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Visit Hitachi at Booth #1376 at Microscopy & Microanalysis 2015 in Portland, Oregon, demo our instruments, and attend our Learning Lab sessions to explore innovative solutions and techniques for your laboratory.
QUESTIONS?

Questions regarding the technical content of the meeting or regarding specific sessions may be directed to:
Program Chair
Mark A. Sanders
MM2015ProgramChair@microscopy.org

Registration is open! Please direct questions regarding registration to:
MMRegistration@microscopy.org

Questions regarding exhibits, exhibitors or sponsors may be directed to:
doreen@corcexpo.com

Please direct all other meeting-related questions to:
MeetingManager@microscopy.org

ARE YOU A MEMBER?

Join Today and Save on M&M 2015 Registration Fees

Visit http://microscopy.org to join the Microscopy Society of America online, or call 1-800-538-3672 for more information about the benefits of MSA membership.

Visit http://microanalysissociety.org to join the Microanalysis Society and find out information about MAS membership benefits.

Dear Fellow Microscopists, Friends and Colleagues,

We invite you to join us August 2-6, 2015 at the Oregon Convention Center in wonderful Portland, Oregon for Microscopy & Microanalysis 2015. Portland, known as the City of Roses, is a wonderful summer venue for the meeting, as many of you may fondly recall our previous visits there in 1999 and 2010.

We are looking forward to another successful M&M meeting. The Program Committee has put together the epitome of scientific diversity that reflects our societies’ interests. The program highlights the latest techniques, methodologies and findings, spanning nano-to-macroscopic scales, and advances in fields such as nanotechnology, biological and clinical sciences, materials science, 3D manufacturing, and metallurgy. The overarching M&M 2015 theme is correlative imaging, with a nod to light-based technologies. As many of you are aware, the United Nations General Assembly proclaimed 2015 as the “International Year of Light and Light-Based Technologies” which blends nicely with the interdisciplinary symposia that reflect the current environment of collaboration between scientists in different disciplines synonymous with M&M. M&M 2015 promises to have something for everyone in the field.

The meeting officially starts on Sunday evening with a welcome reception. The technical program commences on Monday morning with two plenary lectures featuring Nobel laureate Dr. Roger Tsien and NASA Astronaut Dr. Donald Pettit, bookending the winners of our major society and meeting awards. The exhibit floor will showcase the latest state-of-the-art microscopy-related equipment. The vendor tutorials continue to play a significant role in the meeting. The meeting also features an in situ EM pre-meeting congress, in-week intensive workshops, and tutorials, in addition to the traditional Sunday Short Courses.

No matter where you are in your career, participating at M&M 2015 allows you to stay abreast of new technologies, learn new techniques, see the latest instrumentation, and most importantly, network with colleagues and make new connections. We hope that you will be able to join us in Portland for what is certain to be a very exciting and educational meeting.

John F. Mansfield
President
Microscopy Society of America

Thomas E. Kelly
President
Microanalysis Society

Richard Blackwell
President
International Metallographic Society
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Pick up your badge and materials at the Registration desk according to the schedule below. The Sunday Social starts at 6:30 pm in the Portland Ballroom, which is under the same roof at the Oregon Convention Center.

**Registration Hours – Attendee & Exhibitor**

<table>
<thead>
<tr>
<th>Day</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday, July 31</td>
<td>12:00 PM – 6:00 PM*</td>
</tr>
<tr>
<td>Saturday, August 1</td>
<td>8:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>Sunday, August 2</td>
<td>7:00 AM – 7:30 PM</td>
</tr>
<tr>
<td>Monday, August 3</td>
<td>7:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>Tuesday, August 4</td>
<td>7:30 AM – 5:00 PM</td>
</tr>
<tr>
<td>Wednesday, August 5</td>
<td>7:30 AM – 5:00 PM</td>
</tr>
<tr>
<td>Thursday, August 6</td>
<td>7:30 AM – 3:00 PM</td>
</tr>
</tbody>
</table>

*Exhibitor registration will open at 8:00 AM

**Commercial Exhibition Hours:**

<table>
<thead>
<tr>
<th>Day</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Monday, August 3</td>
<td>12:00 PM – 5:30 PM</td>
</tr>
<tr>
<td>Tuesday, August 4</td>
<td>10:00 AM – 5:30 PM</td>
</tr>
<tr>
<td>Wednesday, August 5</td>
<td>10:00 AM – 5:30 PM</td>
</tr>
<tr>
<td>Thursday, August 6</td>
<td>10:00 AM – 2:00 PM</td>
</tr>
</tbody>
</table>

M&M 2015 plenary sessions begin on Monday, August 3 at 8:30 AM. Symposia and In-Week Workshops end on Thursday, August 6 at 5:00 PM.

**Please plan your travel accordingly!**

**ONSITE REGISTRATION DESK**

**OREGON CONVENTION CENTER**

Online registration will be open until July 20. We encourage you to register in advance!

- For the most up-to-date registration information, visit [http://microscopy.org/MandM/2015/index.cfm](http://microscopy.org/MandM/2015/index.cfm)

- Registration can be done either online at: [http://microscopy.org/MandM/2015/index.cfm](http://microscopy.org/MandM/2015/index.cfm) or onsite at the meeting registration desk. We encourage you to register in advance and as early as possible.

- Register by **June 22** (early deadline) and save **$100**!

- Member rates apply to all members (MSA, MAS, IMS).
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ESSENTIAL MEETING & VENUE INFORMATION

GETTING TO & AROUND PORTLAND

The Portland International Airport (PDX) is located only 10 miles (15-20 minutes by car; 30 minutes—only $2.50—by MAX light rail) from downtown Portland. The airport features free Wi-Fi, guest services information and assistance center, and several restaurants, stores, and personal-services outlets. Visit http://pdx.com/pdx for detailed information about the airport.

GROUND TRANSPORTATION

CAR/VAN/SHUTTLE: For detailed information on taxi service, limousine service, and shared-ride shuttle service fees and schedules: http://pdx.com/PDX/GroundTransportation

TRAIN: Amtrak provides rail service directly to Portland from Seattle and also from points south. The train station is located downtown on the west side. Visit http://amtrak.com for fares and service details.

MORE PORTLAND TRAVEL INFO: For detailed attraction, tour, dining, and travel information for visitors, please visit Travel Portland at http://travelportland.com

Accessibility

If you require special accommodation in order to participate fully in the meeting, please ask to speak with the meeting manager, or email MeetingManager@microscopy.org. Requests made after July 1 or onsite at the meeting will be accommodated as much as possible.

Awards

Major Society Awards for the three societies, along with M&M student awards, will be presented at the Plenary Session immediately following the first Keynote Session (Monday morning). Other IMS Awards are presented at the IMS Awards Banquet on Wednesday evening (ticket purchase required). For detailed listings of all awards, criteria, and award winners, please visit http://microscopy.org/MandM/2015/

Cancellation and Refund Policy

Refund requests received prior to July 24, 2015 will be honored less a $60 administrative fee. No refunds will be issued for cancellations (for any reason) received on or after July 24, 2015 and no refunds will be issued onsite in Portland, Oregon.

Email: MMRegistration@microscopy.org or fax (703) 964-1246.

Food for Purchase

Inexpensive, portable breakfast and snack items are available for purchase in the convention center on the ground level (7:30 AM–10:30 AM). Lunch concessions are available for purchase inside the exhibit hall during lunch hours (11 AM–2 PM).

Portland & Regional Visitor Information

Stop by the Travel Portland booth located inside the convention center to pick up local information, including maps, dining guides and tour info. Located on the main level of the Oregon Convention Center, it’s staffed during the meeting and stocked with visitor information on Portland and surrounding areas.

Internet & Email

Free wireless internet is available for M&M attendees in the Oregon Convention Center. Check your email and surf the web at the Internet Café inside the M&M exhibit hall during exhibit hours (located next to the MSA MegaBooth). For more information on the MegaBooth, go to page 22.

Job & Resume Postings/Placement Office

See MSA MegaBooth info on Page 22.

Post your company’s or department’s job listing, peruse posted resumes for that perfect job candidate, or post your own resume. Take advantage of thousands of microscopists and microscopy companies all gathered in one place! Go to the MSA MegaBooth (Exhibit Hall) for details.

M&M 2016 — Meeting & City Information

Get the inside scoop on all the great plans for next year’s M&M Meeting in Columbus, OH. The 2016 booth is staffed with an Experience Columbus representative, and located in the main registration area.
VENUE INFORMATION

ESSENTIAL MEETING & TECHNOSTYLISTS’ FORUM

Learn about Project MICRO, and join the registration foyer on the 1st level outside the information booth located in the main society booths. Registration. All Full Meeting registrations include a free copy of the proceedings on digital DVD Library. Register for the popular Vendor Information on the Certification Board, and a display from scientific publishers, updated and M&M attendees: Free Internet Café, book check out all that MSA has to offer its members: See complete details on Page 22.

MSA MEETING [Booth # 354]

See complete details on Page 22.

Check out all that MSA has to offer its members and M&M attendees: Free Internet Café, book display from scientific publishers, updated information on the Certification Board, and a DVD Library. Register for the popular Vendor Tutorials, sign up for MSA Membership, check out recent editions of Microscopy Today, learn about Project MICRO, and join the Technologists’ Forum.

PHONE NUMBERS & INFORMATION

• Oregon Convention Center Main: 503-235-7575
• Oregon Convention Center - Exhibitor Services 503-731-7801; http://oregoncc.org/ExhibitorServices
• ZoomCare Downtown Portland: 503-608-3082; http://zoomcare.com

PROCEEDINGS

Conference Proceedings are distributed at Registration. All Full Meeting registrations include a free copy of the proceedings on digital medium. Hard-copy proceedings are available for purchase through Cambridge University Press (allow several weeks for delivery). Inquire at the Registration Desk or email: MMProceedings@cambridge.org

Society Booths

MAS and IMS each has a membership and information booth located in the main registration foyer on the 1st level outside the exhibit hall C entrance. Sign up for membership, get information on Society events at or after the M&M Meeting, and find out all that the joining societies have to offer.

SMOKING POLICY

M&M 2015 is a smoke-free meeting. If you wish to smoke, you will need to go to designated outdoor areas.

TOTE BAGS

All non-Exhibitor Meeting Registrants are entitled to a meeting tote bag. Bags are distributed in the registration area.

HOTEL & RESERVATIONS INFO

The open reservations portal, as well as the most current listing of available hotels and rates, is available at: http://microscopy.org/MandM/2015/hoteltravel/hotelinfo.cfm. Book your room through M&M 2015 Housing Bureau, and get an immediate reservation confirmation. A valid credit card is required to reserve a room.

Maps showing the location of the hotels and convention center, and MAX light-rail and streetcar routes, are also available on the M&M 2015 site, and maps of the area are downloadable from: http://travelportland.com/plan-your-trip/maps-of-Portland/

MSA MEGAUBOOTH [Booth # 354]

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Volunteer Room

The volunteer & student bursary office is in Room 126. Check in here for volunteer assignments and sign-outs.

http://microscopy.org/MandM/2015/
SOCIAL EVENTS

MAS Social Event
for MAS Members Only!
Wednesday, August 5, 2015
6:30 PM - 8:30 PM
Stop by the MAS booth in the lobby to check your membership status and pick up your ticket for the MAS social event on Wednesday evening, immediately following the MAS Business Meeting.

IMS Icebreaker
all are welcome!
Monday, August 3, 2015
7 PM - 9 PM
Swing by the IMS Icebreaker at the Multnomah Grille at the Doubletree Hotel for appetizers and beverages, compliments of Precision Surfaces International, Inc.

IMS Awards Banquet
Wednesday, August 5, 2015
6:30 PM - 9 PM
Be sure to purchase your ticket (available at Registration, subject to availability) and inquire at the IMS booth for additional information on the IMS Awards Banquet on Wednesday evening.

M&M 2015 Sunday Evening Social Event
Oregon Convention Center – Portland Ballroom (Upper Level; West Side)
Sunday, August 2, 2015
6:30 PM – 9 PM
One ticket is included with most registrations (see Registration Page for details). Additional tickets: $75 each for adults; $35 each for children 12 and under. Children under 3 are free.

*PLEASE NOTE:
Onsite availability of tickets is not guaranteed. Register for the meeting and, if needed, buy your extra tickets early to be sure that you’re able to attend.

This year’s welcome event at the Oregon Convention Center will be a fun and informal get-together. Catch up with friends and colleagues, enjoy some local wine or beer, and tuck in to some delicious Pacific Northwest-inspired food.

After the reception, grab some friends and check out some of Portland’s famed microbrew spots, quirky donut shops, and fantastic nightlife.
Micrograph Competition

This micrograph competition promotes the innovative blending of art and science. Open to all forms of microscopic imaging, winners of this competition are selected on the basis of artistic merit and general audience appeal. A maximum of three (3) cash awards will be presented. **Winners and runners-up will have the chance to see their work published in a conference brochure for M&M 2016!**

Bring your best work with you to Portland and enter the competition!

For competition rules and details, go to: [http://microscopy.org/MandM/2015/meetings/applyforaward.cfm](http://microscopy.org/MandM/2015/meetings/applyforaward.cfm)

Metallographic Contest

**DEADLINE FOR ENTRIES:**

*July 18, 2015*

This annual contest solicits micrographs that illustrate problem solving using a variety of imaging techniques. Membership in IMS or ASM is NOT required; all are welcome.

For contest rules and entry submission information, visit IMS at [http://metallography.net](http://metallography.net) and click on Awards.

Student Poster Awards

*(Immediately following daily Poster Presentations & Happy Hour!)*

Poster presentations are an excellent format for all participants to engage in intensive discussion with other researchers in the field. To especially encourage students to take advantage of this opportunity and submit papers for poster presentation, MSA provides cash awards to the most outstanding student posters (first author) each day (up to two in each of three categories).

Student poster awards will be presented immediately following each day’s poster session, in the Exhibit Hall.
OREGON CONVENTION CENTER INFORMATION

All official conference events are being held at the Oregon Convention Center, which is located on the east side of the Willamette River in downtown Portland. [http://oregoncc.org](http://oregoncc.org)
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www.emsdiasum.com
As of June 1. Please check the onsite program or your committee chair/liaison to confirm!

All events held at Oregon Convention Center unless otherwise noted.

## Friday, July 31, 2015

<table>
<thead>
<tr>
<th>START TIME</th>
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<td>8:30 AM</td>
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MJA Council

## Saturday, August 1, 2015

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MJA Council

## Sunday, August 2, 2015

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<tr>
<td>9:00 AM</td>
<td>A107</td>
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<tr>
<td>1:00 PM</td>
<td>D131</td>
</tr>
<tr>
<td>3:00 PM</td>
<td>D131</td>
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</tbody>
</table>

IMS Board of Directors  
IMS Poster Judging  
MAS Council  
Microscopy Today Editors  
MaM Editors  
Sunday Evening Social Event

## Monday, August 3, 2015

<table>
<thead>
<tr>
<th>START TIME</th>
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<tr>
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<td>A108-109</td>
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<tr>
<td>3:30 PM</td>
<td>D130</td>
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<tr>
<td>5:30 PM</td>
<td>A108-109</td>
</tr>
<tr>
<td>5:45 – 6:45 PM</td>
<td>Exhibit Hall</td>
</tr>
<tr>
<td>7:00 PM</td>
<td>Doubletree Hotel</td>
</tr>
</tbody>
</table>

Technologists’ Forum Board  
MaM Editorial Board  
MSA Awards + Fellowship Committees  
MAS Meal with a Mentor  
FOM FIG “Lunch with a Facility Manager”  
Focused Ion Beam FIG  
Diagnostic FIG  
IMS General Members’ Meeting  
3D EM in the Biological Sciences FIG  
Technologists’ Forum Business Meeting  
Student Mixer  
Vendor Tutorials *(Sign up at MJA MegaBooth)*  
IMS Icebreaker
# MEETINGS & SPECIAL EVENTS

## SCHEDULE

As of June 1. Please check the onsite program or your committee chair/liaison to confirm!

All events held at Oregon Convention Center unless otherwise noted.

### Tuesday, August 4, 2015

<table>
<thead>
<tr>
<th>Event</th>
<th>Start Time</th>
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<tbody>
<tr>
<td>MSA Local Affiliated Societies’ Breakfast</td>
<td>7:15 AM</td>
<td>A108-109</td>
</tr>
<tr>
<td>Microscopy Today Editorial Board Meeting</td>
<td>7:15 AM</td>
<td>D130</td>
</tr>
<tr>
<td>M&amp;M 2016 - Program Planning Meeting</td>
<td>10:00 AM</td>
<td>A107</td>
</tr>
<tr>
<td>FOM FIG Business Meeting &amp; Lunch</td>
<td>12:15 PM</td>
<td>A108-109</td>
</tr>
<tr>
<td>MSA Distinguished Scientist Awardee Lectures</td>
<td>12:15 PM</td>
<td>C123</td>
</tr>
<tr>
<td>Cryo-Preparation FIG</td>
<td>12:15 PM</td>
<td>D130</td>
</tr>
<tr>
<td>MSA Standards Committee Meeting</td>
<td>12:15 PM</td>
<td>C128</td>
</tr>
<tr>
<td>Electron Crystallography FIG</td>
<td>12:15 PM</td>
<td>D131</td>
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<tr>
<td>FIG Business Meeting</td>
<td>3:30 PM</td>
<td>A107</td>
</tr>
<tr>
<td>MSA Education Committee Meeting</td>
<td>3:30 PM</td>
<td>D130</td>
</tr>
<tr>
<td>ACEM FIG</td>
<td>5:15 PM</td>
<td>D131</td>
</tr>
<tr>
<td>Symposium Organizers – Appreciation Event</td>
<td>5:30 PM</td>
<td>A108-109</td>
</tr>
<tr>
<td>Vendor Tutorials <em>(Sign up at MSA MegaBooth)</em></td>
<td>5:45 PM</td>
<td>Exhibit Hall</td>
</tr>
<tr>
<td>Presidents’ Reception <em>(Invitation Only)</em></td>
<td>6:30 PM</td>
<td>Offsite</td>
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### Wednesday, August 5, 2015

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<thead>
<tr>
<th>Event</th>
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<tbody>
<tr>
<td>MSA Certification Board</td>
<td>7:15 AM</td>
<td>D131</td>
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<tr>
<td>MSA Membership Committee</td>
<td>7:15 AM</td>
<td>D130</td>
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<tr>
<td>M&amp;M 2016 Conference Publications</td>
<td>8:30 AM</td>
<td>A107</td>
</tr>
<tr>
<td>MAS - ANSI Meeting</td>
<td>12:15 PM</td>
<td>D131</td>
</tr>
<tr>
<td>MSA Members Meeting</td>
<td>12:15 PM</td>
<td>C123</td>
</tr>
<tr>
<td>MAS Affiliated Regional Societies</td>
<td>12:15 PM</td>
<td>A108-109</td>
</tr>
<tr>
<td>Atom Probe FIG</td>
<td>12:15 PM</td>
<td>A107</td>
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<tr>
<td>Pharma FIG</td>
<td>12:15 PM</td>
<td>D130</td>
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<tr>
<td>MSA-CUP Book Series Advisory Board Meeting</td>
<td>4:15 PM</td>
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<td>MAS Business Meeting</td>
<td>5:15 PM</td>
<td>C123</td>
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<tr>
<td>Vendor Tutorials <em>(Sign up at MSA Megabooth)</em></td>
<td>5:45 PM</td>
<td>Exhibit Hall</td>
</tr>
<tr>
<td>IMS Awards Banquet</td>
<td>6:30 PM—See IMS Booth for Details</td>
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<tr>
<td>MAS Members Social</td>
<td>6:30 PM—See MAS Booth for Details</td>
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### Thursday, August 6, 2015

<table>
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<tr>
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<tr>
<td>M&amp;M Sustaining Members Meeting</td>
<td>8:30 AM</td>
<td>A108-109</td>
</tr>
<tr>
<td>M&amp;M 2015 Wrap-Up &amp; Debrief <em>(Invitation Only)</em></td>
<td>5:30 PM</td>
<td>A107</td>
</tr>
</tbody>
</table>
HIGHLIGHTS

ADDITIONAL AWARD WINNERS

OUTSTANDING TECHNOLOGIST - Physical
Masahiro Kawasaki, JEOL

OUTSTANDING TECHNOLOGIST - Biological
Norman Olson, University of California, San Diego

BURTON MEDAL
Andrew Minor, University of California, Berkeley

CREWE AWARD
Meng Gu, Pacific Northwest National Laboratory

PALEADE AWARD
Alexey Amunts, MRC Laboratory of Molecular Biology

MASER AWARD
JoAn Hudson, Clemson University

BIRKS AWARD
Hideyuki Takahashi, JEOL, Japan

MACRES AWARD
Kirstin Alberi, National Renewable Energy Laboratory, Golden, CO

COSSLETT AWARD
Xavier Llovet, University of Barcelona, Spain

CASTAING AWARD
Chantelle Venter, University of Pretoria, South Africa

PLENARY SESSION TALKS

Monday, August 3, 2015  OREGON CONVENTION CENTER, OREGON BALLROOM

For speaker bios and presentation details, visit http://microscopy.org/MandM/2015/program/plenarysession.cfm

Prof. Roger Y. Tsien, University of California, San Diego
“New Molecular Tools for Light and Electron Microscopy”

Donald Pettit, PhD, NASA, Johnson Space Center, Houston
“Some Unexpected Difficulties in Microscope Operation in Microgravity”

MSA DISTINGUISHED SCIENTIST AWARDS & TALKS

Tuesday, August 4, 2015  OREGON CONVENTION CENTER, ROOM C123

DISTINGUISHED SCIENTIST - PHYSICAL
(Speaker TBA)
Peter Hawkes, Toulouse, France
Emeritus Research Director, CNRS

DISTINGUISHED SCIENTIST - BIOLOGICAL
Michael Davidson, Florida State University, Tallahassee
Director, Optical Microscopy Division of the National High Magnetic Field Laboratory

2015 IMS HENRY CLIFTON SORBY AWARD & LECTURE

Monday, August 3, 2015  OREGON CONVENTION CENTER, ROOM C123

Prof. David K. Matlock, FASM,
Armco Foundation Fogarty Professor, Colorado School of Mines
“Microstructural Developments Leading to New Advanced High Strength Sheet Steels: A Historical Assessment of Critical Metallographic Observations”
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- Silver as a Removable Coating for Scanning Electron Microscopy
- Carbon Coating Techniques and Applications
- Plasma Etching and Ashing Techniques and Applications
- A summary of the Critical Point Drying Method
- Freeze Drying Principles
- Cryo-SEM — the Advantages

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Critical Point Dryers
Freeze Dryers
RF Plasma Etchers/Plasma Reactors
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Tel: (215) 412-8400
Fax: (215) 412-8450
email: sgkcck@aol.com or stacie@ems-secure.com
www.emsdiasum.com
Kate Burgess (ASEE Postdoctoral Fellow, NRL):

“From achieving 80 pm spatial resolution ten days after the microscope’s delivery to obtaining single-atom-sensitivity EDX spectra in seconds, the Nion UltraSTEM has exceeded expectations. Any day you get an “Oh, wow!” from a visiting Nobel Prize winner looking at your latest data is a great day. At NRL with our new UltraSTEM, we have had this and more.”

Left to right: Nabil Bassim, Kate Burgess, Todd Brintlinger and Rhonda Stroud (group leader) at the controls of NRL’s Nion UltraSTEM 200-X™
FRIDAY, JULY 31

8:30 AM  MSA Council  A107

SATURDAY, AUGUST 1

8:30 AM  MSA Council  A107

SUNDAY, AUGUST 2

8:30 AM  IMS Board of Directors  C124

8:30 AM - 5:00 PM  Sunday Short Courses

X10 - Cryo-Preparation for Biological EM  B110
X11 - Immunolabeling Technology for Light and Electron Microscopy  B111
X12 - Electron Tomography in Life and Materials Sciences  B112
X13 - Imaging and Analysis with Variable Pressure or Environmental SEM  B113
X14 - Advanced Focused Ion Beam Methods  B114
X15 - Practical Considerations for Image Analysis: ImageJ  B115
X16 - Overview of Scanning Probe Microscopy (SPM/AFM) for Nanoscale Morphological, Mechanical, and Optical Characterization of Materials  B116
X17 - Standard Practice for Production and Evaluation of Field Metallographic Replicas  B117
X18 - Nanomaterial Microscopy & Microanalysis: Tools & Preparation  B118

8:30 AM - 5:00 PM  Pre-Meeting Congress (Sponsored by ACEM FIG)
Measuring Materials’ Functionalities and Dynamics in Liquid and Gaseous Environments  A105-106

9:00 AM  MAS Council  A107

9:00 AM  IMS Poster Judging  C123

1:00 PM  Microscopy Today Editors  D131

3:00 PM  MaM Editors  D131

6:30 PM  Sunday Evening Social Event  Portland Ballroom

MONDAY, AUGUST 3

7:15 AM  MSA Awards + Fellowship Committees  D130

7:15 AM  Technologists’ Forum Board  D129

7:15 AM  MaM Editorial Board  D131

8:30 AM - 12:00 PM  M&M 2015 Plenary Sessions

Opening Welcome
PLENARY TALK #1: Dr. Roger Tsien, University of California, San Diego, 2008 Nobel Laureate “New Molecular Tools for Light and Electron Microscopy”
MAS Awards Presentation
IMS Awards Presentation
Coffee & Donuts Break
MSA Awards Presentation
M&M Meeting Awards Presentation
PLENARY TALK #2: Dr. Donald Pettit, NASA, Johnson Space Center, Houston, TX “Some Unexpected Difficulties in Microscope Operation in Microgravity”
## MONDAY, AUGUST 3 CONTINUED

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<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>12:00 PM – 1:30 PM</td>
<td>Lunch Break</td>
<td>Exhibit Hall</td>
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<tr>
<td>12:00 PM – 5:30 PM</td>
<td>Exhibit Hall Open</td>
<td>Exhibit Hall</td>
</tr>
<tr>
<td>12:15 PM</td>
<td>MAS Meal with a Mentor</td>
<td>A108-109</td>
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<tr>
<td>12:15 PM</td>
<td>FOM FIG “Lunch with a Facility Manager”</td>
<td>D132</td>
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<tr>
<td>12:15 PM</td>
<td>Diagnostic FIG Meeting</td>
<td>D131</td>
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<tr>
<td>12:15 PM</td>
<td>Focused Ion Beam FIG</td>
<td>D130</td>
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<tr>
<td>1:00 PM – 5:00 PM</td>
<td><strong>In-Week Intensive Workshops</strong></td>
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<tr>
<td></td>
<td>X19 – Introduction to SEM Imaging and X-ray Compositional Analysis</td>
<td>A103</td>
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<td></td>
<td>X20 – Specimen Preparation for Biological Microscopy</td>
<td>A104</td>
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<tr>
<td>1:30 PM – 3:00 PM</td>
<td><strong>P.M. Symposia &amp; Sessions</strong></td>
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<tr>
<td></td>
<td>X99 - IMS Henry Clifton Sorby Award &amp; Lecture</td>
<td>C123</td>
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<tr>
<td></td>
<td>A01 – Vendor Symposium: New Tools for Life and Materials Sciences</td>
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<td></td>
<td>A11 – Electron Vortex Beams and Higher-Order Beam Modes</td>
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<td>A12 – Low Voltage Electron Microscopy</td>
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<td>A13 – Advancing Data Collection and Analysis for Atom Probe Tomography</td>
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<td>B01 – Apkarian Memorial Symposium: Cryo-HRSEM</td>
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<td></td>
<td>B05 – 3D Structure of Macromolecular Assemblies, Cellular Organelles, and Whole Cells</td>
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<td>B10 – Multiscale Biological Imaging: From Micro to Macro – Animal to Clinical Models</td>
<td>C120</td>
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<td></td>
<td>P01 – Bringing the Real World into the Electron Microscope: Peter R. Swann Memorial Symposium on In Situ TEM and STEM</td>
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<td>P04 – Nano-characterization of Low Dimensional Materials: Carbon to 2D TMDs</td>
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<td>P09 – Microscopy of Additive Manufacturing and 3D Printing in Materials and Biology in Humans, Plants &amp; Animals</td>
<td>D137</td>
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<td></td>
<td>P11 – Advances in Transmission Electron Microscopy and Spectroscopy of Energy-Related Materials</td>
<td>B113</td>
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<tr>
<td>2:30 PM</td>
<td><strong>IMS General Members’ Meeting</strong></td>
<td>C123</td>
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<tr>
<td>3:00 PM – 5:00 PM</td>
<td><strong>Monday Poster Presentations</strong></td>
<td>Exhibit Hall</td>
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<td></td>
<td>A01 – Vendor Symposium: New Tools for Life and Materials Sciences</td>
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<td></td>
<td>A18 – Core Facility Management (FOM FIG)</td>
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<td>P06 – Failure Analysis, Applications of Microanalysis, Microscopy, Metallography, and Fractography</td>
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<td>P11 – Advances in Transmission Electron Microscopy and Spectroscopy of Energy-Related Materials</td>
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<td></td>
<td>PDP – Post Deadline Posters (all)</td>
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</tbody>
</table>
### TUESDAY, AUGUST 4

#### 7:15 AM
**MSA Local Affiliated Societies’ Breakfast**
A108-109

**Microscopy Today Editorial Board Meeting**
D130

#### 8:30 AM - 10:00 AM
**A.M. Symposia & Sessions**

- **X90** - Microscopy Outreach: Microscopy in the Classroom
- **A01** - Vendor Symposium: New Tools for Life and Materials Sciences
- **A12** - Low Voltage Electron Microscopy
- **A13** - Advancing Data Collection and Analysis for Atom Probe Tomography
- **A18** - Core Facility Management (FOM FIG)
- **B01** - Apkarian Memorial Symposium: Cryo-HRSEM
- **B04** - Advances in Specimen Preparation and Correlative LM-EM (CLEM) of Biological Samples
- **B07** - Microscopy, Microanalysis, and Image Cytometry in the Pharmaceutical Sciences
- **B09** - Utilizing Microscopy for Research and Diagnosis of Diseases
- **B10** - Multiscale Biological Imaging: From Micro to Macro – Animal to Clinical Models
- **P01** - Bringing the Real World into the Electron Microscope: Peter R. Swann Memorial Symposium on In Situ TEM and STEM
- **P04** - Nano-characterization of Low Dimensional Materials: Carbon to 2D TMDs
- **P05** - Nuclear and Irradiated Materials: Fundamental Defect Properties
- **P06** - Failure Analysis, Applications of Microanalysis, Microscopy, Metallography, and Fractography
- **P07** - Metallography and Microstructural Characterization of Metals
- **P09** - Microscopy of Additive Manufacturing and 3D Printing in Materials and Biology in Humans, Plants & Animals

#### 10:00 AM - 12:00 PM
**A.M. Symposia & Sessions (Cont’d.)**

- **X90** - Microscopy Outreach: Microscopy in the Classroom
- **A05** - Fast and Ultrafast Imaging with Electrons and Photons
- **A06** - Advanced Analytical TEM/STEM
- **A11** - Electron Vortex Beams and Higher-Order Beam Modes
- **A12** - Low Voltage Electron Microscopy
- **A13** - Advancing Data Collection and Analysis for Atom Probe Tomography
- **A18** - Core Facility Management (FOM FIG)
- **B04** - Advances in Specimen Preparation and Correlative LM-EM (CLEM) of Biological Samples
### TUESDAY, AUGUST 4 CONTINUED

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<tr>
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<td><strong>FOM FIG Business Meeting &amp; Lunch</strong></td>
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<tr>
<td><strong>MSA Distinguished Scientist Awardee Lectures</strong></td>
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<td><strong>Cryo-Preparation FIG Meeting</strong></td>
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<td><strong>MSA Standards Committee</strong></td>
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<td><strong>Electron Crystallography FIG</strong></td>
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<th><strong>P.M. Symposia &amp; Sessions</strong></th>
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<tr>
<td><strong>X92</strong> – Project MICRO</td>
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<tr>
<td><strong>A05</strong> – Fast and Ultrafast Imaging with Electrons and Photons</td>
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<tr>
<td><strong>A16</strong> – Advances in Electron and Ion Scanning Microscopies</td>
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<tr>
<td><strong>B02</strong> – To the Rhizosphere — And Beyond!</td>
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<tr>
<td><strong>B06</strong> – Deep Tissue Imaging and Light Sheet Microscopy</td>
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<td><strong>C13</strong> – Pharmaceuticals FIG Session</td>
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<td><strong>P01</strong> – Bringing the Real World into the Electron Microscope: Peter R. Swann Memorial Symposium on In Situ TEM and STEM</td>
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</table>
Tuesday Poster Presentations

Exhibit Hall

3:00 PM – 5:00 PM

X90 - Microscopy Outreach: Microscopy in the Classroom
A05 - Fast and Ultrafast Imaging with Electrons and Photons
A06 - Advanced Analytical TEM/STEM
A12 - Low Voltage Electron Microscopy
A13 - Advancing Data Collection and Analysis for Atom Probe Tomography
B02 - To the Rhizosphere — And Beyond!
B04 - Advances in Specimen Preparation and Correlative LM-EM (CLEM) of Biological Samples
B05 - 3D Structure of Macromolecular Assemblies, Cellular Organelles, and Whole Cells
B10 - Multiscale Biological Imaging: From Micro to Macro – Animal to Clinical Models
B11 - Specimen Prep for Biological Sciences
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P04 - Nano-characterization of Low Dimensional Materials: Carbon to 2D TMDs
P05 - Nuclear and Irradiated Materials: Fundamental Defect Properties
P08 - Microscopy and Characterization of Ceramics, Polymers and Composites

3:30 PM

FIG Business Meeting

A107

3:30 PM

MSA Education Committee Meeting

D130

5:00 PM

Student Poster Awards

Exhibit Hall Poster Stage

5:15 PM

ACEM FIG

D131

5:30 PM

Symposium Organizers - Appreciation Event

A108-109

5:45 PM

Vendor Tutorials (Sign up at MSA MegaBooth)

Exhibit Hall

6:30 PM

Presidents' Reception (Invitation Only)

Offsite

WEDNESDAY, AUGUST 5

7:15 AM

MSA Certification Board

D131

7:15 AM

MSA Membership Committee

D130

8:30 AM

M&M 2016 Conference Publications

A107

8:30 AM – 10:00 AM

A.M. Symposia & Sessions

D139

X31 - Technologists’ Forum: Safety in the Microscopy Laboratory
X42 - Biological Sciences Tutorial: Maximizing the Likelihood of Successful Maximum Likelihood Classification
A06 - Advanced Analytical TEM/STEM
A08 - Advances in Qualitative and Quantitative X-ray Microanalysis: From Detectors to Techniques
A10 - Advances in Electron Diffraction and Automated Mapping Techniques
A16 - Advances in Electron and Ion Scanning Microscopies
B04 - Advances in Specimen Preparation and Correlative LM-EM (CLEM) of Biological Samples
P01 - Bringing the Real World into the Electron Microscope: Peter R. Swann Memorial Symposium on In Situ TEM and STEM
P02 - Materials Problem Solving with Aberration-Corrected Electron Microscopy
P03 - Advances in Microanalysis of Earth and Planetary Materials
P04 - Nano-characterization of Low Dimensional Materials: Carbon to 2D TMDs
### Wednesday, August 5

#### A.M. Symposia & Sessions

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:30 AM - 10:00 AM</td>
<td>P06 – Failure Analysis, Applications of Microanalysis, Microscopy, Metallography, and Fractography</td>
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<tr>
<td></td>
<td>P07 – Metallography and Microstructural Characterization of Metals</td>
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<tr>
<td></td>
<td>P10 – Microscopy and Microanalysis for Real-World Problem Solving</td>
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<tr>
<td></td>
<td>P11 – Advances in Transmission Electron Microscopy and Spectroscopy of Energy-Related Materials</td>
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<tr>
<td>10:00 AM - 5:30 PM</td>
<td>Exhibit Hall Open</td>
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<tr>
<td>10:00 AM - 10:30 AM</td>
<td>Coffee Break</td>
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<tr>
<td>10:30 AM - 12:00 PM</td>
<td>A.M. Symposia &amp; Sessions (Cont’d.)</td>
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<tr>
<td></td>
<td>X30 – Technologists’ Forum: Emerging New Specialized Techniques for Correlative Microscopy</td>
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<td>X44 – Biological Sciences Tutorial: Optimizing Specimen Preparation for Macromolecular Electron Microscopy</td>
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<td>A05 – Fast and Ultrafast Imaging with Electrons and Photons</td>
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<td>A06 – Advanced Analytical TEM/STEM</td>
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<td>A08 – Advances in Qualitative and Quantitative X-ray Microanalysis: From Detectors to Techniques</td>
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<td>A09 – Advances in Combining Simulation and Experiment for Materials Design</td>
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<td>A10 – Advances in Electron Diffraction and Automated Mapping Techniques</td>
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<td>A14 – Surface Plasmons, Cathodoluminescence, and Low-Loss EELS</td>
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<td>A16 – Advances in Electron and Ion Scanning Microscopies</td>
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<td>B04 – Advances in Specimen Preparation and Correlative LM-EM (CLEM) of Biological Samples</td>
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<td>B05 – 3D Structure of Macromolecular Assemblies, Cellular Organelles, and Whole Cells</td>
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<td>P01 – Bringing the Real World into the Electron Microscope: Peter R. Swann Memorial Symposium on In Situ TEM and STEM</td>
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<td>P02 – Materials Problem Solving with Aberration-Corrected Electron Microscopy</td>
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<td>P03 – Advances in Microanalysis of Earth and Planetary Materials</td>
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<td>P04 – Nano-characterization of Low Dimensional Materials: Carbon to 2D TMDs</td>
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<td>P05 – Nuclear and Irradiated Materials: Fundamental Defect Properties</td>
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<td>P07 – Metallography and Microstructural Characterization of Metals</td>
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<td>P08 – Microscopy and Characterization of Ceramics, Polymers, and Composites</td>
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<td>P10 – Microscopy and Microanalysis for Real-World Problem Solving</td>
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<td>P11 – Advances in Transmission Electron Microscopy and Spectroscopy of Energy-Related Materials</td>
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#### Lunch Break

12:00 PM – 1:30 PM

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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>12:15 PM</td>
<td>MAS - ANSI Meeting</td>
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<td>12:15 PM</td>
<td>MSA Members Meeting</td>
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<td>12:15 PM</td>
<td>MAS Affiliated Regional Societies</td>
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<td>12:15 PM</td>
<td>Atom Probe FIG Meeting</td>
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#### In-Week Intensive Workshops

1:00 PM – 5:00 PM

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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>1:30 PM – 3:00 PM</td>
<td>X19 – Introduction to SEM Imaging and X-ray Compositional Analysis</td>
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<td>X20 – Specimen Preparation for Biological Microscopy</td>
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#### P.M. Sessions & Symposia

1:00 PM – 5:00 PM

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>1:30 PM – 3:00 PM</td>
<td>X30 – Technologists’ Forum: Emerging New Specialized Techniques for Correlative Microscopy</td>
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<td></td>
<td>X43 – Biological Sciences Tutorial: Advances in Light Sheet Microscopy</td>
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P.M. Sessions & Symposia

1:30 PM – 3:00 PM

<table>
<thead>
<tr>
<th>Session</th>
<th>Location</th>
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<tbody>
<tr>
<td>X91 – It’s a Family Affair</td>
<td>B110</td>
</tr>
<tr>
<td>A02 – TEM Phase Contrast Imaging</td>
<td>D135</td>
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<tr>
<td>A03 – Electron Holography for Nanofields in Solids</td>
<td>C120</td>
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<tr>
<td>A04 – Advances in FIB: New Instrumentation and Applications in Materials and Biological Sciences</td>
<td>B117</td>
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<tr>
<td>A05 – Fast and Ultrafast Imaging with Electrons and Photons</td>
<td>A105</td>
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<tr>
<td>A06 – Advanced Analytical TEM/STEM</td>
<td>A106</td>
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<tr>
<td>A07 – Scanning Probe Microscopy: New Methods and Applications</td>
<td>B118</td>
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<tr>
<td>A08 – Advances in Qualitative and Quantitative X-ray Microanalysis: From Detectors to Techniques</td>
<td>B115</td>
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<tr>
<td>A09 – Advances in Combining Simulation and Experiment for Materials Design</td>
<td>B119</td>
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<tr>
<td>A10 – Advances in Electron Diffraction and Automated Mapping Techniques</td>
<td>B112</td>
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<tr>
<td>A14 – Surface Plasmons, Cathodoluminescence, and Low-Loss EELS</td>
<td>D137</td>
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<tr>
<td>A17 – Standardization and Metrology in Electron Microscopy and Microbeam Analysis</td>
<td>B114</td>
</tr>
<tr>
<td>B02 – To the Rhizosphere — And Beyond!</td>
<td>B111</td>
</tr>
<tr>
<td>B04 – Advances in Specimen Preparation and Correlative LM-EM (CLEM) of Biological Samples</td>
<td>D138</td>
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<tr>
<td>P01 – Bringing the Real World into the Electron Microscope: Peter R. Swann Memorial Symposium on In Situ TEM and STEM</td>
<td>B116</td>
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<tr>
<td>P02 – Materials Problem Solving with Aberration-Corrected Electron Microscopy</td>
<td>C124</td>
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<tr>
<td>P03 – Advances in Microanalysis of Earth and Planetary Materials</td>
<td>C122</td>
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<tr>
<td>P08 – Microscopy and Characterization of CerAMics, Polymers, and Composites</td>
<td>D136</td>
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<tr>
<td>P11 – Advances in Transmission Electron Microscopy and Spectroscopy of Energy-Related Materials</td>
<td>B113</td>
</tr>
<tr>
<td>P12 – Advanced Microscopy and Microanalysis of Soft and Hybrid Nanomaterials</td>
<td>D140</td>
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3:15 PM

MSA-CUP Book Series Advisory Board Meeting | D130

3:00 PM – 5:00 PM

Wednesday Poster Presentations

<table>
<thead>
<tr>
<th>Session</th>
<th>Location</th>
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<tbody>
<tr>
<td>A02 – TEM Phase Contrast Imaging</td>
<td>Exhibit Hall</td>
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<tr>
<td>A05 – Fast and Ultrafast Imaging with Electrons and Photons</td>
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<tr>
<td>A17 – Standardization and Metrology in Electron Microscopy and Microbeam Analysis</td>
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<tr>
<td>B06 – Deep Tissue Imaging and Light Sheet Microscopy</td>
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<tr>
<td>P02 – Materials Problem Solving with Aberration-Corrected Electron Microscopy</td>
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<tr>
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<td>P12 – Advanced Microscopy and Microanalysis of Soft and Hybrid Nanomaterials</td>
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</tbody>
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5:00 PM

Student Poster Awards | Exhibit Hall

5:15 PM

MAS Business Meeting | C123

5:45 PM

Vendor Tutorials *(Sign up at MSA MegaBooth)* | Exhibit Hall

6:30 PM – See IMS Booth for Details

IMS Awards Banquet | Offsite

6:30 PM – See MAS Booth for Details

MAS Members Social | Offsite

http://microscopy.org/MandM/2015/
## THURSDAY, AUGUST 6

### 8:30 AM

**M&M Sustaining Members Meeting**  
**A108-109**

### 8:30 AM - 10:00 AM

<table>
<thead>
<tr>
<th>Event</th>
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<tbody>
<tr>
<td><strong>A.M. Symposia &amp; Sessions</strong></td>
<td></td>
</tr>
<tr>
<td><strong>X40</strong> - Physical Sciences Tutorial: Advances in Light Sheet Microscopy</td>
<td>C125</td>
</tr>
<tr>
<td><strong>A02</strong> - TEM Phase Contrast Imaging</td>
<td>D135</td>
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<tr>
<td><strong>A04</strong> - Advances in FIB: New Instrumentation and Applications in Materials and Biological Sciences</td>
<td>B117</td>
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<tr>
<td><strong>A05</strong> - Fast and Ultrafast Imaging with Electrons and Photons</td>
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<td><strong>A14</strong> - Surface Plasmons, Cathodoluminescence, and Low-Loss EELS</td>
<td>D137</td>
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<tr>
<td><strong>A15</strong> - Imaging Mass Spectrometry (MALDI)</td>
<td>B111</td>
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<tr>
<td><strong>P01</strong> - Bringing the Real World into the Electron Microscope: Peter R. Swann Memorial Symposium on In Situ TEM and STEM</td>
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### 10:00 AM - 2:00 PM

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<th>Event</th>
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<tbody>
<tr>
<td><strong>Exhibit Hall Open</strong></td>
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### 10:00 AM - 12:00 PM

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td><strong>Coffee Break + Poster Session</strong></td>
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</tr>
<tr>
<td><strong>Thursday Poster Sessions</strong></td>
<td></td>
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<tr>
<td><strong>A02</strong> - TEM Phase Contrast Imaging</td>
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<tr>
<td><strong>A03</strong> - Electron Holography for Nanofields in Solids</td>
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### 12:00 PM

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<tr>
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<tbody>
<tr>
<td><strong>Student Poster Awards</strong></td>
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### 12:00 PM - 1:30 PM

<table>
<thead>
<tr>
<th>Event</th>
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<tbody>
<tr>
<td><strong>Lunch Break</strong></td>
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### 1:00 PM - 5:00 PM

<table>
<thead>
<tr>
<th>Event</th>
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<tbody>
<tr>
<td><strong>In-Week Intensive Workshops</strong></td>
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<tr>
<td><strong>X19</strong> - Introduction to SEM Imaging and X-ray Compositional Analysis</td>
<td>A103</td>
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<tr>
<td><strong>X20</strong> - Specimen Preparation for Biological Microscopy</td>
<td>A104</td>
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<tr>
<td>Time</td>
<td>Session</td>
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<tr>
<td>1:30 PM - 3:30 PM</td>
<td><strong>P.M. Symposia</strong></td>
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<td>3:00 PM - 3:30 PM</td>
<td><strong>Coffee Break</strong></td>
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<tr>
<td>3:30 PM - 5:00 PM</td>
<td><strong>Late P.M. Symposia</strong></td>
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<tr>
<td>5:30 PM</td>
<td><strong>M&amp;M 2015 Wrap-Up &amp; Debrief</strong></td>
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</table>
The **MSA MEGABOOTH** showcases all that MSA membership has to offer. If you are currently a member, stop by to catch up on all the new society developments. Member information available at Regular, Sustaining (corporate), and Student levels.

Sign up for **VENDOR TUTORIALS** here! These popular sessions are presented on Monday, Tuesday, and Wednesday evenings after the exhibit hall has closed for the day. Don’t miss out – advance registration is required!

The **INTERNET CAFÉ** is open to all meeting attendees during all exhibit hall hours. **Bring Your Own Device!** Lots of places to sit and rest your feet for a few minutes while you check your email, put the finishing touches on your talk, or collaborate with colleagues.

The **TECHNOLOGISTS’ FORUM** (TF): Attention Technologists! Stop by to find out how you can grow and develop your skills, your professional career, and your network by joining the Forum!

The **PLACEMENT OFFICE** is MSA’s job-listing service. Post a job, peruse job listings, post a resume, and/or find that perfect candidate for your job opening. All for **FREE** during the meeting!

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**CERTIFICATION BOARD** – Find out about MSA’s certification program for Electron Microscopy Technologists and how being certified can help you in your next job search!

**MICROSCOPY TODAY** and **MICROSCOPY and MICROANALYSIS** are the society’s two publications – one a magazine format, the other a peer-reviewed scientific journal. Information for authors and advertisers is available here.

**EDUCATION OUTREACH** – Includes MSA’s educational outreach program. Browse the materials and find out how to start an outreach program in your local area. Get details on the special programming at the M&M meeting for educators and kids of all ages.

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