M&M 2024

MICROSCOPY & MICROANALYSIS

July 28-August 1 • Cleveland, OH

ifes international field emission society

MAS Microanalysis Society

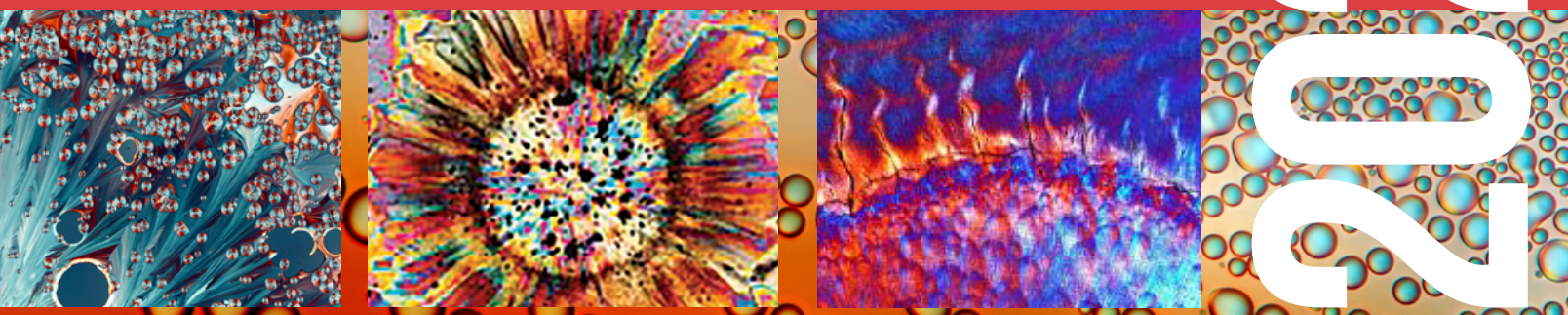
MSA Microscopy Society of America

LOOK INSIDE FOR:

Week At-A-Glance
Plenary Speakers
Awardees
Exhibitor Directory

Official Meeting Guide & Exhibitor Information

2024



https://mmconference.microscopy.org

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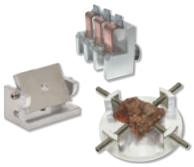

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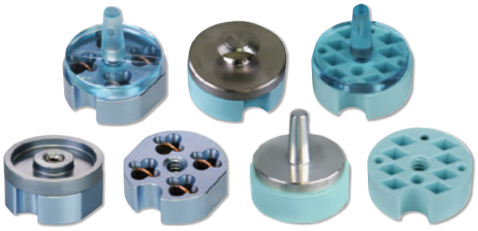

Cryo Grid Boxes & Lids, NEW High Capacity Styles

M&M 2024 VENDOR TUTORIAL

Tuesday, July 30th
5:45pm – 6:45pm, Booth #614

Precision Scribing & Cleaving Methods for Microscopy Sample Preparation with the PELCO® LatticeAx® 420

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QUESTIONS?

TECHNICAL MEETING CONTENT:
2024 Program Chair
James LeBeau, Massachusetts Institute of Technology
MM2024ProgramChair@microscopy.org

EXHIBITS & EXHIBITORS:
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ARE YOU A MEMBER?

Join Today and Save on M&M 2024 Registration Fees!

MSA Microscopy Society of America

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

MAS Microanalysis Society

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

ifes international field emission society

Visit http://fieldemission.org to learn more about the benefits of IFES membership.

JEM-120i

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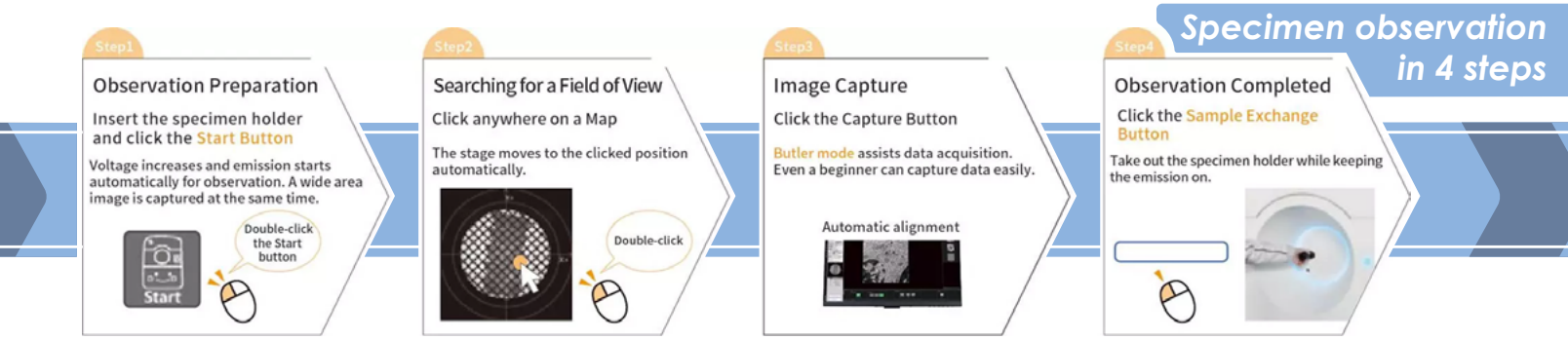
Specimen observation in 4 steps



We developed the JEM-120i with the concept of "Compact", "Easy To Use", and "Expandable". With the new external appearance, this instrument has evolved into a useful tool that anyone can use easily, from operation to maintenance.

It takes only 4 steps from loading a specimen to completing observation. The JEM-120i is equipped with an enhanced TEM control system and fully automated apertures, eliminating the need for switching magnification modes and selecting an aperture. Observation operations can be performed more smoothly than with previous models.

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Learn more

M&M2024 Letter from the Presidents

On behalf of the Microscopy Society of America and the Microanalysis Society, we are pleased to invite you to join us, in-person, July 28-August 1, 2024, for Microscopy & Microanalysis 2024 in Cleveland, OH. Discover the vibrant heartbeat of the Midwest in Cleveland, a city that seamlessly blends rich history with a contemporary flair. Nestled along the shores of Lake Erie, Cleveland invites you to experience a one-of-a-kind journey through its diverse neighborhoods and dynamic cultural scene.

The Program Committee, led by James LeBeau, James Evans, Steven Spurgeon (MAS co-chair), and Francios Vurpillot (IFES co-chair) 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 the Call for Papers for complete symposium descriptions and to submit one or more scientific papers for platform or poster presentations.

Experience an unparalleled gathering of industry experts and microscopists at M&M 2024! Prior to the main meeting, immerse yourself in the renowned Sunday Short Courses and four Pre-Meeting Congresses. The MSA Student Council's Annual Pre-Meeting Congress, tailored for students and early-career professionals, highlights outstanding research, fostering collaboration and recognition.

Kickstart the meeting on Sunday evening at the Opening Welcome Reception, a perfect opportunity to reconnect with colleagues and forge new friends. The scientific program begins on Monday morning with the Plenary Session, featuring captivating talks in both Physical and Biological sciences, along with the presentation of prestigious awards from MSA and sponsoring societies.

Beyond the robust scientific program, the M&M meeting distinguishes itself with the world's largest annual microscopy exhibition in the Exhibit Hall, unveiling cutting-edge instrumentation and accessories. Explore the Exhibit Hall and participate in vendor tutorials, held Monday through Wednesday after hours. Don't miss other educational opportunities, including focused tutorials in biological and physical sciences, educational outreach programs, and special sessions like the Technologists' Forum and roundtable discussions.

M&M 2024 continues to be the premier meeting for microscopy and microanalysis where you'll stay abreast of the latest technologies, discover new applications across microscopy and microanalysis, and, most importantly, foster meaningful connections with colleagues. Elevate your professional journey with M&M 2024!

We look forward to being Together Again for M&M 2024!

MSA Microscopy Society of America

Jay D. Potts
University of South Carolina, School of Medicine
President, Microscopy Society of America

MAS Microanalysis Society

Patrick Camus
Retired
President, Microanalysis Society

Future Meeting Dates

M&M2025 MICROSCOPY & MICROANALYSIS
July 27-31 • Salt Lake City, Utah

August 2–August 6, 2026
MILWAUKEE, WI

August 1–August 4, 2027
PITTSBURGH, PA

July 30–August 3, 2028
SEATTLE, WA

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Huntington Convention Center

M&M2024

Unless indicated otherwise, all official conference events are being held at the Huntington Convention Center, located in the downtown district of Cleveland, OH.

- Exhibit Halls
- Ballrooms
- Meeting Rooms
- Exhibit Hall Concessions
- Show Offices
- Starbucks/Au Bon Pain Cafe
- The UPS Store
- Public Restrooms
- Back of House
- Elevators
- Campus Connections to Hilton and Public Auditorium
- (P) Huntington Park Garage Tunnel
- Water Bottle Refill Stations

M&M2024 Registration Information cont.

If you are not a current member of MSA or MAS (i.e., expired member or non-member), your registration fee will also include a membership fee for the society/societies of your choice, unless otherwise noted.*

Your TOTAL Registration Fee for M&M 2024 will be:

Base Registration Fee $ (CHART A)

+ Selected Membership Fee $ (CHART B)

= **Total Registration Fee**

**This does not include or affect any additional purchases, such as Short Courses or PMCs.*

- Online registration: https://mmconference.microscopy.org/registration-information
- A valid credit card is required to register. Checks are not accepted.
- Questions? Please contact MMregistration@microscopy.org

CHART A – M&M 2024 Base Registration Rates (all rates in USD)

REGISTRATION TYPE	2024 REGISTRATION RATE		
You must register on or before the following dates to receive these rates	**Early** (May 9)	**Regular** (June 27)	**Onsite** (after June 27)
Full Meeting	$692	$865	$933
Full Meeting – Student✦	$204	$216	$247
Full Meeting – Post-Doctoral Researcher	$278	$346	$396
Full Meeting – Emeritus Member* *(requires Emeritus membership in MSA or MAS)***	$278	$278	$278
Partial Meeting – One Day Only *(Monday, Tuesday, Wednesday or Thursday)*	$334	$420	$482
Pre-Meeting Congresses* *(separate registration required)*	$199	$249	$299
Pre-Meeting Congresses – Student*✦ *(separate registration required)*	$100	$129	$149
Sunday Short Course* *(separate registration required)*	$339	$389	$399
Sunday Short Course – Student*✦ *(separate registration required)*	$149	$179	$199

CHART B – 2024 Membership Dues Chart (all rates in USD)

MEMBERSHIP TYPE *Membership with either society is for the calendar year and is not pro-rated*	MSA	MAS	JOINT MEMBERSHIP WITH MSA & MAS
Regular Member	$70	$40	$100
Student Member	$20	$10	$20
Emeritus Member	Free	Free	Free
Honorary Member	Free	Free	Free

*This registration rate **will not** include a membership fee. Member rate applies to any member of MSA, MAS. Membership will be verified.

** Emeritus members are for MSA only. To inquire, please contact associationmanagement@microscopy.org.

All **Full Meeting Registrations** (Regular, Student, Post-Doc, Emeritus) for M&M 2024 include:

- Digital access to meeting proceedings;
- Four full days' access to exhibits, plenary sessions, symposia, tutorials, poster presentations/happy hours, and all vendor tutorials. Vendor Tutorials are free and require registration onsite in Cleveland at the MSA MegaBooth.
- Admission ticket + one (1) drink ticket to the Sunday Welcome Reception on Sunday, July 28.

✦ Student rate is available to full-time undergraduate and graduate students only. Post-doctoral researchers are not considered students.

M&M 2024 Exhibitor List

M&M2024

3D-Micromac AG
Advanced Microscopy Techniques Corp.
Alemnis AG / Angstrom Scientific Inc
Applied Physics Technologies
Attocube Systems Inc.
Barnett Technical Services
Bruker Corporation
Cameca
Canadian Centre for Electron Microscopy
Carl Zeiss Microscopy, LLC
Clark-MXR Inc
Collectome LLC
Comet Technologies Canada
condenZero
ConnectomX Ltd
DECTRIS Ltd
Delong Instruments
DENSsolutions
Diatome US
DigiM Solution LLC
Direct Electron, LP
Duniway Stockroom Corp.
El-Mul Technologies
Electron Microscopy Sciences / Quorum Technology / Diatome US
Euclid TechLabs, LLC
EXpressLO LLC
Ferrovac
Fischione Instruments
Fritsch Milling & Sizing, Inc
Gatan/EDAX
h-Bar Instruments
Herzan LLC
Hirox-USA, Inc.
Hitachi High-Tech America, Inc.
HORIBA Scientific
HREM Research Inc.
Hummingbird Scientific
ibss Group, Inc.
Integrated Dynamics Engineering
JASCO
JEOL USA, Inc.
JH Technologies
Kamrath & Weiss GmbH
Keyence Corporation of America
Kitware
Kleindiek Nanotechnik
Kratos Analytical, a Shimadzu Company
Ladd Research
Leica Microsystems
Linkam Scientific Instruments
MAS: The Microanalysis Society
Mel-Build Corporation
Microscopy Innovations, LLC
Midwest Center for Cryo-Electron Tomography
MIPAR Image Analysis Software
MiTeGen
MSA Mega Booth
NanoMEGAS USA
Nanomotion Inc
Nanoscience Instruments
NenoVision
Nion Company
Norcada, Inc.
NT-MDT America, Inc
Oxford Instruments
Pacific Northwest CryoEM Center
Panasas
Physical Electronics
PIE Scientific LLC
PNDetector GmbH
Point Electronic GmbH
Protochips, Inc.
Quantum Design, Inc
Quantum Detectors
Raith America, Inc.
Rave Scientific
Renishaw Inc
RMC Boeckeler
Royal Microscopical Society
Scientific Bridge
Seron Technologies Inc.
Sigray, Inc.
Simple Origin
SiriusXT Ltd
SmarAct Inc
SPT Labtech
SubAngstrom
Supro Instruments Co., Ltd
syGlass, Inc
Ted Pella Inc.
TESCAN
Theia Scientific
Thermo Fisher Scientific
Tousimis
TVIPS GmbH
United Mineral and Chemical Corp.
VEC
VitroTEM
Voxa
XEI Scientific, Inc.
ZEPTOOLS Technology Co., Ltd

Accessibility

If you require special accommodation 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, MAS, and IFES, along with M&M student awards, 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 https://microscopy.org/Society-Awards-Recipients.

Cancellation and Refund Policy

Refund requests received prior to June 20, 2024 will be honored less a $65 administrative fee. No refunds will be issued for cancellations (for any reason) received on or after June 20, 2024, and no refunds will be issued on-site in Minneapolis. E-mail: MMRegistration@microscopy.org.

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).

Cleveland & Regional Visitor Information

Stop by the Destination Cleveland booth located inside the Exhibit Hall to pick up local information, including maps, dining guides and tour info, and visitor information on Cleveland and the surrounding areas.

Internet & E-mail

Free wireless internet is available for M&M attendees in the Huntington Convention Center.

Job & Resume Postings / Placement Office

(see MSA MegaBooth info on Page 18)

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 2025 – Meeting & City Information

Stop by for advance information on the 2025 M&M Meeting in Salt Lake City, UT! The 2025 table is located in the main registration area, and has visitor guides, maps, and other important information.

MSA MegaBooth – Booth # 933

See complete details on Page 18

Check out all that MSA has to offer its members and M&M attendees! You can peruse recent editions of *Microscopy Today*, learn about Project MICRO, and join the Technologists' Forum.

Proceedings

Conference Proceedings will be available in a digital online format only. All Full Meeting registrations include access to the proceedings online. The proceedings will be linked on the meeting platform and included in an email sent to all paid registrants.

MAS Booth - Booth # 536

MAS has a membership and information booth located in the exhibit hall. 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 2024 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.

Volunteer Room

The volunteer & student bursary office is in Room 2 on the Concourse level. Check in here for volunteer assignments and sign-outs.

M&M 2024 Sunday Evening Welcome Reception

Huntington Convention Center—Grand Ballroom BC, Ballroom Level

Sunday, July 28, 2024 • 6:30 PM – 8:30 PM

One ticket is included with most registrations (see page 8 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.

Step into the heart of Cleveland with our inspired menu and local brews; and catch up with friends and colleagues. After the reception, grab some old and new friends and head out to one of Cleveland's numerous craft breweries or wine bars to continue the fun!

MAS Microanalysis Society

MAS Social Event – for MAS Members Only!

Wednesday, July 31, 2024 • 6:30 PM – 8:30 PM

Stop by the MAS booth in the lobby to check your membership status and pick up your ticket for the MAS social event on Wednesday evening, July 31—immediately following the MAS Business Meeting.

MSA Microscopy Society of America

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 monetary 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.

Getting To & Around Cleveland

The Cleveland Hopkins International Airport (CLE) is Northeast Ohio's Gateway to the World. Serving 10 million passengers annually with over 135 daily departures to 38 nonstop destinations, CLE is Northeast Ohio's premier commercial airport. Ten passenger airlines and two all-cargo airlines operate regularly at CLE. The upcoming multi-phase Terminal Modernization Development Program will elevate the travel experience for all through an extensive transformation of terminal and related facilities. It is anticipated to begin in 2025, the Airport's 100th Anniversary, and extend into the next decade.

https://www.clevelandairport.com/

Ground Transportation

Cleveland's Regional Transit Authority (http://www.riderta.com/routes) runs free trolley buses on weekdays. RTA also operates a rail line between Cleveland Hopkins International Airport and Tower City Center every 15 minutes.

Cleveland's transit system is rather substantial with bus, trolley and train lines all throughout the city. Be sure to visit RTA's website or use the Transit App (https://transitapp.com/) to purchase fares and plan trips with real-time arrival information from your phone.

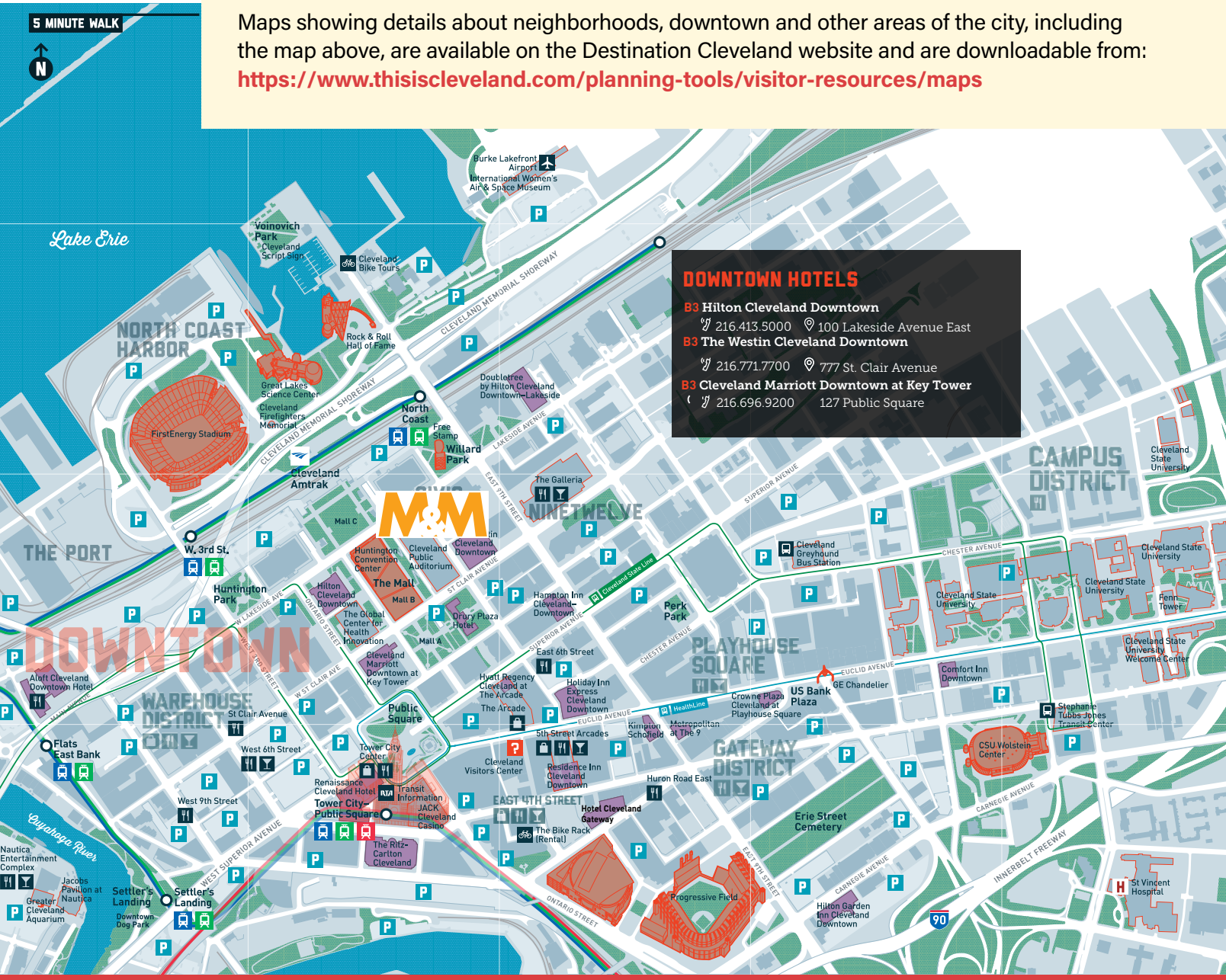
Hotels

All three official M&M Hotels are less than a 10 minute walk to the Huntington Convention Center. If you are staying at the Hilton Cleveland Downtown, you can take the Convention Center Connector.

More Cleveland Travel Info:

For detailed attraction, dining, and travel information for visitors, visit the Destination Cleveland website at **https://www.thisiscleveland.com/**

Maps showing details about neighborhoods, downtown and other areas of the city, including the map above, are available on the Destination Cleveland website and are downloadable from: **https://www.thisiscleveland.com/planning-tools/visitor-resources/maps**



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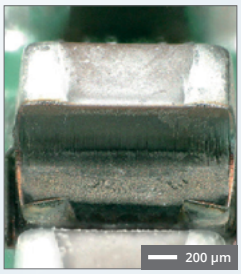
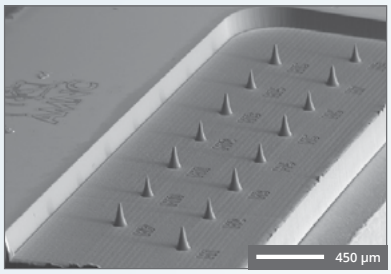
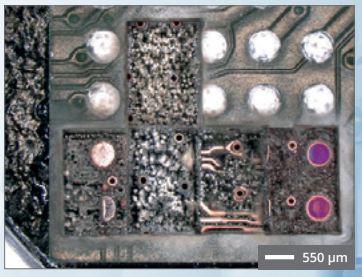


Cutting cross-sections within minutes



Preparing APT tips directly from your specimen



Delayering underlying structures such as circuit layout overlays

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(As of June 11, 2024)

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CryoElectron Microscopy Research Center
Dectris Ltd.
Diatome US
Direct Electron LP
Double Helix Optics
Duniway Stockroom Corp.
EDAX
Electron Microscopy Sciences
EMSIS GmbH
EXpressLO LLC
Gatan/EDAX
Hitachi High-Tech America, Inc.
HREM Research Inc.
Hummingbird Scientific
ibss Group, Inc.
International Centre for Diffraction Data
JEOL USA, Inc.
Kleindiek Inc.
Ladd Research
Lehigh Microscopy School
Micron, Inc.
Microscopy Innovations LLC
NanoSpective
Nion Co.
Oxford Instruments
Protochips, Inc.
Quantum Design
Scientific Instrumentation Services, Inc.
SEMTech Solutions, Inc.
Ted Pella Inc.
TESCAN
Thermo Fisher Scientific
Tousimis
XEI Scientific, Inc.

All events held at Huntington Convention Center of Cleveland unless otherwise noted.

To encourage strong attendance at the Distinguished Scientist Awardee Presentation and the MSA Members Meeting, MSA has decided to remove the lunchtime slots for committee and FIG meetings on the Tuesday and Wednesday schedules to free up time for members to attend these events.

Therefore, all committee and FIG meetings originally slated for these times will be rescheduled to morning timeslots. Please refer to the provided schedule for updated timing for your meeting. If you would like to move your meeting to lunchtime on Thursday, please let us know. Space is limited and accommodations are based on the availability of meeting space.

Saturday, July 27, 2024

8:00 AM – 5:30 PM	MSA Council	

Sunday, July 28, 2024

5:00 PM – 6:00 PM	FIG: Electron Microscopy in Liquids and Gases	
8:30 PM – 10:00 PM	Symposium Organizers' Reception	OFFSITE

Monday, July 29, 2024

7:15 AM – 8:15 AM	Technologists' Forum Board	
7:15 AM – 8:15 AM	Travel Awards Committee	
7:15 AM – 8:15 AM	MSA Awards + Fellowship Committees	
12:15 PM – 1:15 PM	MAS Meal with a Mentor	
12:15 PM – 1:15 PM	International Committee	
12:15 PM – 1:15 PM	FIG: PHARMACEUTICAL	
12:15 PM – 1:15 PM	FIG: DIAGNOSTIC & BIOLOGICAL MICROSCOPY	
12:15 PM – 1:15 PM	FIG: FOCUSED ION BEAM	
12:15 PM – 1:15 PM	FIG: ATOM PROBE FIELD ION MICROSCOPY	
12:15 PM – 1:15 PM	FIG: FOM Roundtable	
3:30 PM – 4:30 PM	FIG: 3D EM in the Biological Sciences	
3:30 PM – 5:00 PM	Technologists' Forum Business Meeting	
4:30 PM – 6:00 PM	MSA Book Elements	
5:30 PM – 7:00 PM	Student Mixer	
5:45 PM – 6:45 PM	Vendor Tutorials *(Sign up at Vendor Booths)*	EXHIBIT HALL

Tuesday, July 30, 2024

7:15 AM – 8:15 AM	MSA Local Affiliated Societies & MAS Affiliated Regional Societies Breakfast	
7:15 AM – 8:15 AM	*Microscopy Today Editorial Board Meeting*	
7:15 AM – 8:15 AM	MSA Standards Committee Meeting	
7:15 AM – 8:15 AM	FIG: Electron Crystallography	
7:15 AM – 8:15 AM	FIG: Low Temperature Electron Microscopy	
10:00 AM – 12:00 PM	M&M 2025 - Program Planning Meeting	
12:15 PM – 1:15 PM	MSA Distinguished Scientist Awardee Lectures	
12:15 PM – 1:15 PM	FIG: FOM FIG Lunch Meeting	
3:30 PM – 4:30 PM	MSA Education Committee Meeting	
3:30 PM – 4:30 PM	FIG Business Meeting	
5:30 PM – 7:00 PM	Post-Doc Reception	
5:45 PM – 6:45 PM	Vendor Tutorials *(Sign up at Vendor Booths)*	
6:30 PM – 8:30 PM	Presidents' Reception *(Invitation Only)*	

Wednesday, July 31, 2024

7:15 AM – 8:15 AM	MSA Certification Board	
7:15 AM – 8:15 AM	MaM Editorial Board	
7:15 AM – 8:15 AM	MSA Membership Committee	
7:15 AM – 8:15 AM	FIG: Aberration Corrected Electron Microscopy	
12:15 PM – 1:15 PM	MSA Members' Meeting	
5:30 PM – 6:30 PM	Diversity and Inclusion Mixer	
5:30 PM – 6:30 PM	MAS Business Meeting	
5:45 PM – 6:45 PM	Vendor Tutorials *(Sign up at Vendor Booths)*	
6:30 PM	MAS Members Social—See MAS Booth for Details	OFFSITE

Thursday, August 1, 2024

8:30 AM – 9:30 AM	M&M Sustaining Members Meeting	
12:15 PM – 1:15 PM	FIG: MicroAnalytical Standards	

MSA
Microscopy Society of America

MegaBooth in the EXHIBIT HALL

MICROSCOPY & MICROANALYSIS

July 28-August 1 • Cleveland, OH

Open during all exhibit hall hours.

The **MSA MEGABOOTH** showcases all that MSA membership has to offer. Stop by to learn about MSA and our mission and receive information about the memberships available—Regular, Sustaining (corporate), and Student levels. If you are currently a member, stop by to catch up on all the new society developments and network with your colleagues.

VENDOR TUTORIALS – Sign up in the presenting companies booth. 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!

Check out the **BOOK DISPLAY** – publisher-donated books, divided into biological/physical topics. Several new titles added every year! Come and browse the newest titles.

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 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.

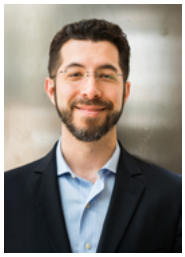
Visit the updated **Project MICRO** display to learn about this organization's education and outreach goals.

Plenary Session

Monday, July 29, 2024
Huntington Convention Center – Grand Ballroom AB

Plenary session begins at 8:30 AM and will feature special awards presentations from the joining societies.

Ed Boyden, PhD



Professor, Departments of Brain and Cognitive Sciences, Media Arts and Sciences, and Biological Engineering, Y. Eva Tan Professor in Neurotechnology McGovern Institute

Tools for Analyzing and Controlling Biological Systems

C. Wren Carr, PhD

Physicist, Lawrence Livermore National Laboratory

How Microscopy Enabled Laboratory Fusion

MSA Distinguished Scientist Award & Talks

Tuesday, July 30, 2024, 12:15 PM
Huntington Convention Center – Room 5

DISTINGUISHED SCIENTIST – BIOLOGICAL SCIENCES

Jay Jerome, Ph.D., Vanderbilt University

Luck, Obstinance, and the Search for Truth

DISTINGUISHED SCIENTIST – PHYSICAL SCIENCES

J. Murray Gibson, Ph.D., Florida State University

From Dark Rooms to Datacubes— A Microscopy Journey

MSA Microscopy Society of America

MSA Major Society Award Winners

BURTON MEDAL – PHYSICAL SCIENCES
Wu Zhou, University of Chinese Academy of Sciences

ALBERT CREWE AWARD
Michael Zachman, Oak Ridge National Laboratory

CHUCK FIORI AWARD FOR OUTSTANDING TECHNOLOGIST, PHYSICAL SCIENCE
Kathleen B. Reuter, IBM T.J. Watson Research Center

GEORGE PALADE AWARD
Florian Schüder, Yale School of Medicine

MAS Microanalysis Society

MAS Major Society Award Winners

PRESIDENTIAL SCIENCE AWARD
Paul Kotula, Sandia National Laboratory

PRESIDENTIAL SERVICE AWARD
Donovan Leonard, Microsoft Quantum

PETER DUNCUMB AWARD FOR EXCELLENCE IN MICROANALYSIS
Sergei Kalinin, University of Tennessee Knoxville

KURT F.J. HEINRICH AWARD
Shelly Conroy, Imperial College London

BIRKS – BEST CONTRIBUTED PAPER
Sponsored by JEOL USA
Vivek Subramanian - *Cryo-FIB and Synchrotron SAXS/WAXS Studies of Confined Crystallization of PDMS in Tubular Network Block Copolymer Morphologies*

CASTAING – BEST STUDENT PAPER
Sponsored by Cameca
Sarah Anderson - *Identifying the Mechanism of Glioblastoma Cell Migration in Mouse Brain Slices*

COSSLETT – BEST INVITED PAPER
Sponsored by MAS
Claudia Roig González - *Epidote Reference Material Development Calibrated for Oxygen Isotope Determination by Secondary Ion Mass Spectrometry (SIMS)*

MACRES – BEST INSTRUMENTATION/SOFTWARE PAPER
Sponsored by Oxford Instruments
Paul Carpenter - *Quantitative Microanalysis Explorer: Next Generation Analytical Tool for Study of Apollo 17 Core 73002,6015-6018*

Friday, July 26–Saturday, July 27

8:00 AM – 5:30 PM	**MSA Council**	*Huntington Convention Center*
9:00 AM – 5:30 PM	**Pre-Meeting Congress**	
	X60 Annual Pre-Meeting Congress for Students, Post-Docs, and Early-Career Professionals in Microscopy & Microanalysis ***(Organized by the MSA Student Council)***	

Sunday, July 28

8:30 AM – 5:00 PM	**Sunday Short Courses**	
	X10 Guidelines for Performing 4D-STEM Characterization from the Atomic to Micrometer Scales: Experimental Considerations, Data Analysis	
	X11 Cryo-EM for Materials Sciences: Hardware, Applications and Data Acquisition	
	X12 Transmission Electron Microscopy and Spectroscopy from First Principles	
	X13 Automated Experiments in Electron Microscopy	
	X14 From Obscure to Clear: A Dive into Tissue Clearing and Expansion Microscopy	
	X15 Focused Ion Beam Theory & Methods	
8:30 AM – 5:00 PM	**Pre-Meeting Congress**	
	X61 Synergy of Hardware Innovations and Computational Breakthroughs in TEM ***(Organized by the MSA Abberation-Corrected Electron Microscopy Data Analysis & Management Focused Interest Groups)***	
	X62 Obtaining Reliable and Relevant Insights in Our *In Situ* Microscopy and Spectroscopy Studies of Reactions in Liquids and Gases: A Discussion on Re-producibility, Robustness and Rigor ***(Organized by the MSA Electron Microscopy in Liquids and Gases Focused Interest Group)***	
6:30 PM – 8:30 PM	**M&M 2024 Welcome Reception**	*Grand Ballroom B-C*
8:30 PM – 10:00 PM	**Symposium Organizers' Reception**	*Offsite (by invitation only)*

Monday, July 29

7:15 AM – 8:15 AM	**MSA Awards + Fellowship Committees**	
7:15 AM – 8:15 AM	**Technologists' Forum Board**	
7:15 AM – 8:15 AM	**Travel Awards Committee**	

8:30 AM – 12:00 PM	**M&M 2024 Plenary Sessions**	*Grand Ballroom A*
	Opening Welcome	
	Plenary Talk #1: **Ed Boyden, PhD** ***Professor, Departments of Brain and Cognitive Sciences, Media Arts and Sciences, and Biological Engineering, Y. Eva Tan Professor in Neurotechnology, McGovern Institute and HHMI*** **Tools for Analyzing and Controlling Biological Systems**	
	MAS Awards Presentation MSA Awards Presentation M&M Meeting Awards Presentation	
	Plenary Talk #2: **C. Wren Carr, PhD** ***Physicist, Lawrence Livermore National Laboratory*** **How Microscopy Enabled Laboratory Fusion**	
12:00 PM – 1:30 PM	**Lunch Break in the Exhibit Hall**	
12:00 PM – 5:30 PM	**Exhibit Hall Open**	

For an up-to-date schedule and meeting room locations, please check www.microscopy.org/mandm/2024 or the mobile app.

Monday, July 29 (Cont'd.)

12:15 PM – 1:15 PM	**MSA International Committee**
12:15 PM – 1:15 PM	**MAS Meal with a Mentor**
12:15 PM – 1:15 PM	**FIG: Pharmaceutical**
12:15 PM – 1:15 PM	**FIG: Diagnostic & Biological Microscopy**
12:15 PM – 1:15 PM	**FIG: Focused Ion Beam**
12:15 PM – 1:15 PM	**FIG: Atom Probe Field Ion Microscopy**
12:15 PM – 1:15 PM	**FIG: FOM Roundtable**
1:30 PM – 3:00 PM	**P.M. Symposia & Sessions**
	A02.1 Data Science and Atom Probe Tomography (IFES-Organized)
	A08.1 New Opportunities in Material Science – Multi-dimensional Imaging and Advanced Data Processing *Sponsored by* GATAN EDAX
	A09.1 Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management
	A10.1 Correlative Analysis and Multimodal Microscopy and Spectroscopy *Sponsored by* OXFORD INSTRUMENTS
	B02.1 Biological Applications of Quantitative Label-Free Imaging
	B03.1 Biomedical Research on Diseases in Humans, Plants and Animals using Electron and Light Microscopy
	B09.1 Volume Electron Microscopy
	C01.1 Emerging 4D STEM Techniques in Materials and Biological Sciences *Sponsored by* JEOL
	C02.1 Facilities Management: Crucial Skills and Strategies
	C06.1 Memorial Symposium: Lena Fitting Kourkoutis
	P02.1 Memorial Symposium: Terence E. Mitchell
	P03.1 Electron Microscopy of Advanced Functional Materials
	P05.1 Advanced Imaging and Spectroscopy Beyond Room Temperature *Sponsored by* GATAN EDAX
	P06.1 Visualizing Electronically Driven Dynamics Across Spatiotemporal Scales: From *In-situ* to Ultrafast
3:00 PM – 5:00 PM	**Monday Poster Presentations** *Post-Deadline Posters will be presented on this day.*
	A02.P1 Data Science and Atom Probe Tomography ***(IFES-Organized)***
	A08.P1 New Opportunities in Material Science—Multi-dimensional Imaging and Advanced Data Processing
	A10.P1 Correlative Analysis and Multimodal Microscopy and Spectroscopy
	B02.P1 Biological Applications of Quantitative Label-Free Imaging
	B03.P1 Biomedical Research on Diseases in Humans, Plants and Animals using Electron and Light Microscopy
	C01.P1 Emerging 4D STEM Techniques in Materials and Biological Sciences
	C07.P1 Lens on Diversity in the Microscopy and Microanalysis Community
	P03.P1 Electron Microscopy of Advanced Functional Materials
	P06.P1 Visualizing Electronically Driven Dynamics Across Spatiotemporal Scales: From *In-situ* to Ultrafast
	P10.P1 *In Situ* and Cryogenic Electron Microscopy and Spectroscopy for Energy Materials
	PDP.P1 Post Deadline Posters
3:30 PM – 4:30 PM	**FIG: 3D EM in the Biological Sciences**
3:30 PM – 5:00 PM	**Technologists' Forum Business Meeting**
4:30 PM – 6:00 PM	**MSA Book Elements**
5:00 PM – 5:30 PM	**Student Poster Awards**
5:30 PM – 7:00 PM	**Student Mixer**
5:45 PM – 6:45 PM	**Vendor Tutorials** *(Sign up at individual exhibitors' booths)*

Tuesday, July 30

7:15 AM – 8:15 AM	**MSA Local Affiliated Societies & MAS Affiliated Regional Societies**
7:15 AM – 8:15 AM	***Microscopy Today* Editorial Board Meeting**
7:15 AM – 8:15 AM	**MSA Standards Committee**
7:15 AM – 8:15 AM	**FIG: Electron Crystallography**
7:15 AM – 8:15 AM	**FIG: Low Temperature Electron Microscopy**
8:30 AM – 10:00 AM	**A.M. Symposia & Sessions**
	A02.2 Data Science and Atom Probe Tomography ***(IFES-Organized)***
	A08.2 New Opportunities in Material Science—Multi-dimensional Imaging and Advanced Data Processing *Sponsored by* GATAN EDAX
	A09.2 Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management
	A10.2 Correlative Analysis and Multimodal Microscopy and Spectroscopy *Sponsored by* OXFORD INSTRUMENTS
	B02.2 Biological Applications of Quantitative Label-Free Imaging
	B03.2 Biomedical Research on Diseases in Humans, Plants and Animals using Electron and Light Microscopy
	B09.2 Volume Electron Microscopy
	C01.2 Emerging 4D STEM Techniques in Materials and Biological Sciences *Sponsored by* JEOL
	C02.2 Facilities Management: Crucial Skills and Strategies
	C06.2 Memorial Symposium: Lena Fitting Kourkoutis
	P02.2 Memorial Symposium: Terence E. Mitchell
	P03.2 Electron Microscopy of Advanced Functional Materials
	P05.2 Advanced Imaging and Spectroscopy Beyond Room Temperature *Sponsored by* GATAN EDAX
	P06.2 Visualizing Electronically Driven Dynamics Across Spatiotemporal Scales: From *In-situ* to Ultrafast
	P07.1 Understanding Structure-Property Relationships in Quantum Materials with Emerging Electron Microscopy Methods
	P09.1 Advances in *In Situ* TEM Characterization of Dynamic Processes in Materials *Sponsored by* GATAN EDAX
10:00 AM – 10:30 AM	**Coffee Break in the Exhibit Hall**
10:00 AM – 5:30 PM	**Exhibit Hall Open**
10:00 AM – 12:00 PM	**M&M 2025 Symposium Organizers' Planning Meeting**
10:30 AM – 12:00 PM	**A.M. Symposia & Sessions**
	A02.3 Data Science and Atom Probe Tomography ***(IFES-Organized)***
	A08.3 New Opportunities in Material Science—Multi-dimensional Imaging and Advanced Data Processing *Sponsored by* GATAN EDAX
	A09.3 Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management
	A10.3 Correlative Analysis and Multimodal Microscopy and Spectroscopy *Sponsored by* OXFORD INSTRUMENTS
	B01.1 3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)
	B03.3 Biomedical Research on Diseases in Humans, Plants and Animals using Electron and Light Microscopy
	B09.3 Volume Electron Microscopy
	C01.3 Emerging 4D STEM Techniques in Materials and Biological Sciences *Sponsored by* JEOL
	C02.3 Facilities Management: Crucial Skills and Strategies
	C06.3 Memorial Symposium: Lena Fitting Kourkoutis
	P02.3 Memorial Symposium: Terence E. Mitchell
	P05.3 Advanced Imaging and Spectroscopy Beyond Room Temperature *Sponsored by* GATAN EDAX

For an up-to-date schedule and meeting room locations, please check **www.microscopy.org/mandm/2024** or the mobile app.

Tuesday, July 30 (Cont'd.)

10:30 AM – 12:00 PM	**A.M. Symposia & Sessions cont.**	
	P06.3	Visualizing Electronically Driven Dynamics Across Spatiotemporal Scales: From *In-situ* to Ultrafast
	P07.2	Understanding Structure-Property Relationships in Quantum Materials with Emerging Electron Microscopy Methods
	P09.2	Advances in *In Situ* TEM Characterization of Dynamic Processes in Materials — *Sponsored by* GATAN EDAX
12:00 PM – 1:30 PM	**Lunch Break in the Exhibit Hall**	
12:15 PM – 1:00 PM	**MSA Distinguished Scientist Awardee Lecture**	
12:15 PM – 1:15 PM	**FIG: FOM FIG Lunch Meeting**	
1:30 PM – 3:00 PM	**P.M. Symposia & Sessions**	
	A03.1	Expanding Capabilities of Atom Probe Tomography ***(IFES-Organized)***
	A07.1	Triumphs, Trials, and Trepidations in Quantifying Low-Z Elements with Microanalytical Methods — *Sponsored by* OXFORD INSTRUMENTS
	A08.4	New Opportunities in Material Science – Multi-dimensional Imaging and Advanced Data Processing — *Sponsored by* GATAN EDAX
	A09.4	Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management
	A10.4	Correlative Analysis and Multimodal Microscopy and Spectroscopy — *Sponsored by* OXFORD INSTRUMENTS
	B01.2	3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)
	B03.4	Biomedical Research on Diseases in Humans, Plants and Animals using Electron and Light Microscopy
	B09.4	Volume Electron Microscopy
	C01.4	Emerging 4D STEM Techniques in Materials and Biological Sciences — *Sponsored by* JEOL
	C06.4	Memorial Symposium: Lena Fitting Kourkoutis
	P02.4	Memorial Symposium: Terence E. Mitchell
	P03.3	Electron Microscopy of Advanced Functional Materials
	P04.1	Science and Applications of High-Entropy Materials
	P05.4	Advanced Imaging and Spectroscopy Beyond Room Temperature — *Sponsored by* GATAN EDAX
	P06.4	Visualizing Electronically Driven Dynamics Across Spatiotemporal Scales: From *In-situ* to Ultrafast
	P07.3	Understanding Structure-Property Relationships in Quantum Materials with Emerging Electron Microscopy Methods
	P09.3	Advances in *In Situ* TEM Characterization of Dynamic Processes in Materials — *Sponsored by* GATAN EDAX
3:00 PM – 5:00 PM	**Tuesday Poster Presentations**	*Exhibit Hall*
	A08.P2	New Opportunities in Material Science – Multi-dimensional Imaging and Advanced Data Processing
	A09.P1	Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management
	A10.P2	Correlative Analysis and Multimodal Microscopy and Spectroscopy
	B01.P1	3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)
	B09.P1	Volume Electron Microscopy
	C01.P2	Emerging 4D STEM Techniques in Materials and Biological Sciences
	C02.P1	Facilities Management: Crucial Skills and Strategies
	P01.P1	Innovative Magnetic Imaging
	P03.P2	Electron Microscopy of Advanced Functional Materials

Tuesday, July 30 (Cont'd.)

3:00 PM – 5:00 PM	**Tuesday Poster Presentations**	*Exhibit Hall*
	P04.P1 Science and Applications of High-Entropy Materials	
	P09.P1 Advances in *In Situ* TEM Characterization of Dynamic Processes in Materials	
3:30 PM – 4:30 PM	**FIG Business Meeting**	
3:30 PM – 4:30 PM	**MSA Education Committee**	
5:00 PM – 5:30 PM	**Student Poster Awards**	*Exhibit Hall Poster Stage*
5:45 PM – 6:45 PM	**Vendor Tutorials** *(Sign up at exhibitors' booths)*	
6:30 PM – 8:30 PM	**Presidents' Reception** *(Invitation Only)*	*Offsite*

Wednesday, July 31

7:15 AM – 8:15 AM	**MaM Editorial Board**	
7:15 AM – 8:15 AM	**MSA Certification Board**	
7:15 AM – 8:15 AM	**MSA Membership Committee**	
7:15 AM – 8:15 AM	**FIG: Aberration Corrected Electron Microscopy**	
8:30 AM – 10:00 AM	**A.M. Symposia & Sessions**	
	A03.2 Expanding Capabilities of Atom Probe Tomography (IFES-Organized)	
	A07.2 Triumphs, Trials, and Trepidations in Quantifying Low-Z Elements with Microanalytical Methods	*Sponsored by* OXFORD INSTRUMENTS
	A08.5 New Opportunities in Material Science—Multi-dimensional Imaging and Advanced Data Processing	*Sponsored by* GATAN AMETEK EDAX
	A09.5 Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management	
	A10.5 Correlative Analysis and Multimodal Microscopy and Spectroscopy	*Sponsored by* OXFORD INSTRUMENTS
	B01.3 3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)	
	B06.1 Imaging, Microscopy, and Micro/Nano-Analysis of Pharmaceutical, Biopharmaceutical, and Medical Health Products—Research, Development, Analysis, Regulation, and Commercialization	
	C01.5 Emerging 4D STEM Techniques in Materials and Biological Sciences	*Sponsored by* JEOL
	C06.5 Memorial Symposium: Lena Fitting Kourkoutis	
	C08.1 Vendor Symposium	
	P02.5 Memorial Symposium: Terence E. Mitchell	
	P03.4 Electron Microscopy of Advanced Functional Materials	
	P04.2 Science and Applications of High-Entropy Materials	
	P05.5 Advanced Imaging and Spectroscopy Beyond Room Temperature	*Sponsored by* GATAN AMETEK EDAX
	P07.4 Understanding Structure-Property Relationships in Quantum Materials with Emerging Electron Microscopy Methods	
	P09.4 Advances in *In Situ* TEM Characterization of Dynamic Processes in Materials	*Sponsored by* GATAN AMETEK EDAX
	P11.1 Frontiers in Electron Tomography	
	X40 Computational Microscopy: Label-Free Imaging	
10:00 AM – 10:30 AM	**Coffee Break in the Exhibit Hall**	
10:00 AM – 5:30 PM	**Exhibit Hall Open**	
10:30 AM – 12:00 PM	**A.M. Symposia & Sessions (Cont'd.)**	
	A03.3 Expanding Capabilities of Atom Probe Tomography (IFES-Organized)	
	A07.3 Triumphs, Trials, and Trepidations in Quantifying Low-Z Elements with Microanalytical Methods	
	A09.6 Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management	
	A10.6 Correlative Analysis and Multimodal Microscopy and Spectroscopy	*Sponsored by* OXFORD INSTRUMENTS

For an up-to-date schedule and meeting room locations, please check **www.microscopy.org/mandm/2024** or the mobile app.

Wednesday, July 31 (Cont'd.)

10:30 AM – 12:00 PM	**A.M. Symposia & Sessions (Cont'd.)**	
	A11.1	Perspectives from Complementary SEM Techniques: STEM-in-SEM Analytics and High-throughput Multi-beam Imaging
	B01.4	3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)
	B06.2	Imaging, Microscopy, and Micro/Nano-Analysis of Pharmaceutical, Biopharmaceutical, and Medical Health Products—Research, Development, Analysis, Regulation, and Commercialization
	C01.6	Emerging 4D STEM Techniques in Materials and Biological Sciences *Sponsored by* JEOL
	C06.6	Memorial Symposium: Lena Fitting Kourkoutis
	C08.2	Vendor Symposium
	P03.5	Electron Microscopy of Advanced Functional Materials
	P04.3	Science and Applications of High-Entropy Materials
	P05.6	Advanced Imaging and Spectroscopy Beyond Room Temperature *Sponsored by* GATAN EDAX
	P07.5	Understanding Structure-Property Relationships in Quantum Materials with Emerging Electron Microscopy Methods
	P09.5	Advances in *In Situ* TEM Characterization of Dynamic Processes in Materials *Sponsored by* GATAN EDAX
	P11.2	Frontiers in Electron Tomography
	X30	Exploring New Methods in Volume Electron Microscopy (vEM) *Technologists Forum Session*
	X41	Diffraction Contract Microscopy: Then and Now
12:00 PM – 1:30 PM	**Lunch Break in the Exhibit Hall**	
12:15 PM – 1:15 PM	**MSA Members' Meeting**	
1:30 PM – 3:00 PM	**P.M. Symposia & Sessions**	
	A01.1	Advances in Cathodoluminescence Spectroscopy and Analysis *Sponsored by* GATAN EDAX
	A06.1	Electronic and Thermal Device Characterization with Electron Microscopy
	A09.7	Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management
	A10.7	Correlative Analysis and Multimodal Microscopy and Spectroscopy *Sponsored by* OXFORD INSTRUMENTS
	A11.2	Perspectives from Complementary SEM Techniques: STEM-in-SEM Analytics and High-throughput Multi-beam Imaging
	B01.5	3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)
	C03.1	Interdisciplinary Analysis of Soft/Hybrid/Bio Materials Using Advanced Focused Ion Beam Methods and Multimodal Microscopy Techniques
	C05.1	Correlative Microscopy Using Light, Electron, and X-ray Microscopy
	C08.3	Vendor Symposium
	P01.1	Innovative Magnetic Imaging *Sponsored by* JEOL
	P03.6	Electron Microscopy of Advanced Functional Materials
	P04.4	Science and Applications of High-Entropy Materials
	P07.6	Understanding Structure-Property Relationships in Quantum Materials with Emerging Electron Microscopy Methods
	P09.6	Advances in *In Situ* TEM Characterization of Dynamic Processes in Materials *Sponsored by* GATAN EDAX
	P10.1	*In Situ* and Cryogenic Electron Microscopy and Spectroscopy for Energy Materials
	P11.3	Frontiers in Electron Tomography
	X32	Technologists' Forum Roundtable: Tips for Managing an EM Lab *Technologists Forum Session*
3:00 PM – 5:00 PM	**Wednesday Poster Presentations**	*Exhibit Hall*
	A03.P1	Expanding Capabilities of Atom Probe Tomography (IFES-Organized)
	A07.P1	Triumphs, Trials, and Trepidations in Quantifying Low-Z Elements with Microanalytical Methods
	A09.P2	Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management
	A10.P3	Correlative Analysis and Multimodal Microscopy and Spectroscopy

Wednesday, July 31 (Cont'd.)

3:00 PM – 5:00 PM	**Wednesday Poster Presentations**	*Exhibit Hall*
	B01.P2 3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)	
	B04.P1 Electron Microscopy in Education	
	C03.P1 Interdisciplinary Analysis of Soft/Hybrid/Bio Materials Using Advanced Focused Ion Beam Methods and Multimodal Microscopy Techniques	
	C05.P1 Correlative Microscopy Using Light, Electron, and X-ray Microscopy	
	P03.P3 Electron Microscopy of Advanced Functional Materials	
	P07.P1 Understanding Structure-Property Relationships in Quantum Materials with Emerging Electron Microscopy Methods	
	P09.P2 Advances in *In Situ* TEM Characterization of Dynamic Processes in Materials	
	P11.P1 Frontiers in Electron Tomography	
5:00 PM	**Student Poster Awards**	*Exhibit Hall - Poster Area Stage*
5:30 PM – 6:30 PM	**MAS Business Meeting**	
5:30 PM – 6:30 PM	**Diversity and Inclusion Mixer**	
5:45 PM – 6:45 PM	**Vendor Tutorials** *(Sign up at exhibitors' booths)*	
6:30 PM – 8:30 PM	**MAS Members' Social** *(See MAS Booth for Details—Offsite)*	

Thursday, August 1

8:30 AM – 9:30 AM	**M&M Sustaining Members Meeting**	
8:30 AM – 10:00 AM	**A.M. Symposia & Sessions**	
	A01.2 Advances in Cathodoluminescence Spectroscopy and Analysis	*Sponsored by* GATAN EDAX
	A06.2 Electronic and Thermal Device Characterization with Electron Microscopy	
	A10.8 Correlative Analysis and Multimodal Microscopy and Spectroscopy	*Sponsored by* OXFORD INSTRUMENTS
	A11.3 Perspectives from Complementary SEM Techniques: STEM-in-SEM Analytics and High-throughput Multi-beam Imaging	
	B04.1 Electron Microscopy in Education	*Sponsored by* TED PELLA, INC.
	B07.1 Microscopy Uncovering Biological and Technological Details Towards Biomimetics	
	C03.2 Interdisciplinary Analysis of Soft/Hybrid/Bio Materials Using Advanced Focused Ion Beam Methods and Multimodal Microscopy Techniques	
	C04.1 Machine Learning-driven Automated Microscopy for Materials Discovery and Semiconductor Manufacturing	
	C05.2 Correlative Microscopy Using Light, Electron, and X-ray Microscopy	
	P01.2 Innovative Magnetic Imaging	*Sponsored by* JEOL
	P03.7 Electron Microscopy of Advanced Functional Materials	
	P07.7 Understanding Structure-Property Relationships in Quantum Materials with Emerging Electron Microscopy Methods	
	P09.7 Advances in *In Situ* TEM Characterization of Dynamic Processes in Materials	
	P10.2 *In Situ* and Cryogenic Electron Microscopy and Spectroscopy for Energy Materials	
	P11.4 Frontiers in Electron Tomography	
10:00 AM – 12:00 PM	**Coffee Break and Poster Session in the Exhibit Hall**	
10:00 AM – 2:00 PM	**Exhibit Hall Open**	
10:00 AM – 12:00 PM	**Thursday Poster Presentations**	*Post-Deadline Posters will be presented on this day*
	A01.P1 Advances in Cathodoluminescence Spectroscopy and Analysis	
	A05.P1 Microscopy and Microanalysis in Cultural Heritage Studies	
	A06.P1 Electronic and Thermal Device Characterization with Electron Microscopy	
	A11.P1 Perspectives from Complementary SEM Techniques: STEM-in-SEM Analytics and High-throughput Multi-beam Imaging	

For an up-to-date schedule and meeting room locations, please check **www.microscopy.org/mandm/2024** or the mobile app.

Thursday, August 1 (Cont'd.)

10:00 AM – 12:00 PM	**Thursday Poster Presentations**	*Post-Deadline Posters will be presented on this day*
	B06.P1	Imaging, Microscopy, and Micro/Nano-Analysis of Pharmaceutical, Biopharmaceutical, and Medical Health Products—Research, Development, Analysis, Regulation, and Commercialization
	B07.P1	Microscopy Uncovering Biological and Technological Details Towards Biomimetics
	C03.P2	Interdisciplinary Analysis of Soft/Hybrid/Bio Materials Using Advanced Focused Ion Beam Methods and Multimodal Microscopy Techniques
	C04.P1	Machine Learning-driven Automated Microscopy for Materials Discovery and Semiconductor Manufacturing
	P03.P4	Electron Microscopy of Advanced Functional Materials
	P05.P1	Advanced Imaging and Spectroscopy Beyond Room Temperature
	P07.P2	Understanding Structure-Property Relationships in Quantum Materials with Emerging Electron Microscopy Methods
	P09.P3	Advances in *In Situ* TEM Characterization of Dynamic Processes in Materials
	PDP.P2	Post Deadline Posters
12:00 PM	**Student Poster Awards**	*Exhibit Hall - Poster Area Stage*
12:15 PM – 1:15 PM	**FIG: MicroAnalytical Standards**	
12:00 PM – 1:30 PM	**Lunch Break**	
1:30 PM – 3:00 PM	**P.M. Symposia & Sessions**	
	A05.1	Microscopy and Microanalysis in Cultural Heritage Studies
	A06.3	Electronic and Thermal Device Characterization with Electron Microscopy
	A10.9	Correlative Analysis and Multimodal Microscopy and Spectroscopy *Sponsored by* OXFORD INSTRUMENTS
	A11.4	Perspectives from Complementary SEM Techniques: STEM-in-SEM Analytics and High-throughput Multi-beam Imaging
	B04.2	Electron Microscopy in Education *Sponsored by* TED PELLA, INC.
	B07.2	Microscopy Uncovering Biological and Technological Details Towards Biomimetics
	C03.3	Interdisciplinary Analysis of Soft/Hybrid/Bio Materials Using Advanced Focused Ion Beam Methods and Multimodal Microscopy Techniques
	C04.2	Machine Learning-driven Automated Microscopy for Materials Discovery and Semiconductor Manufacturing
	C05.3	Correlative Microscopy Using Light, Electron, and X-ray Microscopy
	P01.3	Innovative Magnetic Imaging *Sponsored by* JEOL
	P03.8	Electron Microscopy of Advanced Functional Materials
	P07.8	Understanding Structure-Property Relationships in Quantum Materials with Emerging Electron Microscopy Methods
	P10.3	*In Situ* and Cryogenic Electron Microscopy and Spectroscopy for Energy Materials
3:00 PM – 3:30 PM	**Coffee Break**	
3:30 PM – 5:30 PM	**Late P.M. Symposia & Sessions cont.**	
	A05.2	Microscopy and Microanalysis in Cultural Heritage Studies
	A11.5	Perspectives from Complementary SEM Techniques: STEM-in-SEM Analytics and High-throughput Multi-beam Imaging
	B04.3	Electron Microscopy in Education *Sponsored by* TED PELLA, INC.
	C03.4	Interdisciplinary Analysis of Soft/Hybrid/Bio Materials Using Advanced Focused Ion Beam Methods and Multimodal Microscopy Techniques
	C04.3	Machine Learning-driven Automated Microscopy for Materials Discovery and Semiconductor Manufacturing
	C05.4	Correlative Microscopy Using Light, Electron, and X-ray Microscopy
	P03.9	Electron Microscopy of Advanced Functional Materials
	P10.4	*In Situ* and Cryogenic Electron Microscopy and Spectroscopy for Energy Materials

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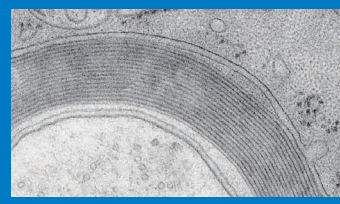

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Hitachi High-Tech America, Inc.	214
Hummingbird Scientific	1710
JEOL USA, Inc.	710
Nanoscience Instruments	527
Nion Company	210
Norcada, Inc.	1031
Point Electronic GmbH	429
Quantum Detectors	1727
TESCAN	521
Thermo Fisher Scientific	1120

Scanning Tunneling Microscopes

3D-Micromac AG	1724
NT-MDT AMERICA, INC	1533

SEM / STEM Digital Imaging Systems

COXEM	223
Dragonfly	1130
PNDetector GmbH	730
Point Electronic GmbH	429
Quantum Detectors	1727
Raith America, Inc.	629
Thermo Fisher Scientific	1120
Voxa	435

SEM Accessories

3D-Micromac AG	1724
Advanced Microscopy Techniques Corp.	927
Bruker Corporation	922
DENSsolutions	422
El-Mul Technologies	1522
Ferrovac	1334
Gatan/EDAX	1116
Herzan LLC	1028
HORIBA	318
ibss Group, Inc.	1716
Integrated Dynamics Engineering	1029
Kleindiek Nanotechnik	1718
Mel-Build	727
MiTeGen	1536
Nanoscience Instruments	527
NenoVision	428
Norcada, Inc.	1031
Oxford Instruments	410

SEM Accessories cont.

PIE Scientific LLC	1523
PNDetector GmbH	730
Point Electronic GmbH	429
Quantum Design, Inc	1327
Theia Scientific	1431
XEI Scientific, Inc.	519

SEM Stages, Mounts and Holders

DENSsolutions	422
EXpressLO LLC	437
Hitachi High-Tech America, Inc.	214
Hummingbird Scientific	1710
Kleindiek Nanotechnik	1718
Mel-Build	727
Norcada, Inc.	1031
Protochips, Inc.	532
Quantum Design, Inc	1327
SmarAct Inc	518
Ted Pella Inc.	614
Tousimis	427

Service & Repair

Carl Zeiss Microscopy, LLC	1310
Duniway Stockroom Corp.	1714
RMC Boeckeler	418

Service Laboratories

COXEM	223
Nanoscience Instruments	527
Pacific Northwest CryoEM Center	1438

Society & Event Organizer

Royal Microscopical Society	1721

Software

DENSsolutions	422
DigiM Solution LLC	1336
Dragonfly	1130
HREM Research Inc.	1638
NanoMEGAS USA	930
Nion Company	210
Theia Scientific	1431

Specimen Preparation & Handling

Barnett Technical Services	1530
condenZero	1624
EXpressLO LLC	437
Fischione Instruments	1027
Mel-Build	727
Microscopy Innovations, LLC	430
MiTeGen	1536
Nanoscience Instruments	527
RMC Boeckeler	418
Ted Pella Inc.	614
United Mineral and Chemical Corp.	1333
Voxa	435
XEI Scientific, Inc.	519

Specimen Storage

Mel-Build	727
Microscopy Innovations, LLC	430
MiTeGen	1536
PIE Scientific LLC	1523
United Mineral and Chemical Corp.	1333

Spectrometers

Clark-MXR Inc	217
Gatan/EDAX	1116
HORIBA	318
Nanoscience Instruments	527
NT-MDT AMERICA, INC	1533
PNDetector GmbH	730
Sigray, Inc.	1332

SQUID / Superconduction Quantum Interference Devices

Quantum Design, Inc.	1327

Stage Automation

Point Electronic GmbH	429
SmarAct Inc	518
Voxa	435

Stereoscopic Viewing Systems

COXEM	223

Supplies

Duniway Stockroom Corp.	1714
Microscopy Innovations, LLC	430
MiTeGen	1536

Surface Analysis

Barnett Technical Services	1530
Clark-MXR Inc	217
Dragonfly	1130
Hirox-USA, Inc.	517
HORIBA	318
Keyence Corporation of America	1331
NenoVision	428
NT-MDT AMERICA, INC	1533
Sigray, Inc.	1332
TESCAN	521

Surface Profiling

Clark-MXR Inc	217
COXEM	223
Hirox-USA, Inc.	517
Keyence Corporation of America	1331
NenoVision	428

Tabletop SEM/TEM

Angstrom Scientific Inc.	327
Clark-MXR Inc	217
COXEM	223
Hitachi High-Tech America, Inc.	214
JEOL USA, Inc.	710
Nanoscience Instruments	527
Voxa	435

TEM Accessories

3D-Micromac AG	1724
Advanced Microscopy Techniques Corp.	927
Barnett Technical Services	1530
Bruker Corporation	922
condenZero	1624
DECTRIS Ltd.	1127
DENSsolutions	422
Direct Electron, LP	1210
Electron Microscopy Sciences /Quorum Technology	916

TEM Accessories cont.

Euclid TechLabs, LLC	1622
EXpressLO LLC	437
Gatan/EDAX	1116
Herzan LLC	1028
Hummingbird Scientific	1710
ibss Group, Inc.	1716
Integrated Dynamics Engineering	1029
Mel-Build	727
MiTeGen	1536
NanoMEGAS USA	930
Norcada, Inc.	1031
PNDetector GmbH	730
Quantum Detectors	1727
SPT Labtech | Quantifoil	1729
Ted Pella Inc.	614
Theia Scientific	1431
Tousimis	427
XEI Scientific, Inc.	519

TEM Specimen Holders

condenZero	1624
DENSsolutions	422
Euclid TechLabs, LLC	1622
EXpressLO LLC	437
Fischione Instruments	1027
Hummingbird Scientific	1710
Mel-Build	727
MiTeGen	1536
Norcada, Inc.	1031
Protochips, Inc.	532
Tousimis	427
Voxa	435

Testing Equipment

Barnett Technical Services	1530
Herzan LLC	1028
Hirox-USA, Inc.	517
SmarAct Inc	518

Transmission Electron Microscopes (TEM)

Advanced Microscopy Techniques Corp.	927
Clark-MXR Inc	217
DECTRIS Ltd.	1127
Euclid TechLabs, LLC	1622
Hitachi High-Tech America, Inc.	214
Hummingbird Scientific	1710
Integrated Dynamics Engineering	1029
JEOL USA, Inc.	710
Midwest Center for Cryo-Electron Tomography	1436
NanoMEGAS USA	930
Norcada, Inc.	1031
Pacific Northwest CryoEM Center	1438
Point Electronic GmbH	429
Quantum Detectors	1727
Scientific Bridge	227
SiriusXT Ltd	319
Thermo Fisher Scientific	1120
Voxa	435

Vacuum Equipment

Duniway Stockroom Corp.	1714
Electron Microscopy Sciences /Quorum Technology	916
Ferrovac	1334
Linkam Scientific Instruments	1542
Mel-Build	727
Norcada, Inc.	1031
United Mineral and Chemical Corp.	1333

Vacuum Evaporators

JEOL USA, Inc.	710

Vibration Isolation Systems

Herzan LLC	1028
Integrated Dynamics Engineering	1029

WDS Detectors & Systems

Bruker Corporation	922
Gatan/EDAX	1116
Oxford Instruments	410
PNDetector GmbH	730
Thermo Fisher Scientific	1120

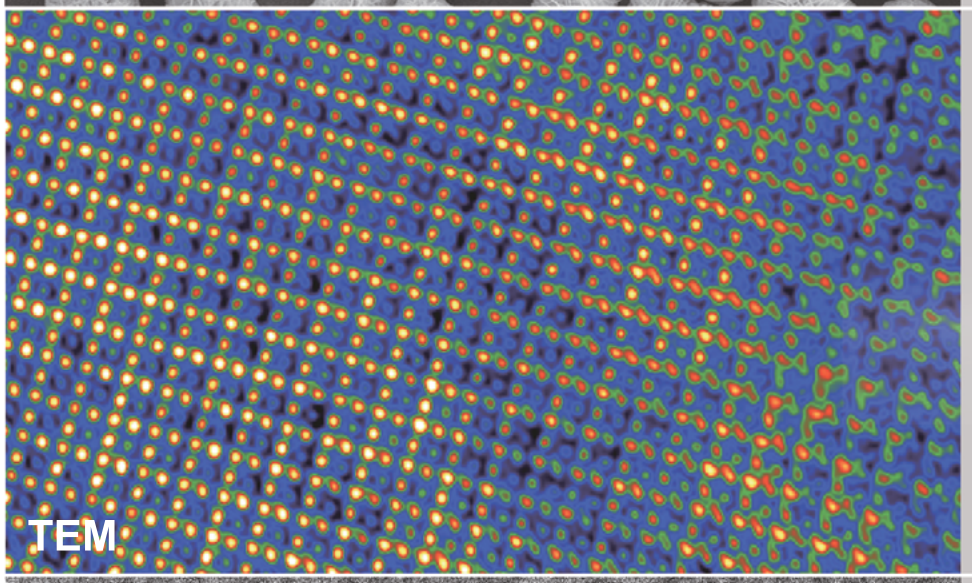
X-ray Analysis Equipment

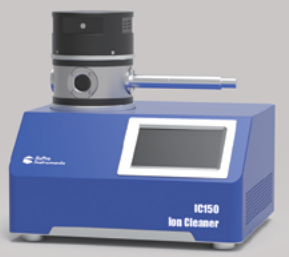
3D-Micromac AG	1724
Bruker Corporation	922
Carl Zeiss Microscopy, LLC	1310
DECTRIS Ltd.	1127
Dragonfly	1130
El-Mul Technologies	1522
HORIBA	318
Linkam Scientific Instruments	1542
MiTeGen	1536
Oxford Instruments	410
PNDetector GmbH	730
Scientific Bridge	227
Sigray, Inc.	1332
SiriusXT Ltd	319
SmarAct Inc	518
TESCAN	521

Booth Number: 516

Dual Target Sputter Coater

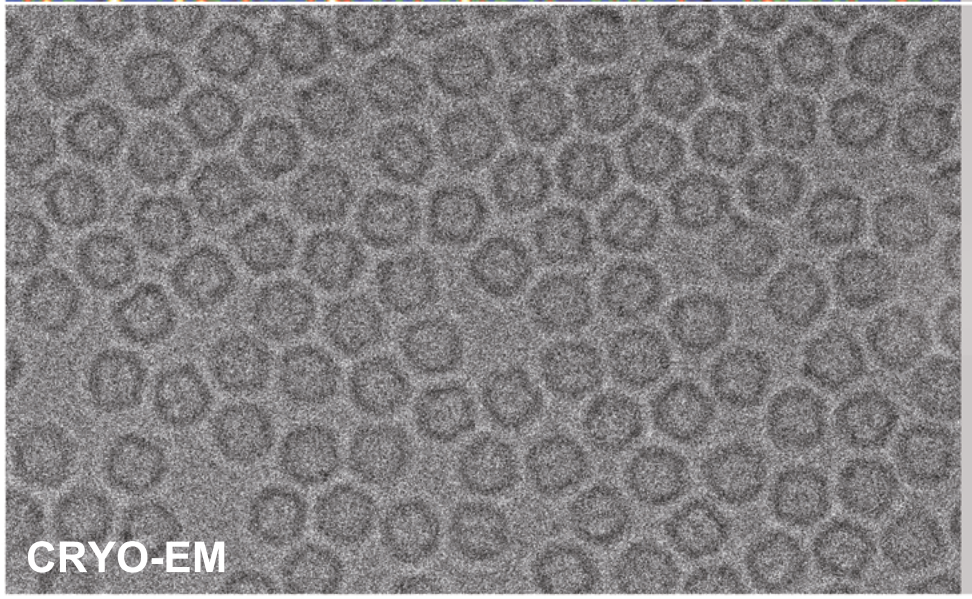
- **Unique** Pt-Au Layered Recipe
- SUV in Ion Sputter Coater





TEM Plasma Cleaner

- Gentle Plasma Cleaning
- Oil Free and Low Cost



Glow Discharge System

- Not DC But RF Glow Discharge
- Gentle Plasma and High Repeatability

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SuPro Instruments
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Focus on EM Sample Preparation

2024 Exhibit Hall

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2024 List of Exhibitors by Name *As of June 17, 2024*

COMPANY NAME	BOOTH
3D- Micromac AG	1724
Advanced Microscopy Techniques Corp.	927
Angstrom Scientific Inc.	327
Applied Physics Technologies	219
attocube systems	1338
Barnett Technical Services	1530
Bruker Corporation	922
CAMECA, TMC Ametek	1213
Canadian Centre for Electron Microscopy	235
Carl Zeiss Microscopy, LLC	1310
Clark-MXR Inc	217
Collectome LLC	1329
condenZero	1624
ConnectomX Ltd.	1432
COXEM	223
DECTRIS Ltd.	1127
Delong Instruments	228
DENSsolutions	422
Diatome US	920
DigiM Solution LLC	1336
Direct Electron, LP	1210
Dragonfly	1130
Duniway Stockroom Corp.	1714
Electron Microscopy Sciences / Quorum Technology	916
El-Mul Technologies	1522
Euclid TechLabs, LLC	1622

COMPANY NAME	BOOTH
EXpressLO LLC	437
Ferrovac	1334
Fischione Instruments	1027
Fritsch Milling & Sizing, Inc.	230
Gatan/EDAX	1116
GBS - STRAMATEC	232
h-Bar Instruments	1434
Herzan LLC	1028
Hirox-USA, Inc.	517
Hitachi High-Tech America, Inc.	214
HORIBA	318
HREM Research Inc.	1638
Hummingbird Scientific	1710
ibss Group, Inc.	1716
Integrated Dynamics Engineering	1029
JASCO	1335
JEOL USA, Inc.	710
Kamrath & Weiss GmbH	1623
Keyence Corporation of America	1331
Kitware	335
Kleindiek Nanotechnik	1718
Kratos Analytical, a Shimadzu Company	222
Ladd Research	1621
Leica Microsystems	716
Linkam Scientific Instruments	1542
MAS: The Microanalysis Society	536

2024 List of Exhibitors by Name *As of June 17, 2024*

COMPANY NAME	BOOTH
Mel-Build	727
Microscopy Innovations, LLC	430
Midwest Center for Cryo-Electron Tomography	1436
MIPAR Image Analysis Software	336
MiTeGen	1536
MSA Mega Booth	933
NanoMEGAS USA	930
Nanomotion Inc	1520
Nanoscience Instruments	527
NenoVision	428
NeoscanAmericas	1617
Nion Company	210
Norcada, Inc.	1031
NT-MDT America, INC	1533
Oxford Instruments	410
Pacific Northwest CryoEM Center	1438
Panasas	1532
PIE Scientific LLC	1523
PNDetector GmbH	730
Point Electronic GmbH	429
Protochips, Inc.	532
Quantum Design, Inc	1327
Quantum Detectors	1727
Raith America, Inc.	629
Rave Scientific	1722
Renishaw, Inc.	1531

COMPANY NAME	BOOTH
RMC Boeckeler	418
Royal Microscopical Society	1721
Scientific Bridge	227
SenseAI	324
Seron Technologies, Inc.	1632
Sigray, Inc.	1332
Simple Origin Inc.	530
SiriusXT Ltd	319
SmarAct Inc	518
SPT Labtech | Quantifoil	1729
SubAngstrom	1712
SuPro Instruments Co., Ltd	516
syGlass, Inc	1435
Ted Pella Inc.	614
TESCAN	521
Theia Scientific	1431
Thermo Fisher Scientific	1120
TMC Ametek	1213
Tousimis	427
TVIPS GmbH	531
United Mineral and Chemical Corp.	1333
VEC	1527
VitroTEM	1427
Voxa	435
XEI Scientific, Inc.	519
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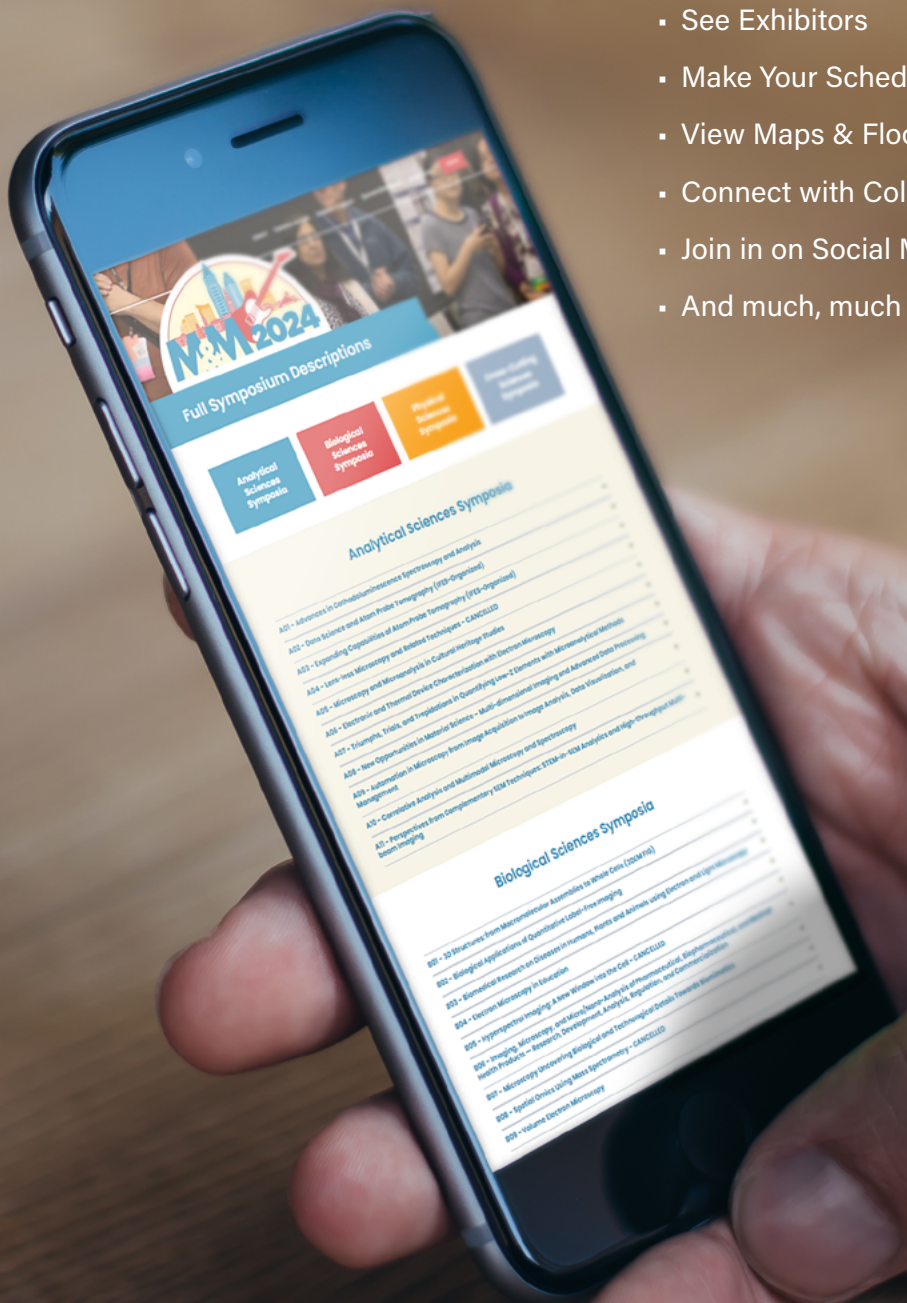

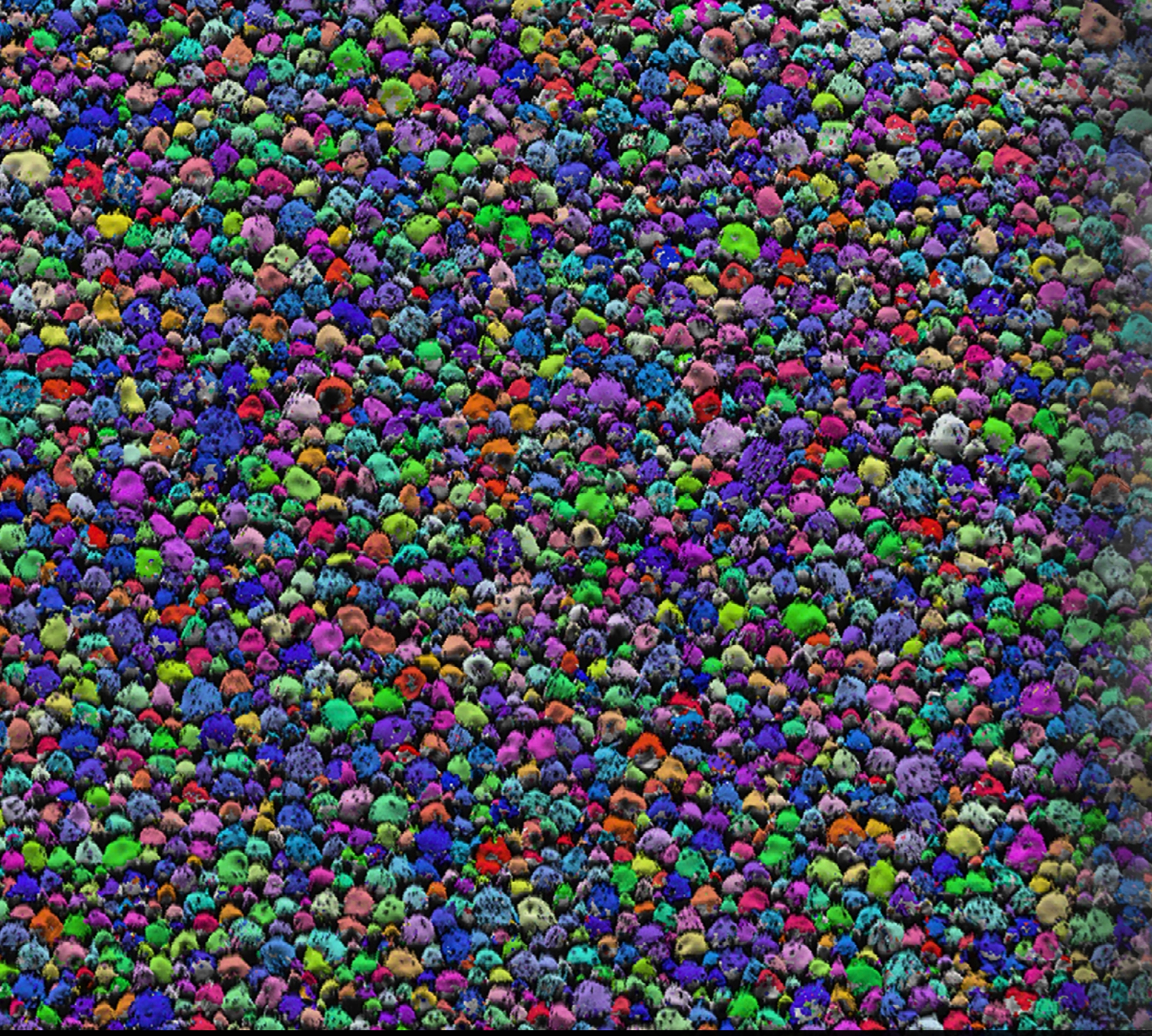

60 Years of Discovery

Celebrating 60 years of electron microscopy excellence, our journey has been one of relentless exploration and discovery. From unveiling intricate structures to driving technological breakthroughs, we have shaped scientific understanding. As we mark this milestone, we reaffirm our commitment to pioneering exploration, igniting curiosity, and inspiring innovation for the decades ahead.

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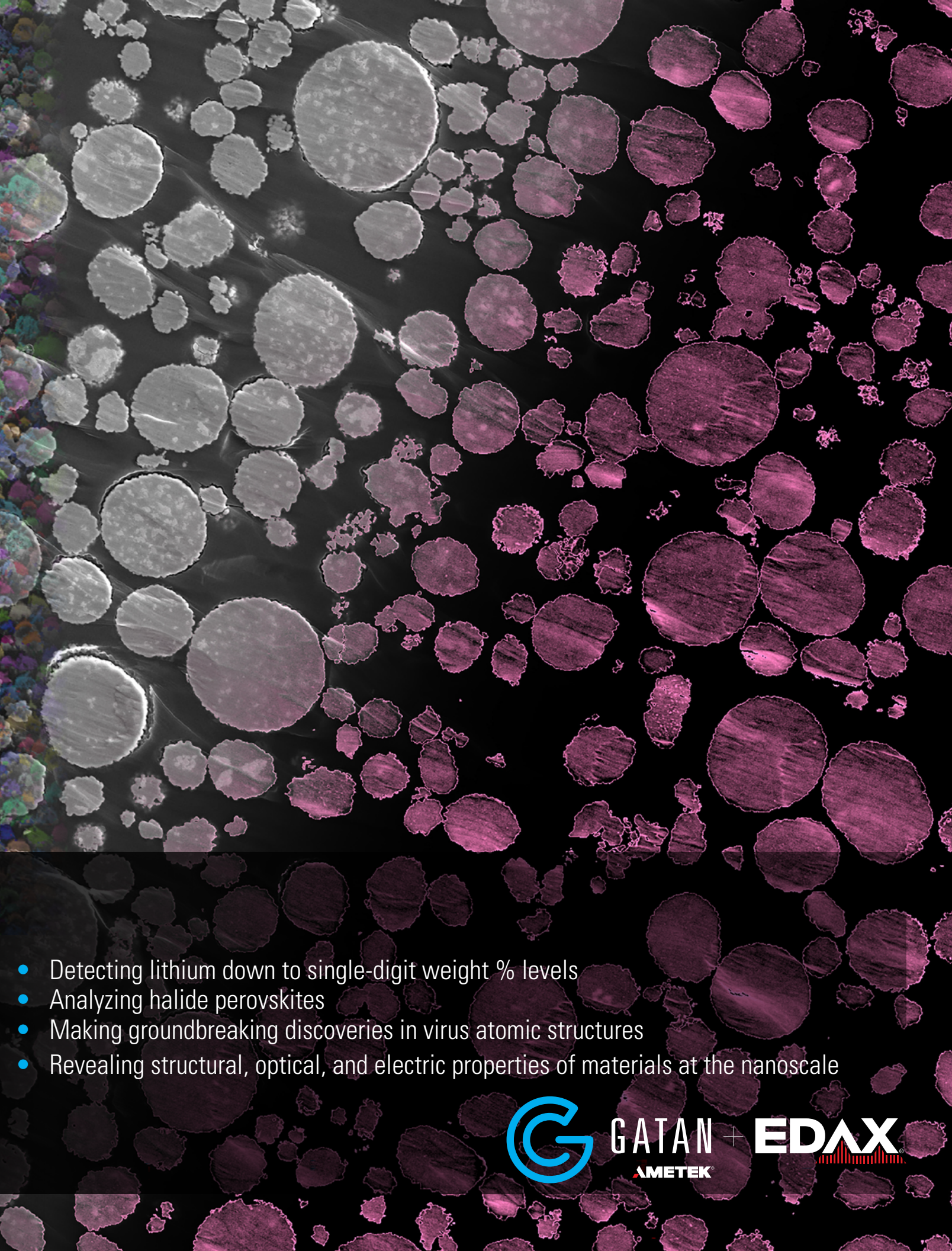
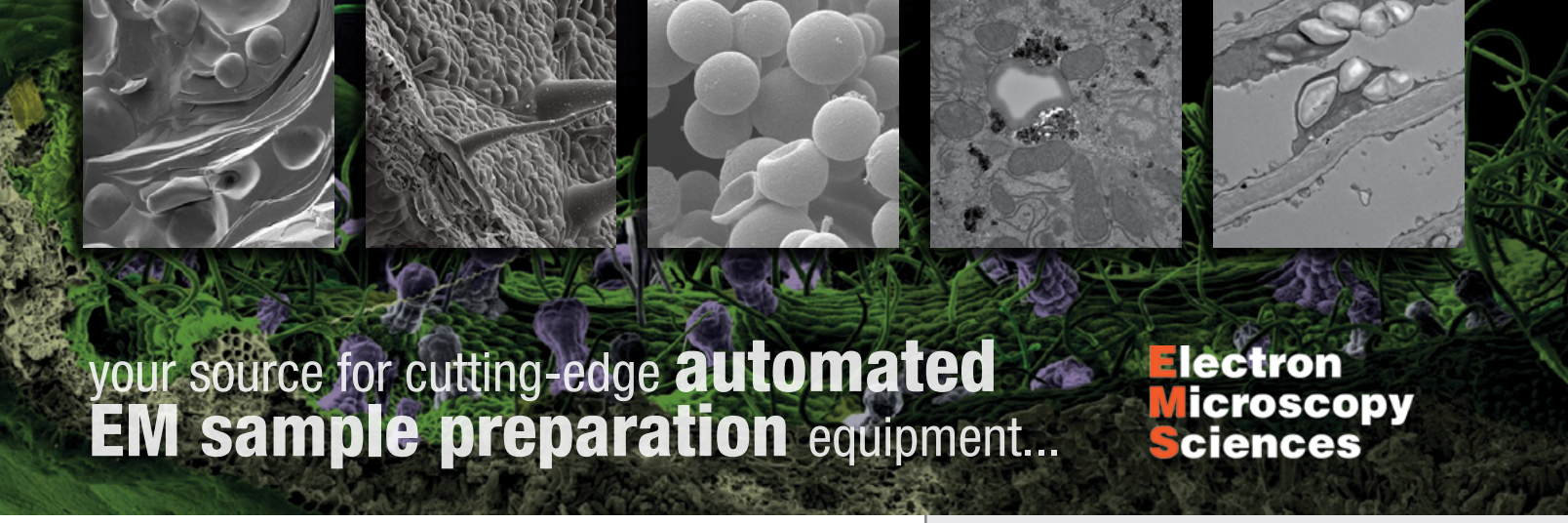


- Detecting lithium down to single-digit weight % levels
- Analyzing halide perovskites
- Making groundbreaking discoveries in virus atomic structures
- Revealing structural, optical, and electric properties of materials at the nanoscale

GATAN + EDAX

AMETEK



your source for cutting-edge **automated EM sample preparation** equipment...

Electron Microscopy Sciences

Qdry Automated CPD

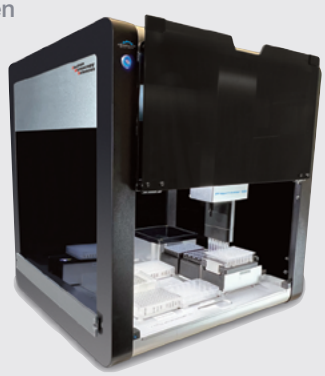
The Qdry ensures repeatable outcomes with minimal user intervention. Built-in adiabatic cooling allows for fast cool-down rates and more throughput.

- **Easy-to-use, flexible software allows for quick recipe-driven set-up of profiles.**
- **Status display to indicate time remaining.**
- **Pre-set profiles cover different sample types allowing easy start for new samples.**
- **Screw top chamber for easy sample loading.**
- **Large viewing window.**
- **Small footprint ideal for use in fume hoods.**

EMS Quorum

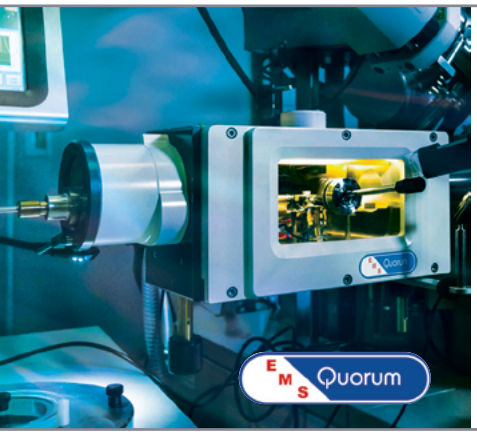
Prepmaster™ 5100 Specimen Preparation Robot

Walk-away specimen prep automation



The Prepmaster™ 5100 is a fully automated system that uses advanced robotics and liquid handling to prepare biological specimens for TEM or SEM. It reliably accomplishes your repetitive tasks, increasing consistency in specimen preparation and giving you confidence in your results compared to manual processing.

- **Easy to set up and clean up**
- **Versatile — can process most biological samples.**
- **Prepare up to 8 kidney specimens in less than 1 hour.**
- **Excellent choice to run Ellisman rOTO protocol for vEM specimen prep.**
- **Up to 24 unique reagents or rinses.**
- **Reliable unattended overnight operation.**
- **High quality, consistent processing.**



PP3010 Cryo-SEM/Cryo-FIB/SEM Preparation System

A highly automated, easy-to-use, column-mounted, gas-cooled cryo preparation system suitable for most makes and models of SEM, FE-SEM and FIB/SEM.

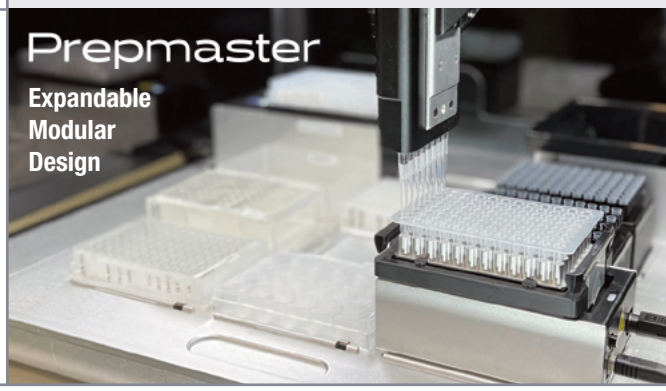
- **High resolution performance**
- **Efficient cooling (down to at least -190ºC)**
- **Large recipe-driven touch-screen interface**
- **Superb specimen visibility**

Cryo Rotate Stage

Designed for use with the P3010 Cryo Preparation System

Offering 360° rotation, the innovative Cryo Rotate Stage allows for ion milling and observation/analysis of samples at cryogenic temperatures down to -160 °C.

The unique Cryo Rotate Stage facilitates cryo-FIB lamella preparation, cryo-FIB lift out and cryo-tomography.



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