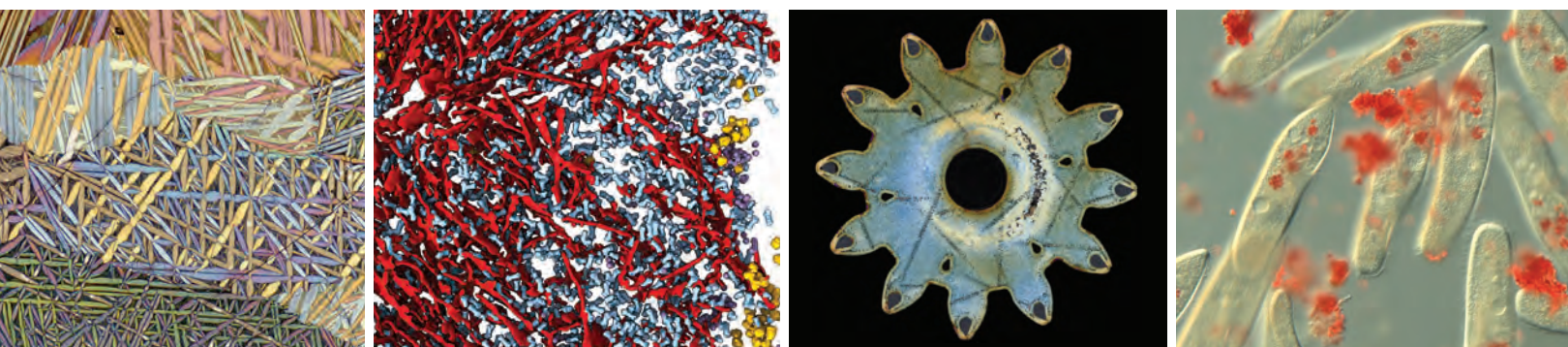


M&M 2020



MICROSCOPY & MICROANALYSIS VIRTUAL MEETING



Meeting Guide & Exhibitor Directory

Electron energy loss spectroscopy with a hybrid-pixel direct detector

Combining a DECTRIS ELA
with a NION IRIS spectrometer



Join our webinar on characterization of a hybrid-pixel direct detector and learn more about its integration into a spectrometer.

Tuesday, August 4, 2020
5 p.m. (CEST) | 11 a.m. (EST)
with Tracy C. Lovejoy, COO NION

REGISTER NOW

www.dectris.com/em-webinar

M&M 2020 MICROSCOPY & MICROANALYSIS VIRTUAL MEETING

QUESTIONS?

TECHNICAL MEETING CONTENT:

2020 Program Chair

Huolin Xin, University of California-Irvine
MM2020ProgramChair@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 2020 Registration Fees!



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

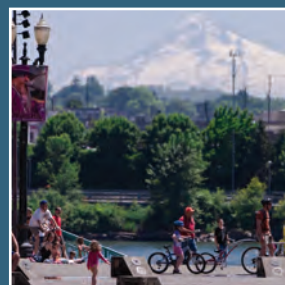


Visit <http://the-mas.org> to find out the benefits of MAS membership.

Future Meeting Dates



July 31-August 4, 2022
PORTLAND, OR



July 23-27, 2023
MINNEAPOLIS, MN



July 28-August 1, 2024
CLEVELAND, OH



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



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 Ultra Jumbo 35° • Ultra Sonic 35°
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 Ultra-Wet 45° • Ultra Jumbo 45°
 Cryo 25° • Cryo Immuno 35°
 Cryo-Dry 35° • Cryo-Wet 35°
 Cryo-Dry 45° • Cryo-Wet 45° Cryo-AFM
 Histo 45° • Histo Jumbo 45°
 Histo-Cryo Dry 45° • Histo-Cryo Wet 45°
 Trimtool 20 • Trimtool 45 • Static Line II



for more information, please
 visit our website at...

www.emsdiasum.com

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Tel: (215) 412-8390 • **Fax:** (215) 412-8450
email: info@emsdiasum.com
 or stacie@ems-secure.com

Need a bigger boat?...

DiATOME is still innovating. We are
 pleased to announce these latest
 additions to our line...

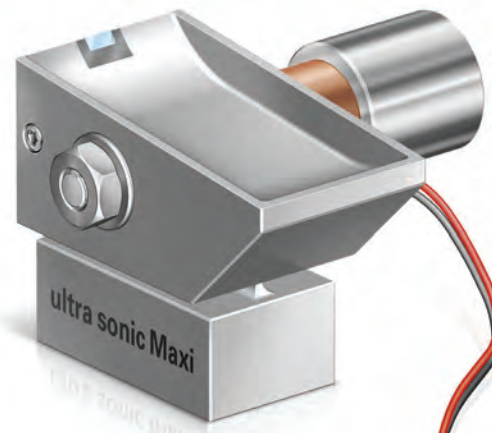
NEW ultra Maxi

The ultra Maxi is similar to our ultra 35°
 4.0 mm but with a larger boat.
 Thickness range: 30-200nm

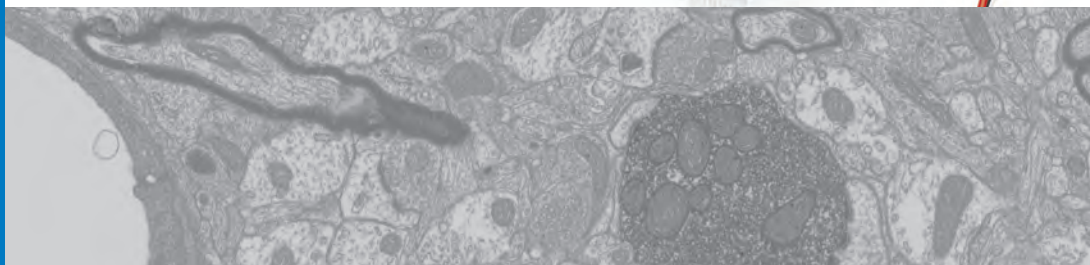


NEW ultra sonic Maxi

The ultra sonic Maxi is a new wider
 ultra sonic knife specifically for
 compression-free serial sectioning
 in biological applications. The knife
 comes in 3.0mm and 4.0mm sizes
 with 35° angle.



Biocytin-labeled giant bouton from the auditory cortex of a
 Mongolian gerbil acquired with a scanning electron microscope.
 Saldeitis et al., 2019 Eur. J. Neurosci. Vol.50-9:3445-3453.



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The Microscopy Society of America (MSA) and the Microanalysis Society (MAS) invite you to Virtual Microscopy & Microanalysis 2020 (vM&M 2020), August 4 through August 7, 2020. This is an exciting new adventure we are undertaking, to join together and share our science when we cannot do so in person.

Attendees can be assured that the latest in applications of, and instrumentation for, microscopy, in both the physical and biological sciences, will be presented during the technical sessions. The vM&M 2020 meeting will feature two plenary speakers, 38 symposia covering a broad range of topics, and numerous educational opportunities in the form of courses, tutorials, and two pre-meeting congresses. At any time you can contact attendees and open a video chat for spontaneous interactions.

The Program Committee has made efforts to promote Diversity and Equity to achieve Inclusive Excellence for M&M 2020. We have called on the symposium organizers to unroot implicit biases and pay attention to diversity in gender, age, race, background, ethnicity, and ways of learning when putting together their symposia. In addition, we have scheduled three chat sessions during the meeting for discussions on how we can improve the meeting and our society to be more diverse and inclusive. We encourage all members to attend the Diversity & Inclusion Meet-up to celebrate the Inclusive Excellence of our community, and to participate in the Mentoring for an Inclusive M&M Community Panel Discussion.

The Program Committee together with the symposium organizers have 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 the Schedule-at-a-Glance and the Full Program Listing for complete symposium lists.

The Microscopy Society of America and the Microanalysis Society welcome you to our virtual Microscopy & Microanalysis 2020 meeting, which promises to be an excellent scientific and networking event.

Catch up with old friends and make new ones! Look for opportunities to attend society business meetings during the week. On behalf of MSA, MAS, and the executive program planning committee, in cooperation with over a hundred symposia organizers and our many exhibitors, we look forward to seeing you online this August!

Esther Bullitt, President, Microscopy Society of America
Rhonda Stroud, President, Microanalysis Society



EXECUTIVE PROGRAM COMMITTEE

Huolin Xin
M&M 2020 Program Chair
University of
California-Irvine

Elizabeth Wright
M&M 2020 Vice-Chair
University of
Wisconsin-Madison

John Fournelle
M&M 2020 MAS Co-Chair
University of
Wisconsin-Madison

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Media Sponsors



Sponsor List as of 7/20/2020

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Tomorrows materials demand to be lighter, stronger, and smarter. Characterize micro- and nano-structures to understand how the material's properties influence its performance.

Visit our booth at the virtual M&M meeting
www.zeiss.com/microscopy/mm



Seeing beyond

Index to Advertisers

Advertiser List as of 7/20/2020

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IXRF Systems	Page 38
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Tescan	Page 44
XEI Scientific	Page 43
ZEISS	Page 7

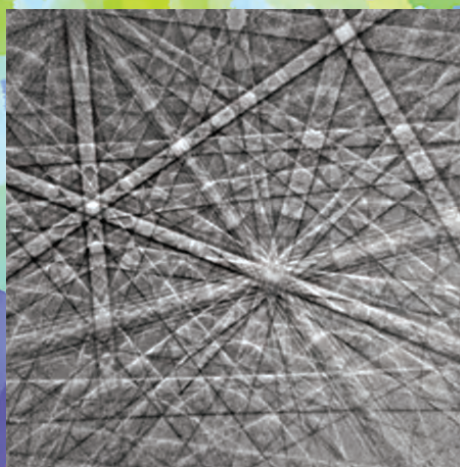
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- No read noise for high sensitivity
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edax.com



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TESCAN USA

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Tousimis

TSS Microscopy, LLC

XEI Scientific, Inc.

(as of July 17, 2020)



MSA MegaBooth in the

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:

M&M 2020 MICROSCOPY & MICROANALYSIS VIRTUAL EXHIBIT HALL

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 – 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.

Visit the updated **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 one of eleven **Focused Interest Groups** (FIGS).

Visit <http://microscopy.org>



The M&M 2020 Executive Program Committee is pleased to present a Live-Stream Plenary Session with lectures from Dr. Maria McNamara, a paleobiologist and Senior Lecturer in Geology at University College Cork, Ireland, and Dr. Yi Cui, a Professor in the Department of Materials Science and Engineering at Stanford University and a world-renowned scholar.

TUESDAY, AUGUST 4, 2020, 10:00 AM CT

For speaker bios and presentation details, visit <http://www.microscopy.org/MandM/2020/program/plenary.cfm>

Maria McNamara, Ph.D.

Palaeobiologist and Senior Lecturer in Geology based at University College, Cork, Ireland



Melanin through Deep Time: Experimental and Analytical Approaches to Decoding the Fossil Record of Melanin

Yi Cui, Ph.D.

Professor in the Department of Materials Science and Engineering at Stanford University



In situ and Cryogenic Electron Microscopy for Energy Materials

REGISTRATION FEES

	Member Rate*	Non-Member Rate
Full Meeting**	\$75	\$150
Invited Speakers	\$75	\$75
Student†/ Post Docs/ Emeritus	\$20	\$20
PMC X60	\$0	\$0
PMC X61	\$0	\$0

* **Member Rate** applies to any member of MSA or MAS. Membership will be verified.

** All **Full Meeting Registrations** (Regular, Post Doc, Emeritus) for M&M 2020 include:

- Digital access to meeting proceedings
- Four full days' access to virtual exhibit hall, live streamed plenary session, symposia, tutorials, poster presentations, and all vendor tutorials.

†**Student Rate** is available to full-time undergraduate students only. Post-Doctoral researchers are not considered students.

MSA Distinguished Scientist Awardee Presentation

AUGUST 5, 2020, 2:00 PM

DISTINGUISHED SCIENTIST – PHYSICAL SCIENCES

Professor David Seidman

Northwestern University, Evanston, IL, USA

Virtual Platform Information

GET READY!

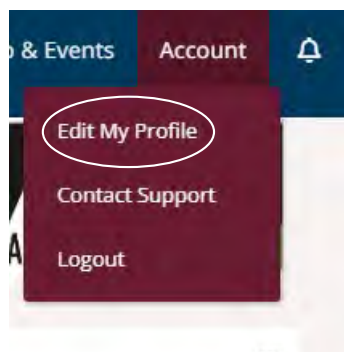
Watch your email on Friday, July 31! You'll be getting a message from noreply@pathable.com with your login credentials, inviting you to join the online meeting platform.

The platform website will be available for browsing starting July 31. Poke around, get familiar with where things are, maybe view some "on-demand" content.

If you don't already have it, download Zoom (free) onto your computer and/or mobile device. Set up a free account. If you plan to use your mobile device to attend the meeting, be sure to download the M&M 2020-Virtual App! (Google Play or Apple App Store)

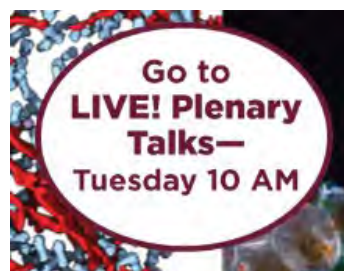
SET UP YOUR PROFILE

This is your virtual badge! Set up your profile so others know it's you. Go to "Account-Edit Profile" and complete the various fields. Categories and ribbons are fields that people can search on to find others with similar interests. Take full advantage of the networking power of the platform!



VIEW THE LIVE PLENARY TALKS – TUESDAY MORNING (10 AM U.S. Central Time)

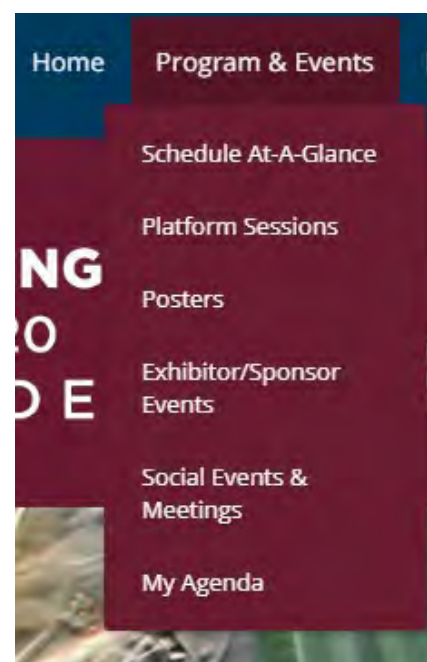
Grab your favorite coffee drink (or adult beverage if you're joining us from certain other time zones) and watch live-streamed talks and Q&A from our world-renowned plenary speakers. Click on the "Plenary Sessions" oval at the top right to join the live stream.**



** Too late or early for you? Have a meeting at work, or a date with your spouse? These talks will be recorded and available on demand for the rest of the meeting days.

PLATFORMS, POSTERS, and SOCIALS, OH MY!

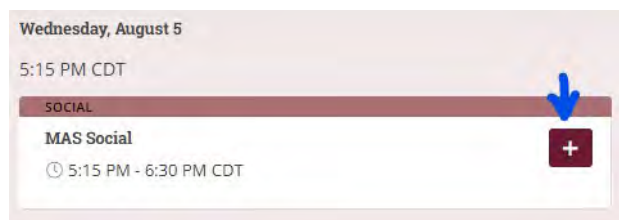
Check out the HUNDREDS of posters and platform talks available 24/7 ("on demand"). Attend a social event, or a members' meeting. Find something fun! The Program & Events tab is your gateway!



Virtual Platform Information cont.

KEEP TRACK OF YOUR SCHEDULE

Any agenda item (talk, poster, meeting, etc.) can be added to your personal agenda by clicking the “plus” sign at the top right. Your personal schedule can be found at “My Agenda” under “Program & Events”.



CHECK OUT THE MSA MEGABOOTH

Yes, there will even be a virtual MegaBooth! Most sections will be staffed during exhibit hours for your real-time questions.



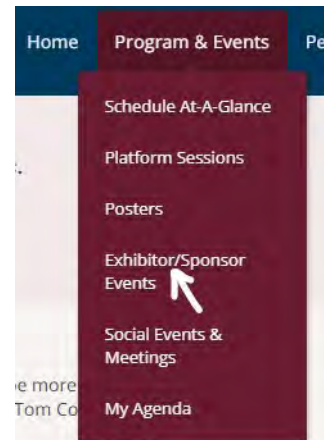
VISIT THE EXHIBIT HALL

During staffed exhibit hall times, visit a company by going to “Exhibitors”, clicking on a booth, and then “Enter Virtual Tradeshow Booth”. Company reps will be standing by to answer your questions and chat with you about your microscopy product and services needs!

ENTER VIRTUAL TRADESHOW BOOTH

ATTEND SPECIAL EXHIBITOR SESSIONS

Exhibitors are excited to be able to offer Vendor Tutorials and special LIVE “Exhibitor Spotlight” sessions. Interested in a particular exhibitor? Go to their booth and click “Spotlight Session”. Or check out the Megabooth “Vendor Tutorials” section for the full list of live Vendor Tutorials. A full list of all Exhibitor-sponsored sessions, content, and networking meetings is under Program & Events – Exhibitor/Sponsor Events.



ALL THE WAYS TO INTERACT

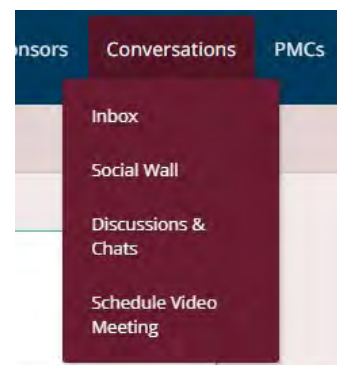
Go to the “Conversations” tab.

1. **“Inbox”** is where you can send and receive PRIVATE messages to and from other participants. (Private messages are only between registered attendees/exhibitors.)

2. The **Social Wall** is the chatter hub! Check out all the tweets, Facebook and Instagram posts for all M&M 2020-related hashtags and social media accounts, or post one yourself and then find it on our fun social wall.

3. **Discussions and Chats** are PUBLIC conversations, like a Twitter or Facebook thread. They each have a title and are available to read or continue the conversation anytime!

4. Schedule a **Private Video Meeting** between yourself and 1 or more people. Schedule it for anytime during the meeting dates. Once your invitees accept, it shows up on Your Agenda (and theirs!) as “Private”. Note – private video meetings are limited to 40 minutes each.





M&M 2020 Virtual Meeting – FAQs

Read more FAQs and answers [here](#).

Q. How do I get into the virtual meeting platform?

A. A link will be emailed to you with your personal login credentials on Friday, 31-July, to the email address that you registered with. At that point, the meeting platform will be open for browsing. On-demand videos can be viewed, and text chat questions/messages may be posted.

Q. Do I have to download anything to use the M&M platform?

A. Yes. We recommend that if you do not already have it, that you download Zoom onto your computer, tablet, or phone (App Store and Google Play provide the Zoom app for free). Set up a free account for an optimal platform experience.

Q. I have an old computer. Will I be able to use the virtual platform?

A. We recommend using Chrome, Microsoft Edge, or Safari browser. Microsoft Explorer is NOT supported and will likely prevent you from experiencing full functionality. Mozilla-Firefox is notoriously problematic with many interactive websites and we do not recommend it.

Q. Will the platform work on a tablet or phone?

A. Yes! M&M has arranged for the virtual platform-website to work on newer (~6 years) Apple and Android mobile devices. Certain types of mobile devices, including BlackBerry and Windows phones, are not supported.

Q. What time zone is the meeting happening in?

A. Live event components are scheduled in U.S. Central Time. The majority of the meeting content will be available “on demand”. This means that the platform talks and posters will be pre-recorded and available 24/7 during the meeting dates (August 3-7). After the meeting is over, the platform will be fully accessible to registrants for 30 more days – until 7-September 2020.

Q. How do I meet with someone privately during the meeting?

A. You can privately message (text) any other attendee or exhibitor, or you can set up a private video meeting (Zoom) with any other registrant. Private video calls are limited to 40 minutes at a time.

Q. How will the exhibits work?

A. The exhibit hall portion of the meeting will have both static and live elements. Product/company information, pre-recorded videos, etc. that exhibitors upload to their “booths” will be available 24/7 (meeting dates + 30 days afterwards). The exhibits will have about 2 hours a day (Tuesday-Wednesday-Thursday) that are “manned booth hours” where attendees can virtually enter exhibit booths and video/text chat with representatives.

Q. Will there be any live Vendor Tutorials or product demos this year?

A. Exhibitors can present live “spotlight sessions” and vendor tutorial/networking events. The schedule should be available a few days before the meeting.

M&M 2020 Virtual Meeting – FAQs cont.

Read more FAQs and answers [here](#).

Q. If the platform session talks are pre-recorded, how do we ask a question?

A. Platform sessions listed on the agenda can be clicked on to reveal a list of all the pre-recorded talks. You can listen to the talks at the scheduled time, or beforehand, or afterwards. A text chat conversation with all available session presenters will be ongoing *during* the scheduled 75-minute session time.

Q. How will the posters be presented?

A. Each poster presenter has been asked to record a short (1-3 minute) talk about their poster, and submit it along with a PDF of their actual poster. Posters will be available 24/7 during the meeting dates (and afterwards if the presenter gives permission). Presenters will be available for live text chat questions during their assigned poster session time.

Q. How will someone find me?

A. When you register for the meeting, your name will be visible in the “People” section. We encourage you to fill out your Profile once you access the Platform so that others know it is you, and can also find you based on your fields of study and interests.

Q. Can I share someone else’s login?

A. It will not be possible for two users to be logged in simultaneously. We strongly recommend that each attendee registers individually and has their own registration login. One of the great benefits of the M&M meeting is the opportunity to network. Our virtual platform allows users to build and customize profiles and connect with others via text chat and through video meetings. Logging in under a profile other than your own greatly diminishes your ability to convey who you are and your interests, to network, build relationships with others, and get the most out of the virtual meeting.



MSA Student Council



Established in 2017, the StC provides a dynamic platform for students to share experiences, network, discuss their research, and engage in professional development. We are a community comprised of undergraduate and graduate students who use microscopy and microanalysis techniques. Our community fosters mentorship and professional development opportunities for all students with programming throughout the year. As a growing community, and an international one, we hope to connect students and young scientists world-wide. MSA StC builds more than just your professional network, it cultivates friendships and bolsters your professional skills.

Consider membership in MSA and get involved in StC. We need you to help grow our community!

Visit microscopy.org/students for more information.

LEADERSHIP OPPORTUNITIES

Graduate and undergraduate student members of MSA are encouraged to run for MSA Student Council executive offices (President-Elect, Secretary, and Treasurer) and can either self-nominate or nominate other MSA student members. Nominations close annually on April 30th with elections held during the month of June.

The Call for Applications for appointed positions (Program Chair, Communications Chair, Regional Liaison Chair, PMCx60 Co-Chairs, and Regional Liaisons) opens on July 1st and closes on August 15th.

“Student leaders help shape the future of MSA. StC provides opportunities to build your professional network and our alumni credit StC involvement for exceptional job opportunities, collaborations, and mentorship beyond the bounds of a single university.”

— 2020 MSA StC Past-president, Cameron Varano



STUDENT EVENTS

Student Mixer

Mingle with your peers at the Student Mixer! This is a terrific opportunity to meet new colleagues, and catch up with old friends. The virtual edition of this event will include games and prizes!

MSA Annual Student Meeting

Gather with MSA students to hear about the StC year-long activities, recognition of outgoing leaders, and announcement of incoming StC Executive Council.

PMCx60

The Pre-meeting Congress x60 (PMCx60) is an annual event organized by the MSA Student Council (StC) for Students, Postdocs, and Early-career Professionals in Microscopy and Microanalysis.

CONNECT WITH US!

EMAIL: studentcouncil@microscopy.org

WEBSITE: www.microscopy.org/students/

FACEBOOK: **Microscopy Society of America- Students**

The StC Facebook page was created to initiate contact between students and to advertise the latest StC activities.

TWITTER: **@MSAStudent**

Check twitter for breaking news and events at M&M.

INSTAGRAM: **@MSAStudentCouncil**

Show your creative side through microscopy and share it with the society!



PMCx60 – for Students, Postdocs and Early-Career Professionals



Pre-meeting Congress X60
for Students, Postdocs and
Early-career Professionals

 **CHECK THE BOX**
while registering for M&M
It's FREE!

PMCx60 | Monday, August 3rd, 2020

Join us for the 4th annual Pre-meeting Congress (PMCx60) featuring the best biological and physical sciences microscopy & microanalysis research from young scientists.

The Pre-meeting Congress highlights will include:

"Microscopy: Past, Present, Future" Session

Hear the thoughts of leading academics and industry on where Microscopy has been and where it is going.

Three Technical Symposia

Be the first to hear Award-Winning research from the M&M 2020 Student and Postdoctoral Scholars, as well as Early Career Major Award Winners in the PMCx60 Physical Science, Biological Science, and Joint Phys./Bio. session.

e-Posters & Networking

Going virtual does not mean we will lose content. Enjoy open discussion with your peers from academia and industry at posters or in a personal meeting.

After Hours Fun!

No...we can't hire a virtual river cruise... but the fun must go on! Join MSA StC for virtual social events after the PMCx60 program.

To register check the box while registering for M&M
For more information visit microscopy.org/students/x60.cfm



PMCx60 Sponsors

Platinum Level



Gold Level



Silver Level



Bronze Level



PMCx61 – Current Status and Horizons of Electron Microscopy in Liquids and Gases

Monday, August 3rd, 2020 | 10:30 PM CT

Please join us for a virtual PMC!

Topics Covered:

- Optimizing electrochemistry experiments, imaging of biological materials and soft matter in liquids
- Optimizing experiments for gas-phase catalytic reactions
- Multidimensional in situ electron microscopy
- Big data analysis using deep learning and neural networks
- Handling and processing data acquired with direct electron detectors

Invited Speakers:

Judith Yang | University of Pittsburgh

Duane Loh | National University of Singapore

Peter Ercius | Lawrence Berkeley National Lab

Joe Patterson | University of California, Irvine

Sara Bals | University of Antwerp

Deb Kelly | Pennsylvania State University

Colin Ophus | Lawrence Berkeley National Lab

Stephen Maldonado | University of Michigan

Organizers:

Wei-Chang David Yang | NIST Gaithersburg

See Wee Chee | Fritz-Haber-Institut

Rosa Diaz | Purdue University

Joshua L. Vincent | Arizona State University

Henry O. Ayoola | University of Pittsburgh

Stephen D. House | University of Pittsburgh

Katherine Jungjohann | Sandia National Laboratories

Huolin Xin | University of California-Irvine

M&M 2020 
**MICROSCOPY &
MICROANALYSIS**
VIRTUAL MEETING



**PMC Registration
is FREE!**

PMCx61 Sponsors

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Nanotechnologies

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detecting the future

Direct Electron

JEOL
Solutions for Innovation

 **HUMMINGBIRD**
SCIENTIFIC

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Laboratories

 **Protochips**
Quantifiably Better™

M&M 2020 Awards



Major Society Award Winners

BURTON MEDAL—BIOLOGICAL

Dr. Brent Nannenga, Arizona State University, Tempe, AZ, USA

BURTON MEDAL—PHYSICAL

Professor James LeBeau, MIT, Cambridge, MA, USA

ALBERT CREWE AWARD

Andrew Yankovich, Chalmers University of Technology, Gothenburg, Sweden

HILDEGARD H. CROWLEY AWARD FOR OUTSTANDING TECHNOLOGIST, BIOLOGICAL SCIENCES

Joseph Mowery, US Department of Agriculture, Electron and Confocal Microscopy Unit, Beltsville, MD, USA

CHUCK FIORI AWARD FOR OUTSTANDING TECHNOLOGIST, PHYSICAL SCIENCES

Dr. Lijun Wu, Brookhaven National Laboratory, Upton, NY, USA

MORTON D. MASER DISTINGUISHED SERVICE AWARD

John Shields, University of Georgia, Athens, GA, USA



Major Society Award Winners

PRESIDENTIAL SCIENCE AWARD

Gianluigi Botton, Canadian Light Source/McMaster University

PRESIDENTIAL SERVICE AWARD

Edward Vicenzi, Smithsonian Institution

PETER DUNCUMB AWARD FOR EXCELLENCE IN MICROANALYSIS

Nestor Zaluzec, Argonne National Laboratory

KURT F.J. HEINRICH AWARD

Lena Kourkoutis, Cornell University

BIRKS AWARD

Elisabeth Bianco, Cornell University

Unraveling the Relationship Between Layer Stacking and Magnetic Order in Nb₃X₈ Systems via Controlled-Temperature Cryo-STEM

MACRES AWARD

Daniel Huber, Ohio State University

An Electron Microscopy Collaboratory for Correlative Imaging Sciences

COSSLETT AWARD

Lena Kourkoutis, Cornell University,

Cryogenic STEM Imaging and Spectroscopy of Electron Beam Sensitive Materials

CASTAING AWARD

Kartik Venkatraman, Arizona State University

Atomic Resolution Vibration Spectroscopy with On-axis Detector Geometry

M&M 2020 Awards

M&M Student Awards



Avi Auslender
Kaustav Chatterjee
Debaditya Chatterjee
Yana Danilova
William Huang
Joseph Kim
Daria Koshkina
Philipp Muscher
Prudhvi Ram Peri
Jacob Pietryga
Debadarshini Samantaray
Jinsol Seo
Katherine Sytwu
Cammy Truong
Mei Wang
Zhili Yu
Steven Zeltmann
Chi Zhang
Michael Xu



Xiangbin Cai
Mouad Essani
Chaitanya Gadre
Chia-Hao Lee
Kakeru Kikumasa
Supriya Ghosh
Christopher Addiego
Haw-Wen Hsiao
Juliana Casali
Dara Lacznai

M&M Postdoctoral Award



Stoichko Antonov
Nuria Bagues Salguero
Shaobo Cheng
Michele Conroy
Shiqing Deng
Armin Feist
Marcus Gallagher-Jones
Chen Huang
Sten Lambeets
Kelly Manthei
Alexander Markevich
Paula Navarro
Jae Yang



Benedikt Haas
Silvan Kretschmer
Andrew Lang
Debangshu Mukherjee
Philipp Pelz

Professional Technical Staff Award



Emily Benson
Maria Paez Segala
James Martinez
Carley Goodwin

2020 Fellows



Ian Anderson
Elizabeth Dickey
J. Bernard Heymann
Masashi Watanabe



Chris Kiely
Lothar Strüder
Yimei Zhu

Memorial Scholarships

**RALEIGH AND CLARA MILLER
STUDENT SCHOLARSHIP**
Stephanie Ribet

**ROBERT P. APKARIAN MEMORIAL
SCHOLARSHIP
(BIOLOGICAL SCIENCES)**
Yue Li

**ROBERT P. APKARIAN MEMORIAL
SCHOLARSHIP (PHYSICAL SCIENCES)**
Shuaishuai Sun

ERIC SAMUEL SCHOLARSHIP
Bumsu Park

M&M Distinguished Scientist Awards

BIOLOGICAL SCIENCES
Xiaowei Zhuang, Harvard University

PHYSICAL SCIENCES
David N. Seidman, Northwestern University

Monday, August 3

10:00 AM – 5:00 PM Central Time	Pre-Meeting Congress X60 - Annual Pre-Meeting Congress for Students, Post-Docs, and Early Career Professionals in Microscopy & Microanalysis
10:30 AM – 2:05 PM Central Time	Pre-Meeting Congress X61 - Current Status and Horizons of Electron Microscopy in Liquids and Gases
5:00 PM – 6:00 PM	Lens On... Embracing Diversity within MM A multi-dimensional safe space to virtually meet and mingle with other microscopists from underrepresented groups as well as voice comments and concerns for change in the demographics of attendees at MM.

Tuesday, August 4

10:00 AM – 11:35 AM Central Time	M&M 2020 Plenary Session Opening Welcome The Executive Program Committee is pleased to present lectures from Dr. Maria McNamara, a paleobiologist and Senior Lecturer in Geology at University College Cork, Ireland; and Dr. Yi Cui, a Professor in the Department of Materials Science and Engineering at Stanford University and a world-renowned scholar. Plenary Talk #1: Maria McNamara, Ph.D. Palaeobiologist and Senior Lecturer in Geology, University College Cork, Ireland <i>Melanin through Deep Time: Experimental and Analytical Approaches to Decoding the Fossil Record of Melanin</i> Plenary Talk #2: Yi Cui, Ph.D. Stanford University, Stanford Institute for Materials and Energy Sciences and SLAC National Accelerator Laboratory <i>In-situ and Cryogenic Electron Microscopy for Energy Materials</i>
11:35 AM – 12:00 PM	Break
12:00 PM – 2:00 PM	Exhibit Hall Staffed Hours
12:00 PM – 1:00 PM	MAS Mentor/Mentoree Panel
1:30 PM – 2:45 PM	P.M. Symposia & Sessions* * Individual presentations are pre-recorded and available for on-demand watching. Session time(s) are designed to allow time (60 minutes) for watching all session presentations, plus an additional exclusive 15 minutes for Q&A. All sessions feature a 75-minute live text chat/Q&A with speakers and session organizers. A01.1 - Advances in Modeling, Simulation, and Artificial Intelligence in Microscopy and Microanalysis for Physical and Biological Systems A02.1 - Four-Dimensional Scanning Transmission Electron Microscopy (4D-STEM): New Experiments and Data Analyses for Determining Materials Functionality and Biological Structures A05.1 - Crystallography at the Nanoscale and MicroED with Electrons and X-rays A07.1 - Advances in Quantitative Electron Beam Microanalysis (EDS and WDS) A08.1 - X-ray, Electron and Synchrotron-Based X-ray Imaging and Analysis A09.1 - Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens A13.1 - Microscopy and Microanalysis of Biomineralized and Biomimetic Materials and Structures A14.1 - Vendor Symposium B01.1 - 3D Structures: From Macromolecular Assemblies to Whole Cells (3DEM FIG) B04.1 - Jim Pawley Memorial Symposium B10.1 - 3D Scanning Electron Microscopy Imaging of Biological Samples B12.1 - Illuminating Health and Disease at New Frontiers of Spatiotemporal Resolution and Adaptive Microscopy P01.1 - Advances in Electron Microscopy to Characterize Materials Embedded in Devices P02.1 - New Frontiers in Electron Microscopy of Two-Dimensional Materials P04.1 - Advanced Characterization of Nuclear Fuels and Materials

M&M
2020



VIRTUAL Week At-A-Glance

Tuesday, August 4 (cont'd.)

1:30 PM – 2:45 PM	P.M. Symposia & Sessions continued* * Individual presentations are pre-recorded and available for on-demand watching. Session time(s) are designed to allow time (60 minutes) for watching all session presentations, plus an additional exclusive 15 minutes for Q&A. All sessions feature a 75-minute live text chat/Q&A with speakers and session organizers. P07.1 - FIB-SEM Technology and Electron Tomography for Materials Science and Engineering P08.1 - Approaching <i>operando</i> Imaging of Functional Materials P09.1 - Electron Pulses as an Ultrafast Probe for Non-Equilibrium Processes
2:15 PM – 2:30 PM	After-Session Video Chats with Speakers and Organizers All are welcome—check schedule for sessions that are holding these.
2:00 PM – 2:30 PM	Exhibitor Spotlights Sessions
3:00 PM – 4:15 PM	P.M. Symposia & Sessions* * Individual presentations are pre-recorded and available for on-demand watching. Session time(s) are designed to allow time (60 minutes) for watching all session presentations, plus an additional exclusive 15 minutes for Q&A. All sessions feature a 75-minute live text chat/Q&A with speakers and session organizers. A01.2 - Advances in Modeling, Simulation, and Artificial Intelligence in Microscopy and Microanalysis for Physical and Biological Systems A02.2 - Four-Dimensional Scanning Transmission Electron Microscopy (4D-STEM): New Experiments and Data Analyses for Determining Materials Functionality and Biological Structures A03.1 - Impact of Recent Advancement in Instrumentation/Detectors on Electron Energy Loss Spectroscopy for Physical and Biological Sciences A05.2 - Crystallography at the Nanoscale and MicroED with Electrons and X-rays A07.2 - Advances in Quantitative Electron Beam Microanalysis (EDS and WDS) A08.2 - X-ray, Electron and Synchrotron-Based X-ray Imaging and Analysis A09.2 - Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens A13.2 - Microscopy and Microanalysis of Biomineralized and Biomimetic Materials and Structures A14.2 - Vendor Symposium B01.2 - 3D Structures: From Macromolecular Assemblies to Whole Cells (3DEM FIG) B07.1 - Biomedical and Pharmaceutical Research on the Development, Diagnosis, Prevention, and Treatment of Diseases B10.1 - 3D Scanning Electron Microscopy Imaging of Biological Samples B11.1 - Advances in Imaging Approaches for Plant Biology B12.2 - Illuminating Health and Disease at New Frontiers of Spatiotemporal Resolution and Adaptive Microscopy P01.2 - Advances in Electron Microscopy to Characterize Materials Embedded in Devices P02.2 - New Frontiers in Electron Microscopy of Two-Dimensional Materials P04.2 - Advanced Characterization of Nuclear Fuels and Materials P07.2 - FIB-SEM Technology and Electron Tomography for Materials Science and Engineering P08.2 - Approaching <i>operando</i> Imaging of Functional Materials P09.2 - Electron Pulses as an Ultrafast Probe for Non-Equilibrium Processes
4:15 PM – 4:30 PM	After-Session Video Chats with Speakers and Organizers All are welcome—check schedule for sessions that are holding these.
3:00 PM – 3:30 PM	Exhibitor Spotlight Sessions
4:00 PM – 5:00 PM	Microscopy Today Editors



Tuesday, August 4 (cont'd.)

4:30 PM – 5:00 PM	Exhibitor Spotlight Sessions
4:30 PM – 6:00 PM	Tuesday Poster Presentations* * Individual poster presentations are available on demand. Each presentation includes a short “flash talk” video (pre-recorded and available for on-demand watching) in addition to the downloadable PDF of the poster. Poster presenters in the following Poster Sessions are available during this 90-minute session for live text chat/Q&A. A01.P1 - Advances in Modeling, Simulation, and Artificial Intelligence in Microscopy and Microanalysis for Physical and Biological Systems A02.P1 - Four-Dimensional Scanning Transmission Electron Microscopy (4D-STEM): New Experiments and Data Analyses for Determining Materials Functionality and Biological Structures A05.P1 - Crystallography at the Nanoscale and MicroED with Electrons and X-rays A10.P1 - Structural Changes in Hard, Soft, and Biological Samples During Imaging: From Transmission Electron to Helium Ion Microscopy A13.P1 - Microscopy and Microanalysis of Biomineralized and Biomimetic Materials and Structures B01.P1 - 3D Structures: From Macromolecular Assemblies to Whole Cells (3DEM FIG) B04.P1 - Jim Pawley Memorial Symposium B11.P1 - Advances in Imaging Approaches for Plant Biology P01.P1 - Advances in Electron Microscopy to Characterize Materials Embedded in Devices P04.P1 - Advanced Characterization of Nuclear Fuels and Materials P07.P1 - FIB-SEM Technology and Electron Tomography for Materials Science and Engineering P07.P2 - FIB-SEM Technology and Electron Tomography for Materials Science and Engineering P09.P1 - Electron Pulses as an Ultrafast Probe for Non-Equilibrium Processes
6:00 PM – 7:30 PM	Student Mixer
6:30 PM – 8:00 PM	Vendor Tutorials

Wednesday, August 5

10:00 AM – 11:15 AM	A.M. Symposia & Sessions* * Individual presentations are pre-recorded and available for on-demand watching. Session time(s) are designed to allow time (60 minutes) for watching all session presentations, plus an additional exclusive 15 minutes for Q&A. All sessions feature a 75-minute live text chat/Q&A with speakers and session organizers. X30 - DIY: Microscopy-Inspired Mkrspace 3D Printing A01.3 - Advances in Modeling, Simulation, and Artificial Intelligence in Microscopy and Microanalysis for Physical and Biological Systems A02.3 - Four-Dimensional Scanning Transmission Electron Microscopy (4D-STEM): New Experiments and Data Analyses for Determining Materials Functionality and Biological Structures A03.2 - Impact of Recent Advancement in Instrumentation/Detectors on Electron Energy Loss Spectroscopy for Physical and Biological Sciences A05.3 - Crystallography at the Nanoscale and MicroED with Electrons and X-rays A07.3 - Advances in Quantitative Electron Beam Microanalysis (EDS and WDS) A09.3 - Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimen A13.2 - Microscopy and Microanalysis of Biomineralized and Biomimetic Materials and Structures A14.3 - Vendor Symposium B01.3 - 3D Structures: From Macromolecular Assemblies to Whole Cells (3DEM FIG) B07.2 - Biomedical and Pharmaceutical Research on the Development, Diagnosis, Prevention, and Treatment of Diseases P01.3 - Advances in Electron Microscopy to Characterize Materials Embedded in Devices P02.3 - New Frontiers in Electron Microscopy of Two-Dimensional Materials P04.3 - Advanced Characterization of Nuclear Fuels and Materials
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Wednesday, August 5 (Cont'd.)

VIRTUAL Week At-A-Glance



2020
M&M

10:00 AM – 11:15 AM	A.M. Symposia & Sessions (Cont'd.) P06.1 - <i>In situ</i> TEM at the Extremes P07.3 - FIB-SEM Technology and Electron Tomography for Materials Science and Engineering P08.3 - Approaching operando Imaging of Functional Materials P09.3 - Electron Pulses as an Ultrafast Probe for Non-Equilibrium Processes
11:15 AM – 11:30 AM	After-Session Video Chats with Speakers and Organizers All are welcome—check schedule for sessions that are holding these.
11:30 AM – 12:45 PM	Midday Symposia & Sessions* * Individual presentations are pre-recorded and available for on-demand watching. Session time(s) are designed to allow time (60 minutes) for watching all session presentations, plus an additional exclusive 15 minutes for Q&A. All sessions feature a 75-minute live text chat/Q&A with speakers and session organizers. X41 - Physical Sciences Tutorial: Entrepreneurship in the Microscopy Community A01.4 - Advances in Modeling, Simulation, and Artificial Intelligence in Microscopy and Microanalysis for Physical and Biological Systems A02.4 - Four-Dimensional Scanning Transmission Electron Microscopy (4D-STEM): New Experiments and Data Analyses for Determining Materials Functionality and Biological Structures A03.3 - Impact of Recent Advancement in Instrumentation/Detectors on Electron Energy Loss Spectroscopy for Physical and Biological Sciences A04.1 - Pushing the Limits of Detection in Quantitative (S)TEM Imaging, EELS, and EDX A05.4 - Crystallography at the Nanoscale and MicroED with Electrons and X-rays A07.4 - Advances in Quantitative Electron Beam Microanalysis (EDS and WDS) A08.3 - X-ray, Electron and Synchrotron-Based X-Ray Imaging and Analysis A09.4 - Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimen B01.4 - 3D Structures: From Macromolecular Assemblies to Whole Cells (3DEM FIG) B07.3 - Biomedical and Pharmaceutical Research on the Development, Diagnosis, Prevention, and Treatment of Diseases P01.4 - Advances in Electron Microscopy to Characterize Materials Embedded in Devices P02.4 - New Frontiers in Electron Microscopy of Two-Dimensional Materials P04.4 - Advanced Characterization of Nuclear Fuels and Materials P06.2 - <i>In situ</i> TEM at the Extremes P07.4 - FIB-SEM Technology and Electron Tomography for Materials Science and Engineering P08.4 - Approaching operando Imaging of Functional Materials
12:30 PM – 12:45 PM	After-Session Video Chats with Speakers and Organizers All are welcome—check schedule for sessions that are holding these.
12:00 PM – 2:00 PM	Exhibit Hall – Staffed Hours
1:00 PM – 2:00 PM	Lunch Break
1:00 PM – 1:30 PM	DSA Awardee Session
1:30 PM – 2:00 PM	Exhibitor Spotlight Sessions
2:00 PM – 3:15 PM	P.M. Symposia & Sessions * Individual presentations are pre-recorded and available for on-demand watching. Session time(s) are designed to allow time (60 minutes) for watching all session presentations, plus an additional exclusive 15 minutes for Q&A. All sessions feature a 75-minute live text chat/Q&A with speakers and session organizers. X34 - Management and Operation of Microscopy and Microanalysis Facilities X44 - Biological Sciences Tutorial: Optimization of Cryo-EM Data Collection using Advanced Direct Detectors A01.5 - Advances in Modeling, Simulation, and Artificial Intelligence in Microscopy and Microanalysis for Physical and Biological Systems

Wednesday, August 5 (Cont'd.)

2:00 PM – 3:15 PM	P.M. Symposia & Sessions (Cont'd.) A02.5 - Four-Dimensional Scanning Transmission Electron Microscopy (4D-STEM): New Experiments and Data Analyses for Determining Materials Functionality and Biological A03.4 - Impact of Recent Advancement in Instrumentation/Detectors on Electron Energy Loss Spectroscopy for Physical and Biological Sciences A05.5 - Crystallography at the Nanoscale and MicroED with Electrons and X-rays A06.1 - Direct Phase Imaging with Coherent Electron Beam in TEM A07.5 - Advances in Quantitative Electron Beam Microanalysis (EDS and WDS) A09.5 - Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens A14.4 - Vendor Symposium B03.1 - Methods and Applications in Localization-Based Super-Resolution Microscopy B07.4 - Biomedical and Pharmaceutical Research on the Development, Diagnosis, Prevention, and Treatment of Diseases P01.5 - Advances in Electron Microscopy to Characterize Materials Embedded in Devices P02.5 - New Frontiers in Electron Microscopy of Two-Dimensional Materials P03.1 - Energy and Soft Materials and the Development of Cryogenic Techniques for Studying Them P06.3 - In situ TEM at the Extremes P07.5 - FIB-SEM Technology and Electron Tomography for Materials Science and Engineering P08.5 - Approaching operando Imaging of Functional Materials
3:15 PM – 3:30 PM	After-Session Video Chats with Speakers and Organizers All are welcome—check schedule for sessions that are holding these.
2:30 PM – 3:00 PM	Exhibitor Spotlight Sessions
3:30 PM – 4:00 PM	Exhibitor Spotlight Sessions
4:30 PM – 6:00 PM	Tuesday Poster Presentations* * Individual poster presentations are available on demand. Each presentation includes a short “flash talk” video (pre-recorded and available for on-demand watching) in addition to the downloadable PDF of the poster. Poster presenters in the following Poster Sessions are available during this 90-minute session for live text chat/Q&A. A01.P2 - Advances in Modeling, Simulation, and Artificial Intelligence in Microscopy and Microanalysis for Physical and Biological Systems A04.P1 - Pushing the Limits of Detection in Quantitative (S)TEM Imaging, EELS, and EDX A08.P1 - X-ray, Electron and Synchrotron-Based X-Ray Imaging and Analysis B01.P2 - 3D Structures: From Macromolecular Assemblies to Whole Cells (3DEM FIG) B07.P1 - Biomedical and Pharmaceutical Research on the Development, Diagnosis, Prevention, and Treatment of Diseases B10.P1 - 3D Scanning Electron Microscopy Imaging of Biological Samples B12.P1 - Illuminating Health and Disease at New Frontiers of Spatiotemporal Resolution and Adaptive Microscopy P01.P2 - Advances in Electron Microscopy to Characterize Materials Embedded in Devices P06.P1 - In situ TEM at the Extremes P08.P1 - Approaching operando Imaging of Functional Materials P09.P1 - Electron Pulses as an Ultrafast Probe for Non-Equilibrium Processes
5:00 PM	MSA Student Council Meeting
5:00 PM – 5:45 PM	Lens On... Retention of Underrepresented Groups at MM This session will focus on voicing ideas on what can be done to reach out to and retain attendance of underrepresented groups (i.e. persons of color) at MM.
5:15 PM – 6:30 PM	MAS Social
6:00 PM – 8:00 PM	Vendor Tutorials



Thursday, August 6

10:00 AM – 11:15 AM

A.M. Symposia & Sessions*

* Individual presentations are pre-recorded and available for on-demand watching. Session time(s) are designed to allow time (60 minutes) for watching all session presentations, plus an additional exclusive 15 minutes for Q&A. All sessions feature a 75-minute live text chat/Q&A with speakers and session organizers.

X31 - Technologists' Forum Roundtable: Commercial Technical Careers in Microscopy – No PhD? No Worries

A01.6 - Advances in Modeling, Simulation, and Artificial Intelligence in Microscopy and Microanalysis for Physical and Biological Systems

A02.6 - Four-Dimensional Scanning Transmission Electron Microscopy (4D-STEM): New Experiments and Data Analyses for Determining Materials Functionality and Biological

A04.1 - Pushing the Limits of Detection in Quantitative (S)TEM Imaging, EELS, and EDX

A06.2 - Direct Phase Imaging with Coherent Electron Beam in TEM

A07.6 - Advances in Quantitative Electron Beam Microanalysis (EDS and WDS)

A09.6 - Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens

A10.1 - Structural changes in Hard, Soft, and Biological Samples During Imaging: From Transmission Electron to Helium Ion Microscopy

B02.1 - Vendor Symposium

B03.2 - Methods and Applications in Localization-Based Super-Resolution Microscopy

B05.1 - Microbes in Focus

B09.1 - Image Processing Developments in Cryo-EM

P03.2 - Energy and Soft Materials and the Development of Cryogenic Techniques for Studying Them

P06.4 - In situ TEM at the Extremes

P07.6 - FIB-SEM Technology and Electron Tomography for Materials Science and Engineering

P08.6 - Approaching operando Imaging of Functional Materials

P10.1 - Call of the Wild: Advances in Microanalysis and Microscopy of Geological and Extraterrestrial Materials

P12.1 - Collaborative Analysis Using Atom Probe Tomography Including TEM/APT Characterization of Metal Alloys and Other Material Systems

12:30 PM – 12:45 PM

After-Session Video Chats with Speakers and Organizers

All are welcome—check schedule for sessions that are holding these.

11:30 AM – 12:45 PM

Midday Symposia & Sessions*

* Individual presentations are pre-recorded and available for on-demand watching. Session time(s) are designed to allow time (60 minutes) for watching all session presentations, plus an additional exclusive 15 minutes for Q&A. All sessions feature a 75-minute live text chat/Q&A with speakers and session organizers.

X32 - Technologists' Forum - Negative Staining of Small Molecules in Non-CryoEM Facilities

X40 - Physical Sciences Tutorial: Advanced Cryo-FIB Specimen Preparation and Handling of Environmentally Sensitive Materials for APT and TEM Analysis

X45 - Biological Sciences Tutorial: CryoEM Sample Preparation: Problems and Potential Solutions

X91 - Microscopy Explorations for Families and Kids of All Ages (formerly "Family Affair")

A01.7 - Four-Dimensional Scanning Transmission Electron Microscopy (4D-STEM): New Experiments and Data Analyses for Determining Materials Functionality and Biological

A03.5 - Impact of Recent Advancement in Instrumentation/Detectors on Electron Energy Loss Spectroscopy for Physical and Biological Sciences

A04.2 - Pushing the Limits of Detection in Quantitative (S)TEM Imaging, EELS, and EDX

A06.3 - Direct Phase Imaging with Coherent Electron Beam in TEM

A09.7 - Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens

A10.2 - Structural changes in Hard, Soft, and Biological Samples During Imaging: From Transmission Electron to Helium Ion Microscopy

A12.1 - High-Resolving Power, Multi-Modal and Correlative SIMS Imaging in Biology, Geology and Materials



Thursday, August 6 (cont'd.)

11:30 AM – 12:45 PM	Midday Symposia & Sessions (Cont'd.)
	B02.2 - The Promise of Cryo-Electron Tomography
	B05.2 - Microbes in Focus
	B09.2 - Image Processing Developments in Cryo-EM
	P03.3 - Energy and Soft Materials and the Development of Cryogenic Techniques for Studying Them
	P05.1 - Advances in Microscopy for Quantum Information Sciences
	P06.5 - In situ TEM at the Extremes
	P08.7 - Approaching operando Imaging of Functional Materials
	P10.2 - Call of the Wild: Advances in Microanalysis and Microscopy of Geological and Extraterrestrial Materials
	P11.1 - Bridging the Fundamental Electron Dose Gap for Observing Atom Processes in Complex Materials in their Native Environments
	P12.1 - Collaborative Analysis Using Atom Probe Tomography Including TEM/APT Characterization of Metal Alloys and Other Material Systems
12:30 PM – 12:45 PM	After-Session Video Chats with Speakers and Organizers All are welcome—check schedule for sessions that are holding these.
12:00 PM – 2:00 PM	Exhibit Hall – Staffed Hours
1:00 PM – 2:00 PM	MSA Members Meeting
1:30 PM – 2:00 PM	Exhibitor Spotlight Sessions
2:00 PM – 3:15 PM	P.M. Symposia & Sessions *
	* Individual presentations are pre-recorded and available for on-demand watching. Session time(s) are designed to allow time (60 minutes) for watching all session presentations, plus an additional exclusive 15 minutes for Q&A. All sessions feature a 75-minute live text chat/Q&A with speakers and session organizers.
	X42 - TriBeam Tomography for 3D Data Acquisition
	X43 - Biological Sciences Tutorial: Liquid Cell TEM Imaging Techniques and Optimization for Biological Samples
	A01.8 - Advances in Modeling, Simulation, and Artificial Intelligence in Microscopy and Microanalysis for Physical and Biological Systems
	A03.6 - Impact of Recent Advancement in Instrumentation/Detectors on Electron Energy Loss Spectroscopy for Physical and Biological Sciences
	A04.3 - Pushing the Limits of Detection in Quantitative (S)TEM Imaging, EELS, and EDX
	A09.8 - Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens
	A10.3 - Structural changes in Hard, Soft, and Biological Samples During Imaging: From Transmission Electron to Helium Ion Microscopy
	A12.2 - High-Resolving Power, Multi-Modal and Correlative SIMS Imaging in Biology, Geology and Materials
	B02.3 - The Promise of Cryo-Electron Tomography
	B05.3 - Microbes in Focus
	B06.1 - Correlative and Multimodal Microscopy and Imaging of Physical, Environmental, and Biological Sciences
	B08.1 - Biological Soft X-ray Tomography
	P03.4 - Energy and Soft Materials and the Development of Cryogenic Techniques for Studying Them
	P05.2 - Advances in Microscopy for Quantum Information Sciences
	P06.6 - In situ TEM at the Extremes
	P10.3 - Call of the Wild: Advances in Microanalysis and Microscopy of Geological and Extraterrestrial Materials
	P11.2 - Bridging the Fundamental Electron Dose Gap for Observing Atom Processes in Complex Materials in their Native Environments
	P12.3 - Collaborative Analysis Using Atom Probe Tomography Including TEM/APT Characterization of Metal Alloys and Other Material Systems
	After-Session Video Chats with Speakers and Organizers All are welcome—check schedule for sessions that are holding these.
12:30 PM – 12:45 PM	After-Session Video Chats with Speakers and Organizers All are welcome—check schedule for sessions that are holding these.



Thursday, August 6 (Cont'd.)

3:30 PM – 4:00 PM	Break
4:00 PM – 5:30 PM	Thursday Poster Sessions* * Individual poster presentations are available on demand. Each presentation includes a short “flash talk” video (pre-recorded and available for on-demand watching) in addition to the downloadable PDF of the poster. Poster presenters in the following Poster Sessions are available during this 90-minute session for live text chat/Q&A. A06.P1 - Direct Phase Imaging with Coherent Electron Beam in TEM A07.P1 - Advances in Quantitative Electron Beam Microanalysis (EDS and WDS) A09.P1 - Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens B03.P1 - Methods and Applications in Localization-Based Super-Resolution Microscopy B07.P2 - Biomedical and Pharmaceutical Research on the Development, Diagnosis, Prevention, and Treatment of Diseases B09.P1 - Image Processing Developments in Cryo-EM P02.P1 - New Frontiers in Electron Microscopy of Two-Dimensional Materials P03.P1 - Energy and Soft Materials and the Development of Cryogenic Techniques for Studying Them P06.P2 - In situ TEM at the Extremes P08.P2 - Approaching operando Imaging of Functional Materials
5:00 PM – 5:30 PM	Exhibitor Spotlight Sessions
5:30 PM – 7:00 PM	MAS Members Meeting
6:00 PM – 8:00 PM	Vendor Tutorials

Friday, August 7

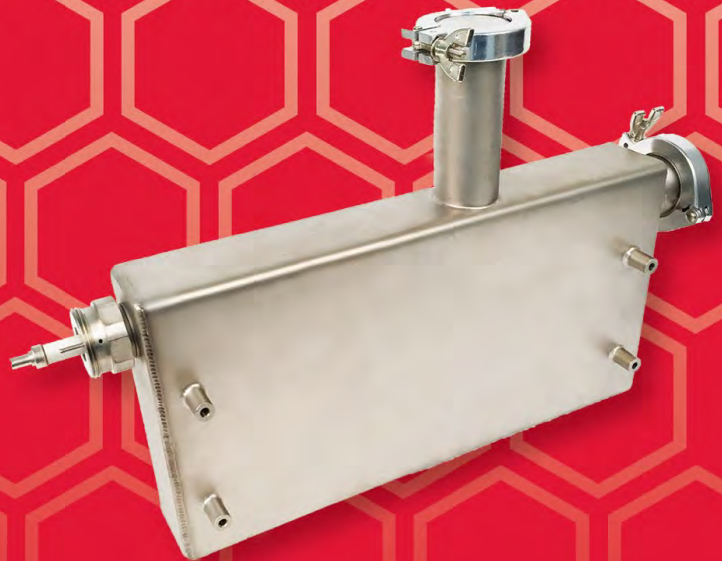
9:00 AM – 10:00 AM	Lens On... My Microscopist Looks Like Me An informal chat about representation and how important it is to see a demographic change within MM.
10:00 AM – 11:15 PM	A.M. Symposia & Sessions* * Individual presentations are pre-recorded and available for on-demand watching. Session time(s) are designed to allow time (60 minutes) for watching all session presentations, plus an additional exclusive 15 minutes for Q&A. All sessions feature a 75-minute live text chat/Q&A with speakers and session organizers. A01.9 - Advances in Modeling, Simulation, and Artificial Intelligence in Microscopy and Microanalysis for Physical and Biological Systems A04.4 - Pushing the Limits of Detection in Quantitative (S)TEM Imaging, EELS, and EDX A09.9 - Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens B02.4 - The Promise of Cryo-Electron Tomography B06.2 - Correlative and Multimodal Microscopy and Imaging of Physical, Environmental, and Biological Sciences B08.2 - Biological Soft X-ray Tomography P03.5 - Energy and Soft Materials and the Development of Cryogenic Techniques for Studying Them P05.3 - Advances in Microscopy for Quantum Information Sciences P06.7 - In situ TEM at the Extremes P10.4 - Call of the Wild: Advances in Microanalysis and Microscopy of Geological and Extraterrestrial Materials P11.3 - Bridging the Fundamental Electron Dose Gap for Observing Atom Processes in Complex Materials in their Native
11:15 PM – 11:30 PM	After-Session Video Chats with Speakers and Organizers All are welcome—check schedule for sessions that are holding these.

Friday, August 7 (Cont'd.)

11:30 AM – 12:45 PM	Midday Symposia & Sessions*
	* Individual presentations are pre-recorded and available for on-demand watching. Session time(s) are designed to allow time (60 minutes) for watching all session presentations, plus an additional exclusive 15 minutes for Q&A. All sessions feature a 75-minute live text chat/Q&A with speakers and session organizers.
	A04.5 - Pushing the Limits of Detection in Quantitative (S)TEM Imaging, EELS, and EDX
	B06.3 - Correlative and Multimodal Microscopy and Imaging of Physical, Environmental, and Biological Sciences
	B08.3 - Biological Soft X-ray Tomography
	P03.6 - Energy and Soft Materials and the Development of Cryogenic Techniques for Studying Them
	P05.4 - Advances in Microscopy for Quantum Information Sciences
12:30 PM – 1:00 PM	Exhibitor Spotlight Sessions
	After-Session Video Chats with Speakers and Organizers All are welcome—check schedule for sessions that are holding these.
12:30 PM – 12:45 PM	
1:00 PM – 2:30 PM	Friday Poster Presentations*
	* Individual poster presentations are available on demand. Each presentation includes a short “flash talk” video (pre-recorded and available for on-demand watching) in addition to the downloadable PDF of the poster. Poster presenters in the following Poster Sessions are available during this 90-minute session for live text chat/Q&A.
	A03.P1 - Impact of Recent Advancement in Instrumentation/Detectors on Electron Energy Loss Spectroscopy for Physical and Biological Sciences
	A09.P2 - Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens
	A14.P1 - Vendor Symposium
	B02.P1 - The Promise of Cryo-Electron Tomography
	B05.P1 - Microbes in Focus
	B06.P1 - Correlative and Multimodal Microscopy and Imaging of Physical, Environmental, and Biological Sciences
	B08.P1 - Biological Soft X-Ray Tomography
	P03.P2 - Energy and Soft Materials and the Development of Cryogenic Techniques for Studying Them
	P05.P1 - Advances in Microscopy for Quantum Information Sciences
	P10.P1 - Call of the Wild: Advances in Microanalysis and Microscopy of Geological and Extraterrestrial Materials
	P12.P1 - Collaborative Analysis Using Atom Probe Tomography Including TEM/APT Characterization of Metal Alloys and Other Material Systems
2:30 PM – 3:00 PM	Exhibitor Spotlight Sessions



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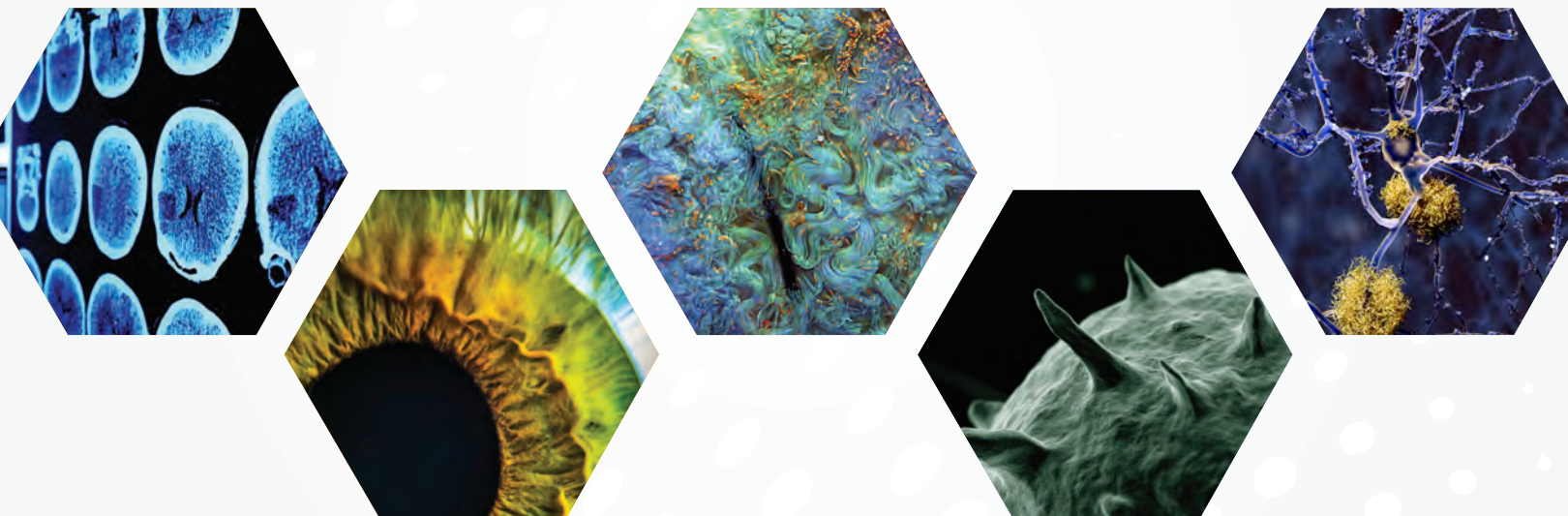
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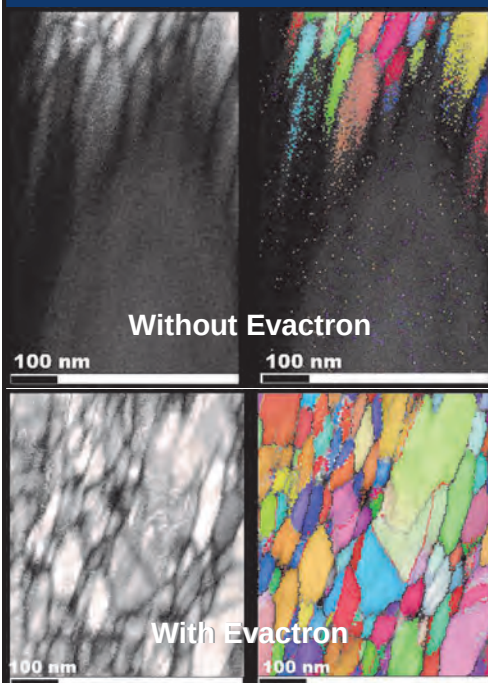
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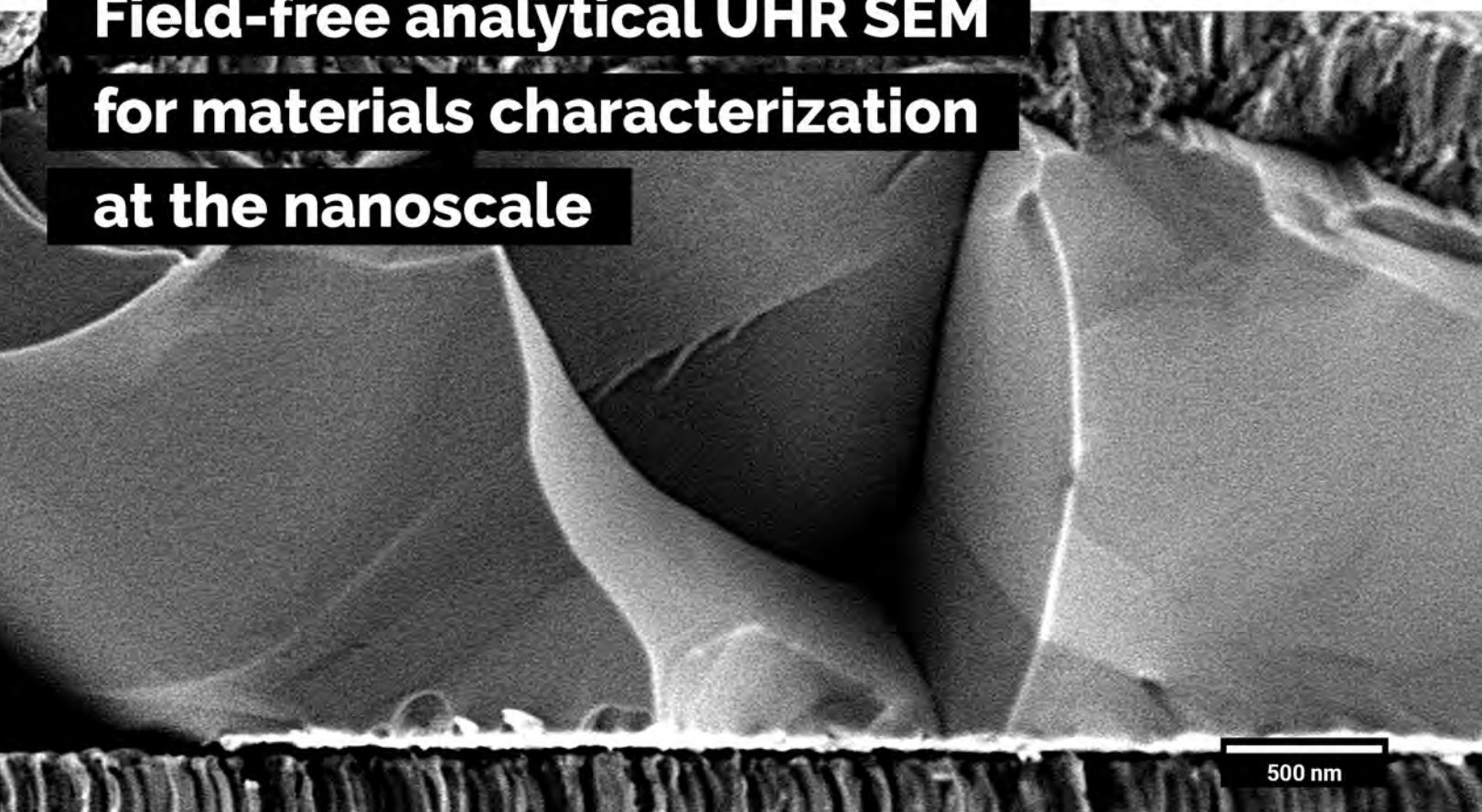
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XEI Scientific, Inc

Fixatives

Electron Microscopy Sciences

Fluorescence Microscopy

Carl Zeiss Microscopy, LLC

EDAX

Electron Microscopy Sciences

Fluid Imaging Technologies, Inc.

HORIBA Scientific

Leica Microsystems

**Focused Ion Beam Systems / Workstations**

Applied Beams LLC

EXpressLO LLC

Leica Microsystems

Tescan USA**FT-IR Microscopy**

Digital Surf**Glow Discharge Cleaning**

SPI Supplies**Image Analysis and Processing**

Applied Beams LLC

Bruker Corporation

Carl Zeiss Microscopy, LLC

Digital Surf

Fluid Imaging Technologies, Inc.

HORIBA Scientific

NEWTEC Scientific**Immuno-Labeling**

Electron Microscopy Sciences**Journals**

Cambridge University Press**Knife Resharpener / Resharpener Services**

Electron Microscopy Sciences**Leak Detection**

NEWTEC Scientific**Light Microscopes**

Carl Zeiss Microscopy, LLC

EXpressLO LLC

Fluid Imaging Technologies, Inc.

Leica Microsystems**Micro-CT Scanning**

Sigray, Inc.**Micromanipulators**

EXpressLO LLC

Kleindiek Nanotechnik

Oxford Instruments**Microtomes and Ultramicrotomes**

Electron Microscopy Sciences

Leica Microsystems**Nano Indentation**

Bruker Corporation

Nanoscience Instruments**Nanopositioners & Stages**

Kleindiek Nanotechnik**Nanoprobes / Mechanical Microprobes**

Sigray, Inc.**New and Used Equipment**

NanoSoft**Optical Filters, Fluorescence Filters**

Seiwa Optical America, Inc.**Other**

Alveole

Fluid Imaging Technologies, Inc.

MSA Mega Booth

Pacific Northwest CryoEM Center

Seiwa Optical America, Inc.

Phase Identification

EDAX

NanoMEGAS USA

Sigray, Inc.

Plasma Cleaners

Gatan, Inc.

ibss Group, Inc.

SPI Supplies

XEI Scientific, Inc.

Publishers

Cambridge University Press

Photonics Media

Raman Spectroscopy / Microscopy

HORIBA Scientific

Quantum Design, Inc

Renishaw Healthcare Inc.

Scanning Electron Microscopes (SEM)

Applied Beams LLC

Cameca

Carl Zeiss Microscopy, LLC

Digital Surf

ETS-Lindgren Inc.

JEOL USA, Inc.

Nanoscience Instruments

Tescan USA

Scanning Transmission Electron Microscopes (STEM)

Cameca

ETS-Lindgren Inc.

JEOL USA, Inc.

Nion Company

Quantum Detectors

Scanning Tunneling Microscopes

Digital Surf

Secondary Ion Mass Spectrometer (SIMS)

Cameca

SEM / STEM Digital Imaging Systems

Direct Electron, LP

ETS-Lindgren Inc.

SEM Accessories

Advanced Microscopy Techniques Corp

Applied Beams LLC

Bruker Corporation

EDAX

Gatan, Inc.

HORIBA Scientific

ibss Group, Inc.

JEOL USA, Inc.

Kleindiek Nanotechnik

Quantum Design, Inc

SPI Supplies

XEI Scientific, Inc.

SEM Stages, Mounts and Holders

EXpressLO LLC

Hummingbird Scientific

Kleindiek Nanotechnik

Quantum Design, Inc

Service & Repair

Applied Beams LLC

Carl Zeiss Microscopy, LLC

NanoSoft

Service Laboratories

Applied Beams LLC

Nanoscience Instruments

NanoSoft

Pacific Northwest CryoEM Center

**Software**

Cameca
Digital Surf
Direct Electron, LP
Gatan, Inc.
NanoMEGAS USA
NEWTEC Scientific
Seiwa Optical America, Inc

Specimen Preparation & Handling

Alveole
EXpressLO LLC
Gatan, Inc.
Nanoscience Instruments
NanoSoft
XEI Scientific, Inc.

Specimen Storage

NanoSoft

Spectrometers

Digital Surf
HORIBA Scientific
Sigray, Inc.

SQUID / Superconducting Quantum Interference Devices

Quantum Design, Inc

Surface Analysis

Digital Surf
HORIBA Scientific
Seiwa Optical America, Inc
Sigray, Inc.

Surface Profiling

Seiwa Optical America, Inc

Tabletop SEM/TEM

ETS-Lindgren Inc.
JEOL USA, Inc.

TEM Accessories

Advanced Microscopy Techniques Corp
Alveole
Bruker Corporation
Direct Electron, LP
EDAX
Electron Microscopy Sciences
EXpressLO LLC
Gatan, Inc.
Hummingbird Scientific
ibss Group, Inc.
NanoMEGAS USA
NanoSoft
SPI Supplies
XEI Scientific, Inc.

TEM Specimen Holders

EXpressLO LLC
Gatan, Inc.
Hummingbird Scientific
Nanoscience Instruments
NanoSoft

Testing Equipment

Fluid Imaging Technologies, Inc.
NEWTEC Scientific
Seiwa Optical America, Inc

Transmission Electron Microscopes (TEM)

Advanced Microscopy Techniques Corp.
ETS-Lindgren Inc.
JEOL USA, Inc.
NanoMEGAS USA
NanoSoft
Pacific Northwest CryoEM Center

Vacuum Equipment

Electron Microscopy Sciences

Vacuum Evaporators

SPI Supplies

WDS Detectors & Systems

Bruker Corporation

EDAX

Oxford Instruments

X-ray Analysis Equipment

Bruker Corporation

Carl Zeiss Microscopy, LLC

EDAX

HORIBA Scientific

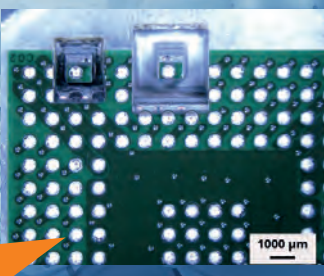
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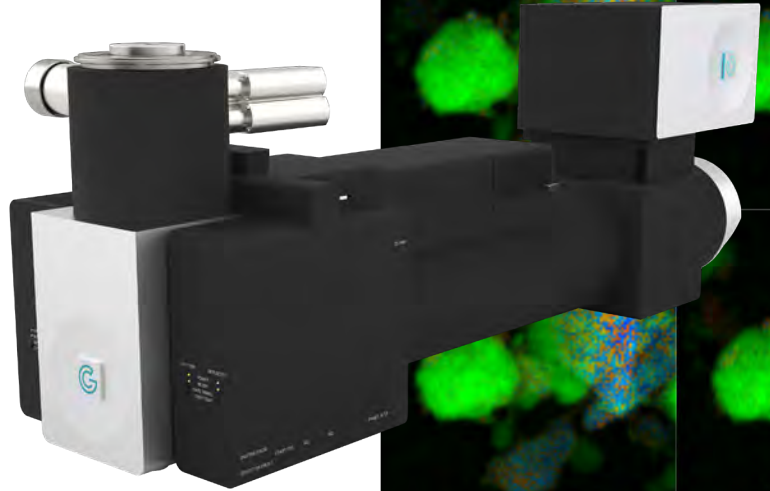
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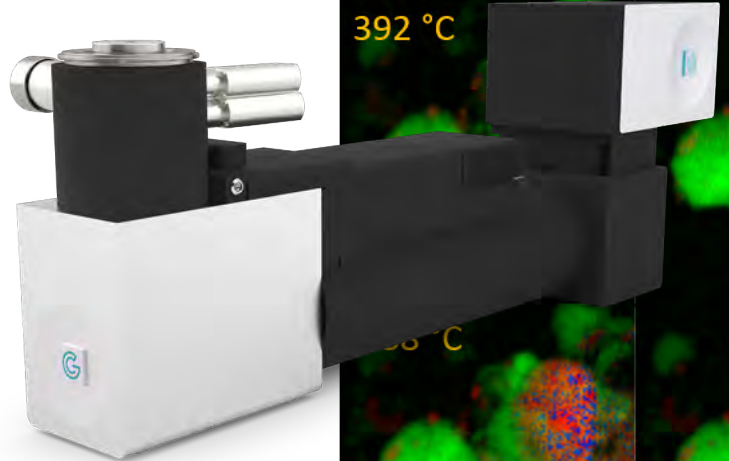
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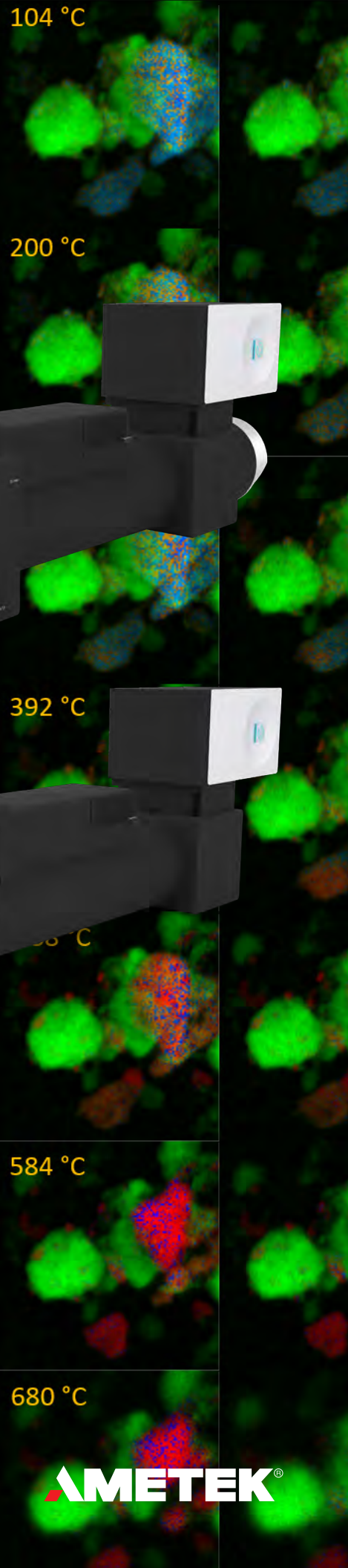


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