@gmail.org

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MAS Society Awards

•Kurt F. J. Heinrich Award: James Le Beau

-Assistant Professor, Materials Science & Engineering, North Carolina State University



•Presidential Service Award: Jim McGee

-Recently retired from Bechtel Marine Propulsion Corporation and now a private consultant



•Presidential Science Award: Patrick Echlin

-Emeritus Fellow, Clare Hall - University of Cambridge



•Peter Duncumb Award: Eric Lifshin

-College of Nanoscale Science & Engineering, University of Albany, State University of New York



2013 M&M Meeting Award Winners



• **Joseph Dycus, NCSU**

- *'Resolving Ambiguities at the Be₂Te₃/GaAs Interface with Atomic Resolution EDS'*

• **Chun-yueh Lin, National Taiwan University**

- *'Low-Energy Electron Diffractive Imaging Based on a Single Atom-Source Electron Source'*



• **Anudah Mittal, University of Minnesota**

- *'Electron Beam Channeling in Single Atomic Column'*

• **Kayla Nguyen, Cornell University**

- *'AirSEM: Electron Microscopy in Air, without a Specimen Chamber'*



• **Andrew Yankovich, University of Madison**

- *'Measuring Surface Atom Bond Length Contraction in Au and Pt Nanoparticles Using High-Precision STEM Imaging'*

• **Yinchao Yu, Cornell University**

- *'Understanding Pt-Co Catalyst Degradation Mechanism: from Ex-situ to In-situ'*



2013 M&M Meeting Award Winners



• **Mahsa Sina, Rutgers University**

- *'STEM/EELS and diffraction study of phase transformation in FeO_{0.7}F_{1.3}/C nanocomposites after lithium/delithiation'*

• **Datong Yuchi, Arizona State University**

- *'Adsorption of Sb on the {1010} facets of ZnO nanowires'*



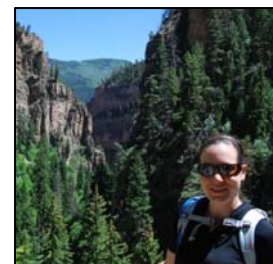
• **Chenyang Lu, University of Michigan**

- *'Helium Ion Implantation Effects of 9Cr-ODS (Oxide Dispersion Strengthened) Steel'*



• **Rita Kirchhofer, Colorado School of Mines**

- *'Atomic Scale Composition Profiling of Ferroelectrics via Laser-Pulsed Atom Probe Tomography and Cross-correlative Transmission Electron Microscopy'*



• **Desai Zhang, Arizona State University**

- *'Study of GaAs/Fe Core/Shell Nanowires using Electron Holography'*



• **Lyle Gordon, Northwestern University**

- *'Towards Atom Probe Tomography of Hybrid Organic-Inorganic Nanoparticles'*



News from the Archivist

It is with sad news that I inform you of the passing of one of the founders of the Society, Professor Robert E. Ogilvie (1923-2013). An oral history interview with Professor Ogilvie conducted in the summer of 2013 is being transcribed and will appear in a future MicroNews. The following notice comes from the MIT Materials Science and Engineering Department.

Robert E. Ogilvie, Professor Emeritus of Metallurgy in the Department of Materials Science and Engineering, passed away after brief illness on September 3. A memorial will be held at the MIT Chapel on Sept. 28th at 2:00 pm. Professor Ogilvie's academic foundation in metallurgy and his insatiable curiosity led him to become a world-renowned expert in the detection of art forgeries, the construction of samurai swords, and the analysis of meteorites. His diverse research interests connected him to many communities where he formed strong friendships.

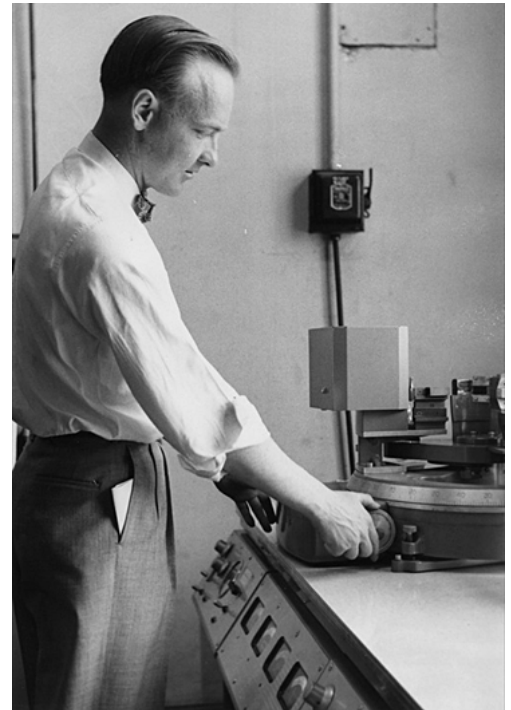
Born in Wallace, Idaho, in 1923, Bob served in the Navy during World War II, and then pursued undergraduate studies at Gonzaga University and the University of Washington. He came to MIT for graduate school in 1950, studying x-ray absorption analysis with Professor John T. Norton. His graduate research led to the development of the electron microbeam probe and the founding of AMR, Inc. with Professor Norton. Also at that time, he began working with William Young founder of the Research Lab at the Museum of Fine Arts, Boston, and developed a long collaboration and supportive relationship with what is now the Department of Conservation and Collections Management at the MFA and with conservators and conservation scientists there and elsewhere. He was instrumental in establishing the series of workshops and publications on the Application of Science in the Examination of Works of Art. His use of the electron microprobe in detecting forgeries and authenticating art was the subject of cover stories in *Technology Review* and *Saturday Review*.

Another application of the electron microanalyzer was the examination of meteorites; the instrument could determine the objects' thermal history and the size of the original body of which the meteorite was a fragment. Bob was a member of the Harvard-Smithsonian Meteorite Discussion group, and in 2000 he was recognized for his long-time involvement and contributions with a named minor planet, 3973 Ogilvie.

Bob had a long fascination with the creation and structure of samurai swords, leading him to visit swordmakers in Japan, including the famous Gassan family. His extensive collection of samples and data has been invaluable for students and scholars.

At MIT, Bob taught "Fundamentals of Crystallography and X-Ray Diffraction," "Electron Optics," "Materials Laboratory," and "Celestial Navigation." He directed the X-Ray and Electron Optics Lab at MIT and served as President of the Electron Probe Analysis Society of America. An avid sailor, he sailed "Op-Tiki," a 36-foot Cheoy Lee ketch, around the world with his son Rob.

Bob is survived by children Claudia Ogilvie of Pittsfield, MA, Marylee Bergin of Ridgewood, NJ, and Rob Scott Ogilvie of Nashville, TN, as well as grandchildren Robert C. Ogilvie, John G. Ogilvie, Alex Bergin, and Zoe Bergin. In lieu of flowers, donations may be made to the St. Labre Indian School, 1000 Tongue River Rd., Ashland, Montana.



Robert E. Ogilvie

<http://web.mit.edu/newsoffice/2013/robert-ogilvie-obituary.html>

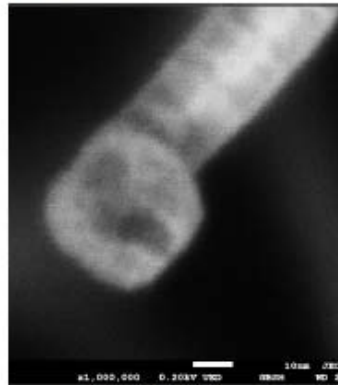
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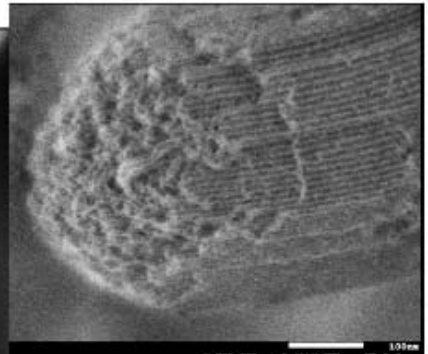
Field Emission SEM - JSM-7800F



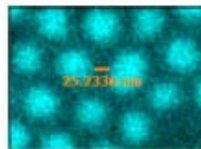
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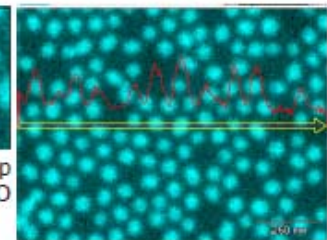
0.2kV image at 1,000,000X - SnO₂ whisker



10V image at 200,000X - Mesoporous Silica



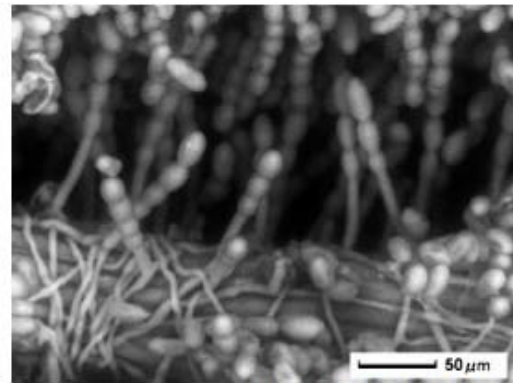
<25nm high resolution EDS map Ni on ITO



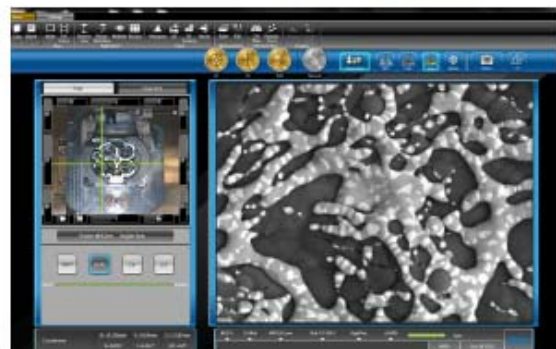
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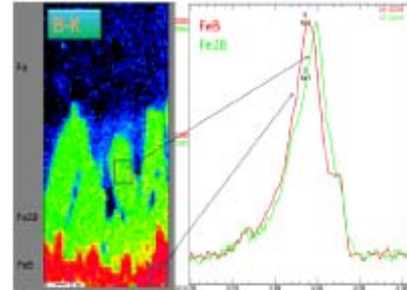
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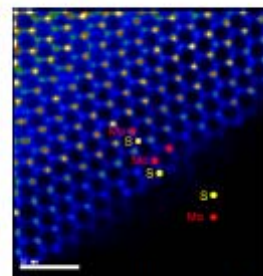
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- Fast parallel detection



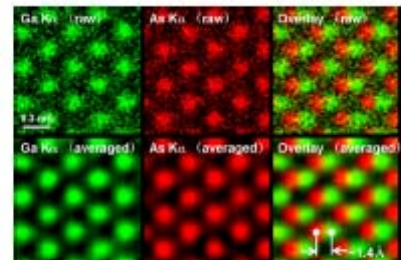
Atomic Resolution TEM - ARM200FC



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Dr. Moon Kim - University of Texas, Dallas
STEM HAADF image of transferred MoS₂ showing Mo and S atom positions and their 2H stacking sequence.



Atomic resolution mapping

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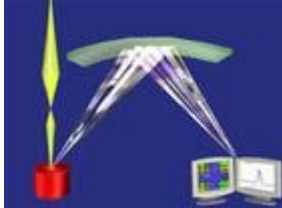
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Electron Microscopy



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- ⇒ Oklahoma Microscopy Society (Nov 08, 2013)
- ⇒ Appalachian Regional Microscopy Society (Nov 15, 2013)
- ⇒ The Midwest Microscopy and Microanalysis Society (Nov 22, 2013)
- ⇒ 23rd Australian Conference on Microscopy and Microanalysis (Adelaide, SA from Feb 02 to Feb 06, 2014)
- ⇒ Focus on Microscopy 2014 (Sydney, NSW from Apr 13 to Apr 16, 2014)
- ⇒ EBSD 2014 (Pittsburgh, PA from Jun 17 to Jun 19, 2014)
- ⇒ IUMAS-6 (Hartford, CT from Aug 02 to Aug 07, 2014)
- ⇒ Microscopy & Microanalysis 2014 (Hartford, CT from Aug 03 to Aug 07, 2014)
- ⇒ ICM 2014—18th International Microscopy Congress (Prague from Sept 07 to Sept 12, 2014)
- ⇒ EMAS Regional Workshop: EPMA of Materials Today (Leoben, AT from Sept 21 to Sept 24, 2014)
- ⇒ Microscopy & Microanalysis 2015 (Portland, OR from Aug 02 to Aug 06, 2015)
- ⇒ Microscopy & Microanalysis 2016 (Columbus, OH from Jul 24 to Jul 28, 2016)