We are launching #4DFuture

Join our launch event at M&M 2022
QUESTIONS?

TECHNICAL MEETING CONTENT:
2022 Program Chair
Eric Stach, University of Pennsylvania
MM2022ProgramChair@microscopy.org

REGISTRATION:
Registrar
MMRegistration@conferencemanagers.com

EXHIBITS & EXHIBITORS:
Exhibits Manager
doreen@corcexpo.com

SPONSORS & SPONSORSHIPS:
Sponsorship Manager
mary@corcexpo.com

GENERAL:
Meeting Manager
meetingmanager@microscopy.org

ARE YOU A MEMBER?

Join Today and Save on M&M 2022 Registration Fees!

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

Visit http://the-mas.org to find out the benefits of MAS membership.

Visit https://msc-smc.org to find out the benefits of MSC – SMC membership.

TOP COVER IMAGE:
1st Prize, unpublished
Natural Diamond by Nathan Renfro, Gemological Institute of America, Escondido, California

Future Meeting Dates

July 23-27, 2023
MINNEAPOLIS, MN

July 28-August 1, 2024
CLEVELAND, OH

July 27-July 31, 2025
SALT LAKE CITY, UT

August 3-August 7, 2026
MILWAUKEE, WI

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Visit http://the-mas.org to find out the benefits of MAS membership.

Visit https://msc-smc.org to find out the benefits of MSC – SMC membership.

TOP COVER IMAGE:
1st Prize, unpublished
Natural Diamond by Nathan Renfro, Gemological Institute of America, Escondido, California
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Welcome

On behalf of the Microscopy Society of America (MSA) and the Microanalysis Society (MAS), we invite you to join us, in-person, July 31-August 4, 2022, for Microscopy & Microanalysis 2022 in Portland, Oregon. Known for its parks, bridges, and bicycle paths, as well as its microbreweries and coffeehouses, Portland has proven to be a prime location to host our annual meeting. This year, we welcome our colleagues from the Microscopical Society of Canada as conference partners for M&M 2022!

After two years of participating in virtual meetings, we look forward to being together again in the City of Roses. The Program Committee, led by Eric Stach, Ru-Ching Hsia, and Michelle Thompson has developed an exciting group of symposia, spanning advances in instrumentation and techniques development, as well as applications in the analytical, biological, and physical sciences. We encourage you to browse this Meeting Guide for a complete schedule at a glance to start planning your week. A late breaking poster session will be offered for poster presentations.

The main meeting will be preceded by the ever-popular Sunday Short Courses and three Pre-Meeting Congresses. Students and early-career professionals are especially encouraged to participate in the MSA Student Council’s 6th Annual Pre-Meeting Congress that highlights outstanding work by student and postdoctoral fellow attendees. Join us Sunday evening to officially kick off the meeting at the Opening Welcome Reception and reconnect with colleagues and meet new friends. On Monday morning, the Plenary Session kicks off the scientific program with an exciting set of lectures in Physical and Biological science and the presentations of the M&M meeting awards and awards from the sponsoring societies.

In addition to the strong scientific program, what sets the M&M meeting apart is the Exhibit Hall, the world’s largest annual microscopy exhibition, which showcases the latest instrumentation and accessories. Don’t miss the highly popular vendor tutorials, held Monday through Wednesday after hours in the Exhibit Hall. Other educational opportunities throughout the week include focused biological and physical science tutorials, educational outreach programs, and our Technologists’ Forum special and roundtable sessions.

As always, M&M 2022 will be the premier meeting to attend to stay abreast of the latest technologies, hear about new developments in applications across all areas of microscopy and microanalysis, and most importantly network with colleagues.

We look forward to being Together Again for M&M 2022!

Deb Kelly
Pennsylvania State University
President, Microscopy Society of America

Heather Lowers
U.S. Geological Survey
President, Microanalysis Society

Kathryn Grandfield
McMaster University
President, MSC - SMC
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**ultra Maxi**
Similar to our ultra 35° 4.0 mm but with a larger boat. Applications include soft industrial samples such as metals and polymers, hard and brittle samples such as semiconductors, superconducting oxides, nanocrystalline ceramics.

**histo Jumbo**
*Perfect for Immuno-histo-chemistry*
For 3D reconstruction it is imperative not to lose a single section (Ref. Blumer). The large Jumbo boat as well as the adhesive (Pattex compact by Henkel) applied to the side of the sample block increase the distinct advantages. They allow:
- Easy production of section ribbons (0.5-2 μm)
- No section loss
- No folding
- The same orientation of all sections
- Easy collection of section ribbons
- Multiple ribbons on one glass slide

**histo**
The knife is designed for the sectioning of hard and soft biological and industrial materials, non embedded or embedded in methacrylate or epoxy resins. The histo knife may be used on all ultramicrotomes and microtomes with a retraction of the specimen in the return phase.

Advantages compared to glass knives:
- Perfect sections, free of scores or compression.
- Serial sections without knife change.
- Thinner sections.

Eye of A. peroni: part of a sequence of semithin sections.

Rat muscle (Quadriceps) x 23'000 Werner Graber, Anatomisches Institut, Bern.

Nondecalcified rat bone., Scale: 35 mm = 100μm.
Daniel Studer, Anatomisches Institut, Bern.

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Online registration will remain open throughout the meeting. We encourage you to register in advance!

- For the most up-to-date registration information, visit [https://www.microscopy.org/MandM/2022/](https://www.microscopy.org/MandM/2022/)
- Registration can be done either online at: [https://www.microscopy.org/MandM/2022/registration/](https://www.microscopy.org/MandM/2022/registration/) or on-site at the meeting registration desk. We encourage you to register in advance and as early as possible.
- Member rates apply to all members (MSA, MAS, MSC - SMC). Membership will be verified.

**Onsite Registration Desk**

**Oregon Convention Center**

Pick up your badge and materials at the Registration desk according to the schedule below. The Sunday Welcome Reception starts at 6:30 PM in the Portland Ballroom (upper level of the Oregon Convention Center).

**Registration Hours:**
- **Friday, July 29**
  - 8:00 am – 1:00 pm
  - 1:00 pm – 6:00 pm
- **Saturday, July 30**
  - 8:00 am – 6:00 pm
- **Sunday, July 31**
  - 7:00 am – 7:30 pm
- **Monday, August 1**
  - 7:00 am – 6:00 pm
- **Tuesday, August 2**
  - 7:30 am – 5:00 pm
- **Wednesday, August 3**
  - 7:30 am – 5:00 pm
- **Thursday, August 4**
  - 7:30 am – 3:00 pm

*Exhibitors Only*

**Commercial Exhibition Hours:**
- **Monday, August 1**
  - 12:00 pm – 5:30 pm
- **Tuesday, August 2**
  - 10:00 am – 5:30 pm
- **Wednesday, August 3**
  - 10:00 am – 5:30 pm
- **Thursday, August 4**
  - 10:00 am – 2:00 pm

**Exhibitor Move-In:**
- **Thursday, July 28**
  - 8:00 am – 4:30 pm
- **Friday, July 29**
  - 8:00 am – 4:30 pm
- **Saturday, July 30**
  - 8:00 am – 4:30 pm
- **Sunday, July 31**
  - 8:00 am – 4:30 pm

*Targeted Island Booths Only*

**Exhibitor Move-Out:**
- **Thursday, August 4**
  - 2:00 pm – 7:00 pm
- **Friday, August 5**
  - 8:00 am – 5:00 pm
Safe Meeting Guidelines

As of April 8, 2022

MSA & MAS continue to monitor official Centers for Disease Control COVID-19 safety protocols working closely with our partners at the Oregon Convention Center, the city of Portland and Multnomah County, and the state of Oregon. Guidelines are changing constantly across the United States and we are working to create the safest environment possible for this event. Participant well-being is our first priority. Here’s what we’re doing to protect your health and peace of mind so you can focus on getting the most from this event.

- **Vaccine Verification:** All registered, in-person attendees must provide proof of full vaccination status. No exceptions. Any individual attending M&M 2022—including all attendees, exhibitors, staff and service partners—will be verified as fully vaccinated.

- **Masks Required:** Masks will be required within the event space, hotels and all special function venues in accordance with the City of Portland mask requirement.
  - **Speakers will be permitted to remove their masks when actively giving their presentations, if they wish.**
  - **Attendees will be permitted to remove their masks briefly while actively eating or drinking at official M&M 2022 functions.**

- **Proof of Vaccination:**
  - Proof of a CDC-issued vaccination card, WHO-approved vaccination card, or vaccination record from your physician is required. Your proof of vaccination must include the type of vaccination provided and the date that the last dose was administered. A digital photo of a CDC-issued vaccination card stored on a phone or electronic device, or a printed photo of a CDC-issued vaccination card are acceptable in addition to the original card or record.

- **Defining Fully Vaccinated:** A person is considered fully vaccinated 14-days after their final dose of a two-dose vaccine series, such as the Pfizer and Moderna vaccines or any World Health Organization approved vaccine.

No Vaccine Exemptions:
If an attendee, exhibitor, or M&M staff member does not meet the vaccine requirements outlined on this page, they are NOT considered fully vaccinated and will not be permitted to attend M&M 2022 in-person.

Patience, Please
As has been the case for the past two years, the situation is changing constantly, and guidelines are fluid. M&M reserves the right to change these guidelines at any time and to deny entry to this event to any participant not in compliance with these guidelines. Please be patient with event organizers, facility partners, and your fellow event participants, and please operate with kindness and understanding.

M&M will continue to evaluate what is best for event participants to ensure we meet safely and that every attendee and member of the staff and service communities are comfortable.

Access to Live Conference and Exhibition
M&M will adhere to venue meeting procedures and guidelines and will follow strict CDC guidance for meetings and events while allowing guests to come together safely.

M&M will require proof of full vaccination to enter this event. There are no exceptions. Any individual attending the M&M 2022 in-person events including: registered attendees, guests, exhibitors and M&M staff, OCC staff, and service partners must be fully vaccinated in order to gain access to this event.

Additional questions can be directed to meetingmanager@microscopy.org.
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Hotels & Reservations

The open reservations portal, as well as the most current listing of available hotels and rates, is available at: https://www.microscopy.org/MandM/2022/travel/hotel.cfm.

Book your room through the M&M 2022 Housing Bureau, and get an immediate reservation confirmation. A valid credit card is required to reserve a room.

Maps showing details about neighborhoods, downtown, and other areas of the city are available on the Travel Portland website and are downloadable from: https://www.travelportland.com/plan-your-trip/maps-of-portland/.

MSA, MAS and its joining societies contract with local hotels to ensure M&M attendees get the best rate possible. Please be aware that the organizing societies will have to pay significant penalties if these rooms are not utilized. Everyone makes a difference! Please support the meeting and your societies and book your room reservations through this reservations site.

Hyatt Regency Portland at the Oregon Convention Center
HQ Hotel
375 NE Holladay Street

Hilton Portland Downtown
921 SW Sixth Avenue

Double Tree by Hilton Hotel Portland
1000 NE Multnomah Street
Travel and City Information

Ground Transportation

RENTAL CAR / VAN /SHUTTLE:
https://flypdx.com/groundtransportation for detailed information on taxi service, limousine service, and scheduled shuttle service fees and schedules.

MAX LIGHT RAIL:
Portland features one of the best light-rail systems in the country. Travel Portland will provide complimentary MAX light rail passes to all M&M 2022 attendees. The passes will be valid during the entire duration of the conference on MAX light rail, buses, and the Portland Streetcar. Visit www.trimet.org for fares, schedules, and system maps.

MORE PORTLAND TRAVEL INFO:
For detailed attraction, tour, dining and travel information for visitors, please go to the Travel Portland website at www.travelportland.com.

Getting To & Around Portland

The Portland International Airport (PDX) is located only 12 miles (roughly 20 minutes by car) from downtown Portland. The airport features free Wi-Fi, guest services information and assistance center, and several restaurants, stores, and personal-services outlets.

Visit https://flypdx.com for detailed information about the airport.
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As of May 20, 2022

Visit www.microscopy.org/MandM/2022 for
M&M 2022 Week At-A-Glance
Exhibitor and Sponsor Listings
Pre-Meeting Congresses
Full Symposium Descriptions
Microscopy Outreach
Sunday Short Courses
Tutorials
Technologists’ Forum

... and more!
Essential Meeting & Venue Information

**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 MSA and MAS will be presented at the Plenary Session immediately following the first Plenary Talk (Monday morning). For detailed listings of all awards, criteria, and award winners, please visit http://microscopy.org/MandM/2022/.

**Cancellation and Refund Policy**
Refund requests received prior to July 8, 2022 will be honored less a $65 administrative fee. No refunds will be issued for cancellations (for any reason) received on or after July 8, 2022, and no refunds will be issued on-site in Portland. E-mail: MMRegistration@conferencemanagers.com or fax (703) 964-1246.

**Food for Purchase**
Inexpensive, portable breakfast and snack items are available for purchase in the convention center on the exhibit/registration level (7:30 AM-10:30 AM). Lunch concessions are available for purchase inside the exhibit hall during lunch hours (11:00 AM-2:00 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, and visitor information on Portland and surrounding areas.

**Internet & E-mail**
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, see page 20.

**Job & Resume Postings/Placement Office**
See MSA MegaBooth info on page 20.
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 2023 – Meeting & City Information**
Stop by for advance information on the 2023 M&M Meeting in Minneapolis, MN! The 2023 table is located in the main registration area, and has visitors guides, maps, and other important information.

**MSA MegaBooth**
See complete details on Page 20.
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
- Exhibitor Service Desk: ask@oregoncc.org
- ZOOM+Care NE Grand Super Clinic (Urgent Care): (503) 684-8252 (7 days: 7:00 AM - midnight); www.zoomcare.com
- Emergency Room (24 hours): Oregon Health & Science University (OHSU) – 503-494-7551

**Proceedings**
Conference proceedings are available online at the start of the conference. All full meeting registrations include access to the online proceedings. Printed and USB proceedings are no longer available.

**MAS Booth**
MAS has a membership and information booth located in the main registration foyer. Sign up for membership, get information on Society events at or after the M&M Meeting, and talk with MAS members and stakeholders to learn how to get involved!

**Smoking Policy**
M&M 2022 is a smoke-free meeting. If you wish to smoke, you will need to go outside (street level).

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

There will be no printed program at M&M 2022.
M&M 2022 Social Events

M&M 2022 Sunday Evening Welcome Reception
Oregon Convention Center
Portland | Ballroom (Upper Level)
Sunday, July 21, 2022 | 6:30 PM - 9:00 PM

One ticket is included with most registrations (see Registration Page for details). Additional tickets: $50 each for adults; $25 each for children 12 and under. PLEASE NOTE: Onsite availability of tickets is not guaranteed. Register for the meeting and buy 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 reunion—a chance to celebrate gathering for the first time since 2019. Enjoy a delicious Northwest inspired supper buffet and local brews; and catch up with friends and colleagues. After the reception, continue to catch up with old and new friends and head out to one of Portland’s numerous pubs, microbreweries, or wine bars to extend the fun!

MAS Business Meeting and Social Event
for MAS Members Only!
WEDNESDAY, AUGUST 3, 2022
5:30 PM - 8:30 PM

Stop by the MAS booth in the lobby to check your membership status and pick up your ticket to the MAS Business Meeting and Social Event, starting on Wednesday, August 3, at 5:30 PM. The social event will be held in an offsite venue, away from the convention center.

Student Poster Awards
(Immediately following daily Poster Presentations & Happy Hours!)

Poster presentations are an excellent format for all participants to engage in intensive discussion with other researchers in the field. 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.

Microscopy Today Innovation Awards
WEDNESDAY, AUGUST 3, 2022
4:00 PM
Poster Awards Stage, Exhibit Hall
Unless indicated otherwise, all official conference events are being held at the Oregon Convention Center, located on the east side (Convention Center District) of downtown Portland, Oregon.
M&M 2022 Plenary Session Speakers

Plenary Session

MONDAY, AUGUST 1, 2022 | 8:30 AM | OREGON BALLROOM – OREGON CONVENTION CENTER

James Rea - Instructor
Stony Brook University | Alan Alda Center for Communicating Science

Alda Science Communication Experience
Science is complex. It shouldn’t be exclusive.

For more than 20 years, James has rooted around in dense thickets of scientific and public policy content, searching for the stories that shine. He found this calling in 1996 at the US Environmental Protection Agency, where he translated vital scientific research into language the public would understand and remember. James further honed his skills as an independent reporter for National Public Radio, crafting stories most often for WAMU 88.5 FM in Washington, DC. As the 21st century dawned, James founded the production firm Site Stories to help technical organizations share their stories through web videos. By 2011, James had interviewed countless experts. He knew how to find the gold in their stories and wanted to help them do the same. He now follows this passion through his own firm Experts/Clearly, and as an instructor with the Alan Alda Center for Communicating Science.

The Alda Science Communication Experience is the Center’s signature professional development program. Scientists will explore strategies to engage their audiences in ways that build trust and inspire. Because all people understand the world through their individual experiences, this program will help researchers invite their audiences into their work. Through active listening and close attention to non-verbal communication, participants will learn to build connections between their research and other people's backgrounds and experiences.

Wendy Garrett, MD, PhD

Health Versus Disease: The Facts in the Case of the Microbiota

Wendy Garrett is the Irene Heinz Given Professor of Immunology and Infectious Diseases at the Harvard T. H. Chan School of Public Health and a Professor of Medicine at Dana-Farber Cancer Institute and Harvard Medical School. She is co-director and co-founder of the Harvard Chan Microbiome in Public Health Center. Dr. Garrett’s team explores interactions between the gut microbiome and the immune system, both in physiological and pathological conditions, with a focus on inflammatory bowel diseases and colorectal cancer. Her team has identified microbial species, functions, and metabolites influencing host health and disease by using an interdisciplinary approach bridging meta'omics, microbiology, cellular immunology, biochemistry, cell biology, and cancer biology. The mission of Dr. Garrett’s lab is to identify basic biologic mechanisms to be applied to precision medicine.
Major Society Award Winners

**BURTON MEDAL—BIOLOGICAL**
Yuan He, Northwestern University

**BURTON MEDAL—PHYSICAL**
Colin Ophus, Lawrence Berkeley National Laboratory

**ALBERT CREWE AWARD**
Jordan Adam Hachtel, Oak Ridge National Laboratory

**HILDEGARD H. CROWLEY AWARD FOR OUTSTANDING TECHNOLOGIST, BIOLOGICAL SCIENCES**
Janice Green Pennington, University of Wisconsin-Madison

**CHUCK FIORI AWARD FOR OUTSTANDING TECHNOLOGIST, PHYSICAL SCIENCES**
Hendrik Colijn, The Ohio State University

**MORTON D. MASER DISTINGUISHED SERVICE AWARD**
Edward Patrick Calomeni, The Ohio State University Medical Center

**GEORGE PALADE AWARD**
Melody G. Campbell, Fred Hutchinson Cancer Research Center

**DISTINGUISHED SCIENTIST - PHYSICAL SCIENCES**
Rudolf Tromp, IBM Yorktown Heights & University of Leiden

**DISTINGUISHED SCIENTIST - BIOLOGICAL SCIENCES**
Kenneth A. Taylor, Florida State University

Major Society Award Winners

**PRESIDENTIAL SCIENCE AWARD**
John Panitz, University of New Mexico

**PRESIDENTIAL SERVICE AWARD**
Kerry Siebein, National Institute of Standards and Technology

**PETER DUNCUMB AWARD FOR EXCELLENCE IN MICROANALYSIS**
Colin MacRae, CSIRO Mineral Resources

**KURT F.J. HEINRICH AWARD**
Jordan Hachtel, Oak Ridge National Laboratory

**BEST PAPER AWARDS M&M 2021**

**BIRKS AWARD—BEST CONTRIBUTED**
Sponsored by JEOL
Aaron Torpy, CSIRO Mineral Resources

**COSSELT AWARD—BEST INVITED**
Sponsored by MAS
Timmons Erickson, Jacobs Technology

**CASTAING AWARD—BEST STUDENT**
Sponsored by Cameca
Dara Laczniak, Purdue University

**MACRES AWARD—BEST INSTRUMENTATION/SOFTWARE**
Sponsored by Oxford Instruments
Aleksander Mosberg, SuperSTEM Daresbury
Open during all exhibit hall hours

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 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!

The Microscopy Society of America offers several programs to help its LOCAL AFFILIATED SOCIETIES hold successful meetings through the Tour Speaker and Meeting Funding programs. For more information on programs and participating societies:

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.

EDUCATIONAL OUTREACH – Browse 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.

Visit the Project MICRO display to learn about this organization’s education and outreach goals.

Join other MSA members to promote specific disciplines relevant to microscopy and microanalysis by becoming a member of a Focused Interest Group (FIG).

Meet with MSA Student Council officers and learn about the growing community of students, postdocs, and early-career professionals in microscopy and microanalysis. Build your professional network, share experiences, discuss research, and find out how to get more involved with the most dynamic group of young professionals that microscopy and microanalysis has to offer.

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Visit us at M&M Booth #1544 to learn more about our micro-CT solutions!
M&M 2022 Meeting Schedule

All events to be held at the Oregon Convention Center unless otherwise noted.

Friday, July 29, 2022
8:30 AM  MSA Council

Saturday, July 30, 2022
8:30 AM  MSA Council

Sunday, July 31, 2022
12:00 PM  MSC-SMC Council Meeting
3:00 PM  Microscopy Today Editors
6:30 PM  Opening Reception

Monday, August 1, 2022
7:15 AM  MSA Awards Committee
7:15 AM  Technologists’ Forum Board
7:15 AM  M&M Meeting Award Committee
12:15 PM  MAS Meal with a Mentor
12:15 PM  FIG: Pharmaceuticals
12:15 PM  FIG: Diagnostic & Biomedical Microscopy
12:15 PM  FIG: Focused Ion Beam
12:15 PM  FIG: Atom Probe Field Ion Microscopy
12:15 PM  FOM FIG Roundtable
12:15 PM  International Committee
3:30 PM  Technologists’ Forum Business Meeting
3:30 PM  3D EM in the Biological Sciences FIG
5:30–7 PM  MSA Student Council Meeting and Student Mixer
5:45–6:45 PM  Vendor Tutorials *(Sign Up at MSA MegaBooth)*

Tuesday, August 2, 2022
7:15 AM  MSA Local Affiliated Societies & MAS Affiliated Regional Societies
7:15 AM  Microscopy Today – Editorial Board Breakfast
10:00 AM  M&M 2023 – Program Planning Meeting for Symposia Organizers
12:15 PM  Microscopy Today Editorial Board Meeting
12:15 PM  MSA Distinguished Scientist Awardee Lectures
12:15 PM  FIG: Cryo-Preparation
12:15 PM  FIG: Electron Microscopy in Liquids and Gases
12:15 PM  FIG: Electron Crystallography
12:15 PM  FIG: MicroAnalytical Standards
3:30 PM  FIG Business Meeting
3:30 PM  MSA Education Committee
5:30 PM  MSA Student Council
5:30 PM  Post-Doctoral Researchers’ Reception
5:45–6:45 PM  Vendor Tutorials *(Sign Up at MSA MegaBooth)*
6:30–8:30 PM  Presidents’ Reception *(Offsite, Invitation Only)*

Wednesday, August 3, 2022
7:15 AM  MaM Editorial Board
7:15 AM  MSA Certification Board
7:15 AM  MSA Membership Committee
12:15 PM  MAS - ANSI Meeting – not confirmed
12:15 PM  MSA Members’ Meeting
5:15 PM  MSA Members’ Social *(See MAS Booth for Details)*
5:15 PM  Diversity and Inclusion Meet-up
5:45–6:45 PM  Vendor Tutorials *(Sign Up at MSA MegaBooth)*
6:30 PM  MSA Members’ Social *(See MAS Booth for Details)*

Thursday, August 4, 2022
8:30 AM  M&M Sustaining Members Meeting
12:15 PM  MSA Standards Committee Meeting
12:15 PM  MSC-SMC Business Meeting
### Friday, July 29

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>8:30 AM</td>
<td>MSA Council</td>
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### Saturday, July 30

<table>
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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>8:30 AM</td>
<td>MSA Council</td>
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<tr>
<td>8:30 AM – 5:00 PM</td>
<td>Pre-Meeting Congress</td>
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<tr>
<td></td>
<td>X60 - Pre-Meeting Congress for Early Career Professionals in Microscopy &amp; Microanalysis</td>
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### Sunday, July 31

<table>
<thead>
<tr>
<th>Time</th>
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<tbody>
<tr>
<td>8:30 AM – 5:00 PM</td>
<td>Sunday Short Courses</td>
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<tr>
<td></td>
<td>X10 High Resolution Structure Determination by Cryo-EM</td>
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<tr>
<td></td>
<td>X11 Explaining the New World Order of Biological Fluorescence Microscopy</td>
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<td></td>
<td>X12 Guidelines for Performing 4-D STEM Characterization from the Atomic to &gt;Micrometer Scales: Experimental Considerations, Data Analysis and Simulation</td>
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<td></td>
<td>X13 SerialEM for EM Data Acquisition</td>
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<td></td>
<td>X14 In situ and Operando Approaches to TEM</td>
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<td></td>
<td>X15 Cryo-STEM and EELS for Material Sciences</td>
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<tr>
<td></td>
<td>X16 Data Analysis in Materials Science</td>
</tr>
<tr>
<td></td>
<td>X17 Biological EM Sample Processing</td>
</tr>
<tr>
<td>8:30 AM – 5:00 PM</td>
<td>Pre-Meeting Congress</td>
</tr>
<tr>
<td></td>
<td>X61 Pharmaceutical, Biopharmaceutical, and Medical Health Products</td>
</tr>
<tr>
<td></td>
<td>X62 Real-World Data Analytics and Quantitative Liquid and Gas Environmental Electron Microscopy</td>
</tr>
<tr>
<td>12:00 PM</td>
<td>MSC-SMC Council Meeting</td>
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<tr>
<td>3:00 PM</td>
<td>Microscopy Today Editors</td>
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<tr>
<td>6:30 PM</td>
<td>Opening Reception</td>
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### Monday, August 1

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>7:15 AM</td>
<td>MSA Awards Committee</td>
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<tr>
<td>7:15 AM</td>
<td>Technologists’ Forum Board</td>
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<tr>
<td>7:15 AM</td>
<td>M&amp;M Meeting Award Committee</td>
</tr>
<tr>
<td>8:30 AM – 12:00 PM</td>
<td>M&amp;M 2022 Plenary Sessions</td>
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<tr>
<td></td>
<td>Opening Welcome</td>
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<tr>
<td></td>
<td>Plenary Talk #1:</td>
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<tr>
<td></td>
<td>Stony Brook University</td>
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<td>Alda Science Communication Experience</td>
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<td>MAS Awards Presentation</td>
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<td>MSC-SMC Awards Presentation</td>
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<td>Coffee Break</td>
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<td>MSA Awards Presentation</td>
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<td>M&amp;M Meeting Awards Presentation</td>
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### Monday, August 1 (Cont’d.)

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<tr>
<th>Time</th>
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<tr>
<td>8:30 AM – 12:00 PM</td>
<td><strong>M&amp;M 2022 Plenary Sessions cont.</strong></td>
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<tr>
<td></td>
<td><strong>Plenary Talk #2:</strong></td>
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<tr>
<td></td>
<td>Wendy Garrett, MD PhD</td>
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<td></td>
<td>Harvard School of Public Health, Boston, MA</td>
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<tr>
<td></td>
<td><em>Health Versus Disease: The Facts in the Case of the Microbiota</em></td>
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<tr>
<td>12:00 PM – 1:30 PM</td>
<td><strong>Lunch Break in the Exhibit Hall</strong></td>
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<tr>
<td>12:00 PM – 5:30 PM</td>
<td><strong>Exhibit Hall Open</strong></td>
</tr>
<tr>
<td>12:15 PM</td>
<td><strong>MAS Meal with a Mentor</strong></td>
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<tr>
<td>12:15 PM</td>
<td><strong>FIG: Pharmaceuticals</strong></td>
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<td>12:15 PM</td>
<td><strong>FIG: Diagnostic &amp; Biomedical Microscopy</strong></td>
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<tr>
<td>12:15 PM</td>
<td><strong>FIG: Focused Ion Beam</strong></td>
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<td>12:15 PM</td>
<td><strong>FIG: Atom Probe Field Ion Microscopy</strong></td>
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<tr>
<td>12:15 PM</td>
<td><strong>FOM FIG Roundtable</strong></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><strong>A01.1</strong> Advances in Focused Ion Beam Instrumentation, Applications and Techniques in Materials and Life Sciences</td>
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<tr>
<td></td>
<td><strong>A03.1</strong> Advanced 3D Imaging and Analysis Methods for New Opportunities in Material Science</td>
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<td></td>
<td><strong>A05.1</strong> Quantitative and Qualitative Mapping of Materials</td>
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<tr>
<td></td>
<td><strong>B02.1</strong> 3D Structures: From Macromolecular Assemblies to Whole Cells (3DEM FIG)</td>
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<tr>
<td></td>
<td><strong>B07.1</strong> 3D Volume Electron Microscopy in Biology Research</td>
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<tr>
<td></td>
<td><strong>C03.1</strong> Facilities Management Crucial Skills and Strategies</td>
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<tr>
<td></td>
<td><strong>C04.1</strong> Artificial Intelligence, Instrument Automation, and High-Dimensional Data Analytics for Microscopy and Microanalysis</td>
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<td></td>
<td><strong>P01.1</strong> Emerging Methods for Characterizing Hydrogen Effects in Metals and Alloys</td>
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<td><strong>P02.1</strong> Quantum Materials Under Electron Beam: From Atomic Structures to Working Devices</td>
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<td><strong>P05.1</strong> In situ TEM Characterization of Dynamic Processes During Materials Synthesis and Processing</td>
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<td><strong>P07.1</strong> Correlative Microscopy and High-Throughput Characterization for Accelerated Development of Materials in Extreme Environments</td>
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<td><strong>P08.1</strong> Electron Microscopy of Beam Sensitive Samples: The Trials and Tribulations of Electron-Beam Sample Interactions</td>
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<td><strong>P10.1</strong> Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens</td>
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<td></td>
<td><strong>P12.1</strong> Memorial Symposium: John C. H. Spence</td>
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<tr>
<td>3:00 PM – 5:00 PM</td>
<td><strong>Monday Poster Presentations</strong></td>
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<tr>
<td></td>
<td><strong>A01.P1</strong> Advances in Focused Ion Beam Instrumentation, Applications and Techniques in Materials and Life Sciences</td>
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<tr>
<td></td>
<td><strong>A02.P1</strong> Beyond Visualization with in situ and operando TEM</td>
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<td></td>
<td><strong>A03.P1</strong> Advanced 3D Imaging and Analysis Methods for New Opportunities in Material Science</td>
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<td></td>
<td><strong>A05.P1</strong> Quantitative and Qualitative Mapping of Materials</td>
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### Monday, August 1 (Cont’d.)

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<thead>
<tr>
<th>Event Time</th>
<th>Event Description</th>
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</table>
| 3:00 PM – 5:00 PM | **Monday Poster Presentations cont.**  <br>**B02.P1** 3D Structures: From Macromolecular Assemblies to Whole Cells (3DEM FIG)  
**C03.P1** Facilities Management Crucial Skills and Strategies  
**C04.P1** Artificial Intelligence, Instrument Automation, and High-Dimensional Data Analytics for Microscopy and Microanalysis  
**P08.P1** Electron Microscopy of Beam Sensitive Samples: The Trials and Tribulations of Electron-Beam Sample Interactions  
**P10.P1** Advanced Imaging and Spectroscopy for Nanoscale Materials  
**P12.P1** Memorial Symposium: John C.H. Spence |
| 3:30 PM      | Technologists’ Forum Business Meeting                  |
| 3:30 PM      | 3D EM in the Biological Sciences FIG                    |
| 5:00 PM      | Student Poster Awards                                   |
| 5:30 PM      | MSA Student Council Meeting and Student Mixer           |
| 5:45 PM      | Vendor Tutorials (Sign Up at MSA MegaBooth)             |

### Tuesday, August 2

<table>
<thead>
<tr>
<th>Event Time</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>7:15 AM</td>
<td>MSA Local Affiliated Societies &amp; MAS Affiliated Regional Societies</td>
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<tr>
<td>7:15 AM</td>
<td><strong>Microscopy Today - Editorial Board Breakfast</strong></td>
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</table>
| 8:30 AM – 10:00 AM | **A.M. Symposia & Sessions**  
**A01.2** Advances in Focused Ion Beam Instrumentation, Applications and Techniques in Materials and Life Sciences  
**A02.1** Beyond Visualization with in situ and operando TEM  
**A03.2** Advanced 3D Imaging and Analysis Methods for New Opportunities in Material Science  
**A05.2** Quantitative and Qualitative Mapping of Materials  
**B02.2** 3D Structures: From Macromolecular Assemblies to Whole Cells (3DEM FIG)  
**B07.2** 3D Volume Electron Microscopy in Biology Research  
**C04.2** Artificial Intelligence, Instrument Automation, and High-Dimensional Data Analytics for Microscopy and Microanalysis  
**P01.2** Emerging Methods for Characterizing Hydrogen Effects in Metals and Alloys  
**P02.2** Quantum Materials Under Electron Beam: From Atomic Structures to Working Devices  
**P05.2** In situ TEM Characterization of Dynamic Processes During Materials Synthesis and Processing  
**P07.2** Correlative Microscopy and High-Throughput Characterization for Accelerated Development of Materials in Extreme Environments  
**P08.2** Electron Microscopy of Beam Sensitive Samples: The Trials and Tribulations of Electron-Beam Sample Interactions  
**P09.2** Insights into Phase Transitions in Functional Materials by in situ/operando TEM: Experiment Meets Theory  
**P10.2** Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens  
**P12.2** Memorial Symposium: John C.H. Spence  
**X94** STEM Roundtable: Building Skills for the Future |
| 10:00 AM – 10:30 AM | **Coffee Break in the Exhibit Hall**                      |
| 10:00 AM – 5:30 PM | **Exhibit Hall Open**                                        |
| 10:00 AM | **M&M 2023 Program Planning Meeting**                      |
## Tuesday, August 2 (Cont’d.)

<table>
<thead>
<tr>
<th>Time</th>
<th>A.M. Symposia &amp; Sessions</th>
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<tr>
<td>10:30 AM – 12:00 PM</td>
<td><strong>A.M. Symposia &amp; Sessions</strong></td>
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<tr>
<td></td>
<td><strong>A01.3</strong> Advances in Focused Ion Beam Instrumentation, Applications and Techniques in Materials and Life Sciences</td>
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<td><strong>A02.2</strong> Beyond Visualization with in situ and operando TEM</td>
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<td><strong>A03.3</strong> Advanced 3D Imaging and Analysis Methods for New Opportunities in Material Science</td>
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<td><strong>A05.3</strong> Quantitative and Qualitative Mapping of Materials</td>
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<td><strong>A06.1</strong> Expanding the Limits of Atom Probe Tomography</td>
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<td><strong>B01.1</strong> Microcrystal Electron Diffraction (MicroED)</td>
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<td><strong>B02.3</strong> 3D Structures: From Macromolecular Assemblies to Whole Cells (3DEM FIG)</td>
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<td></td>
<td><strong>B07.3</strong> 3D Volume Electron Microscopy in Biology Research</td>
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<tr>
<td></td>
<td><strong>B09.1</strong> Memorial Symposium: Shinya Inoue</td>
</tr>
<tr>
<td></td>
<td><strong>C04.3</strong> Artificial Intelligence, Instrument Automation, and High-Dimensional Data Analytics for Microscopy and Microanalysis</td>
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<td><strong>P01.3</strong> Emerging Methods for Characterizing Hydrogen Effects in Metals and Alloys</td>
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<td><strong>P02.3</strong> Quantum Materials Under Electron Beam: From Atomic Structures to Working Devices</td>
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<td><strong>P05.3</strong> In situ TEM Characterization of Dynamic Processes During Materials Synthesis and Processing</td>
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<td><strong>P08.3</strong> Electron Microscopy of Beam Sensitive Samples: The Trials and Tribulations of Electron-Beam Sample Interactions</td>
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<td><strong>P12.3</strong> Memorial Symposium: John C.H. Spence</td>
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<th>Time</th>
<th>A.M. Symposia &amp; Sessions (Cont’d.)</th>
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<tr>
<td>11:00 AM – 12:00 PM</td>
<td><strong>A.M. Symposia &amp; Sessions (Cont’d.)</strong></td>
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<tr>
<td></td>
<td><strong>X41</strong> Applying CryoAPEX in the Cell Biology of RNA Viruses; A Question-Based Evolution of the Methodology</td>
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<thead>
<tr>
<th>Time</th>
<th>Lunch Break in the Exhibit Hall</th>
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<tr>
<td>12:00 PM – 1:30 PM</td>
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<th>Time</th>
<th>Microscopy Today Editorial Board Meeting</th>
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<tr>
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<tr>
<th>Time</th>
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<tr>
<th>Time</th>
<th>MSA Distinguished Scientist Awardee Lectures</th>
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<tr>
<td>12:15 PM</td>
<td><strong>MSA Distinguished Scientist Awardee Lectures</strong></td>
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<tr>
<th>Time</th>
<th>FIG: Cryo-Preparation</th>
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<tr>
<td>12:15 PM</td>
<td><strong>FIG: Cryo-Preparation</strong></td>
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<tr>
<th>Time</th>
<th>FIG: Electron Microscopy in Liquids and Gases</th>
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<td>12:15 PM</td>
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<tr>
<th>Time</th>
<th>FIG: Electron Crystallography</th>
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<tr>
<th>Time</th>
<th>FIG: MicroAnalytical Standards</th>
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<tr>
<th>Time</th>
<th>P.M. Symposia &amp; Sessions</th>
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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><strong>A01.4</strong> Advances in Focused Ion Beam Instrumentation, Applications and Techniques in Materials and Life Sciences</td>
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<td><strong>A02.3</strong> Beyond Visualization with in situ and operando TEM</td>
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<td><strong>A03.4</strong> Advanced 3D Imaging and Analysis Methods for New Opportunities in Material Science</td>
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<td></td>
<td><strong>A04.1</strong> Developments of 4D-STEM Imaging - Enabling New Materials Applications</td>
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<td><strong>A05.4</strong> Quantitative and Qualitative Mapping of Materials</td>
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<td><strong>A06.2</strong> Expanding the Limits of Atom Probe Tomography</td>
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<td><strong>B01.2</strong> Microcrystal Electron Diffraction (MicroED)</td>
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<td><strong>B03.1</strong> Technical Advances in Cryo-EM</td>
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<tr>
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<td><strong>B07.4</strong> 3D Volume Electron Microscopy in Biology Research</td>
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</table>
Tuesday, August 2  (Cont’d.)

2:00 PM – 3:15 PM  P.M. Symposia & Sessions (Cont’d.)
- B09.2 Memorial Symposium: Shinya Inoue
- C04.4 Artificial Intelligence, Instrument Automation, and High-Dimensional Data Analytics for Microscopy and Microanalysis
- P01.4 Emerging Methods for Characterizing Hydrogen Effects in Metals and Alloys
- P02.4 Quantum Materials Under Electron Beam: From Atomic Structures to Working Devices
- P05.4 in situ TEM Characterization of Dynamic Processes During Materials Synthesis and Processing
- P07.4 Correlative Microscopy and High-Throughput Characterization for Accelerated Development of Materials in Extreme Environments
- P08.4 Electron Microscopy of Beam Sensitive Samples: The Trials and Tribulations of Electron-Beam Sample Interactions
- P09.4 Insights into Phase Transitions in Functional Materials by in situ/operando TEM: Experiment Meets Theory
- P10.4 Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens

2:00 PM – 3:00 PM  P.M. Symposia & Sessions (Cont’d.)
- X42 Indirect Correlative Light and Electron Microscopy (iCLEM)

3:00 PM – 5:00 PM

Tuesday Poster Presentations
- A01.P2 Advances in Focused Ion Beam Instrumentation, Applications and Techniques in Materials and Life Sciences
- A02.P2 Beyond Visualization with in situ and operando TEM
- A03.P2 Advanced 3D Imaging and Analysis Methods for New Opportunities in Material Science
- A04.P1 Developments of 4D-STEM Imaging - Enabling New Materials Applications
- A05.P2 Quantitative and Qualitative Mapping of Materials
- A06.P1 Expanding the Limits of Atom Probe Tomography
- B02.P2 3D Structures: From Macromolecular Assemblies to Whole Cells (3DEM FIG)
- B07.P1 3D Volume Electron Microscopy in Biology Research
- C04.P2 Artificial Intelligence, Instrument Automation, and High-Dimensional Data Analytics for Microscopy and Microanalysis
- P01.P1 Emerging Methods for Characterizing Hydrogen Effects in Metals and Alloys
- P02.P1 Quantum Materials Under Electron Beam: From Atomic Structures to Working Devices
- P05.P1 in situ TEM Characterization of Dynamic Processes During Materials Synthesis and Processing
- P07.P1 Correlative Microscopy and High-Throughput Characterization for Accelerated Development of Materials in Extreme Environments
- P08.P2 Electron Microscopy of Beam Sensitive Samples: The Trials and Tribulations of Electron-beam Sample Interactions
- P09.P1 Insights into Phase Transitions in Functional Materials by in situ/operando TEM: Experiment Meets Theory

3:30 PM  FIG Business Meeting

3:30 PM  MSA Education Committee

5:00 PM  Student Poster Awards

5:30 PM  Post-Doctoral Researchers’ Reception

5:45 PM  Vendor Tutorials  (Sign Up at MSA MegaBooth)

6:30 PM  Presidents’ Reception  (Invitation Only)
## Wednesday, August 3

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<th>Time</th>
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<td>A05.5 Quantitative and Qualitative Mapping of Materials</td>
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<td>A06.3 Expanding the Limits of Atom Probe Tomography</td>
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<td>A09.1 Ultrashort Pulse Lasers: Microscopy, Simulations, and Material Interactions</td>
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<td>P10.5 Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens</td>
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<td>9:00 AM – 10:00 AM</td>
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<tr>
<td>10:00 AM – 10:30 AM</td>
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<tr>
<td>10:00 AM – 5:30 PM</td>
<td>Exhibit Hall Open</td>
</tr>
<tr>
<td>10:30 AM – 12:00 PM</td>
<td><strong>A.M. Symposia &amp; Sessions (Cont’d.)</strong></td>
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<tr>
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[www.microscopy.org/MandM/2022](http://www.microscopy.org/MandM/2022) for up-to-date meeting information
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<tr>
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<td></td>
<td><strong>P07.6</strong> Correlative Microscopy and High-Throughput Characterization for Accelerated Development of Materials in Extreme Environments</td>
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<td><strong>P10.6</strong> Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens</td>
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<td>11:00 AM – 12:00 PM</td>
<td>A.M. Symposia &amp; Sessions (Cont’d.)</td>
</tr>
<tr>
<td></td>
<td><strong>X44</strong> Precession Electron Diffraction: A Little Bit of History, Basics, and Recent Developments in Projected Crystal Symmetry Quantifications</td>
</tr>
<tr>
<td>12:00 PM – 1:30 PM</td>
<td>Lunch Break in the Exhibit Hall</td>
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<tr>
<td>12:15 PM</td>
<td>MAS - ANSI Meeting – not confirmed</td>
</tr>
<tr>
<td>12:15 PM</td>
<td>MSA Members’ Meeting</td>
</tr>
<tr>
<td>1:30 PM – 3:00 PM</td>
<td>P.M. Symposia &amp; Sessions</td>
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<tr>
<td></td>
<td><strong>A02.6</strong> Beyond Visualization with in situ and operando TEM</td>
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<td></td>
<td><strong>A04.4</strong> Developments of 4D-STEM Imaging - Enabling New Materials Applications</td>
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<td><strong>P11.1</strong> Planetary-Materials Characterization in the Era of Mission Returned Sample Analysis</td>
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<td>3:00 PM – 5:00 PM</td>
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<td><strong>A04.P2</strong> Developments of 4D-STEM Imaging - Enabling New Materials Applications</td>
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<td></td>
<td><strong>P10.P1</strong> Advanced Imaging and Spectroscopy for Nanoscale Materials</td>
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<td>5:00 PM</td>
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<td>MAS Business Meeting</td>
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<td>5:30 PM</td>
<td>Diversity and Inclusion Meet-up</td>
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<tr>
<td>5:45 PM</td>
<td>Vendor Tutorials (Sign Up at MSA MegaBooth)</td>
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<tr>
<td>6:30 PM</td>
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# Thursday, August 4

## M&M Sustaining Members Meeting

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<td>Science of Metrology with Electrons</td>
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<tr>
<td>A08.1</td>
<td>From <em>operando</em> Microcell Experiments to Bulk Devices</td>
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<td>A10.4</td>
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<tr>
<td>B03.5</td>
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<td>Correlative and Multimodal Microscopy and Analysis</td>
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<td>B06.1</td>
<td>Imaging, Microscopy, and Micro/Nano-Analysis of Pharmaceutical, Biopharmaceutical, and Medical Health Products—Research, Development, Analysis, Regulation, and Commercialization</td>
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<td>P03.2</td>
<td>Imaging Chemical Reactions Using High Speed Electron Microscopy (EM)</td>
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<td>P06.2</td>
<td>Nanoscale Optics with Electrons and Photons</td>
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<tr>
<td>X30</td>
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<td>X91</td>
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### Coffee Break and Poster Session in the Exhibit Hall

### Exhibit Hall Open

### Thursday Poster Presentations

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<td>B02.P1</td>
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<td>B05.P1</td>
<td>Microbes in Focus</td>
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<td>B08.P1</td>
<td>Biological Soft X-Ray Tomography</td>
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<td>P03.P2</td>
<td>Energy and Soft Materials and the Development of Cryogenic Techniques for Studying Them</td>
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<td>P05.P1</td>
<td>Advances in Microscopy for Quantum Information Sciences</td>
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<td>P10.P1</td>
<td>Call of the Wild: Advances in Microanalysis and Microscopy of Geological and Extraterrestrial Materials</td>
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<tr>
<td>P12.P1</td>
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### Student Poster Awards

### Lunch Break in the Exhibit Hall

### MSA Standards Committee

### MSC-SMC Business Meeting

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<td>From <em>operando</em> Microcell Experiments to Bulk Devices</td>
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<td><strong>X31</strong> Technologists’ Forum Symposia: 3D SEM Techniques</td>
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<td>3:00 PM – 3:30 PM</td>
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<td>3:30 PM – 5:30 PM</td>
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<td></td>
<td><strong>X32</strong> Technologists’ Forum Workshop—Tissue Clearing Tips and Techniques</td>
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Changes with temperature in phonon band structure in h-BN

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- Barnett Technical Services/Attolight 1543
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### New and Used Equipment
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- Denton Vacuum, LLC 1664
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### Other
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- National Cryo-EM Facility at NCI-Frederick 1042
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- Refeyn 1039

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