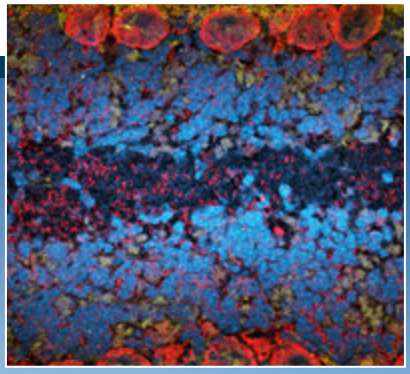
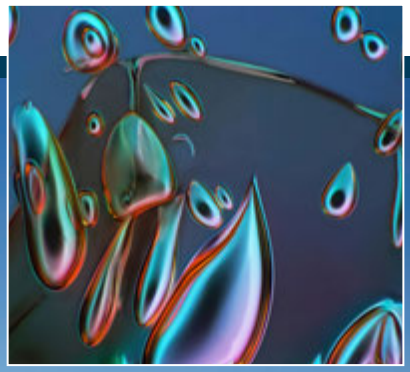
M&M 2026

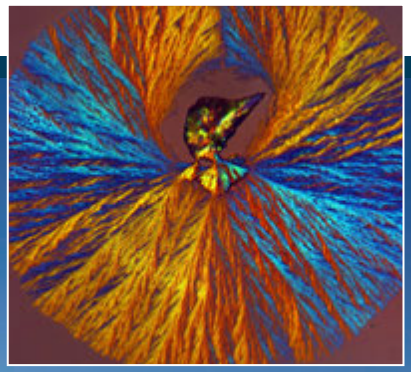
MICROSCOPY & MICROANALYSIS

Microscopy Society of America

Microanalysis Society



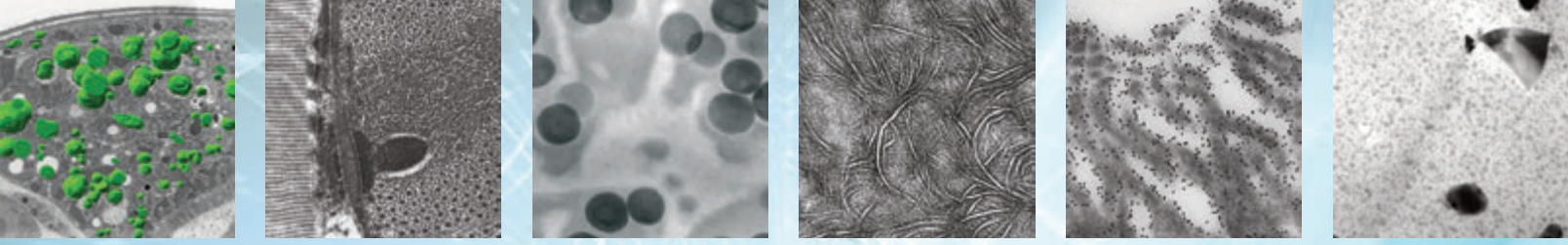




ONSITE PROGRAM GUIDE & EXHIBITOR DIRECTORY

August 2-6 • Milwaukee, WI

https://mmconference.microscopy.org



the incomparable Diamond Knife for all fields of research

The **ultra semi** knife serves for alternating sectioning ultrathin/semithin, for rather thick sections (for example 200-300nm 3D reconstruction, etc.)

The **ultra 35°** knife has demonstrated it's usefulness as a standard knife for the majority of applications in both biological and materials research.

The **ultra 45°** knife is acknowledged as the appropriate knife angle for routine sectioning of both biological and materials research specimens.

unequaled in quality and service

Live Ultramicrotomy comes to **M&M 2026** this August at the DiATOME Booth, with the **Leica UC Enuity** and **DiATOME Diamond Knives**. It's all happening at **Booth 318**.

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Fax: (267)-730-6091
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Micro-surgical Tools

Table of Contents

Grant Jensen
Brigham Young University
President,
Microscopy Society of America

Andy Herzing
National Institute of Standards and Technology
President, Microanalysis Society

Questions?

TECHNICAL MEETING CONTENT:
2026 Program Chair
Mitra Taheri, Johns Hopkins | Whiting School of Engineering
2026ProgramChair@microscopy.org

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Speaker Manager
MMSpeakers@microscopy.org

Are You a Member?

Join Today and Save on M&M 2026 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.

Navigate the meeting like a pro with the **M&M 2026** mobile app, powered by Cadmium.

With the M&M 2026 mobile app, you can:

- Receive Up-to-the-Minute Meeting & Presenter Info
- Multi-Device Sync
- Receive Alerts
- See Exhibitors
- Make Your Schedule
- View Maps & Floor Plans
- Connect with Colleagues & Friends
- Join in on Social Media with #MM2026
- And much, much more!

MICROSCOPY & MICROANALYSIS

Google play

Available on the App Store

Letter from the Program Chairs

We are looking forward to welcoming you to Milwaukee, Wisconsin, in August 2026 for the annual Microscopy and Microanalysis Meeting. Our program features a variety of symposia and events that highlight next-generation techniques and microscopy at forefront of fields including, but not limited to quantum, biological, materials, and pharmaceutical sciences.

New this year, is a focus on industry participation and translational research associated with microscopy. To this end, in addition to continued industry participation in symposia, we will feature a perspective on translational research from Plenary Speaker, Thomas Kelly, the founder of Imago Scientific Instruments and co-founder of Steam Scientific Instruments. We will also feature a short panel of industry speakers highlighting the critical role of microscopy in advancing materials, medicine, and other application-based science and engineering.

Our program continues to be a homebase for the most innovative microscopy and microanalysis across disciplines, and an opportunity to showcase the role of microscopy in adjacent or complementary fields or techniques. Plenary Speaker, Wah Chiu, will highlight his career in cryo TEM, as well as how science is collaboratively accomplished at the Stanford Linear Accelerator.

Finally, our pre-meeting congress sessions are, as always, the springboard of innovation, with this year's PMCs focused on early career research, atom probe tomography and its cross-cutting role in microscopy, and finally, innovation in microscopy in liquid and gas environments.
M&M 2026 is a perfect place to meet your colleagues and discuss how our techniques, research, and interactions shape and interact with the technical and industrial world.

We look forward to seeing you in Milwaukee!

Mitra Taheri,
Johns Hopkins University
(Program Chair)

Steve Seddio,
Thermo Fisher Scientific
(Asst. Chair)

Future Meeting Dates

M&M2027
MICROSCOPY & MICROANALYSIS
August 1-5, 2027 • Pittsburgh, PA

July 30–August 3, 2028
SEATTLE, WA

July 29–August 2, 2029
KANSAS CITY, MO

July 28–August 1, 2030
LOUISVILLE, KY

July 27–31, 2031
LONG BEACH, CA

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

Awards
Major Society Awards for MSA and MAS, 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 17, 2026 will be honored less a $75 administrative fee. No refunds will be issued for cancellations (for any reason) received on or after June 17, 2026, and no refunds will be issued on-site in Milwaukee. E-mail: MMRegistration@microscopy.org.

Guest & Child Policy
Only registered attendees are permitted entry to the conference sessions, exhibit halls, and other related events. Guests, including family members, friends, or non-registered individuals, are not allowed access to any part of the conference, including session rooms, networking events, and exhibit areas, unless they have purchased registration. Guest passes will not be provided.Children under the age of 16 must be accompanied by an adult at all times.

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).

Milwaukee & Regional Visitor Information
Stop by the Visit Milwaukee booth located inside the convention center on the ground floor to pick up local information, including maps, dining guides and tour info, and visitor information on MKE and surrounding areas.

Internet & E-mail
Free wireless internet is available for M&M attendees in the Baird Center.

Job & Resume Postings/ Placement Office *(see MSA MegaBooth info on Page 14)*
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 2027 – Meeting & City Information
Stop by for advance information on the 2027 M&M Meeting in Pittsburgh, PA! The 2027 table is located in the main registration area, and has visitors guides, maps, and other important information.

MSA MegaBooth
Booth # 739
See complete details on Page 14
Check out all that MSA has to offer its members and M&M attendees, including recent editions of *Microscopy Today*, learn about the Outreach Committee, 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
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!

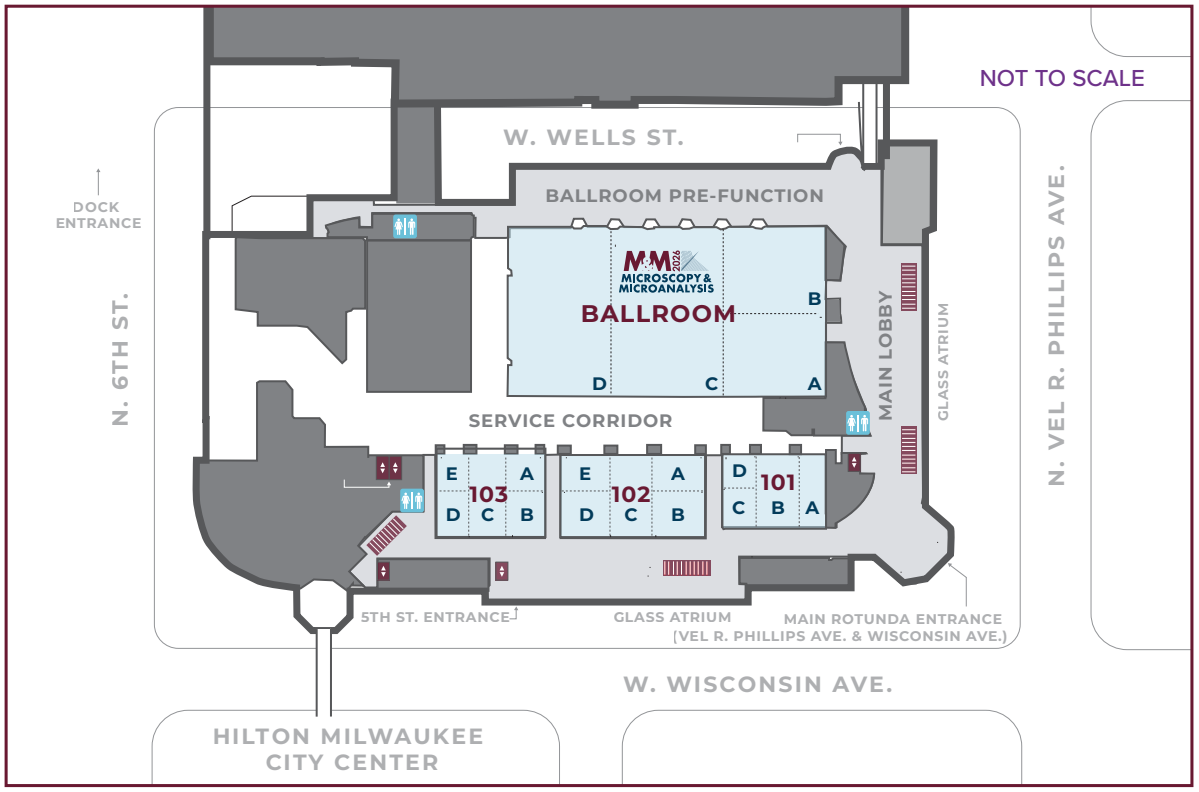
Smoking Policy
M&M 2026 is a smoke-free meeting. If you wish to smoke, you will need to go outside (street level).

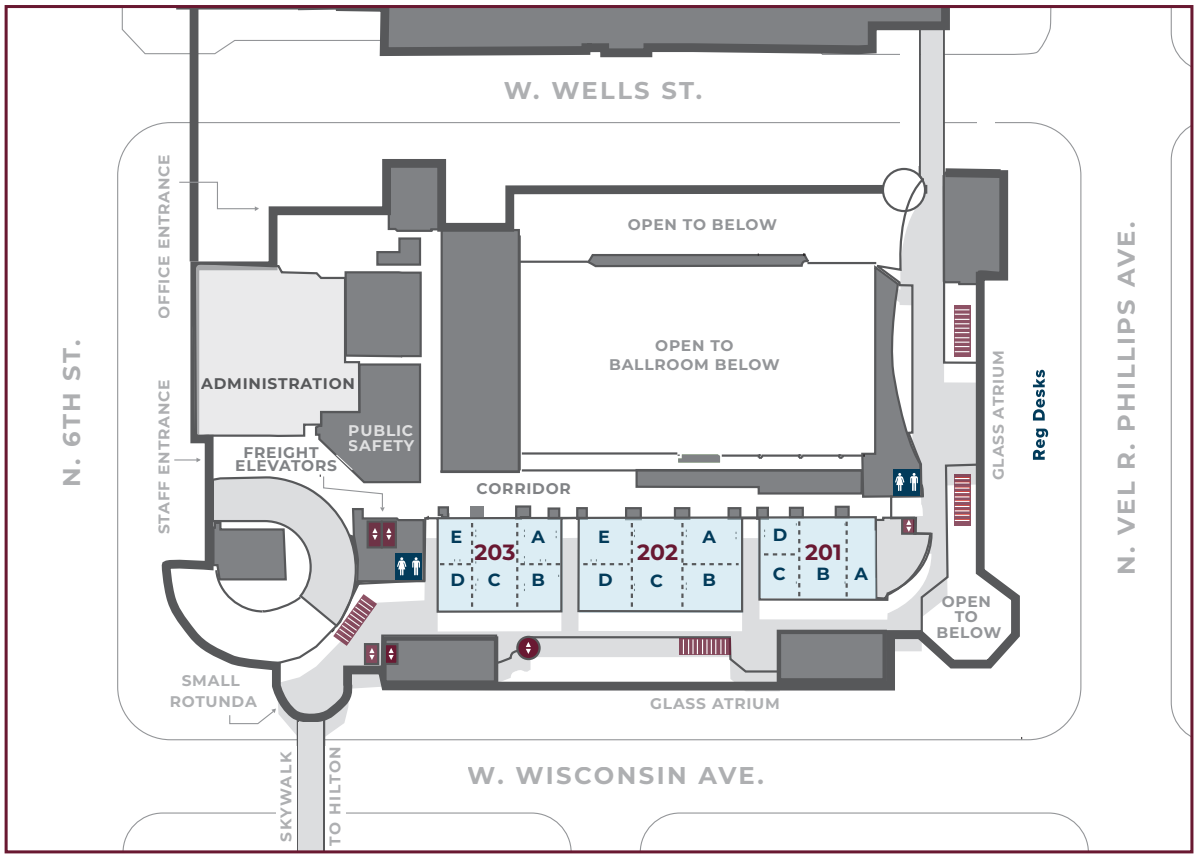
Volunteer Room
The volunteer & student bursary office is in Room 203D on the 2nd floor. Check in here for volunteer assignments and sign-outs.

2026 Convention Center Floor Plans

Baird Center

Unless indicated otherwise, all official conference events will be held at the Baird Center in downtown Milwaukee.

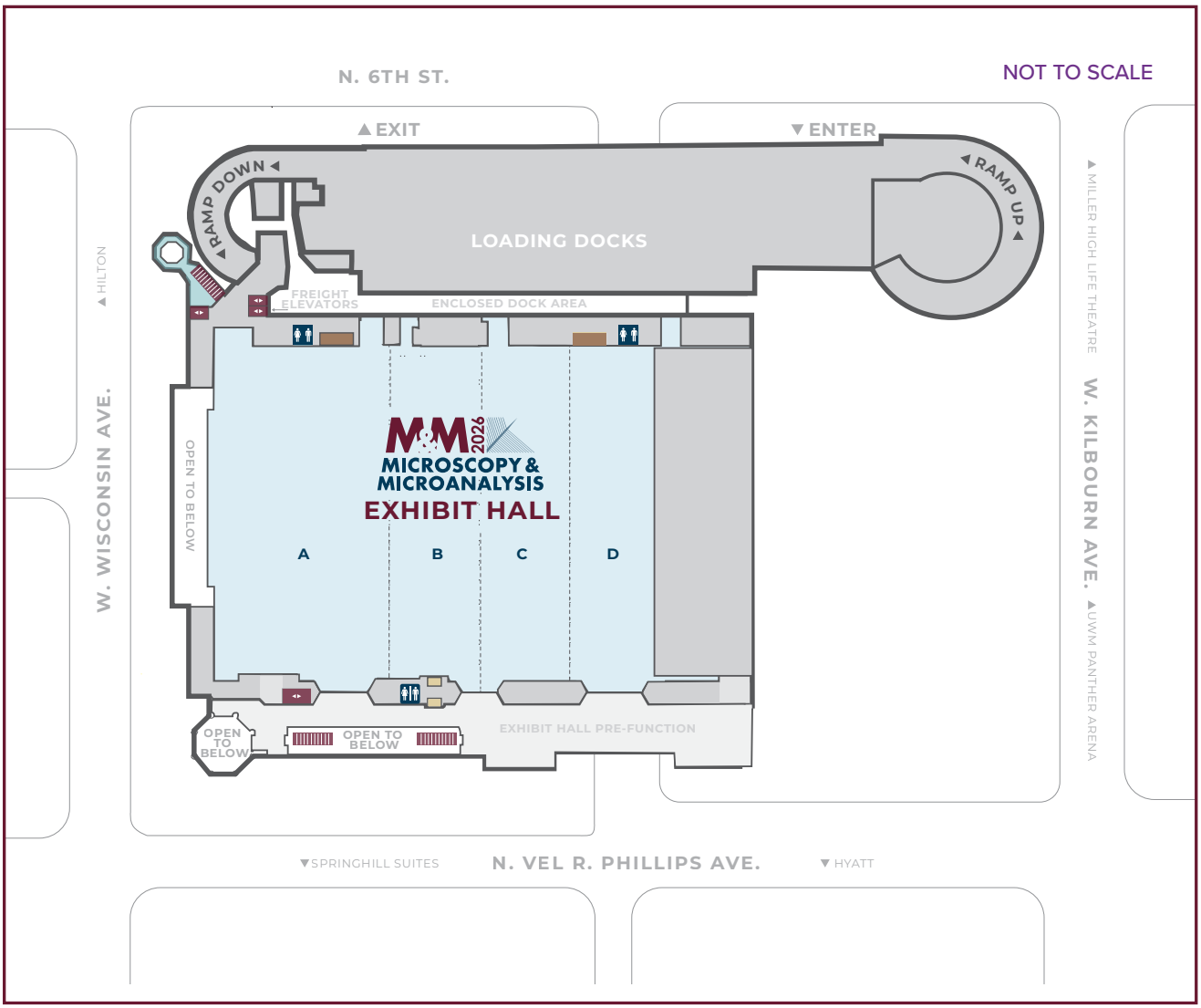




2026 Convention Center Floor Plans cont.

Baird Center

Unless indicated otherwise, all official conference events are being held at the Baird Center, located in downtown Milwaukee, WI.



Registration Information

Registration Hours:

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

**Exhibitors Only*

Commercial Exhibition Hours:

Monday, August 3	12:00 pm – 5:30 pm
Tuesday, August 4	10:00 am – 5:30 pm
Wednesday, August 5	10:00 am – 5:30 pm
Thursday, August 6	10:00 am – 2:00 pm

Exhibitor Move-In:

Thursday, July 30*	8:00 am – 5:00 pm
Friday, July 31	8:00 am – 5:30 pm
Saturday, August 1	8:00 am – 5:30 pm
Sunday, August 2	8:00 am – 5:30 pm

**Targeted Island Booths Only*

Exhibitor Move-Out:

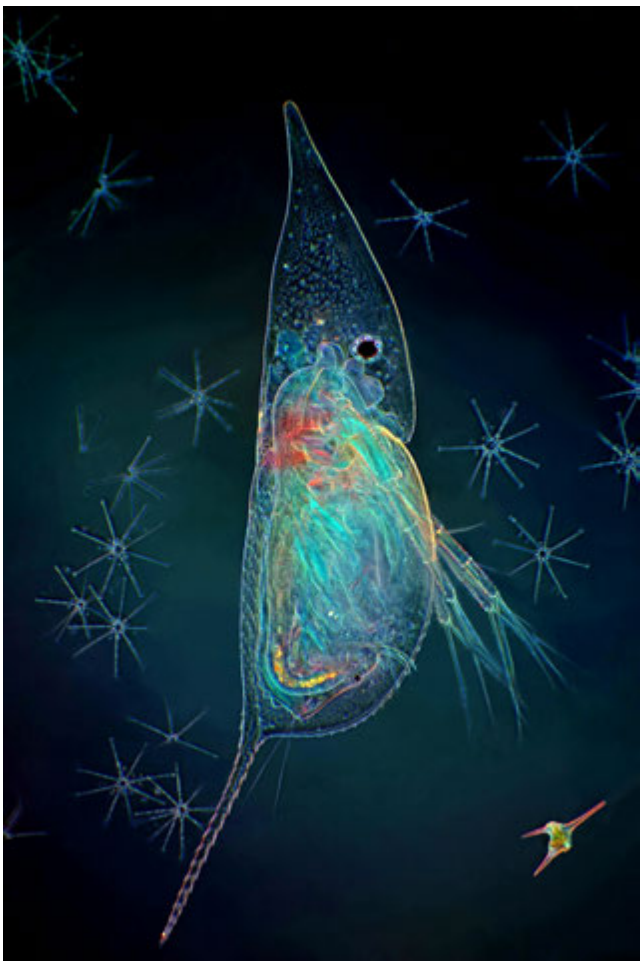
Thursday, August 6	2:00 pm – 7:00 pm
Friday, August 7	8:00 am – 5:00 pm

Onsite Registration Desk

Baird Center – Located on Level 2 near escalators.

Pick up your badge at the Badge Printing Stations according to the schedule seen here.

The Sunday Welcome Reception starts at 6:30 PM in the Grand Ballroom D in the Baird Center on the Ground Floor. You must pick up your drink ticket and badge before going to the reception. Tickets will not be given out at the reception.



MICROGRAPH ON PAGE 11

Caffeine. Crystals of caffeine inside an air bubble under heat and pressure. Melted caffeine at 245˚C and pressing down on the cover glass creates bubbles with crystals forming inside. Polarized LM.
Image by Tian Olivier, independent microscopist, Boksburg, South Africa

ABOVE MICROGRAPH

Microorganisms. Ceratium dinoflagellate, freshwater organism that has a shell made from the cell membrane and vesicles, and Asterionella formosa star-shaped diatoms. Dark-field polarized LM.
Image by Marek Mis, Marek Mis Photomicrography, Suwalk, Poland

PMC X60 – For Students, Post-Docs, and Early Career Professionals Social

Organized by MSA Student Council

Saturday, August 1, 2026 | 6:30 PM - 8:30 PM

Location: GATHER at the Deer District

M&M 2026 Sunday Evening Welcome Reception

Baird Center – Ballroom D, Ground Floor

Sunday, August 2, 2026 | 6:30 PM - 8:30 PM

One ticket is included with most registrations (see Registration Page for details). Additional tickets: $50 each for adults; $25 each for children 12 and under.

Experience the spirit of Milwaukee through a locally inspired menu and craft brews while connecting with colleagues and friends.

***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.*

Student, Early Career, and Post-Doc Mixer

Monday, August 3, 2026 | 5:30 PM - 7:30 PM

M&M 2026 Early Career Professional Development Event

Organized by the MSA Early Career Group

Tuesday, August 4, 2026 | 5:30 PM – 7:30 PM

Are you looking to grow your career, expand your professional network, or explore new job opportunities? Join us at M&M 2026 for an exciting Early Career Professional Development Event hosted by the MSA Early Career Group (ECG)! Participants will engage in roundtable discussions with professionals from academia, industry, and national labs. Refreshments and snacks will be served.

Belonging, Enrichment, Empowerment, and Support (BEES) Committee

Wednesday, August 5, 2026 | 5:30 PM - 7:30 PM

The BEES Committee aims to promote the visibility and discussion of BEES (Belonging, Enrichment, Empowerment, and Support) topics within the Society and microscopy-at-large and to facilitate increased attendance and involvement within the Society, at Society-related events, and among Society leadership positions.

MAS Social Event – for MAS Members Only!

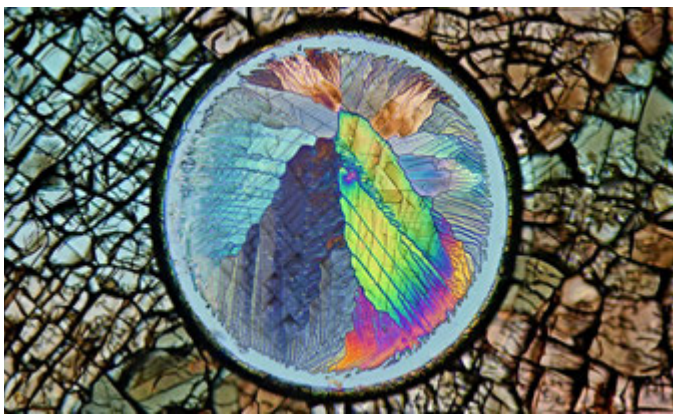
Wednesday, August 5, 2026 | 6:30 PM - 8:30 PM

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, August 5, immediately following the MAS Business Meeting.

Student Poster Awards

(Immediately following daily Poster Presentations & Happy Hours)

Poster presentations are an excellent format for all participants to engage in intensive discussion with other researchers in the field. MSA provides cash awards to the most outstanding student posters (first author) each day (up to two in each of three categories). Student poster awards will be presented immediately following each day's poster session, in the Exhibit Hall.



Committee/Ancillary Meeting Schedule

All events held at Baird Center of Milwaukee 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.

Saturday, August 1, 2026

8:30 AM – 5:30 PM	MSA Council	Hyatt Regency Milwaukee

Sunday, August 2, 2026

8:30 PM – 10:00 PM	Symposium Organizers' Reception	OFFSITE

Monday, August 3, 2026

7:15 AM – 8:15 AM	Major Society Awards Committee	Hyatt Regency Milwaukee
7:15 AM – 8:15 AM	Travel Awards Committee	Hyatt Regency Milwaukee
7:15 AM – 8:15 AM	**FIG:** Low Temperature Electron Microscopy	Hyatt Regency Milwaukee
7:15 AM – 8:15 AM	**FIG:** Aberration Corrected EM	Hyatt Regency Milwaukee
12:15 PM – 1:15 PM	MAS Meal with a Mentor	
12:15 PM – 1:15 PM	Technologists' Forum Board Meeting	Hyatt Regency Milwaukee
12:15 PM – 1:15 PM	Early Career Committee	Hyatt Regency Milwaukee
12:15 PM – 1:15 PM	**FIG:** 3D EM in The Biological Sciences	Hyatt Regency Milwaukee
12:15 PM – 1:15 PM	**FIG:** Focused Ion Beam	Hyatt Regency Milwaukee
3:30 PM – 4:30 PM	Technologists' Forum Business Meeting	
4:30 PM – 5:30 PM	MSA Elemental Microscopy	
5:30 PM – 7:00 PM	Student, Early Career, & Post Doc Mixer	
5:45 PM – 6:45 PM	Vendor Tutorials *(Sign up at Vendor Booths)*	

Tuesday, August 4, 2026

7:15 AM – 8:15 AM	MSA Local Affiliated Societies & MAS Affiliated Regional Societies Breakfast	Hyatt Regency Milwaukee
7:15 AM – 8:15 AM	*Microscopy Today* Editorial Board Meeting	Hyatt Regency Milwaukee
7:15 AM – 8:15 AM	Education Outreach Committee	Hyatt Regency Milwaukee

Committee/Ancillary Meeting Schedule

Tuesday, August 4, 2026 cont.

7:15 AM – 8:15 AM	MSA Standards Committee Meeting	Hyatt Regency Milwaukee
10:00 AM – 12:00 PM	M&M 2027 - Program Planning Meeting	
12:15 PM – 1:15 PM	MSA Distinguished Scientist Awardee Lectures	
3:30 PM – 4:30 PM	**FIG:** Business Meeting	
5:30 PM – 6:30 PM	PostDoc Reception	
5:45 PM – 6:45 PM	Vendor Tutorials *(Sign up at Vendor Booths)*	
5:30 PM – 6:30 PM	Post Doc Professional Development Event	
6:30 PM – 8:30 PM	Presidents' Reception *(Invitation Only)*	

Wednesday, August 5, 2026

7:15 AM – 8:15 AM	MaM Editorial Board	Hyatt Regency Milwaukee
7:15 AM – 8:15 AM	Membership Committee Meeting	Hyatt Regency Milwaukee
7:15 AM – 8:15 AM	**FIG:** Diagnostic & Biomedical Microscopy (DBM)	Hyatt Regency Milwaukee
7:15 AM – 8:15 AM	**FIG:** EM in Liquids and Gases (EMLG)	Hyatt Regency Milwaukee
7:15 AM – 8:15 AM	**FIG:** MicroAnalytical Standards (MAS)	Hyatt Regency Milwaukee
12:15 PM – 1:15 PM	MSA Members' Meeting	
5:30 PM – 6:30 PM	BEES Reception	
5:30 PM – 6:30 PM	MAS Business Meeting	
6:30 PM – 8:30 PM	MAS Members Social	OFFSITE—See MAS Booth for Details
5:45 PM – 6:45 PM	Vendor Tutorials *(Sign up at Vendor Booths)*	
7:30 PM – 9:30 PM	MSA Publishing with a Purpose *(Invitation Only)*	

Thursday, August 6, 2026

8:30 AM – 9:30 AM	M&M Sustaining Members Meeting

Thank you to our Sustaining Members

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Quantum Detectors Ltd.

Scientific Instrumentation Services, Inc.

SEMTech Solutions, Inc.

Ted Pella Inc.

TESCAN

Thermo Fisher Scientific

Tousimis

XEI Scientific, Inc.

Plenary Session

Monday, August 2, 2026 | Ballroom AB

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

Thomas F. Kelly, PhD

Associate Professor, Founder and CEO, Steam Instruments

So Many Atoms and So Little Time

Wah Chiu, PhD

Wallenberg-Bienenstock Professor and Bioimaging, SLAC National Accelerator Lab

Cryogenic Electron Imaging of Macromolecules and Cells

MSA Distinguished Scientist Award & Talks

Tuesday, August 3, 2026
12:15 PM | Baird Center

DISTINGUISHED SCIENTIST – BIOLOGICAL SCIENCES
Scott E. Fraser, Chan-Zuckeberg Initiative

DISTINGUISHED SCIENTIST – PHYSICAL SCIENCES
Frances R. Ross, Massachusetts Institute of Technology

MSA Major Society Award Winners

ALBERT CREWE AWARD
Menglin Zhu, The Ohio State University

BURTON MEDAL – PHYSICAL SCIENCES
Pinshane Huang, University of Illinois at Urbana-Champaign

MSA Major Society Award Winners cont.

CHUCK FIORI AWARD FOR OUTSTANDING TECHNOLOGIST IN THE PHYSICAL SCIENCES
John H. Turner, National Center for Electron Microscopy

GEORGE PALADE AWARD
Bin Li, University of Oxford

HILDEGARD H. CROWLEY AWARD FOR OUTSTANDING TECHNOLOGIST IN THE BIOLOGICAL SCIENCES
Tracey Stewart, Iowa State University

MORTON D. MASER DISTINGUISHED SERVICE AWARD
Jay Potts, University of South Carolina School of Medicine

MAS Major Society Award Winners

PRESIDENTIAL SCIENCE AWARD
Julie Cairney, University of Sydney

PRESIDENTIAL SERVICE AWARD
Owen Neill, University of Michigan

PETER DUNCUMB AWARD FOR EXCELLENCE IN MICROANALYSIS
Mathieu Kociak, Université Paris-Saclay

KURT F.J. HEINRICH AWARD
Michael Zachman, Oak Ridge National Laboratory

BIRKS – BEST CONTRIBUTED PAPER
Vensna Srot, Max Planck Institute for Solid State Research

CASTAING – BEST STUDENT PAPER
Yueyun Chen, University of California, Los Angeles

COSSLETT – BEST INVITED PAPER
Zsanett Pintér, Commonwealth Scientific and Industrial Research Organisation

MACRES – BEST INSTRUMENTATION/ SOFTWARE PAPER
Richard Wuhrer, Western Sydney University

Meeting Awards

RALEIGH & CLARA MILLER MEMORIAL SCHOLARSHIP AWARDEE

Edward De La Uz – Florida Atlantic University
Exploring the Ultrastructural Organization of Collagenous Tissues Using Emerging Imaging Modalities

Alex Williams – University of Liverpool
Effects of Denoising on Cryo-EM Single Particle 3-D Reconstructions

ERIC SAMUEL MEMORIAL SCHOLARSHIP AWARDEE

Nicholas Marchese – Stanford University
Nanobeam Electron Diffraction and Machine Learning Analysis for Mapping Semicrystalline Order in Polymers

STUDENT SCHOLAR AWARDEES

Sponsored by MSA Microscopy Society of America

Sadikul Alam – The Ohio State University

Raja Abdul Wahab Ayyubi – University of Illinois at Chicago

Eegene Chung – Cornell University

Jayden Grunde – Colorado School of Mines

Shunsuke Hayashi – The University of Tokyo, Ishizaka Laboratory

Lifang Hu – The University of Texas at Dallas

Maalini Krishna – University of Michigan

Shoaib Masood – University of Illinois at Chicago

Caitlyn Obrero – Stanford University

Lauryn Reyes – University of Tennessee, Knoxville

Alex Stangel – University of Michigan

Kaiwen Yang – Rice University

Jian-Min Zuo – Monash Centre for Electron Microscopy

STUDENT SCHOLAR AWARDEES

Sponsored by MAS Microanalysis Society

Bavley Guerguis – McMaster University

Hayes Johnston – American University

Elias Kallon – Northwestern University

Sungju Kang - University of California, Los Angeles

Anna Li – University of Illinois Urbana-Champagne

Cedric Lim – Stanford University

Shoaib Masood – University of Illinois

Himani Mishra – Cornell University

Alberto Daniel Rico-Cano - Universidad de Las Palmas de Gran Canaria

Roufei Zheng – University of Waterloo

ROBERT P. APKARIAN MEMORIAL SCHOLARSHIP AWARDEES

BIOLOGICAL SCIENCE AWARDEE

Chang Liu – University of Texas at Austin
High-Resolution IgM Structures in Patient Serum and Native IgM-HBV Subviral Particle Interactions Revealed by Structural Serology

PHYSICAL SCIENCE AWARDEE

Lin Yuan – Stanford University
Bridging Atomistic Active Sites and Bulk Performance in Ammonia Synthesis Photocatalysts

POSTDOCTORAL SCHOLAR AWARDEES

Sponsored by MSA Microscopy Society of America

Alexander Campos-Quiros – Lehigh University

Xinyan Li – Rice University

Mairi McCauley – Humboldt Universität zu Berlin

Noah Schnitzer – Imperial College London

Boris Slautin – University of Tennessee

Ang Tao – Rice University

Meeting Awards cont.

POSTDOCTORAL SCHOLAR AWARDEES

Sponsored by MAS Microanalysis Society

Paul Chao – Northwestern University
Hanyu Hou – University of Illinois Urbana-Champagne
Christopher Mead – Northwestern University
Bita Pourbahari – McMaster University

TECHNOLOGIST SCHOLAR

Sponsored by MAS Microanalysis Society

Nicholas Richter - Oak Ridge National Laboratory

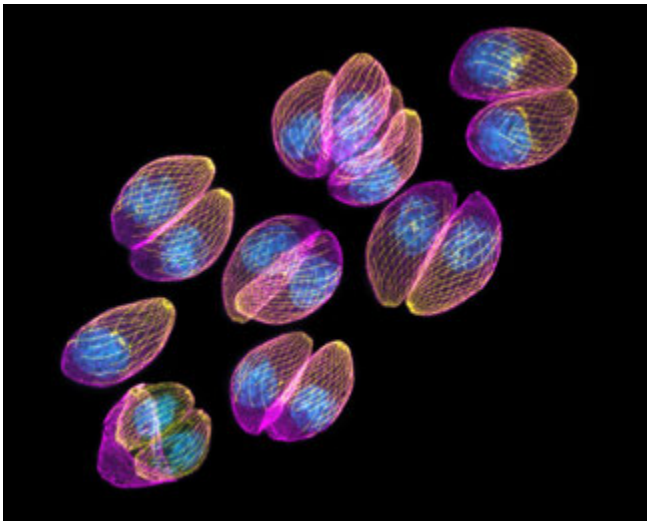
M&M 2026 PROFESSIONAL TECHNICAL STAFF AWARDS

Joseph Mowery – University of Maryland, Baltimore
Dual-layer Absorptive Mounting Preparation for Cryo-SEM Imaging of Hydrated Biological Specimens

Tymofii Pieshkov – University of Missouri
Diamond Nanowire Lift-Out Sample Preparation for TEM Analysis and Mechanical Experiments

MICROGRAPH

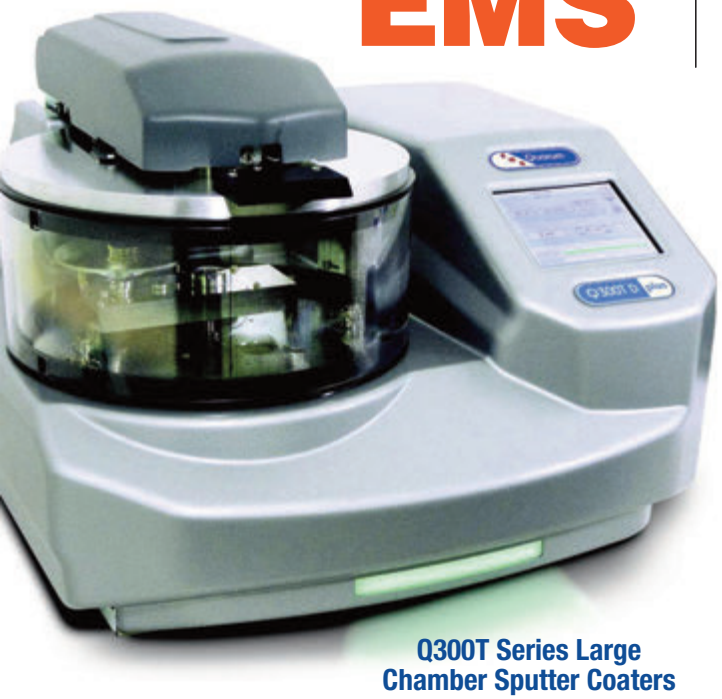
Arc. Electric arc between pencil lead and copper wire. The purple glow around the wire at the bottom is corona emission. The green color is due to ionized copper from the wire. The orange glow is probably from calcium in the pencil lead. Light microscopy.
Image by Marce Clemen, independent microscopist, Verona, Italy



MICROGRAPH

Parasites. Acute-stage parasites of Toxoplasma gondii in a human skin cell. This is an intracellular parasite that invades various cell types in all warm-blooded animals. Fluorescence microscopy.
Image by Ksena Longrin, University of Edinburgh, United Kingdom

EMS | Quorum



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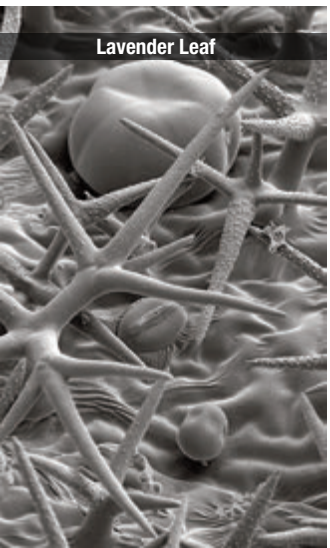

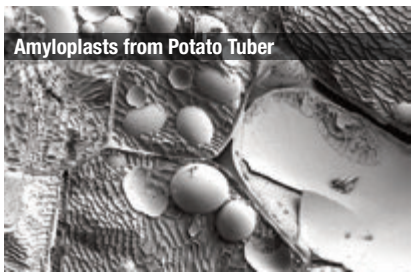

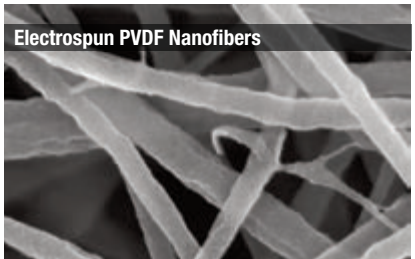

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M&M 2026

MICROSCOPY & MICROANALYSIS

Schedule At-A-Glance

Saturday, August 1

Saturday Sessions and Ancillary Meetings will be held at the Hyatt Regency Milwaukee

8:00 AM – 5:30 PM	**MSA Council**
8:30 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, August 2

8:30 AM – 5:30 PM	**Sunday Short Courses**
	X10 Electron Ptychography: Experimental Considerations and Data Analysis
	X11 Nanobeam Diffraction and 4DSTEM Analysis of Crystalline and Disordered Materials
	X12 Focused Ion Beam Theory & Methods
	X13 SEM, EPMA, EDS, and WDS Best Practices for Quantitative Microanalysis
	X14 Biological EM Sample Processing: From 2D to 3D
8:30 AM – 5:30 PM	**Pre-Meeting Congress**
	X61 Atom Probe Tomography Users; Meeting and Workshop Professionals in Microscopy and Microanalysis
	X62 Interfaces in Action: Obtaining Reliable and Relevant Insights of Interfacial Reactions in Liquids and Gases with Operando and In Situ Microscopy and Spectroscopy
	X63 Facilities and Operations Management: Skills, Strategies, and Best Practices
6:30 PM	**M&M 2026 Welcome Reception**
8:30 PM	**Symposium Organizers' Reception** *Offsite (by invitation only)*

Monday, August 3

7:15 AM – 8:15 AM	**Technologists' Forum Board**
7:15 AM – 8:15 AM	**Travel Awards Committee**
7:15 AM – 8:15 AM	**FIG: Low Temperature Electron Microscopy (LT-EM)**
7:15 AM – 8:15 AM	**FIG: Aberration Corrected EM (ACEM)**
8:30 AM – 12:00 PM	**M&M 2026 Plenary Sessions** *Ballroom AB, Baird Center*
	Opening Welcome
	Plenary Talk #1: **Thomas F. Kelly, PhD** | Associate Professor, Founder and CEO, Steam Instruments *So Many Atoms and So Little Time*
	MAS Awards Presentation MSA Awards Presentation M&M Meeting Awards Presentation
	Plenary Talk #2: **Wah Chiu, PhD** | Wallenberg-Bienenstock Professor and Bioimaging, SLAC National Accelerator Lab *Cryogenic Electron Imaging of Macromolecules and Cells*
12:00 PM – 1:30 PM	**Lunch Break in the Exhibit Hall**
12:00 PM – 5:30 PM	**Exhibit Hall Open**
12:15 PM – 1:15 PM	**MAS Meal with a Mentor**
12:15 PM – 1:15 PM	**Major Society Awards Committee**

For an up-to-date schedule and meeting room locations, please check **https://mmconference.microscopy.org/** or the mobile app.

Monday, August 3 cont.

12:15 PM – 1:15 PM	**Early Career Committee**
12:15 PM – 1:15 PM	**FIG: 3D EM in Biological Sciences (3DEMBS)**
12:15 PM – 1:15 PM	**FIG: Focused Ion Beam (FIB)**
1:30 PM – 3:00 PM	**P.M. Symposia & Sessions**
	A01.1 Advancements in Forensic Chemistry: Microscopy and Microanalysis Techniques
	A03.1 Advances in 4DSTEM Experimentation, Analysis Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications
	A09.1 Multi-dimensional and Multi-scale Imaging and Advanced Data Processing—Novel Opportunities in Material Science
	B01.1 3D Structures: from Macromolecular Assemblies to Whole Cells ***(3DEM FIG)***
	B05.1 Smaller, Faster, Cheaper—Recent Advances in Super-resolution Microscopy
	C05.1 Innovative Approaches to Microstructural Analysis: EBSD, ECCI, and 3D Techniques Across Disciplines
	C06.1 Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management
	P03.1 Advanced TEM Analysis for Semiconductors
	P04.1 Advances in 4D-STEM and In Situ Electron Microscopy for Quantum Materials
	P05.1 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis
	P06.1 Technical and Application Advances in Liquid and Gas Phase TEM
	P08.1 Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods
	P10.1 Quantitative Microanalysis of Terrestrial and Planetary Samples by Electrons, X-rays, Ions, and Lasers
3:00 PM – 5:00 PM	**Monday Poster Presentations** *Post-Deadline Posters will be presented on this day.*
	A01.P1 Advancements in Forensic Chemistry: Microscopy and Microanalysis Techniques
	A03.P1 Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applicationsand Interpretation
	A09.P1 Multi-dimensional and Multi-scale Imaging and Advanced Data Processing—Novel Opportunities in Material Science
	B01.P1 3D Structures: from Macromolecular Assemblies to Whole Cells ***(3DEM FIG)***
	C05.P1 Innovative Approaches to Microstructural Analysis: EBSD, ECCI, and 3D Techniques Across Disciplines
	P03.P1 Advanced TEM analysis for Semiconductors
	P04.P1 Advances in 4D-STEM and In Situ Electron Microscopy for Quantum Materials
	P06.P1 Technical and Application Advances in Liquid and Gas Phase TEM
	P10.P1 Quantitative Microanalysis of Terrestrial and Planetary Samples by Electrons, X-rays, Ions, and Lasers
3:30 PM – 5:00 PM	**Technologists' Forum Business Meeting**
4:30 PM – 6:00 PM	**MSA Elemental Microscopy**
5:00 PM – 5:30 PM	**Student Poster Awards**
5:30 PM – 7:00 PM	**Student, Early Career, and Post-Doc Mixer**
5:45 PM – 6:45 PM	**Vendor Tutorials** *(Sign up at individual exhibitors' booths)*

Tuesday, August 4

7:15 AM – 8:15 AM	***Microscopy Today* Editorial Board Meeting**
7:15 AM – 8:15 AM	**MSA Local Affiliated Societies & MAS Affiliated Regional Societies Breakfast**
7:15 AM – 8:15 AM	**Education Outreach Committee Meeting**
7:15 AM – 8:15 AM	**MSA Standards Committee Meeting**
8:30 AM – 10:00 AM	**Symposia & Sessions**
	A02.1 Advances in 4DSTEM Experimentation, Analysis and Interpretation
	A03.2 Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications
	A04.1 Advances in Cryogenic Electron Microscopy for Energy and Quantum Materials
	A06.1 Correlative, Multimodal Microscopy, Spectroscopy, and Imaging
	A09.2 Multi-dimensional and Multi-scale Imaging and Advanced Data Processing—Novel Opportunities in Material Science
	A10.1 Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools
	B01.2 3D Structures: from Macromolecular Assemblies to Whole Cells ***(3DEM FIG)***
	B05.2 Smaller, Faster, Cheaper—Recent Advances in Super-resolution Microscopy
	B06.1 Integrative Imaging Approaches for Biological Structure-Function Relationships
	C05.2 Innovative Approaches to Microstructural Analysis: EBSD, ECCI, and 3D Techniques Across Disciplines
	C06.2 Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management
	C08.1 Vendor Symposia
	P03.2 Advanced TEM Analysis for Semiconductors
	P04.2 Advances in 4D-STEM and In Situ Electron Microscopy for Quantum Materials
	P05.2 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis
	P06.2 Technical and Application Advances in Liquid and Gas Phase TEM
	P08.2 Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods
	P10.2 Quantitative Microanalysis of Terrestrial and Planetary Samples by Electrons, X-rays, Ions, and Lasers
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 2027 Symposium Organizers' Planning Meeting**
10:30 AM – 12:00 PM	**Symposia & Sessions**
	A02.2 Advances in 4DSTEM Experimentation, Analysis and Interpretation
	A03.3 Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications
	A04.2 Advances in Cryogenic Electron Microscopy for Energy and Quantum Materials
	A06.2 Correlative, Multimodal Microscopy, Spectroscopy, and Imaging
	A09.3 Multi-dimensional and Multi-scale Imaging and Advanced Data Processing—Novel Opportunities in Material Science
	A10.2 Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools
	B01.3 3D Structures: from Macromolecular Assemblies to Whole Cells ***(3DEM FIG)***
	B06.2 Integrative Imaging Approaches for Biological Structure-Function Relationships
	C05.3 Innovative Approaches to Microstructural Analysis: EBSD, ECCI, and 3D Techniques Across Disciplines

For an up-to-date schedule and meeting room locations, please check **https://mmconference.microscopy.org/** or the mobile app.

Tuesday, August 4 cont.

10:30 AM – 12:00 PM	**Symposia & Sessions cont.**	
	C06.3	Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management
	C07.1	Lens on Engagement
	P03.3	Advanced TEM analysis for Semiconductors
	P04.3	Advances in 4D-STEM and In Situ Electron Microscopy for Quantum Materials
	P05.3	Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis
	P06.3	Technical and Application Advances in Liquid and Gas Phase TEM
	P08.3	Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods
	P10.3	Quantitative Microanalysis of Terrestrial and Planetary Samples by Electrons, X-rays, Ions, and Lasers
11:00 AM – 12:00 PM	**Tutorial**	
	X40	Transmission Kikuchi Diffraction (TKD) Hardware, Sample Preparation and Data Acquisition
12:00 PM – 1:30 PM	**Lunch Break in the Exhibit Hall**	
12:15 PM – 1:15 PM	**MSA Distinguished Scientist Awardee Lecture**	
1:30 PM – 3:00 PM	**Symposia & Sessions**	
	A02.3	Advances in 4DSTEM Experimentation, Analysis and Interpretation
	A03.4	Advances in 4DSTEM Experimentation, Analysis Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applicationsand Interpretation
	A04.3	Advances in Cryogenic Electron Microscopy for Energy and Quantum Materials
	A05.1	Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences
	A06.3	Correlative, Multimodal Microscopy, Spectroscopy, and Imaging
	A08.1	Microscopy and Microanalysis for Real World Problem Solving
	A09.4	Multi-dimensional and Multi-scale Imaging and Advanced Data Processing — Novel Opportunities in Material Science
	A10.3	Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools
	B01.4	3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)
	B06.3	Integrative Imaging Approaches for Biological Structure-Function Relationships
	C05.4	Innovative Approaches to Microstructural Analysis: EBSD, ECCI, and 3D Techniques Across Disciplines
	C06.4	Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management
	C07.2	Lens on Engagement
	P03.4	Advanced TEM Analysis for Semiconductors
	P04.4	Advances in 4D-STEM and In Situ Electron Microscopy for Quantum Materials
	P05.4	Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis
	P06.4	Technical and Application Advances in Liquid and Gas Phase TEM
	P08.4	Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods
2:00 PM – 3:00 PM	**Tutorial**	
	X41	Harmonizing Electron Microscopy Sample Preparation: Advances in Automated Sample Preparation

Tuesday, August 4 cont.

3:00 PM – 5:00 PM	**Tuesday Poster Presentations**	*Exhibit Hall*
	A02.P1 Advances in 4DSTEM Experimentation, Analysis and Interpretation	
	A04.P1 Advances in Cryogenic Electron Microscopy for Energy and Quantum Materials	
	A05.P1 Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences	
	A06.P1 Correlative, Multimodal Microscopy, Spectroscopy, and Imaging	
	B06.P1 Integrative Imaging Approaches for Biological Structure-Function Relationships	
	C07.P1 Lens on Engagement	
	C08.P1 Vendor Symposia	
	P05.P1 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis	
	P08.P1 Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods	
3:30 PM – 4:30 PM	**FIG Business Meeting**	
5:00 PM – 5:30 PM	**Student Poster Awards**	*Exhibit Hall Poster Stage*
5:30 PM – 6:30 PM	**Early Career Professional Development Event**	
5:45 PM – 6:45 PM	**Vendor Tutorials** *(Sign up at exhibitors' booths)*	
6:30 PM	**Presidents' Reception** *(Invitation Only)*	*Offsite*

Wednesday, August 5

7:15 AM – 8:15 AM	**MaM Editorial Board**	
7:15 AM – 8:15 AM	**BEES Committee**	
7:15 AM – 8:15 AM	**FIG: EM in Liquids and Gases (EMLG)**	
7:15 AM – 8:15 AM	**FIG: MicroAnalytical Standards (MAS)**	
8:30 AM – 10:00 AM	**Symposia & Sessions**	
	A02.4 Advances in 4DSTEM Experimentation, Analysis and Interpretation	
	A03.5 Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications	
	A05.2 Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences	
	A06.4 Correlative, Multimodal Microscopy, Spectroscopy, and Imaging	
	A07.1 Electronic and Thermal Characterization of Devices with Electron Microscopy	
	A08.2 Microscopy and Microanalysis for Real World Problem Solving	
	A10.4 Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools	
	B03.1 Microscopy in Action: Advancing Disease Research and Diagnosis in Humans, Animals, and Plants	
	B04.1 Technical Advances and Transformative Applications of CryoEM	
	B07.1 AI-Driven Microanalysis: Transforming Industrial Innovation and Discovery	
	C01.1 Transmission Electron Microscopy for Beam-Sensitive Materials	
	C06.5 Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management	
	P02.1 Probing Phase Transitions from Atomic-Scale Imaging to In Situ Control	
	P03.5 Advanced TEM analysis for Semiconductors	
	P05.5 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis	

For an up-to-date schedule and meeting room locations, please check **https://mmconference.microscopy.org/** or the mobile app.

Wednesday, August 5 cont.

8:30 AM – 10:00 AM	**Symposia & Sessions cont.**	
	P06.5	Technical and Application Advances in Liquid and Gas Phase TEM
	P07.1	High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments
	P08.5	Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods
	P11.1	Unveiling Quantum Order: Cryo-EELS, 4D STEM, and Ptychography at the Nanoscale
	X30	Career Paths in Microscopy Roundtable
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	**Symposia & Sessions**	
	A02.5	Advances in 4DSTEM Experimentation, Analysis and Interpretation
	A03.6	Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications
	A05.3	Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences
	A06.5	Correlative, Multimodal Microscopy, Spectroscopy, and Imaging
	A07.2	Electronic and Thermal Characterization of Devices with Electron Microscopy
	A08.3	Microscopy and Microanalysis for Real World Problem Solving
	A10.5	Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools
	B02.1	Development, Challenges, and Biomedical Applications of Tissue Clearing, Expansion Microscopy, and Volumetric Imaging
	B03.2	Microscopy in Action: Advancing Disease Research and Diagnosis in Humans, Animals, and Plants
	B04.2	Technical Advances and Transformative Applications of CryoEM
	C01.2	Transmission Electron Microscopy for Beam-Sensitive Materials
	C04.1	Living on the Edge: Real-Time Processing and Decision Making at the Microscope
	C06.6	Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management
	P02.2	Probing Phase Transitions from Atomic-Scale Imaging to In Situ Control
	P03.6	Advanced TEM Analysis for Semiconductors
	P05.6	Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis
	P07.2	High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments
	P08.6	Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods
	P11.2	Unveiling Quantum Order: Cryo-EELS, 4D STEM, and Ptychography at the Nanoscale
	X31	Professional Development Opportunities for Microscopy Lab Technologists
11:00 AM – 12:00 PM	**Tutorial**	
	X42	A Practical Guide to Electron Channeling Contrast Imaging
12:00 PM – 1:30 PM	**Lunch Break in the Exhibit Hall**	
12:15 PM – 1:15 PM	**MSA Members' Meeting**	

Wednesday, August 5 cont.

1:30 PM – 3:00 PM	**Symposia & Sessions**	
	A02.6	Advances in 4DSTEM Experimentation, Analysis and Interpretation
	A03.7	Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications
	A05.4	Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences
	A06.6	Correlative, Multimodal Microscopy, Spectroscopy, and Imaging
	A07.3	Electronic and Thermal Characterization of Devices with Electron Microscopy
	A08.4	Microscopy and Microanalysis for Real World Problem Solving
	A10.6	Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools
	B02.2	Development, Challenges, and Biomedical Applications of Tissue Clearing, Expansion Microscopy, and Volumetric Imaging
	B03.3	Microscopy in Action: Advancing Disease Research and Diagnosis in Humans, Animals, and Plants
	B04.3	Technical Advances and Transformative Applications of CryoEM
	C01.3	Transmission Electron Microscopy for Beam-Sensitive Materials
	C04.2	Living on the Edge: Real-Time Processing and Decision Making at the Microscope
	P02.3	Probing Phase Transitions from Atomic-Scale Imaging to In Situ Control
	P05.7	Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis
	P07.3	High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments
	P08.7	Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods
	P09.1	Spatiotemporal Optical Response Using Electron Spectroscopies for Nano-optics
	P11.3	Unveiling Quantum Order: Cryo-EELS, 4D STEM, and Ptychography at the Nanoscale
	X32	A Technologists' Guide to Communication and Funding Skills
2:00 PM – 3:00 PM	**Tutorial**	
	X43	Don't Break the Ice!
3:00 PM – 5:00 PM	**Wednesday Poster Presentations**	*Exhibit Hall*
	A07.P1	Electronic and Thermal Characterization of Devices with Electron Microscopy
	A08.P1	Microscopy and Microanalysis for Real World Problem Solving
	B02.P1	Development, Challenges, and Biomedical Applications of Tissue Clearing, Expansion Microscopy, and Volumetric Imaging
	B03.P1	Microscopy in Action: Advancing Disease Research and Diagnosis in Humans, Animals, and Plants
	B04.P1	Technical Advances and Transformative Applications of CryoEM
	B07.P1	AI-Driven Microanalysis: Transforming Industrial Innovation and Discovery
	C06.P1	Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management
	P02.P1	Probing Phase Transitions from Atomic-Scale Imaging to In Situ Control
	P05.P2	Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis
5:00 PM – 5:30 PM	**Student Poster Awards**	*Exhibit Hall - Poster Area Stage*
5:30 PM – 6:30 PM	**MAS Business Meeting**	
5:30 PM – 6:30 PM	**BEES Reception**	
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)*	

For an up-to-date schedule and meeting room locations, please check **https://mmconference.microscopy.org/** or the mobile app.

Thursday, August 6

7:15 AM – 8:15 AM	**FIG: Diagnostic & Biomedical Microscopy (DBM)**	
8:30 AM – 9:30 AM	**M&M Sustaining Members Meeting**	
8:30 AM – 10:00 AM	**Symposia & Sessions**	
	A03.8	Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications
	A06.7	Correlative, Multimodal Microscopy, Spectroscopy, and Imaging
	A08.5	Microscopy and Microanalysis for Real World Problem Solving
	A10.7	Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools
	C01.4	Transmission Electron Microscopy for Beam-Sensitive Materials
	C02.1	Atomic-Scale Hyperspectral Imaging for Materials Characterization
	C03.1	Preservation and Validation of Electron Microscopy Data Across the Biological and Physical Sciences
	C04.3	Living on the Edge: Real-Time Processing and Decision Making at the Microscope
	P05.8	Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis
	P07.4	High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments
	P09.2	Spatiotemporal Optical Response Using Electron Spectroscopies for Nano-optics
	P11.4	Unveiling Quantum Order: Cryo-EELS, 4D STEM, and Ptychography at the Nanoscale
10:00 AM – 10:30 AM	**Coffee Break and Poster Session in the Exhibit Hall**	
10:00 AM – 2:00 PM	**Exhibit Hall Open**	
10:00 AM – 12:00 PM	**Poster Presentations**	*Post-Deadline Posters will be presented on this day*
	A08.P2	Microscopy and Microanalysis for Real World Problem Solving
	A10.P1	Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools
	C01.P1	Transmission Electron Microscopy for Beam-Sensitive Materials
	C02.P1	Atomic-Scale Hyperspectral Imaging for Materials Characterization
	C03.P1	Preservation and Validation of Electron Microscopy Data Across the Biological and Physical Sciences
	C04.P1	Living on the Edge: Real-Time Processing and Decision Making at the Microscope
	P01.P1	'Nothing is Perfect': Order and Disorder in the Functional Responses of Molecular Materials
	P05.P3	Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis
	P07.P1	High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments
	P09.P1	Spatiotemporal Optical Response Using Electron Spectroscopies for Nano-optics
12:00 PM – 12:30 PM	**Student Poster Awards**	*Exhibit Hall - Poster Area Stage*
12:00 PM – 1:30 PM	**Lunch Break**	
1:30 PM – 3:00 PM	**Symposia & Sessions**	
	A08.6	Microscopy and Microanalysis for Real World Problem Solving
	C01.5	Transmission Electron Microscopy for Beam-Sensitive Materials
	C02.2	Atomic-Scale Hyperspectral Imaging for Materials Characterization
	C03.2	Preservation and Validation of Electron Microscopy Data Across the Biological and Physical Sciences
	C04.4	Living on the Edge: Real-Time Processing and Decision Making at the Microscope
	P01.1	'Nothing is Perfect': Order and Disorder in the Functional Rsponses of Molecular Materials
	P05.9	Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis

Thursday, August 6 cont.

1:30 PM – 3:00 PM	**Symposia & Sessions cont.**
	P07.5 High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments
	P09.3 Spatiotemporal Optical Response Using Electron Spectroscopies for Nano-optics
3:30 PM – 5:30 PM	**Symposia & Sessions**
	A08.7 Microscopy and Microanalysis for Real World Problem Solving
	C01.6 Transmission Electron Microscopy for Beam-Sensitive Materials
	C02.3 Atomic-Scale Hyperspectral Imaging for Materials Characterization
	P01.2 'Nothing is Perfect': Order and Disorder in the Functional Rsponses of Molecular Materials
	P05.10 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis
	P07.6 High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments

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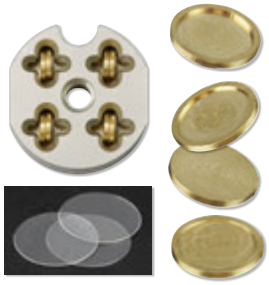
NEW AutoGrid Rings, C-clips & Clipping Tools

PELCO easiGlow™ Cryo-EM Glow Discharge



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Tuesday, August 4th
5:45pm – 6:45pm, Booth #404

Introduction to Hand Polishing for Electron Microscopy

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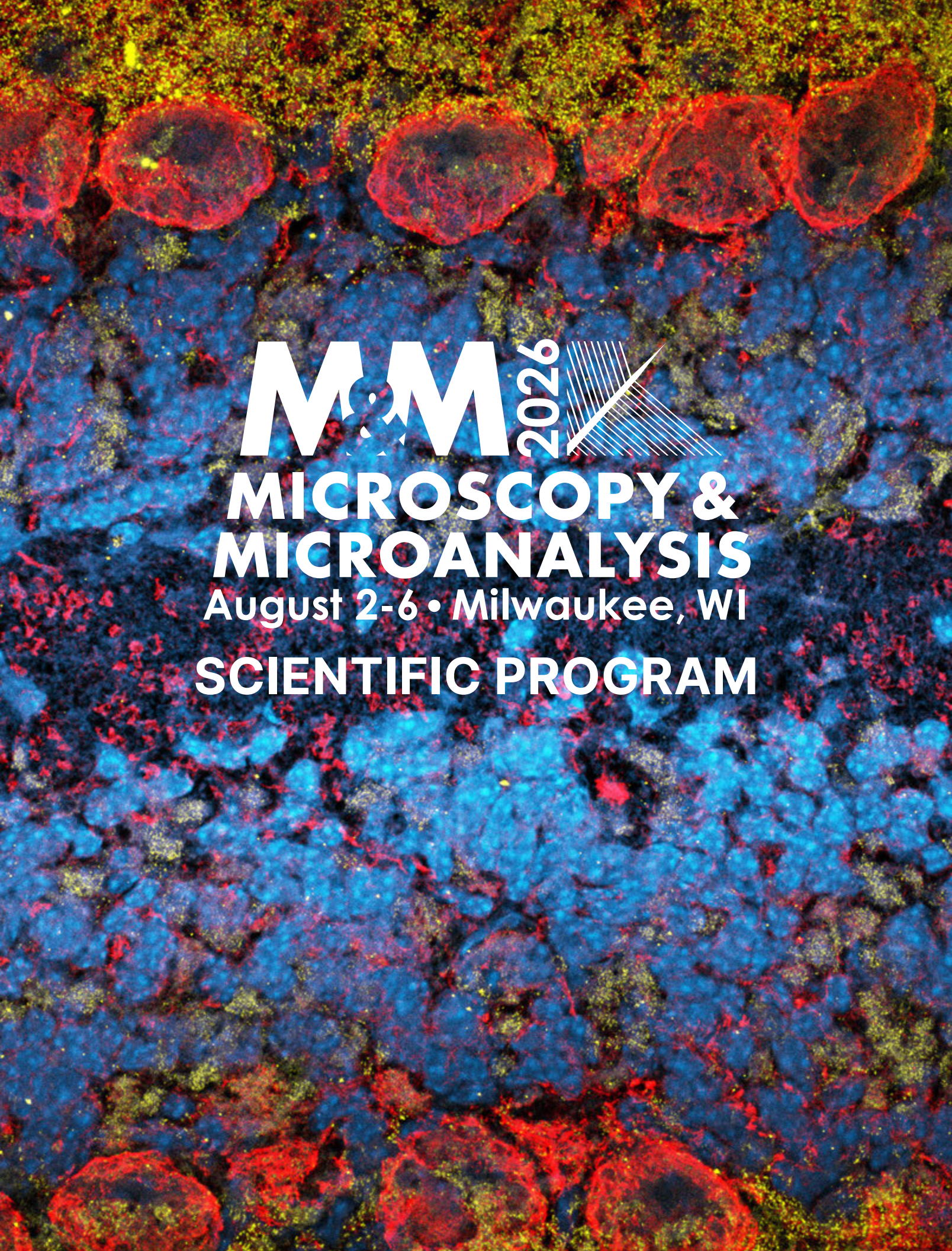

M&M 2026
MICROSCOPY &
MICROANALYSIS
August 2-6 • Milwaukee, WI
SCIENTIFIC PROGRAM

X60 Annual Pre-Meeting Congress for Students, Post-Docs, and Early-Career Professionals in Microscopy and Microanalysis

Organized by the Microscopy Society of America Student Council (StC)

PROGRAM CHAIR: Austin Houson, University of Tennessee, Knoxville

PROGRAM CO-CHAIR: Noami Pieczulewski, Cornell University

PHYSICAL SCIENCES CO-CHAIR: Blake Dorame, Arizona State University

BIOLOGICAL SCIENCES CO-CHAIR: Abayomi Adegboyega, Purdue University

EARLY CAREER CO-CHAIR: Bryan Lim, Ph.D., Oak Ridge National Lab

EARLY CAREER CO-CHAIR: Allison Mis, National Institute of Standards and Technology

EARLY CAREER CO-CHAIR: Selda Nayir, Oak Ridge National Lab

SOCIAL CHAIR: Essance Ray, University of Washington

SPONSOR LIAISON: Andres Marquez, T/A for Process & Characterization of Materials, Oak Ridge National Laboratory

X61 Atom Probe Tomography Users' Meeting and Workshop Professionals in Microscopy and Microanalysis

Organized by the Microscopy Society of America Atom Probe Field Ion Microscopy (APFIM) Focused Interest Group

ORGANIZERS:

Robert Ulfig, CAMECA / AMATEK

Steve Foldvari, CAMECA / AMATEK

Simon Ringer, University of Sydney, Australia

Kayla Yano, Pacific Northwest National Laboratory

Dan Schreiber, Pacific Northwest National Laboratory

Eason Chen, Nanyang Technological University, Singapore

X62 Interfaces in Action: Obtaining Reliable and Relevant Insights of Interfacial Reactions in Liquids and Gases with Operando and In Situ Microscopy and Spectroscopy

Organized by the Microscopy Society of America Electron Microscopy in Liquids and Gases (EMLG) Focused Interest Group

ORGANIZERS:

Tanya Prozorov, Ames National Laboratory

Yao Yang, Cornell University

Dan Zhou, Leibniz-Institut für Kristallzüchtung, Berlin

Patricia Kooyman, University of Cape Town

Emil Christian Stillhoff Jense, Insight Chips

Alexandre Foucher, Oak Ridge National Laboratory

Xiaobo Chen, University of Pttsburgh

Stephen House, Sandia National Laboratory

David (Wei-Chang) Yang, National Institute of Standards and Technology

X63 Facilities and Operations Management: Skills, Strategies, and Best Practices

Organized by the Microscopy Society of America Operation and Management (FOM) Focused Interest Group

ORGANIZERS:

Felipe Rivera, Brigham Young University

Luisa Amelia Dempere, University of Florida

Maria Arellano-Jimenez, University of Texas at Dallas

Elizabeth Miller, Michigan Technology University

Lee Cohen-Gould, Cornell University

Sunday Short Courses

Separate registration fees are required to attend the Sunday Short Courses. If you have not previously signed up, please visit the registration desk onsite.

AM & PM Coffee Breaks and a boxed Lunch will be provided only for PAID Short Course attendees.

X10 Electron Ptychography: Experimental Considerations and Data Analysis

LEAD INSTRUCTORS:

Steven Zeltmann, Cornell University

David Muller, Cornell University

James LeBeau, MIT

Colin Gilgenbach, MIT

Chia-Hao Lee, Cornell University

X11 Nanobeam Diffraction and 4DSTEM Analysis of Crystalline and Disordered Materials

LEAD INSTRUCTORS:

Colin Ophus, Stanford University

Stephanie Ribet, Lawrence Berkeley National Laboratory

Ian MacLaren, University of Glasgow

X12 Focused Ion Beam Theory & Methods

LEAD INSTRUCTORS:

Lucille Gianuzzi, TESCAN USA

Joseph Michael, Sandia National Laboratory (ret.)

X13 SEM, EPMA, EDS, and WDS Best Practices for Quantitative Microanalysis

LEAD INSTRUCTORS:

John Donovan, Probe Software

Glenn Poirier, Canadian Museum of Nature

Heather Lowers, US Geological Survey

Will Nachlas, University of Wisconsin-Madison

Joseph Robert Boro, Lawrence Livermore National Laboratory

Paul Carpenter, Washington University

Anette von der Handt, British Columbia

Andrew Ducharme, University of York, UK

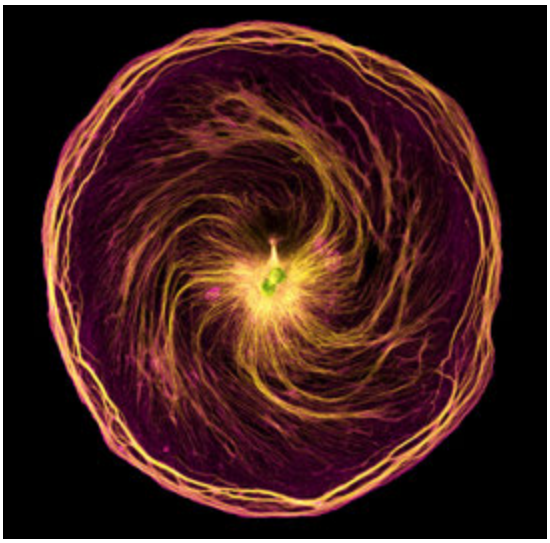
X14 Biological EM Sample Processing: From 2D to 3D

LEAD INSTRUCTORS:

Alice Liang, New York University Grossman School of Medicine

Kirk Czymmek, Donald Danforth Plant Science Center

Ru-ching Hsia, Frederick National Laboratory for Cancer Research, NIH



MICROGRAPH

Apoptotic cell. Apoptosis is a process of programmed cell death, which is important to maintain cellular homeostasis. This image shows a cancer cell at late stage of apoptosis. Scanning electron microscopy. Image by Ali Rizwan, Bio-Imaging core facility of King Abdullah Medical Research Center (KAIMRC), Riyadh, Saudi Arabia.

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DEEP LEARNING

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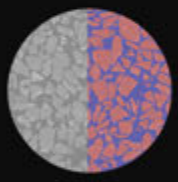
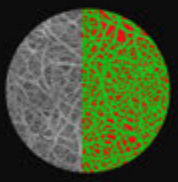
Train a custom model on your own images to segment exactly your features, at scale.

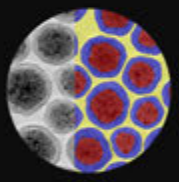
APPLICATIONS

Bring your images. We'll quantify them.

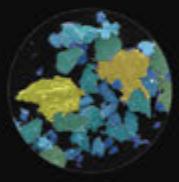

Phases


Grains


Fibers


Nano


Manufacturing


Particles

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August 3–6, 2026

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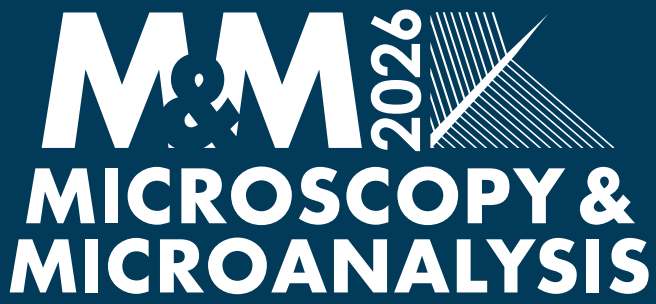

Monday, August 3

Quantum DETECTORS
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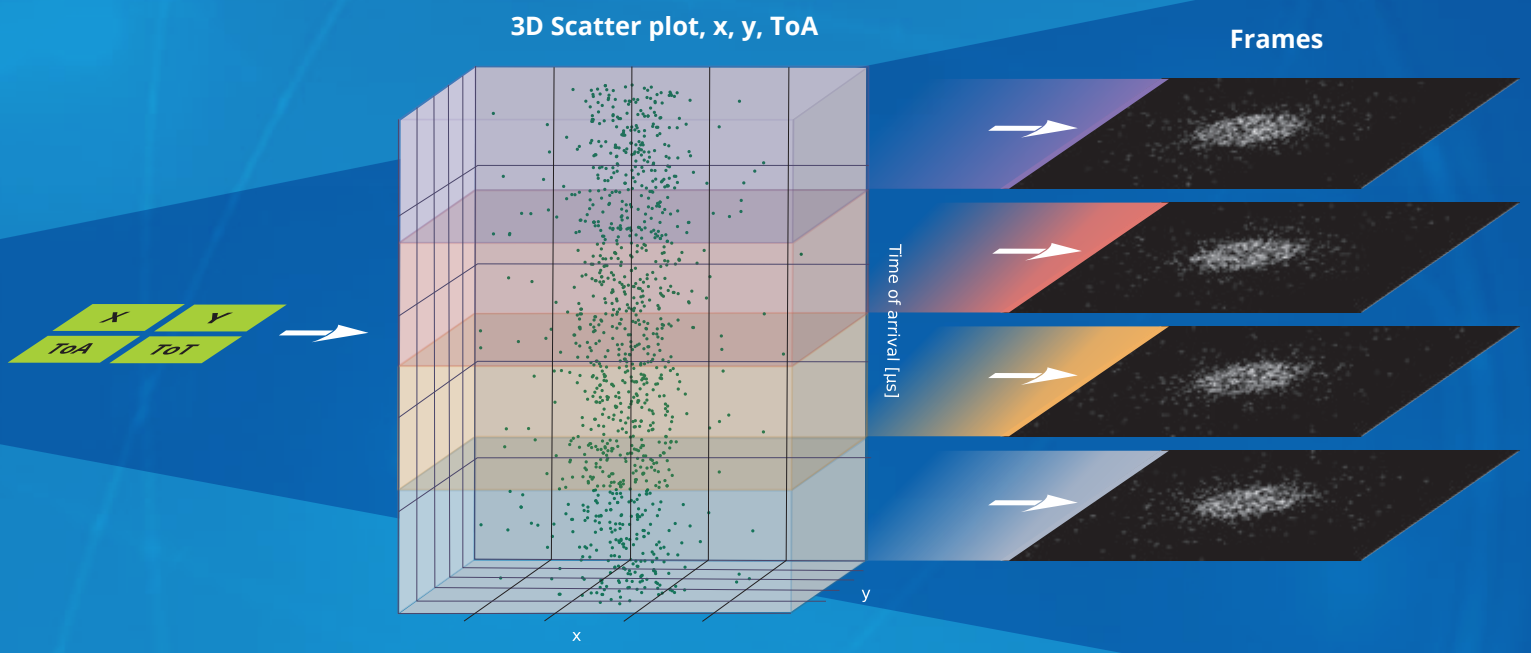
Event-based detection for dynamic TEM and high-speed 4D-STEM



This isn't a faster detector. It's a different way of measuring.

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Unlock new experimental capability

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Scientific Program

SESSION CHAIRS:

Grant Jensen, President, Microscopy Society of America
Andrew Herzing, President, Microanalysis Society
Mitra Taheri, M&M 2026 Program Chair

MONDAY 8:30 AM – 12:00 PM

Baird Center – Ballroom AB

OPENING WELCOME:

Paul Voyles, President, Microscopy Society of America
Andrew Herzing, President, Microanalysis Society

Program Chair Welcome Remarks

8:45 AM **1** *Cryogenic Electron Imaging of Macromolecules and Cells;* **Wah Chiu** (INVITED)

11:00 AM **2** *So Many Atoms and So Little Time;* **Thomas Kelly** (INVITED)

A Analytical/Instrumentation Sciences Symposia – Monday Afternoon

A01.1 Advancements in Forensic Chemistry: Microscopy and Microanalysis Techniques

PLATFORM SESSION
Monday 1:30 PM

1:30 PM **3** *A Forensic Minerology Toolbox—Combined and Correlative SEM, EDS, XRM, CL, Raman and Optical System (Colour-CL-GSR System);* **Richard Wuhrer** (INVITED), Ken Mason, Ken Moran, Matteo Donghi, Jeroen Smulders

2:00 PM **4** *Chemical Microscopy and Microscope Photometry in Pharmaceutical Forensic Investigations;* **Dale Purcell** (INVITED)

2:30 PM **5** *Microscopy Analysis of Foreign/Particulate Matter Complaint Samples;* **Brittany Handzo** (INVITED), Ravi Kalyanaraman

A03.1 Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications

PLATFORM SESSION
Monday 1:30 PM

1:30 PM **6** *Chemical and Optical Study of Semiconductor Heterostructures by Photonic Atom Probe;* **Lorenzo Rigutti** (INVITED)

2:00 PM **7** *Atom Probe Tomography of 3D NAND Memory Devices;* **Katherine Rice**, *Isabelle Martin, Sasidhar Narasimha Kasturi*

2:15 PM **8** *Automated Cluster Analysis in Mg-doped AlGaN/GaN QWIPs 3D Positional Microscopy Data;* **Baishakhi Mazumder**, *Prachi Garg, Shaadnan Bin Syed*

2:30 PM **9** *Atom Probe Characterizations on MoS2 Heterostructured Device: Challenges and New Results;* **Hung-Wei Yen** (INVITED), *Yu-Jen Tseng, Ying-Chun Chao, Hsing-Yeh Li, Ching-Yuan Su*

A09.1 Multi-dimensional and Multi-scale Imaging and Advanced Data Processing—Novel Opportunities in Material Science

Monday 1:30 PM

1:30 PM **10** *Closing the Loop in Correlative Microscopy: Targeting, Validation, Image Fidelity, and Enabling Hardware;* **Nabil Bassim** (INVITED), Mehdi Mosayebi, Bita Pourbahari, Joachim De Fourestier, Travis Casagrande, Pardis Mohammadpour, Phaneuf Michael

2:00 PM **11** *Focused Ion Beam Milling and Mechanical Testing Performed In-Situ in the Scanning Electron Microscope as a Means to Characterize Orientation-Dependent Mechanical Properties of Molecular Crystals;* **Daniel Bufford**, Adam Pimentel, Jalen Salas, Luis Jauregui, Dustin Ellis

2:15 PM **12** *In situ damage and deformation of materials at various strain rates during synchrotron based high-speed 3D tomography;* **Brian Patterson**, Theresa Quintana, Michael McCann, Estevan Sandoval, Andrew Ahn, Genevieve Kidman, Kwan-soo Lee, Nitin Daphalapurkar, Alex Arzoumanidis, Michael Drakopoulos

2:30 PM **13** *Large-Scale 3D Reconstruction and Quantification of Martensite–Austenite Constituents from Serial Sectioning Images;* **Hiroto Shimazu**, Takashi Michikawa, Tetsuya Nakamura, Norio Yamashita, Zhe Sun, Shinya Morita, Toru Hara, Kazuo Umemura, Hideo Yokota

2:45 PM **14** *Multiscale In-situ Liquid Phase Electron Microscopy for Electrochemical Applications;* **Hongkui Zheng**, Hugo Pérez-Garza, Merijn Pen, Yevheniy Pivak, Arixin Bo, Hongyu Sun

Scientific Program

B Biological Sciences Symposia – Monday Afternoon

B01.1 3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)

Monday 1:30 PM

1:30 PM **15** *Single Particle and Tomographic Analyses of Heterogenic In Vitro and In Vivo Assembled Bacterial Microcompartment Shells;* **Kristin Parent** (INVITED), Michaela TerAvest, Megan Gruenberg Cross, Nicholas Tefft, Timothy Chiang, Cheryl Kerfeld

2:00 PM **16** *Cryo-Electron Microscopy of Mycobacterium Tuberculosis Transcription Factor AbmR;* **Haixin Sui**, Xiaohong Qin, Roxanne C. Girardin, Jiraporn Panmanee, Kathryn Fisher, Matthew Phanchana, Yanfeng Zhang, Ke Chen, Janice D. Pata, Kathleen A. McDonough

2:15 PM **17** *High-Resolution IgM Structures in Patient Serum and Native IgM–HBV Subviral Particle Interactions Revealed by Structural Serology;* **Chang Liu**, Aditi Dhawan, Juyeon Park, Xinyi Yao, Shirin Nkongolo, Alexandra Beaver, Helen Chen, George Georgiou, Stefan Seitz, Zunlong Ke

2:30 PM **18** *Photocycle Structures of a Myxobacterial Phytochrome as Revealed by Cryo-EM;* **Marius Schmidt** (INVITED), Prabin Karki, Tek N. Malla, Carolina Hernandez, Joshua Mendez, David Menendez, Emina A Stojkovic

B05.1 Integrative Imaging Approaches for Biological Structure-Function Relationships

Monday 1:30 PM

1:30 PM **19** *A Physics-Informed Alternative to Richardson-Lucy Deconvolution;* **Steve Pressé** (INVITED), Zachary H. Hendrix, Peter T. Brown, Rory Kruithoff, Tim Flanagan, Douglas P. Shepherd, Ayush Saurabh

2:00 PM **20** *Combining Super-Resolution Microscopy with Functional Nonoelectrophysiology to Gain Insight into Nanoscale Structural Physiology in Health and Disease;* **Przemysław Radwański** (INVITED)

2:30 PM **21** *Ultrasmall Fluorescent Core-Shell Silica Nanoparticle for Optical Super-Resolution Microscopy;* **Ulrich (Uli) Wiesner** (INVITED)

C Cross-Cut/Interdisciplinary Sciences Symposia – Monday Afternoon

C05.1 Innovative Approaches to Microstructural Analysis: EBSD, ECCI, and 3D Techniques Across Disciplines

Monday 1:30 PM

1:30 PM **22** *Resolving Overlapping EBSPs by Simulation-Based Subtraction and Residual Reindexing;* **Grzegorz Cios** (INVITED), Aimo Winkelmann, Piotr Bała, Tomasz Tokarski, Wiktor Bednarczyk

2:00 PM **23** *Phase Differentiation in EBSD Using Deep Learning-based Anomaly Detection;* **Alfred Yan**, Roberto dos Reis, Vinayak Dravid

2:15 PM **24** *Crystal Orientation Estimation Using Discrete Fourier Transform Analysis of Backscattered Electron Azimuthal Distributions;* **Takeshi Otsuka**, Seiichi Takami

2:30 PM **25** *Fast HR-EBSD Based Pattern Center Calibration;* **William Lenthe**, Stuart Wright, Rene de Kloe, Matt Nowell

2:45 PM **26** *Automated in situ and Correlative EBSD, HR-DIC and EDS Characterisation of Materials;* **Ali Gholinia**, Jack Donoghue, Rhys Thomas, Mark Taylor, Albert Smith

C06.1 Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management

Monday 1:30 PM

1:30 PM **27** *From Data to Agency on Automated Microscopes;* **Sergei Kalinin**, Kamyar Barakati, Boris Slautin, Yu Liu, Utkarsh Pratiush, Timur Bazhirov, Austin Houston, Gerd Duscher, Kamal Choudhary

2:00 PM **28** *Agentic AI for Autonomous Microscopy through a Hierarchical Framework for Automated Microstructural Characterization;* **Daniel Perea**, Andrew Polonsky, James Lamb, Oceane Bel, Sten Lambeets, Mark Wirth, Peter Martin, Jacqueline Royer, Alivia Mourot, Dallin Barton

2:15 PM **29** *Making Microscopy AI-Ready;* **Austin Houston** (INVITED), Sergei Kalinin, Gerd Duscher, Utkarsh Pratiush, Levi Dunn, Dominick Pelaia

2:30 PM **30** *From Observation to Orchestration: The Autonomous Multi-Modal Characterization and Processing Platform;* **Steven Spurgeon**, Michelle Smeaton, John Mangum, Jayden Grunde, Emily Avey, Anderson Borch, Benjamin Wyland, Renae Gannon

2:45 PM **31** *Electron Microscopy Through Large-Language Model Control;* **Christopher Dunham**, Peter Ercius, Khang Tran, Rachel Hansen, Ava Duvall, Khanh Tran, Yueyun Chen, Matthew Mecklenburg, Nathan Joshua, Judy Su

Scientific Program

P Physical Sciences Symposia – Monday Afternoon

P03.1 Advanced Characterization of Nuclear Fuels and Materials

Monday 1:30 PM

1:30 PM **32** *3D Atomic-Scale Metrology of Buried Interfaces via Multislice Electron Ptychography;* **David Muller** (INVITED), Shake Karapetyan, Steven Zeltmann, Glen Wilk, Ta-Kun Chen, Vincent Duen-Huei Hou

2:00 PM **33** *A Comprehensive Failure Analysis Methodology to Effectively Characterize Complex Semiconductor Nano Device for Integration and Yield Learning at Wafer-Fab Technology Research and Development;* **Wayne Zhao**, Yu Zhu, Lukas Tierney, Michael Iwatake, Ashley Hughes, Ellahi Choudhurry, Ruqiang Bao, Ishtiaq Ahsan

2:15 PM **34** *Application of CTEM Fourier Ptychography to Semiconductor Specimens;* **Andrew Barnum**

2:30 PM **35** *Automated 4D-STEM Workflow for Strain Analysis and Orientation Mapping;* **Chu-Ping Yu**, Zhenxin Zhong, Chunhua (Emma) Tang, Daen Jannis, Dominique Delille

2:45 PM **36** *Interface-Segregation Quantification and Atomic-Column Metrology in Al0.24Ga0.76As/GaAs Quantum Wells by Aberration-Corrected HAADF-STEM;* **Roy Peña**, Daniel Rey, Kinga Lasek, Michael Manfra, Rosa Diaz

P04.1 Advances in 4D-STEM and In Situ Electron Microscopy for Quantum Materials

Monday 1:30 PM

1:30 PM **37** *Advances in 4D-STEM for Quantum Materials;* **Yimei Zhu** (INVITED), Desheng Ma, Lijun Wu, David Muller

2:00 PM **38** *Progressive Melting of Charge Density Waves Mapped with in situ 4D-STEM;* **Jeremy Shen**, Gaihua Ye, Cynthia Nnokwe, Alex Stangel, Yang Zhang, Suk Hyun Sung, Nishkarsh Agarwal, Rui He, Ismail El Baggari, Robert Hovden

2:15 PM **39** *Correlative Reciprocal-Space and Spectral Mapping of the Quantum Microstructure in High-Performance Epitaxial Materials for Superconducting Qubits;* **Peter Lim**, David Garcia-Wetten, Mitchell Walker, Gabriel dos Santos, Roberto dos Reis, Dominic Goronzy, Michael Bedzyk, Mark Hersam, Vinayak Dravid

2:30 PM **40** *Electromagnetic Field Imaging in Quantum and Magnetic Materials;* **Naoya Shibata** (INVITED)

P05.1 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis

Monday 1:30 PM

1:30 PM **41** *Off-Asis Electron Holography of Point Defects in Semiconductor Devices;* **Rafal**

2:00 PM **42** *Atomic-Scale Visualization of Oxygen Exchange and Transport Dynamics in Ceria;* **Peter Crozier,** Piyush Haluai, Mai Tan

2:15 PM **43** *Defect-Induced Phonon Redistribution at Semiconductor Heterointerfaces;* **Zihao Qin**, Francisco Guzman, Fenghui Gong, Xingxu Yan, Yifeng Huang, Xiaoqing Pan, Han-Hsuan Wu

2:30 PM **44** *Probing the local Structure and Electronic States of Strained High Entropy Oxide Heterostructures;* **Sai Venkata Gayathri Ayyagari**, Kevin Roccapriore, Jon-Paul Maria, Nasim Alem, Debangshu Mukherjee, Saeed Almishal

2:30 PM **45** *Phonon Asymmetry at a Single Twin Boundary in Boron Arsenide;* **Han-Hsuan Wu**, Ange Benise Niyikiza, Ying Peng, Xiaoqing Pan, Toshihiro Aoki, Bolin Liao, Zhifeng Ren, Ruqian Wu, Zhe Wang, Xingxu Yan

P06.1 Technical and Application Advances in Liquid and Gas Phase TEM

Monday 1:30 PM

1:30 PM **46** *Using Liquid-Phase Electrochemical Liquid Holder for Directed Assembly of Nanoparticles Under Electric Fields;* **Qian Chen** (INVITED), Zuochen Wang

2:00 PM **47** *Thermal and Hydrodynamic Control of Crystalline Growth: Tuning Cu and Cu-Ag Nanoparticle Facets for CO2 Reduction;* **Hongyu Sun**, Hongkui Zheng, Christian Deen, Vasilis Papadimitriou, Merijn Pen, Yevheniy Pivak, Hugo Pérez-Garza, Arixin Bo

2:15 PM **48** *Active Control of Radiolysis and Phase Stability in Liquid-Phase TEM Using Atomically Thin 2D Window Materials;* **Shoaib Masood**, Raja Abdul Wahab Ayyubi, Proloy Nandi, Yihang Sun, Jiwoong Park, Robert Klie

2:30 PM **49** *Ionic Liquid Enabled Suppression of Radiolysis-Induced Gas Bubble Formation in Aqueous Closed Liquid Cells with Ultrathin Carbon Windows;* **Marija Gajdardziska-Josifovska**, Daewon Lee, Haimei Zheng, Karen Bustillo

2:45 PM **50** *Liquid Cell TEM Study of Dynamic Interfaces in Liquid Phase Reactions;* **Haimei Zheng**

P08.1 Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods

Monday 1:30 PM

2:30 PM **51** *Probing Emergent Phenomena in Quantum Materials with Advanced Electron Microscopy;* **Yimei Zhu** (INVITED)

2:00 PM **52** *Coulomb-Correlated Multi-Electron Pulses for Probing Coherent Materials Dynamics;* **Armin Feist**, Rudolf Haindl, Valerio Di Giulio, Claus Ropers

P08.1 Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods

Monday 1:30 PM

1:30 PM **53** *Advancing Liquid Helium Electron Microscopy for Quantum Materials;* **Yang Zhang** (INVITED), Ismail El Baggari, Suk Hyun Sung, Haoyang Ni, Nishkarsh Agarwal, Maya Gates, Sang-Wook Cheong, Robert Hovden, Miaofang Chi

2:15 PM **54** *Field-Coupled Polymorphic Evolution of InSe Lamellae under In-situ TEM Biasing;* **Kenan Elibol**, Peter van Aken, Vesna Srot

P10.1 Quantitative Microanalysis of Terrestrial and Planetary Samples by Electrons, X-rays, Ions, and Lasers

Monday 1:30 PM

1:30 PM **55** *Geochemistry and Geochronology of Terrestrial and Planetary Samples by LA-ICP-MS;* **Alicia Marie Cruz-Uribe** (INVITED)

2:00 PM **56** *Systematic Assessment of Quantitative EDS: Reproducibility, Standardization, Limitations and Best Practices;* **Kayleigh Harvey**, David Edwards, Peter McSwiggen

2:15 PM **57** *EPMA meets XPMA: Testing a Microfocus XRF Source in an Electron Probe Microanalyzer;* **Stephen Kuehn**, Jeffrey Hannon, Donald Lesher

2:30 PM **58** *Approaches, Application, and Assessment of micro-XRF Quantification in Cultural Heritage: Silicate Geomaterials;* **Thomas Lam** (INVITED), Edward Vicenzi

Scientific Program

A Analytical Sciences Poster Sessions – Monday

3:00 PM – 5:00 PM **EXHIBIT HALL**

A01.P1 Advancements in Forensic Chemistry: Microscopy and Microanalysis Techniques

POSTER # 1

59 *Spent Cartridge Waste from Chihuahua Police Training; a Characterization Study for their Circular Processing;* **Ivanovich Estrada-Guel**, Roberto Martínez-Sánchez, C. Gómez-Esparza, Carlos G. Garay-Reyes, A. Lui-Chavira, A. Villalobos-Aragón, G. Loya-Chávez, J. M. Mendoza-Duarte, A. Santos-Beltrán, E. Rocha-Rangel

POSTER # 2

60 *Mechanical Properties by Micro-Raman Spectroscopy of Polymeric Matrix Composites Reinforced with MWCNTs;* **Yamile Cardona-Maya**, Diego Uribe-Suárez, Cesar Isaza

POSTER #3

61 *BEX Marks the Spot: Utilizing High-throughput SEM-EDS for Rapid Forensic Sand Analysis;* **Nicholas Gogola**, Tirzah Abbott

POSTER #4

62 *New Opportunities for Forensic Non-Destructive Multimodal Analysis of Inspection, Screening, Materials and Traces;* **Marek Kotrlý**, Martin Jonak, Radim Burget, Josef Uher, Jana Bohacova, Michal Pech, Ivana Turkova, Petr Cejka

POSTER #5

63 *High-Precision Micro-XRF for Forensic Glass Comparison: A Study of Cross-Generation Consistency and Efficiency;* **Shangshang Mu**, Gerward Weppelman, Aurelien Moy, Steve Coyle, Ed James, Jacob Wilbrink, Chris Booth

POSTER #6

64 *Correlative 4D-STEM and Atom Probe Tomography;* **Xinren Chen**

A03.P1 Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications

POSTER #7

65 *Atom Probe Analysis for Atomic Oxygen Induced Degradation in Low Earth Orbit Satellite Materials;* **Yeon Ha Jo**, Won-Hyoung Lee, Se-Ho Kim

POSTER #8

66 *General Purpose Strategies for Handling Peak Overlaps in Atom Probe Data;* **Olof Hellman**, David Reinhard

POSTER #9

67 *Automated Tip Radius Profiling for Atom Probe Reconstruction Using Tip Fitter in AP Suite;* **Isabelle Martin**, Brian Geiser, Katherine Rice

POSTER #10

68 *Atom Probe Tomography for Probing the Microstructure Evolution with Aging in Metallic Glass;* **Marouane Mejres**, Ronan Henry, Loic Perriere, Ivan Blum, François Vurpillot, Yannick Champion, Nicolas Delpouve, Allisson Saiter-Froucin

POSTER #11

69 *Metric Driven Atom Probe Reconstruction;* **Brian Geiser**, David Larson, Isabelle Martin, Katherine Rice, David Reinhard

A09.P1 Multi-dimensional and Multi-scale Imaging and Advanced Data Processing—Novel Opportunities in Material Science

POSTER #12

70 *In-situ Data Processing Made Easy;* **Mark Coleman**, Mark Atwater, Kim Larsen, Louise Hughes

POSTER #13

71 *Evaluation of Electrochemical Properties of Two Pacemakers Samples in Simulated Body Fluid;* **Sofia Sakr-Nassef**, Diana Tint, Julia Claudia Mirza-Rosca, Juan Carlos Lozano-Medina

POSTER #14

72 *Development and Applications of a High-Speed Spectrum Imaging Method in Auger Electron Spectroscopy;* **Fuyuki Nabeshima**, Kenichi Tsutsumi, Konomi Ikita, Tatsuya Uchida, Noboru Taguchi, Kazushiro Yokouchi, Akihiro Tanaka, Toshiyuki Ohama

POSTER #15

73 *Microscopy-Guided Machine Learning for Femtosecond-Laser Surface Engineering of Glass Microfluidic Lab-on-Chip Devices;* **Parisa Mahyari**, Peyman Ahmadi, Sina Shahbazmohamadi, Pouya Tavousi, Matthew Maniscalco, Marcus Emanuel, Mohammad Taghi Mohammadi Anaei, Hongbin Choi, Wesley Roser, Adrian Phoulady

POSTER #16

74 *Implicit Neural Representation STEM Tomography with Physics-Based Modeling of Probe Defocus and Depth-of-Field;* **William Millsaps**, Cedric Lim, Arthur R. C. McCray, Corneel Casert, Colin Ophus

A Analytical Sciences Poster Sessions – Monday cont.

POSTER #17

75 *Compressed Sensing Methods for Nanobeam 4D-STEM;* **Alex Robinson**, Nigel Browning, Daniel Nicholls, Jack Wells, Mounib Bahri

POSTER #18

76 *Physics-Informed Auto-Differentiation for Limited-Angle Tomography of Thick Amorphous Specimens Using BF-STEM;* **Deepan Balakrishnan**, Shi Jian, Antonia Monteiro, N. Duane Loh

POSTER #19

77 *Non-Destructive Analysis of Grain Growth Mechanisms in Ni-8Cr Alloy Using X-ray Diffraction Contrast Tomography;* **Kaushik Yanamandra**, Hrishi Bale, William Chuirazzi, Boopathy Kombaiah, Swapnil Morankar

POSTER #20

78 *SEM 3D Reconstruction: A Deep Learning Approach Using Adaptive Masking and Multi-Angle Disparity Fusion;* **Marcus Emanuel**, Matthew Maniscalco, Hongbin Choi, Adrian Phoulady, sepehr Hafezipour, Wesley Roser, Alexander Blagojevic, shahram Amini, Sina Shahbazmohamadi, Pouya Tavousi

POSTER #21

79 *Development of Precession Lorentz Transmission Electron Microscopy for Efficient Magnetic Imaging with Suppressed Diffraction Contrast;* **Shunsuke Hayashi**, Dongxue Han, Hidenori Tsuji, Kyoko Ishizaka, Asuka Nakamura

POSTER #22

80 *Model for Spectral Counting Noise in Atom Probe Tomography Data with Application to Chemical Phase Identification;* **Robert Ulfig**, Michael Keenan, David Reinhard, Vincent Smentkowski, David Larson

Scientific Program

B Biological Sciences Poster Sessions – Monday

B01.P1 3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)

POSTER # 38

93 *Assessment of the Genotoxic Effects of Nanomaterials on Plant Tissues, using "Allium cepa" as the Experimental Model Organism;* **Salomón Borjas**, Maria del Carmen Perez Sanchez, Leslie Sanchez Ramirez, Dhirendra Kumar Tiwari

POSTER #23

81 *Cryo-EM Reconstruction of the Giant Bacteriophage phiK601 Neck;* **Olga S Sokolova**, Grigorii Mitrov, Andrey Moiseenko, Ishika Gupta, Ruqaiyah Khan, Virajith Boddapati, Sayani Das, Sandip Kaledhonkar, Kiran Kondabagil

POSTER #24

82 *Single Particle Asymmetric Reconstructions of Stx Bacteriophage Phi24B;* **Olga S Sokolova**, Matvey Bubenchikov, Andrey Moiseenko, Alexander Kuznetsov, Andrey Letarov

POSTER #25

83 *Capsid Structure of Escherichia coli bacteriophage DH23;* **Olga S Sokolova**, Andrey Letarov, Andrey Moiseenko

POSTER #26

84 *CANCELLED: From Grid Preparation to Atomic Resolution: Practical Cryo-EM Advances at SECM4;* Jiawei Li, Nebojsa Bogdanovic, **Scott Stagg**

POSTER #27

85 *Advancements in Targeted Ultramicrotomy for Correlative and Volume Electron Microscopy Workflows;* **Mercedeh Yeganeh**

POSTER #28

86 *Signal Enhancement via Stage Biasing in Biological Specimen Imaging by Scanning Electron Microscopy;* **Nathalie Becerra Mora**, Sarah LaGrange, Danielle Little, Michael Dyer, Hanane Khoury, Mac Williamson, Wilson Clements, Camenzind Robinson

POSTER #29

87 *Democratizing Capillary-Based Cryo Soft X-ray Tomography for Whole Cell Imaging;* **Kenneth Fahy**, William Fyans, Fergal O'Reilly, Tony McEnroe, Peter Dahlberg, Cali Antolini, Thomas Eichinger, Paul Sheridan, Sergey Kapishnikov

POSTER #30

88 *In Silico Structural and Dynamic Characterization of Predicted Interactions Between PpCesA5 and Transmembrane Protein Partners;* **Lynnicia Massenburg**, Tracy Nixon

POSTER #31

89 *High-Performance Integrated Single-Particle Cryo-EM Workflows for Shared Academic and Industrial Facilities;* **Preeti Verma**, Elizabeth Wright, Joshua Pierson, Matthew Gaines, Wang Zheng, Bryan Sibert, Cheri Hampton, Matt Larson, Jae Yang

POSTER #32

90 *Structural Studies of the Helicobacter pylori Cag Type IV Secretion System; Wilhelm Salmen, Chiamaka Okoye, Timothy Cover, Melanie Ohi, Arwen Frick-Cheng, Youngki Yoo, Timothy Baker*

POSTER #33

91 *Characterizing Protein Aggregation and Solubility via the Second Virial Coefficient;* **Alberta Abotsi**, Scott Stagg

POSTER #34

92 *Launching Your Lab's Cryo-EM Capabilities with PNCC Screening Access Mechanism;* **Vamseedhar Rayaprolu**, Janette Myers, Claudia Lopez

POSTER #35

93 *PP7 and MS2 Virus-Like Particles as Complementary Standards for Cryo-EM;* **Misha Kopylov**

C Cross-Cut/Interdisciplinary Sciences Poster Sessions – Monday

C05.P1 Innovative Approaches to Microstructural Analysis: EBSD, ECCI, and 3D Techniques Across Disciplines

POSTER #36

94 *Orientation Analysis of Li Crystal Growth in Solid State Li Batteries using PFIB and EBSD at Room Temperature;* **Amir Avishai**, Minghao Zhang, Ying Shirley Meng

POSTER #37

95 *EBSD of Vitrified Cryo-TEM Specimens: Grid Quality Assessment Step for Cryo-TEM for Lamella and APT Specimen Preparation;* **Eric Woods**, Baptiste Gault, Christoph Wigge, Yujun Zhao, Rene de Kloe, Tim M. Schwarz, Ben Britton, Stefan Zaefferer

POSTER #38

96 *X-ray Phase Contrast Imaging Capabilities for Biomedical Applications at the BEATS Beamline of the SESAME Synchrotron;* **Fareeha Hameed**, Charalambos Chrysostomou, Yara Oweis, Christoforos Odiatis, Maher Sughayer, Elizabeth New

POSTER #39

97 *SEM Study of Lithium-Containing Microstructures for Battery and Biomedical Technologies;* **David Stowe**, Shangshang Mu, Julia Mausz

POSTER #40

98 *Clouding in Eucrite Pyroxenes: Analyzing a Key Metamorphic Indicator in Three Dimensions;* **Michael Odlyzko**, Nicholas Seaton, Jennifer Mitchell, Thomas Barrett, Natasha Stephen

POSTER #41

99 *Niobium Doping-Induced Texture Randomization for Strain Mitigation in Ni-Rich Cathodes;* **Hari Adhikari**, Yasuo Ito, Joseph A. Libera, Jianguo Wen

Scientific Program

P Physical Sciences Poster Sessions – Monday

P03.P1 Advanced TEM analysis for Semiconductors

POSTER #42

100 *Characterization of Tantalum and Tantalum-alloyed Films for Quantum Devices;* **Guangming Chen**g, Nan Yao

POSTER #43

101 *Electron Energy Loss as a Phase Identification Tool in Hafnium Zirconium Oxide Ferroelectrics;* **Ece Gunay**, Benjamin Aronson, Jon Ihlefeld, Elizabeth Dickey, Sebastian Calderon

POSTER #44

102 *Electron-Beam-Induced Atomic Migration in Sonochemically Synthesized Fe_2MnO_4 Investigated by Transmission Electron Microscopy;* **Yazmin Mariela Hernandez-Rodriguez**, Maria del Rosario Munguía-Fuentes, Oscar Eduardo Cigarroa-Mayorga

POSTER #45

103 *Optical and Electron Microscopy Study of TiO2 Nanoparticles Doped with MoOx for Paracetamol Oxidation in Aqueous Media;* **Hector Calderon**, Angeles Mantilla, Michelle Navarrete

POSTER #46

104 *Sensing Nanoscale Charge Transport with In Situ TEM;* **Piyush Haluai**, Peter Crozier

POSTER #47

105 *Revealing Preparation and Imaging-Induced Defects in Operando GaN HEMT Samples with STEM EBIC;* **William Hubbard**, B.C. Regan

POSTER #48

106 *Physics-Informed Deep Neural Networks and Density Functional Theory for Quantum Defect Modeling in Hexagonal Boron Nitride (hBN);* **Raphael Noriega**

POSTER #49

107 *Atomic Scale Characterization of Ordering, Defects, and Polar Behavior in Epitaxial II-IV-N2 Ultrawide Band Gap Nitride Thin Films;* **Motahareh Helli**, Hongping Zhao, Chenxi Hu, Christopher Chae, Jinwoo Hwang, Kathleen Kash, Abdul Mukit Majumder, Vijay Gopal Thirupakuzi Vangipuram

POSTER #50

108 *PtychoPath: Physics-Informed Machine Learning for Accelerated Ptychographic Phase Reconstruction;* **Michael Dushkoff**, Thanh Nguyen, Allen Malony, Kayla Nguyen

POSTER #51

109 *STEM Analysis of Interfacial Defects in Cubic Boron Nitride on Diamond;* **Andrew Lang**, D. Scott Katzer, James Hart, Bethany Hudak, Matthew Hardy, Tyler Erickson, Eric Jin, Peter Litwin, Neeraj Nepal, David Boris

POSTER #52

110 *Interfacial Atomic Structure of Cobalt Oxide Nanoparticles Functionalized with Cannabinoid Molecules Revealed by High-Resolution Transmission Electron Microscopy; Oscar Eduardo Cigarroa-Mayorga, Yazmin Mariela Hernandez-Rodriguez, Maria del Rosario Munguía-Fuentes*

POSTER #53

111 *The Photocatalytic Reduction of Hexavalent Chromium using Hydrotalcite/ Vismirnovite Heterostructures: a Microscopy-Supported Research;* **Hector Calderon**, Guadalupe Romero, Enrique Samaniego, Angeles Mantilla

POSTER #54

112 *Temperature-Dependent Crystal Growth and Facet Exposure in Layered BiOCl;* **Hector Calderon**, Maria Mantilla, Enrique Samaniego

POSTER #55

113 *Use of Electron Microscopy for the Identification of Crystalline Phases in Ag/ZnO–ZnS heterostructures with Photocatalytic Potential;* **Carlos Felipe**, Francisco Tzompantzi, Fernanda Hernandez-Rodrigez, David Ramírez-Ortega, Claudia Santiago, Felipe Cervantes Sodi, Liliana E Rojas-Candelas, Diana Guerrero, Karla Quiroz-Estrada

POSTER #56

114 *Substrate Preparation: A Critical Step for Epitaxial Growth of Mn_5Ge_3 Thin Films on Ge(001) Substrates by Magnetron Sputtering Technique;* **Adriana Alvidrez-Lechuga**, José T. Holguin-Momaca, Idris O. Olayiwola, Sion F. Olive-Méndez

POSTER #57

115 *Automating Identification of Iodine Cluster Distortions in InSeI using Blob Detection;* **Patrick Hays**, Seth Ariel Tongay, Sandhya Susarla, Melike Erdi, Peter Ercius

P04.P1 Advances in 4D-STEM and In Situ Electron Microscopy for Quantum Materials

POSTER #58

116 *Tracking Nanosecond Kinetics of an Electrically Triggered Charge Density Wave Transition Using Ultrafast Electron Microscopy;* **Daniel Durham**, Laszlo Cline, David Czaplewski, Ralu Divan, Yue Cao, Supratik Guha, Thomas Gage, Charudatta Phatak

POSTER #59

117 *A New Low-Cost High-Speed Electron Detector for 4D Stem Measurements;* **Megha Chacko Kachappilly**, Germano Motta Alves, Lewys Jones, Jonathan Peters

POSTER #60

118 *In Situ TEM Observations of Strain-Driven Soliton Dynamics in Twisted Graphene;* **Kang'an Wang**, Kate Reidy, Aining Hu, Mucheng Ma, Rohan Dhall, Xiaoyu Chen, Karen Bustillo, Archana Raja, Michael Crommie, Andrew Minor

POSTER #61

119 *Nanoscale Investigation of the Metal-Insulator Transition in Free-Standing VO2 Single Crystals through in Situ Strain and Temperature Control in the S/TEM;* **Amanda Arteaga**, Berit Goodge, Yong Zhu, Christian Liebscher, Christoph Flathmann, Lin Tian, Tobias Meyer, Paul Canfield

P06.P1 Technical and Application Advances in Liquid and Gas Phase TEM

POSTER #62

120 *In-situ Gas Cell Electron Microscopy and Spectroscopy of Heterogenous Catalysts at High-pressure and Temperature;* **Calvin Parkin**, George Hollyer, Dmitri Zakharov, Eric Stach, Daan Hein Alsem

POSTER #63

121 *In-situ Electrochemical Liquid Cell STEM Observation of Water Electrolysis Catalysts;* **Masaki Takeguchi**, Ayako Hashimoto

POSTER #64

122 *Real-Time Nanoscale Observation Of High-Temperature Electrolysis And Thermoelectric Conversion Under Controlled Gas Environments;* **Hongyu Sun**, Pritam K. Chakraborty, Kyuseon Jang, Hongkui Zheng, Ronald Spruit, Yevheniy Pivak, Siyuan Zhang, Shibabrata Basak, Rüdiger-A Eichel, Hugo Pérez-Garza

POSTER #65

123 *Revealing the True Reaction Structure of AuPd-TiO2 under CO2+H2 Gas Conditions by In-situ Transmission Electron Microscopy;* **Cheng Li**, Duojie Wu, Meng Danny Gu

POSTER #66

124 *In-Situ Electrical STEM Investigation of Interfacial Evolution and Anion Redox Mechanisms in Li-Rich Cathode Materials;* **Duojie Wu**, Cheng Li, Meng Gu

POSTER #67

125 *A New Method for Quantifying Light Delivery in a Closed-Cell Gas-Phase In Situ TEM System for Studying Light Sensitive Materials;* **Jennifer McConnell**, Katherine Marusak Stephens, Franklin Walden, Patrick Wellborn, Jake Barnes, Nelson Marthe, John Damiano

POSTER #68

126 *Considering the Consequences of Liquid Thickness on Spatial Resolution in Liquid-Phase Transmission Electron Microscopy;* **Nathan Rosenmann**, Yu Chen, Roberto dos Reis, Lauren Irie, Shengyi Su, Sofia Aman, Zhaoxu Li, Peter Kunnas, Joseph Patterson, Nathan Gianneschi

POSTER #69

127 *The First Monolithic Chip with Microelectrodes Integrated into Nanochannels for Electrochemical-LPTEM;* **Niccolò Bottauscio**, Kristian Mølhave, Emil Jensen

POSTER #70

128 *Monolayer MoS2 Liquid Cells in Imaging Beam-Sensitive Biological Samples;* **Proloy Nandi**, Xingzhi Wang, Robert Klie, Russell Pesavento, Qian Chen, Shoaib Masood, Kassapa Ellepola

POSTER #71

129 CANCELLED: *Sensing Surface Adsorbed Species on ZrO2 supported Pt with Aloof-Beam STEM-EELS;* **Blake Dorame**, Piyush Haluai, Peter Crozier

POSTER #72

130 *Ultrathin (UT) Membrane Platform for In-Situ Dynamics: From Non-Equilibrium Thermodynamics to Extreme Environments;* **Vinayak Dravid**

P10.P1 Quantitative Microanalysis of Terrestrial and Planetary Samples by Electrons, X-rays, Ions, and Lasers

POSTER #73

131 *The Challenges of Standardless Quantification of Light Elements by EDS-XRF;* **Aurelien Moy**, Shangshang Mu

POSTER #74

132 *McEPMA: Fast, Open-Source, CUDA-Accelerated Monte Carlo EPMA for Custom 3D Geometries, Absorption, and Boundary Fluorescence;* **Joe Boro**

POSTER #75

133 *Measurement of Migration of Sodium in Glass in a Banded Olivine Chondrule;* **John Konopka**

POSTER #76

134 *Quantitative Energy Dispersive Spectroscopy on a Scanning Electron Microscope Platform;* **Heather Lowers**

POSTER #77

135 *EDS Characterization of Transition Metal L-lines at Varying Beam Energies with Implications for the Analysis of Minerals;* Stephen Seddio, Ivan Mohelsky

POSTER #78

136 *WDS-SD Can Improve Our Understanding of the Physics of the WDS Spectrometer Allowing the Development of New Designs;* **Patrick Camus**, Ken Moran, Michael Matthews, Richard Wuhrer

POSTER #79

137 *Improving Accuracy of Critical Element Analysis by LA-ICP-MS in the Mineral Sphalerite;* **Jay Thompson**

POSTER #80

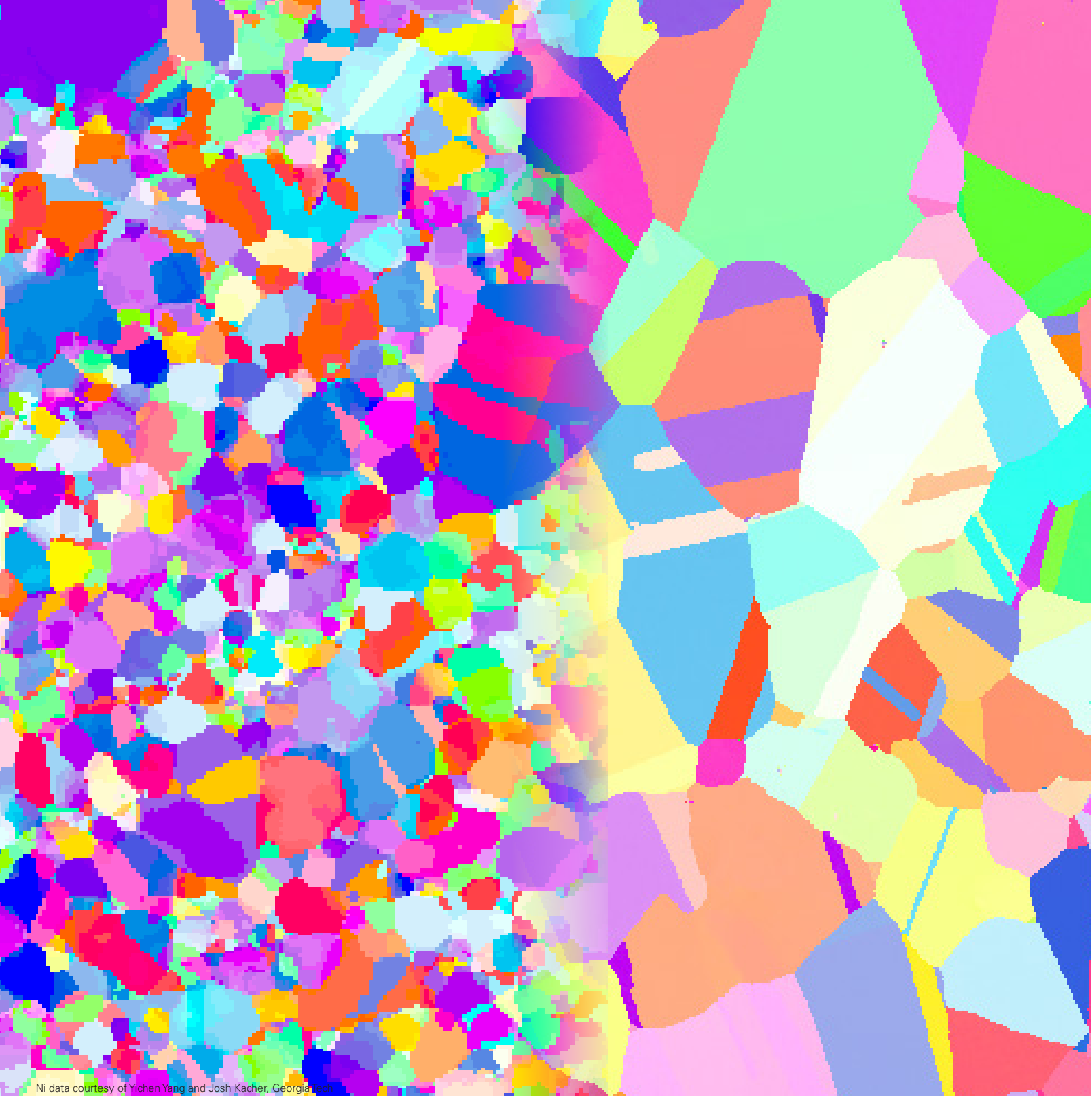
138 *XPS Investigation of Thorium Chemical State in Grain Boundary Regions of Recrystallized Monazite;* **Lindsey Hmielewsk**i, Peter Sobol, Cameron Meyers, Greg Hirth, William Nachlas

POSTER #81

139 *STEM Observation of Voids in Whitened Mexican Opal;* **Junji Yamanaka**, Yuki Haraguchi, Chiaya Yamamoto, Keisuke Arimoto, Yasushi Takahashi

POSTER #82

140 *Introduction to PRECISE: Purdue Resources Empowering Coordinated Investigations for Sample Exploration, a NASA Planetary Science Enabling Facility;* **Marissa Tremblay**, PRECISE Research Team, Michelle Thompson



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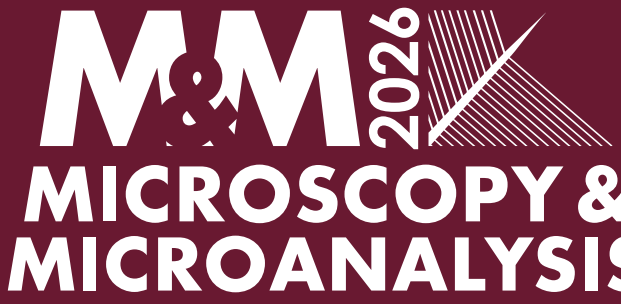

Tuesday, August 4

Scientific Program

A Analytical/Instrumentation Sciences Symposia – Tuesday Morning

A02.1 Advances in 4DSTEM Experimentation, Analysis and Interpretation

Tuesday 8:30 AM

8:30 AM **141** *A Reconfigurable Detector for Spectroscopy and Diffraction;* **Peter Denes** (INVITED)

9:00 AM **142** *Application of Multi-Angle Precession Electron Diffraction to Electric Field Measurement Using Differential Phase Contrast;* **Edwin Supple**, Kris Bertness, Karen Bustillo, Rohan Dhall, Stephanie Ribet, Alexana Roshko

9:15 AM **143** *Quantitative Electron Diffraction for Detecting Electron Localization in Complex Oxides;* **Robert Busch**, Hsu-Chih Ni, Jian-Min Zuo

9:30 AM **144** *Mapping the Heterogeneous Charge Transport During Oxidation of Metals Containing Nanoscale Metal Inclusions with 4D-STEM and APT;* **Kieran Rivers**, Adrien Couet, Junliang Liu, Alexander Kvit, Yongfeng Zhang, Ximeng Wang, Andrew Tong, Brelon May, Jennifer Choy

9:45 AM **145** *Simultaneous Energy-Filtered 4D-STEM and Quantitative XEDS Analysis for Strain and Composition Mapping in Semiconductor Materials;* **Alexander Campos-Quiros**, Kotaro Sakaguchi, Takeshi Kaneko, Masashi Watanabe

A03.2 Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications

Tuesday 8:30 AM

8:30 AM **146** *The Limits of Atom Probe Tomography;* **Thomas Kelly** (INVITED)

9:00 AM **147** *Revisiting Correlated Evaporation Events in Atom Probe Tomography Data;* **Daniel Schreiber**, Nathan Bailey, Karen Kruska

9:15 AM **148** *Development of Reference Materials for Atom Probe Tomography;* **Karen DeRocher**, Mark McLean, Frederick Meisenkothen, Shashi Poddar

9:30 AM **149** *Wavelength-Dependent Field Evaporation in Atom Probe Tomography;* **Ann Chiaramonti** (INVITED), Benjamin Caplins, Karen DeRocher, Jacob Garcia, May Martin, Mark McLean, Christopher Mead, Luis Miaja Avila, William Osborn, Xiaochen Ren

A04.1 Advances in Cryogenic Electron Microscopy for Energy and Quantum Materials

Tuesday 8:30 AM

8:30 AM **150** *Studying Ice Crystallization from Water at Angstrom Resolution Using Cryogenic Liquid-Cell TEM;* **Jingshan Du** (INVITED), James De Yoreo

9:00 AM **151** *Cryogenic Multi-Slice Electron Ptychography for Resolving Complex, Three-Dimensional Atomic Structures with Deep Sub-Ångström Resolution;* **Chuqiao Shi**, Ting-Ran Liu, Prithwijit Mandal, Hongkui Zheng, Mia Andersen, Yevheniy Pivak, Hugo Pérez-Garza, Srimanta Middey, Yu-Tsun Shao

9:15 AM **152** *Building the Metrology of the Quantum Future: Engineering, Design, and Simulation of an All-Superconducting Electron Microscope at Berkeley Lab;* **Jim Ciston**, Tengming Shen, Lucas Brouwer, Yufan Yan, Ryan Norris, Ray Hafalia, Stephanie Ribet, Marian Mankos

9:30 AM **153** *Multiscale Structural Analysis of Hydrated Membranes with Cryogenic Electron Microscopy;* **Nikita Dutta** (INVITED), Olivia McIntee, Joelin Agyei-Mensah, Caleb Reese, Glenn Teeter, Mou Paul, Abhishek Roy

A06.1 Correlative, Multimodal Microscopy, Spectroscopy, and Imaging

Tuesday 8:30 AM

8:30 AM **154** *Non-Destructive XPS/HAXPES Depth Profiling with Variable X-ray Energies Ranging from UHV to Near Ambient Pressure Conditions;* **Andreas Thissen** (INVITED), Paul Dietrich

9:00 AM **155** *MEMS-Based Tensile Platform for Correlative In-Situ SEM and TEM Studies;* **Hongkui Zheng**, Gijs Gugten, Otho Granata, Jiarui Mo, Vasilis Papadimitriou, Shibabrata Basak, Yu-Tsun Shao, Leopoldo Molina-Luna, Merijn Pen, Hugo Pérez-Garza

9:15 AM **156** *In situ Multimodal Chemical Imaging of Aluminum Containing Particles as Models for Waste Treatment;* **Xiao-Ying Yu**, John Lasseter, Tobias Misicko

9:30 AM **157** *ToF-SIMS Analysis Correlated with In-Situ SPM Techniques: Synergy and Mutual Influences;* **Bertram Schulze Lammers** (INVITED), Julia Zakel, Derk Rading, Thomas Grehl, Felix Kollmer

A09.2 Multi-dimensional and Multi-scale Imaging and Advanced Data Processing—Novel Opportunities in Material Science

Tuesday 8:30 AM

8:30 AM **158** *Understanding the Electro-Chemo-Mechanical Processes of Graphite/Si Composite Lithium-ion Battery Electrodes by Multimodal Operando Microscopy;* **Xuekun Lu** (INVITED), Rhodri Owen, Wenjia Du, Zhenyu Zhang, Xun Zhang, Antonio Bertei, Roby Soni, Daqing Li, Paul Shearing

9:00 AM **159** *Correlative Multiscale 2D and 3D Imaging Workflow to Reveal Chemo-Mechanical Mechanisms in Batteries;* **Michael Haeusler**, Nikola Šimić, Rahulkumar J. Sinojiya, Daniel Knez, Christoph Stangl, Stefan Koller, Roland Brunner

9:15 AM **160** *Utilizing Correlative Monochromated EELS, EDX and 4D-Scanning Confocal Electron Diffraction (4D-SCED) for Nanoscale Battery Analysis;* **Nikola Šimić**, Michael Haeusler, Evelin Fisslthaler, Roland Brunner, Daniel Knez

9:30 AM **161** *Correlative Microscopy Approach for Battery Materials;* **Yulia Trenikhina**, Stephen Kelly, Hrishi Bale

9:30 AM **162** *Machine-Learning-Enabled Robust Phase Mapping from X-ray Hyperspectral Imaging of Cycled Sodium-Ion Cathodes;* **Fayçal Adrar**, Sufal Swaraj, Raghvender Raghvender, Francois Cadiou, Laurence Croguennec, Matthieu Bugnet, Arnaud Demortiere, Nicolas Folastre, Chloe Pablos, Stefan Stanescu

A10.1 Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools

Tuesday 8:30 AM

8:30 AM **163** *Photon Lenses for Aberration Correction in Electron Microscopes;* **Marius Constantin Chirita Mihaila**, Martin Kozák

9:00 AM **164** *Development of the 300 kV Magnetic Field-Free Atomic Resolution Electron Microscope;* **Yuji Kohno** (INVITED), Tatsuhiro Maekawa, Shigeyuki Morishita, Hidetaka Sawada, Isamu Ishikawa, Naoya Shibata

9:15 AM **165** *Next-Generation Atomic-Resolution Spectroscopy and Multidimensional Imaging with the Monochromated JEOL ARMD-TEM;* **Peter van Aken**, Tobias Heil, Heiko Müller, Stephan Uhleman, Pirmin Kükelhan, Martin Linck, Hongguang Wang, Akiho Nakamura, Masaki Mukai

9:30 AM **166** *Developments of a Large-Convergence-Angle Scanning Transmission Electron Microscope Operable Over a Wide Range of Accelerating Voltages;* **Gen Koinuma**, Stephan Uhleman, Yu Jimbo, Svenja Perl, Thomas Riedel, Yuki Ninota, Philipp Wachsmuth, Naoya Chihara

9:45 AM **167** *Sub-Angstrom TEM by Ultra-Cold Liquid Helium Multiplatform Sample Holder;* **Maya Gates**, Michele Conroy, Miaofang Chi, Robert Hovden, Ismail El Baggari, Haoyang Ni, Yang Zhang, Noah Schnitzer, Suk Hyun Sung, Nishkarsh Agarwal

Scientific Program

B Biological Sciences Symposia – Tuesday Morning

B01.2 3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)

Tuesday 8:30 AM

8:30 AM **168** *Understanding and Engineering Transposons for Next-Generation Genome-Editing;* **Shubham Dubey** (INVITED)

9:00 AM **169** *Targeting Protein-Protein Interactions in the Extrinsic Apoptotic Pathway and Their Implications in Cancer;* **Kakoli Bose**, Aditi Sharma, Navodipa Bhattacharya, Anshita Srivastava, Shubhankar Dutta

9:15 AM **170** *Embrella: Integrated Data Tracking and Workflow Orchestration for Cryo-Electron Tomography;* **Yue Yu**, Bridget Carragher, Anchi Cheng, Yongbaek Cho, Pallavi Khedle, Utz Ermel, Jonathan Schwartz, Ariana Peck, David Dong, Michael Souza

9:30 AM **171** *Exploring the 3D Architecture of Organelles with Electron Tomography;* **Amy Strydom**, Coral Martinez, Olivia Carmo, Hong Zhan, Steven Boeynaems, Marisa Otegui

9:45 AM **172** *Reducing Beam Damage in Cryo Volume Scanning Electron Microscopy Through Compressive Sensing;* **Daniel Nicholls**, Maryna Kabylynska, Nigel Browning, Zoe Broad, Jack Wells, Alex Robinson, Roland Fleck

B05.2 Integrative Imaging Approaches for Biological Structure-Function Relationships

Tuesday 8:30 AM

8:30 AM **173** *Nano-IR Applications in Life Science;* **Artem Danilov**, Andreas J. Huber, Korbinian Kaltenecker

9:00 AM **174** *Mesoscale Fluorescence Imaging at Nanoscale Resolution by Photochemical Sectioning;* **Wei Wang** (INVITED), Xiongtao Ruan, Gaoxiang Liu, Milkie Daniel, Wenping Li, Eric Betzig, Srigokul Upadhyayula, Ruixuan Gao

9:30 AM **175** *Imaging Force-Dependent Conformational Change in Desmosomes;* **Sanjeevi Sivasankar** (INVITED), Yinchen Dong

B06.1 Integrative Imaging Approaches for Biological Structure-Function Relationships

Tuesday 8:30 AM

8:30 AM **176** *High Resolution Imaging of Collagen Remodeling in Cancer and Fibrosis;* **Paul Campagnola** (INVITED), Emily Shelton, Akbar Hasanzadeh

9:00 AM **177** *Light as a Probe for Living Systems: Mapping Tissue Mechanics, Extracellular Matrix Architecture and Ion Signaling;* **Antonio Fiore** (INVITED)

9:15 AM **178** *From Photons to Fibers: Imaging the Architecture of the Extracellular Matrix;* **Leila Mostaço-Gudiolin** (INVITED)

C Cross-Cut/Interdisciplinary Sciences Symposia – Tuesday Morning

C05.2 Innovative Approaches to Microstructural Analysis: EBSD, ECCI, and 3D Techniques Across Disciplines

Tuesday 8:30 AM

8:30 AM **179** *Resolving Energy in EBSD: From 2D Kikuchi Patterns to Spectro-Crystallographic Maps;* **Nicolò Maria della Ventura** (INVITED), Kalani Moore, McLean Echlin, Tresa Pollock, Marc De Graef, Daniel Gianola

9:00 AM **180** *Uncovering Spatially Modulated Phase Boundaries in Multiferroic Thin Film with Multi-Modal Electron Microscopy;* **Ting-Ran Liu**, Xiangwei Guo, Sajid Husain, Maya Ramesh, Pushpendra Gupta, Darrell Schlom, Ramamoorthy Ramesh, Yu-Tsun Shao

9:15 AM **181** *Time-Resolved Electron Backscattering Diffraction Analysis for Dynamic Plastic Deformation of Crystalline Materials;* **Masashi Watanabe**, Tucker Rhead, Sanjit Bhowmick, Daniel Goran, Alexander Campos-Quiros, Donald Carpenter

9:30 AM **182** *Characterization of γ'-Precipitate-Strengthened Nickel-Based Superalloys Using Transmission Scanning Electron Microscopy Under Controlled Diffraction Conditions;* **Johan Westraadt** (INVITED), Andreas Bezold, Gopal Viswanathan, Michael Mills

C06.2 Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management

Tuesday 8:30 AM

8:30 AM **183** *Robust Machine Learning for HRTEM Image Analysis;* **Mary Scott** (INVITED)

9:00 AM **184** *Denoising Machine Learning Model for Out-of-distribution Transmission Electron Microscopy Datasets;* **Brian Lee**, Susan Minkoff, Rohin Harikumar, Meng Li, Judith Yang, Dmitri Zakharov, Xiaohui Qu

9:15 AM **185** *Spatial Transformer Integrated Convolutional Variational Autoencoder for Robust Region-of-Interest Detection in Atomic-Resolution STEM Images;* **Raja Abdul Wahab Ayyubi**, Robert Klie, James P. Buban, Shoaib Masood

9:30 AM **186** *PtyRANNOSAUR: Ptychography using Robust Artificial Neural Networks Optimized for Sub-Ångstrom Accuracy and Ultrafast Reconstruction;* **Rahim Raja**, Kieran Loehr, Xiaochuan Ding, Jeffrey Huang, Bryan Clark, Pinshane Huang

9:45 AM **187** *Autonomous Agentic Workflows for Ptychographic Analysis and Algorithm Discovery;* **Yi Jiang**, Xiangyu Yin, Chuqiao Shi, Yu-Tsun Shao, Ming Du

C08.1 Vendor Symposia

Tuesday 8:30 AM

8:30 AM **188** *Multivariate Volume Rendering in VTK, ParaView, and Tomviz: Desktop and Web Implementations;* **Patrick Avery**, Aaron Michelson, Alessandro Genova, Sebastien Jourdain, Klaus Mueller, Aishik Deb, Dan Lipsa, Ayush Kumar, Hanfei Yan

8:45 AM **189** *Towards surface science in the STEM: atomic resolution secondary electron imaging on bulk samples;* **Joel Martis**, Benjamin Plotkin-Swing, Niklas Dellby, Michael Hotz, Ondrej Krivanek, Tracy Lovejoy

9:00 AM **190** *A Novel SEM-Integrated EBSD–RISE Strategy for Intrinsic, Model-Free Calibration of Crystal Orientation in Polycrystalline Materials;* **Stefan Kreissl**, Ute Schmidt, Joshua Lea, Mark Coleman

9:15 AM **191** *Accelerating Desktop Imaging with Compressive Sensing for Wide Field-Of-View Imaging;* **Daniel Nicholls**, Nigel Browning, Cliff Mathisen, Sebastian Kossek, James Hainsworth, Alex Robinson, Jack Wells, Michael Stoller

9:30 AM **192** *Introducing the 3rd Generation of mPrep Automated Programmable EM Specimen and Grid Processors: the ASP-2500 and ASP-1500;* **Steven Goodman**, Jeffery Percival, Mark Nelson

9:45 AM **193** *The Eyes and the Nose of the Microscope – Fast and Accurate Detectors for High Quality Imaging and Elemental Analysis in Electron Microscopy;* **Adrian Niculae**, Mozhdeh Abbasi, Stefan Aschauer, Suschank Dawn, Klaus Heinzinger, Maximillian Schmid, Heike Soltau, Lothar Strüder

Scientific Program

P Physical Sciences Symposia – Tuesday Morning

P03.2 Advanced TEM Analysis for Semiconductors

Tuesday 8:30 AM

8:30 AM **194** *Advanced Transmission Electron Microscopy (TEM) Analysis for Semiconductors;* **Bianzhu Fu** (INVITED), Kadir Sentosun, Haw-Wen Hsiao, Zhaofeng Gan, Daniel Hedinger, Jiong Zhang, Amish Shah, Qianlang Liu, Adedapo Oni, Ling Pan

9:00 AM **195** *Atomic-Scale Characterization of Ferroelectric Domain Walls in Freestanding Y-Alloyed HfO2 Membranes;* **Ece Gunay**, Yuichi Shimakawa, Daisuke Kan, Elizabeth Dickey, Rintaro Maki, Sebastian Calderon

9:15 AM **196** *STEM EBIC Imaging of a Ferroelectric Field Effect Transistor (FeFET);* **B.C. Regan**, Tristan O'Neill, Emmanuel Quezada, William Hubbard, Suman Datta, Yueyun Chen

9:30 AM **197** *Beyond Ideal Band Diagrams: Correlative 4D-STEM DPCI Reveals Electric Field Heterogeneity in High-Efficiency PV;* **John Mangum**, Renae Gannon, Michelle Smeaton, Yanfa Yan

9:45 AM **198** *The Hydrogen Effect: Probing Silicon Bonding and Barrier Integrity in MEMS via STEM–EELS;* **Rosa Diaz**, Meera Vikas, Dana Weinstein, Matt Weiner, Sara Harris

P04.2 Advances in 4D-STEM and In Situ Electron Microscopy For Quantum Materials

Tuesday 8:30 AM

8:30 AM **199** *A Machine Learning Framework for Crystal Structure and Charge Distribution from Convergent Beam Electron Diffraction;* **Lijun Wu** (INVITED), Dmitrii Torbunov, Yihui Ren, Yimei Zhu

9:00 AM **200** *Revealing Atomically Bonded Twisted Oxide Interface by Multislice Electron Ptychography;* **Ang Tao**, Xinyan Li, Zishen Tian, Ramamoorthy Ramesh, Lane Martin, Yimo Han

9:15 AM **201** *The Genealogical Relationship Between Trivial and Nontrivial Domains in Ferroelectric PbTiO3 Film System;* **Fenghui Gong**, Toshihiro Aoki, Xiaoqing Pan, Yifeng Huang, Xiaowang Wang, Zihao Qin, Han-Hsuan Wu, Fr*ancisco Guzman, XINGXU YAN, Haiping Sun*

9:30 AM **202** *From Point Defects To Embedded Nanoparticles, Providing New Insights Into Quantum Materials With Multislice Electron Ptychography;* **James LeBeau** (INVITED)

P05.2 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis

Tuesday 8:30 AM

8:30 AM **203** *Diffraction-based Defect Analysis in the TEM: Utilizing 4D-STEM to Analyze Vacancies, Dislocations, Faults and Short Range Order;* **Andrew Minor** (INVITED)

9:00 AM **204** *Revealing the Atomistic and Electronic Structure of Irradiated Oxide Interfaces via DFT and 4D-STEM DPC;* **Sean Mills**, Elizabeth Peterson, Dongye Liu, Tiffany Kaspar, Andrew Minor, Blas Uberuaga

9:15 AM **205** *Tracking Nanoscale Recrystallization Pathways in Amorphous GaAs Using 4D-STEM and Latent Space Analysis;* **Ellis Kennedy**, Kwanghwi Je, Yongqiang Wang, Blas Uberuaga, Samuel Greer, Erik Thiede

9:30 AM **206** *Mapping Point Defect Landscapes in FCC Metals Using 4D-STEM Diffuse Scattering Signatures;* **Alexandre Bordas**, Julia Deitz, Andrew Minor, Stephanie Ribet, Madelyn Payne

9:45 AM **207** *Electron Microscopy Characterization of Resistive Switching in Memristors: Insights from TEM Imaging and 4D-STEM Diffraction Patterns;* **Denise Torres Avalos**, Francisco Robles Hernandez, Judy Wu, Berg Dodson, Wenhua Guo, Aniqa Lim

P06.2 Technical and Application Advances in Liquid and Gas Phase TEM

Tuesday 8:30 AM

8:30 AM **208** *Graphene Gas Cells for Operando Atomic Resolution Electron Microscopy at Ambient Pressure;* **Qian He** (INVITED), Yao Wu, Bingqing Yao

9:00 AM **209** *Mechanical Properties of Solid-Liquid Interfaces: A Microelectromechanical System for Electron Microscopy;* **Katherine Jungjohann**

9:15 AM **210** *Streamlined Liquid-Phase Electron Microscopy of Isolated Mitochondria;* **Germán Sciaini**, John Chan, Kostyantyn Pichugin, Ariel Petruk, Robin Duncan, Tetyana Maksyuta, Antonia Berdeklis, Saadia Benourdja, Tyler Lott

9:30 AM **211** *Tracking redox transformations in nickel and iron oxides under reactive environments by in situ TEM;* **Xiaozhi Liu** (INVITED), Yue Pan, Mengshu Ge, Yuhan Wang, Yang Shen, Yangfan Li, Liang Zhang, Dan Zhou, Dong Su

P08.2 Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods

Tuesday 8:30 AM

8:30 AM **212** *Progress in spatially resolved magnon spectroscopy in the STEM;* **Quentin M. Ramasse** (INVITED), Jan Rusz, Vlado K. Lazarov, Florian Castioni, José Ángel Castellanos-Reyes, Julio do Nascimento, Anders Bergman, Jorge Luis Briseño-Gómez, Paul Zeiger, Demie Kepaptsoglou

9:00 AM **213** *The Design of Topological Spin Textures in TmMn6Sn6;* **Mohamed El Gazzah**, Fehmi Yasin, Nirmal Ghimire

9:15 AM **214** *Measuring the Valley Hall Effect using EMCD in Monolayer Wse2;* **Essance Ray**, Xiaodong Xu, Juan Carlos Idrobo, Alex Stangel, Nishkarsh Agarwal, Robert Hovden, Maya Gates

9:30 AM **215** *Self-Supported Thin-Film Platform for In Situ EMCD Measurements of Hall Effects;* **Hyoju Park**, Juan Carlos Idrobo, Libor Kovarik, Sten Lambeets, Yingge Du, Alejandra Guedeja-Marrón, Ding Peng, Minju Choi

9:45 AM **216** *Electron Interferometry and EELS;* **David Kordahl**

P10.2 Quantitative Microanalysis of Terrestrial and Planetary Samples by Electrons, X-rays, Ions, and Lasers

Tuesday 8:30 AM

8:30 AM **217** *Quantitative Analysis of Ge and Ga in Zn Ore Deposits and Their Waste Streams;* **Ryan McAleer** (INVITED), Nadine Piatak, Sarah Jane White, Alex Taylor, Karen Spaleta, Sarah Hayes, Robert Seal

8:45 AM **218** *The Universal K-Ratio: a Concept for Interlaboratory Comparability of Chemical Analysis Data, with Examples for Mg and Si;* **William Nachlas**, Aurelien Moy, John Donovan

9:00 AM **219** *EPMA Compositional Mapping and Analysis Using the Quantitative Microanalysis Explorer;* **Paul Carpenter**, Ryan Ogliore, Bradley Jolliff

9:15 AM **220** *Peak Shifts and Intensity Changes Due to Structural Changes in the Magnesium and Carbon Systems;* **Peter McSwiggen**

9:30 AM **221** *Identifying Phosphorus Speciation in Planetary Materials Using L2,3-edge ELNES;* **Brittany Cymes**, Brendan Anzures, Francis McCubbin, Lindsay Keller

Scientific Program

A Analytical/Instrumentation Sciences Symposia – Tuesday Late Morning

A02.2 Advances in 4DSTEM Experimentation, Analysis and Interpretation

Tuesday 10:30 AM

10:30 AM **222** *Beyond Projection: Quantitative 3D Atomic-Scale Characterization with Electron Ptychography;* **Shake Karapetyan** (INVITED), David Muller, Glen Wilk, Arkady V. Krasheninnikov, Ute Kaiser, Johannes Biskupek, Prosun Santra, Vincent Duen-Huei Hou, Ta-Kun Chen, Steven Zeltmann

11:00 AM **223** *phaser: An All-in-one Software Package for Multislice Electron Ptychography;* **Colin Gilgenbach**, Menglin Zhu, James LeBeau

11:15 AM **224** *Automatic Aberration Correction using 4D-STEM: Development and Demonstration;* **Konosuke Oe**, Yuji Kohno, Naoya Shibata, Koudai Tabata, Takehito Seki

11:30 AM **225** *4D-STEM Ptychography for Correlative Three-Dimensional Atomic Imaging and Spectroscopy;* **Yu Lei**, Peng Wang

11:45 AM **226** *Advances in Phase Contrast 4D-STEM Tomography of Thick Biological Specimens;* **Berk Kucukoglu**, Julika Radecke, Knut Mueller-Caspary, Stephanie Ribet, Carsten Sachse, Henning Stahlberg, Massimo Kube, Wen-Lu Chung, Georgios Varnavides, Max Leo Leidl

A03.3 Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications

Tuesday 10:30 AM

10:30 AM **227** *Innovative Aspects of Sample Preparation Overcome the Challenges of Poorly Conductive, Fragile Materials, and the Analysis of Liquid/Solid Interfaces in Atom Probe Tomography;* **Tim M. Schwarz** (INVITED), Baptiste Gault

11:00 AM **228** *A Cryogenic Workflow for APT of Frozen-Hydrated Mineralized Collagen Fibrils;* **Katsuaki Naito**, Dieter Isheim, Reiner Bleher, Maksim Sultanov, Fengyuan Shi, Liyang Zhong, Robert Klie, Eli Sone, David Seidman, Derk Joester

11:15 AM **229** *Blank Space, Filled: Unlocking Porous and 2D Materials for Atom Probe Tomography;* **Lukas Worch**, James Douglas, Kavin Arunasalam, Baptiste Gault, Valeria Nicolosi, Shelly Michele Conroy

11:30 AM **230** *Integrating Atom-Probe Tomography with the Cryo-Domain;* **Dieter Isheim**, Maksim Sultanov, Fengyuan Shi, Robert Klie, Derk Joester, David Seidman, Katsuaki Naito, Reiner Bleher

11:30 AM **231** *COSMOSAT: An Optimized Atom Probe Tomography Instrument for Geochemistry and Cosmochemistry;* **François Vurpillot**, Gérald Da Costa, Tom Veret, Martin Brault, Jean-Baptiste Maillet, Charly Vaudolon, Jonathan Houard, Mathieu Roskosz, Anne-Magali Seydoux-Guillaume

A04.2 Advances in Cryogenic Electron Microscopy for Energy and Quantum Materials

Tuesday 10:30 AM

10:30 AM **232** *Novel Workflows for Cryogenic Sample Preparation of Beam-Sensitive Materials;* **Eric Woods** (INVITED), Baptiste Gault, Yuwei Zhang, Xinren Chen, Charles Ogolla, Rene de Kloe, Stefan Zaefferer, Tim M. Schwarz, Benjamin Butz

11:00 AM **233** *Cryogenic Correlative TEM and APT for Probing Lithium Redistribution, Damage Evolution, and Liquid–Solid Interfaces in Single-Crystal NMC;* **Lukas Worch**, Baptiste Gault, Syeda Ramin Jannat, James Douglas, Valeria Nicolosi, Shelly Michele Conroy, Aigerim Omirkhan, Neil Mulcahy

11:30 AM **234** *Optimization of STEM Measurement Conditions for NaSICON Solid Electrolytes at Room and Cryogenic Temperatures;* **Zhengwu Fang**

11:45 AM **235** *Electron Beam Induced Damage of Sodium Closo-Hydroborate;* **Thomas Marchese** (INVITED), Y. Shirley Meng, Nestor Zaluzec, Mary Scott, Yuanlong Bill Zheng, Yu Chen, Minghao Zhang, Shuang Bai, James Burrow

A06.2 Correlative, Multimodal Microscopy, Spectroscopy, and Imaging

Tuesday 10:30 AM

10:30 AM **236** *Tracing Environmental and Biological Signatures in Diverse Coral Skeletal Systems Using Correlative Chemical Imaging;* **Alejandra Coronel-Zegarra** (INVITED), Domenico Guadalupe, Joshua Voss, Si Chen, Joonsu Han, Molly Moynihan, Kyle Morgan, Vivian Merk

11:00 AM **237** *Correlative Microscopy of Lepidoptera Wing Scales;* **Sue Okerstrom**, Maxime Foret-Bruno

11:15 AM **238** *Multimodal Spectroscopic Analysis of a Painted Opalotype: pXRF, Raman and Quantitative Standards-based SEM-EDS in Variable Pressure;* **Thomas Lam**, Erin Birdsall, Shannon Brogdon-Grantham

11:30 AM **239** *Computational Depth Correction of 3D SIMS Compositional Images;* **Mary Kraft** (INVITED), Caleb Goodsin, Darien Raymond, Brittney Gorman, Melanie Brunet

A09.3 Multi-dimensional and Multi-scale Imaging and Advanced Data Processing—Novel Opportunities in Material Science

Tuesday 10:30 AM

10:30 AM **240** *Looking Inside: Multiscale Diffraction Imaging from Millimeters to Nanometers;* **Aditya Shukla** (INVITED), Can Yildirim, Louis Lesage, Virginia Sanna, Lucía Puertas Peláez, Marilyn Sarkis, Henning Poulsen, Nils Axel Henningsson, Michela La Bella, Carsten Detlefs

11:00 AM **241** *Electron Backscatter Diffraction and X-Ray Diffraction Used in Conjunction for Complex Phase Analysis;* **Elizabeth Young-Dohe**, Laura Wilson

11:15 AM **242** *Semantic Data Management for Accelerated Scientific Discovery In Synchrotron X-Ray Diffraction and X-Ray Computed Tomography;* **Ozan Dernek** (INVITED), Roger French, Maliesha Kalutotage, Redad Mehdi

11:45 AM **243** *Multi-scale Characterization of Grain Boundaries: Relating Atomic Structure to Velocity;* **Mehmet Can Dursun**, Amanda Krause, Hailey Hall

A10.2 Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools

Tuesday 10:30 AM

10:30 AM **244** *Tunable-Bandwidth Secondary Electron Energy Filtering Enabled by Controlled Wien Filter Operation;* **Shuhei Yabu**, Yu Yamazawa, Yoichiro Hashimoto

10:45 AM **245** *From Comparative to Coincidence Spectroscopies: Instrumentation for Cathodoluminescence, Light Injection, and EELS in STEM;* **Luiz Tizei** (INVITED), Mathieu Kociak, Alissa Freilinger, Yves Auad, Xiaoyan Li, Jean-Denis Blazit, Florian Castioni

11:15 AM **246** *Low-loss EELS of Backscattered and Secondary Electrons in an Aberration Corrected Scanning Electron Microscope at Ultra-Low Landing Energies;* **Rasmus Schroeder** (INVITED)

11:45 AM **247** *High-Performance Time-Resolved Cathodoluminescence: Bridging the Gap Between Nanoscale Imaging and Picosecond Dynamics;* **Herman Duim**, Domenik Spallek, Aidan Campbell, Kagiso Loeto, Jonas lähnemann

A08.2 Next Generation Microanalysis Standards For EPMA and SEM-EDS Calibration

Tuesday 10:30 AM

10:30 AM **260** *Virtual Standards;* **Nicholas Ritchie** (INVITED)

11:00 AM **261** *Evaluating Sources of High-Purity Synthetic Crystals for Use as K-Ratio Standards: Examples from P, Ca, Ti, and Pb;* **William Nachlas** (INVITED)

11:30 AM **262** *Challenges in Measuring Low Concentration of Overlapping Elements with EDS and Need for Verification with Standard Materials;* **Lucia Spasevski**, Simon Burgess, Philippe Pinard, John Zhang, Katherine MacArthur

11:45 AM **263** *True Pixel-wise Full-frame Standard-based Analysis: Pitfalls and Benefits;* **Stephen Seddio**, Jakub Klus

Scientific Program

B Biological Sciences Symposia – Tuesday Late Morning

B01.3 3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)

Tuesday 10:30 AM

10:30 AM **248** *In situ structural mechanism of Epothilone B-induced CNS axon regeneration;* **Naoko Mizuno** (INVITED), Satish Bodakuntla, Kenichiro Taira, Nirakar Basnet, Rui Zhang, Antonio Martinez-Sanchez, Christian Biertümpfel, Pelayo Alvarez Brecht, Yurika Yamada, King Cada

11:00 AM **249** *Sub-Nanometer Structural Analysis of Respiratory Syncytial Virus Matrix Mutants by Cryo-Electron Tomography and Sub-Tomogram Averaging;* **Hayley Hirsch**, Elizabeth Wright, Jae Yang, Ava Berdelman, Bryan Sibert

11:15 AM **250** *Seeing Beyond the Fibril: Why the Amyloid Microenvironment Matters;* **Jan-Hannes Schaefer**

11:30 AM **251** *Ultrastructure Assembly Tunes the Activity of the Universally Conserved Enzyme PRPP Synthetase;* **Kelli Hvorecny** (INVITED), Navya Gupta, Kenzee Hargett, Sophia Arons, S. John Calise, Joel Quispe, Justin Kollman

B06.2 Integrative Imaging Approaches for Biological Structure-Function Relationships

Tuesday 10:30 AM

10:30 AM **252** *A Simple Method for Locating Polysaccharides in the Electron Microscope Using Correlative Light and Electron Microscopy;* **Allison van de Meene**

10:45 AM **253** *Decoding and Translating the Languages of Biology;* **Jian Shu** (INVITED)

11:15 AM **254** *Integrated correlative light-sheet and X-ray microscopy for multi-scale imaging of small and large organisms;* **Venera Weinhardt** (INVITED), Natalia Fuchs, Kristaps Kairiss

11:45 AM **255** *Electron Microscope Studies of the Self-Assembly of Complex Extracellular Matrix Structures Through an Intervening "Glass House" Fully Encapsulating the Protoplast in Diatoms;* **Michael Gretz**, Yan Wang

C Cross-Cut/Interdisciplinary Sciences Symposia – Tuesday Late Morning

C05.3 Innovative Approaches to Microstructural Analysis: EBSD, ECCI, and 3D Techniques Across Disciplines

Tuesday 10:30 AM

10:30 AM **256** *3D-EBSD Analysis of Delta-Ferrite to Austenite Phase Transformations in Duplex Stainless Steels Manufactured via Laser Powder Bed Fusion;* **Charlie Kong** (INVITED), Xinyi He, Zipeng Xu, Gregory Rohrer, Nima Haghdadi, Sophie Primig

11:00 AM **257** *Advancing Electron Channeling Contrast Imaging (ECCI) based Crystallographic Defect Analysis in Natural Materials using AstroECP for Electron Channeling Pattern (ECP) Indexing;* **Ben Britton**, Callum Abraham, Renelle Dubosq, Haroon Qaiser

11:15 AM **258** *Progress Toward Quantifiable, High-Throughput Analysis of 4D-RHEED Data of 2D Materials;* **Allison Mis**, Alexana Roshko, Jason Holm

11:30 AM **259** *Dedicated Ice EBSD Analysis in the IceHaus Lab at UW-Madison;* **Chloe Bonamici** (INVITED), Alissa Choi, William Schneider, Noah LeBrun, Natasha Morgan-Witts, William Nachlas, Peter Sobol

C06.3 Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management

Tuesday 10:30 AM

10:30 AM **260** *Automated High-Content Confocal Imaging with AI-Driven Analysis for Pharmaceutical Research;* **Jonathan Boyd** (INVITED), Karly Mather, Sarah Will

11:00 AM **261** *Advancing Image Analysis through Machine Learning and Its Real-World Applications;* **Yang Liu**, Matthew Atkinson, Matthew Mills, Maria Vratsanos, Geng Bang Jin, Matthew Burch, Tianyu Wu, Melissa Lackey, Haeen Sykora, Zhong Chen

11:15 AM **262** *From Micrographs to Particle Taxonomy: Automated Discovery in STEM Using SAM and Semi-Supervised Learning;* **Aditya Raghavan**, Christopher Lowe, Brandi Cossairt, Sergei Kalinin, Catherine Bodinger, Kamyar Barakati, Utkarsh Pratiush

11:30 AM **263** *Advancements in Computer Vision Techniques for Precision Measurement of Surface Characteristics in Additively Manufactured Parts;* **Abdul Wahab Hashmi**, Mamilla Ravi Sankar, Yebing Tlan

11:45 AM **264** *Cancelled: Quantitative Microscopy and Informatics for Property Prediction in Commercial Stainless Steels;* **Tzu-Wei Wang**, Gerfried Millner, Eason Yi-Sheng Chen

C07.1 Lens on Engagement

Tuesday 10:30 AM

10:30 AM **265** *Engagement as Strategy: Designing Cross-Sector Partnerships for Impact in Microscopy;* **Priyanka Brunese** (INVITED)

11:00 AM **266** *From Initial Inspiration to Lifelong Engagement: The Professional Journey of an Electron Microscopist—Reflections as a Student, Researcher, Facility Manager, and Educator;* **Donggao Zhao**

11:15 AM **267** *From Awe to Adoption: Early-Phase Development of Data-Informed Model for Microscopy Engagement Across K-12;* **Rosa Diaz**, Louisa Mezache, Madison Ammon, Elaine Humphrey

11:30 AM **268** *The Small Picture: A Multi-Week Undergraduate Lab Unit for Understanding How a Single Micrograph of a Cell is Made;* **Rebekah White**

11:30 AM **269** *Characterization @ UBC – Drawing Together Community Across the University of British Columbia;* **Ben Britton**, Ismail El Baggari, Anette von der Handt, Mark Martinez, Joey Yeap

Scientific Program

P Physical Sciences Symposia – Tuesday Late Morning

P03.3 Advanced TEM Analysis for Semiconductors

Tuesday 10:30 AM

10:30 AM **270** *Advance in Characterization of Doped Silicon by Data-Mining Large Electron Diffraction and Spectroscopy Datasets;* **Jian-Min Zuo** (INVITED), Hsu-Chih Ni, Robert Busch, Jiong Zhang

11:00 AM **271** *CANCELLED: A Connected Fault Isolation (FI) and Failure Analysis (FA) Workflow Across (P) FIB, Nanoprobing, Ga+ FIB, and (S)TEM;* **Cigdem Ozsoy-Keskinbora**, David Prentice, Douglas Blom, Sandhya Gopalakrishnan, John Sanders, Christoph Mitterbauer, Ioannis Alexandrou, Majid Vaghayenegar, Khengdauliu Chawang, Alex Buxbaum

11:15 AM **272** *Correlative 4D-STEM, PED, and Spectroscopic Microscopy for Quantifying Ion-Induced Structural Modifications in Si/SiGe Multilayer Architectures;* **Jiangtao Zhu**, Ying Huang, Bengisu Sari, Shaojie Wang, Yan Xu, Sarah Wang

11:30 AM **273** *Critical Dimension Measurement of ONON Layer Thickness Using OBF STEM: Low-Dose, High-Contrast Imaging;* **Kevin Mcilwrath** (INVITED), Masayasu Yoneda, Masahide Shima, Kyoichiro Asayama, Shuji Kawai, Yuhiro Segawa, Kazuya Yamazaki

P04.3 Advances in 4D-STEM and In Situ Electron Microscopy or Quantum Materials

Tuesday 10:30 AM

10:30 AM **274** *Measuring 3D Atomic Coordinates and Thermal Vibrations with Electron Ptychography;* **Pinshane Huang** (INVITED), Yichao Zhang, Jeffrey Huang, Ballal Ahammed, He lin Zhao, Arend van der Zande, Elif Ertekin

11:00 AM **275** *Depth-Resolved Electron Ptychography Reveals Hidden Stripe Phase in Misfit Superlattices;* **Zixiao Shi**, Jiayi Li, Xavier Roy, David Muller

11:15 AM **276** *Uncovering Links Between Magnetic Exciton and Strain-Driven AFM-to-FM Transition in 2D Magnetic Materials;* **Patricia Meza**, Andrew Kindseth, Roberto dos Reis, Mercouri Kanatzidis, Vinayak Dravid, Steffi Woo, Alp Kulaksizoglu

11:30 AM **277** *Electron Ptychography Reveals the Impact of Oxygen Defects on Superconductivity in Bilayer Nickelates;* **Zehao Dong** (INVITED), Pengcheng Li, Lin Gu, Zhen Chen, Yayu Wang

P05.3 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis

Tuesday 10:30 AM

10:30 AM **278** *In Situ TEM of Defect Dynamics in Iron;* **Kazuto Arakawa** (INVITED)

11:00 AM **279** *Self-healing in Metals? It's More Likely Than You Think! (And Other Surprising Observations from in situ TEM Fatigue Testing);* **Stephen House**, Andrew Baker, Kyle Dorman, Douglas Stauffer, Remi Dingreville, Brad Boyce

11:15 AM **280** *In-Situ Investigation of Phase Transition on Defect-Rich Electrodeposited Ni by Heat Treatment;* **Hyoju Park**, Kelsey A Stoerzinger, Peter V Sushko, Arun Devaraj, Dongsheng Li, Sampreeti Bhattacharya, Jack Grimm, Kelly White, Özgür Çapraz

11:30 AM **281** *Impact of FIB Damage on Defect Evolution Under In-Situ TEM Annealing;* **Anshul Kamboj**, Md Minaruzzaman, David Hurley, Matthew Mann, Miaomiao Jin, Lin Shao, Yongfeng Zhang, Marat Khafizov, Lin-Chieh Yu, Kaustubh Bawane

11:45 AM **282** *Tracking Strain Evolution in Polycrystalline Pt Using In Situ 4D-STEM;* **Yutong Bi**, Xiaoqing Pan, Leonardo Estrada, Horst Hahn, Jian Han, David Srolovitz, Yuan Tian, Evgeniy Boltynjuk

P06.3 Technical and Application Advances in Liquid and Gas Phase TEM

Tuesday 10:30 AM

10:30 AM **283** *In Situ Heating Gas-Environmental Electron Microscopy on Catalytic Systems;* **Xiaofeng Zhang** (INVITED)

11:00 AM **284** *Ammonia Catalyst Evolution Under Realistic Reactor Conditions Revealed by Multimodal, Multi-Stimuli In Situ Gas-Cell Electron Microscopy;* **Amy McKeown-Green**, Parivash Moradifar, Zisheng Zhang, Cedric Lim, Andrew Barnum, Lin Yuan, Frank Abild-Pedersen, Robert Sinclair, Colin Ophus, Jennifer Dionne

11:15 AM **285** *Structural Evolution and Thermal Stability of Oxidation-Derived Copper Revealed by In-Situ Gas-Cell TEM;* **Yongfa Cheng**, Zizhen Cai, Xiaobing Hu, Vinayak Dravid

11:30 AM **286** *Applications of Gas-Phase TEM for Operando Studies of Gas–Solid Reactions Dynamics;* **Xiaobing Hu** (INVITED), Yongfa Cheng, Vinayak Dravid

P08.3 Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods

Tuesday 10:30 AM

10:30 AM **287** *Probing the Phonon Modes in Oxides using Electron Energy Loss Spectroscopy;* **Nasim Alem** (INVITED), Quentin M. Ramasse, Steffi Woo, Sai Venkata Gayathri Ayyagari, Andrew Balog

11:00 AM **288** *Resolving More Using Momentum Resolved Electron Energy-Loss Spectroscopy;* **Eric Hoglund**, Dipanjan Chaudhuri, Sokrates Pantelides, Andrew Lupini, Peter Abbamonte, Jordan Hachtel, Harrison Walker, Niels De Vries, Thomas Pfeifer

11:15 AM **289** *Momentum-Selective EELS Study of Phonon Anisotropy in PbTiO3/SrTiO3 Flux-Closure Structures;* **Yifeng Huang**, Toshihiro Aoki, Fenghui Gong, Xiaoqing Pan, Xingxu Yan

11:30 AM **290** *Towards an Understanding of Phase-Shape Dichroism in Vibrational EELS;* **Paul Zeiger**, Jan Rusz, Juan Carlos Idrobo, Guodong Ren

11:45 AM **291** *Imaging Topological Vortex Phonons at the Nanoscale;* **Xiaowang Wang**, Fenghui Gong, Suyash Rijah, laurent Ballaiche, Xiaoqing Pan

P10.3 Quantitative Microanalysis of Terrestrial and Planetary Samples by Electrons, X-rays, Ions, and Lasers

10:30 AM **292** *Secrets of the Stars Revealed by NanoSIMS Isotopic Imaging;* **Larry Nittler** (INVITED)

11:00 AM **293** *Coordinated Ion, Electron and X-ray Beam Analysis of Chromium Mobilization and Destruction of Presolar Grains in the Mildly Shocked Boorama (CO3) Chondrite;* **Rhonda Stroud**, Cameron Morse, Larry Nittler, Eric Orson, Axel Wittmann

11:15 AM **294** *Investigation of Muonionalusta Meteorite via SEM-EDS, EMPA, Micro-CT, XRD, and XRM;* **Nestor J Zaluzec**, Daniel Fanna, Richard Wuhrer, Laurel George, Hyunsung Min, Ken Moran, Will Parker, Leigh Sheppard

11:30 AM **295** *Vibrational Spectroscopy of Nanoscale Fluid Inclusions in Bennu Samples;* **Beau Prince**, Thomas Zega, Harold Connolly, Dante Lauretta

11:45 AM **296** *Quantification of Phyllosilicates Using the Single-Standard Approach to EDS in the Scanning Transmission Electron Microscope;* **Thomas Zega**, Maizey Benner, Harold Connolly, Dante Lauretta

Scientific Program

A Analytical/Instrumentation Sciences Symposia – Tuesday Afternoon

A02.3 Advances in 4DSTEM Experimentation, Analysis and Interpretation

Tuesday 1:30 PM

1:30 PM **297** *Low-Dose and Event-Driven Analytical Ptychography Under the Guided Progressive Reconstructive Imaging Framework;* **Hoelen Lalandec Robert** (INVITED), Arno Annys, Tamazouzt Chennit, Jo Verbeeck

2:00 PM **298** *Towards Quantitative and Trustworthy Electron Ptychography;* **Chia-Hao Lee**, Noah Schnitzer, Lopa Bhatt, David Muller

2:15 PM **299** *Quantitative Retrieval of the Complex Transmission Function in Multislice Electron Ptychography;* **Bridget Denzer**, Colin Gilgenbach, James LeBeau

2:30 PM **300** *Deep Priors and Self-Supervised Learning for Electron Ptychography and Beyond;* **Arthur R. C. McCray** (INVITED), Stephanie Ribet, Georgios Varnavides, Colin Ophus

A03.4 Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications

Tuesday 1:30 PM

1:30 PM **301** *A Same-Site Correlative STEM–APT Protocol for Quantifying Short-Circuit Solute Transport at Evolving Crystallographic Defects in Ordered Precipitates;* **Jae Bok Seol** (INVITED), Won Hui Jo, Joong Eun Jung, Baptiste Gault, Hyoung Seop Kim

2:00 PM **302** *Site-specific Chemical Analysis of Dopant Distribution in GaN using Correlative Approaches with Atom Probe Tomography;* **Yimeng Chen**, Jiangtao Zhu, Michael Salmon, Houston Dycus

2:15 PM **303** *A Multi-Modal Transformer Framework for Correlative TEM-APT Defect Analysis;* **Yalei Tang**, Sara Wonner, Mukesh Bachhav, Matthew Anderson

2:30 PM **304** *Atom Probe Tomography and Electron Microscopy of Distributed Polarization-Doped AlGaN Heterostructures;* **Brittany Ford**, Asif Khan, Norman Sanford, Tariq Jamil, Alexana Roshko, Kris Bertness, Matt Brubaker

2:45 PM **305** *Rethinking ZnS:Cu AC Electroluminescence through Correlative Electron Microscopy and Atom Probe Analysis;* **Lorenzo Rigutti**, Roberto Hernandez, Jonathan Houard, Ludovic Largeau, Stefano Pirotta, Nathaniel Findling, François Julien, Jules Duraz, Maria Tchernycheva

A04.3 Advances in Cryogenic Electron Microscopy for Energy and Quantum Materials

Tuesday 1:30 PM

1:30 PM **306** *Imaging Emergent Charge Order and Quantum Paraelectric Phases with LHe Cryogenic TEM;* **Suk Hyun Sung** (INVITED), Yang Zhang, Nishkarsh Agarwal, Maya Gates, Robert Hovden, Ismail El Baggari

2:00 PM **307** *Liquid Helium TEM Sample Holder: Swift Cool-Down and Long Holding Time at 5K;* **Denys Sutter**, Penghan Lu, Joachim Thomsen, Hooman Hosseinkhannazer, Dominik Biscette, Rafal Dunin-Borkowski

2:15 PM **308** *Sub-Seven Kelvin Real-Space Magnetic Imaging;* **Fehmi Yasin**, Miaofang Chi, Max Birch, Xiuzhen Yu, Akiko Kikkawa, Yasujiro Taguchi, Young-Hoon Kim

2:30 PM **309** *Deep-Cryogenic Nanoscale Excitonic Response of van der Waals Semiconductors;* **Steffi Woo** (INVITED)

A05.1 Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences

Tuesday 1:30 PM

1:30 PM **310** *Improving Incorporation of FIBSIMS into Multimodal and Correlative Microscopy Visualizations;* **Jamie Ford** (INVITED), David Barth, Dan Sabrsula

2:00 PM **311** *High Resolution Hyperspectral SIMS for Advanced Semiconductor and Materials Analysis;* **Peter Gnauck**, Torsten Richter, Alexander Ost

2:15 PM **312** *The Role of Focused Ion Beam Probe Profiles on TEM Specimen Quality and Beam Damage;* **Martin Slama**, Daniel Nemecek, Nithin Iyappan, Lucille Giannuzzi

2:30 PM **313** *Comparisons and Characterization of Multi Ion Species in the Plasma FIB;* **Srinivas Subramaniam**, Megan Knapp, Grant Buffaloe, Travis Williams, Baohua Niu

2:45 PM **314** *Beam Profile Mapping in a Helios 5 Hydra PFIB for Adaptive Microfabrication Workflows;* **Alexander Fakiner**, Robert Winkler, A. Wahab Shakib, Leopoldo Molina-Luna, Daniel Vasquez

A06.3 Correlative, Multimodal Microscopy, Spectroscopy, and Imaging

Tuesday 1:30 PM

1:30 PM **315** *Correlative Analysis of Pearlescent Pigments;* **Darius Choksy**, Randy Dumas, Satyam Ladva, Kerim Arat

1:45 PM **316** *Complementing SEM-EDS with Broad-Scale Mapping by Laser Ablation Laser Ionization Time of Flight Mass Spectrometry (LALI-TOF-MS);* **Ellen Williams**, Peyton Willis, Andrew Laroche, Jeffrey Williams

2:00 PM **317** *Enhancing Identification Confidence in FIB-SIMS through Higher Mass Resolving Power;* **Lex Pillatsch**, Valentine Riedo-Grimaudo, James Whitby, Janos Metzger, Joel Kimmel, Maya Abou-Ghanem

2:15 PM **318** *Multidimensional Correlative Vibrational Spectroscopy at Micro and Nano Scales;* **Artem Danilov**, Claas Reckmeier, Andreas J. Huber

2:30 PM **319** *Enhanced Light Element Sensitivity and Throughput Enabled by a New Pulse Processor Design in Super-X G3;* **Austin Wade**, Kristyna Bukvisova, Bert Freitag, Maria Meledina, Ivo Hlavicka, Tomas Potocnak

2:45 PM **320** *Colocalized Simultaneous SEM–Raman Imaging for Correlated Multimodal Analysis;* **Ezekiel Haugen**, Jorge Diniz, Tim Prusnick

A08.1 Microscopy and Microanalysis for Real World Problem Solving

Tuesday 1:30 PM

1:30 PM **321** *Transmission Electron Microscopy for Characterizing New Concept Catalytic Materials for Environmental Applications;* **Fudong Liu** (INVITED)

2:00 PM **322** *Mapping Nickel Nanoparticle Size and Surface Chemistry for Catalytic Applications;* **Gladel Saintilm**e, Zhu-Lin Xie, Renjie Wang, Xiao Tong, Sooyeon Hwang, Shawnus Chen, Sakhrat Khizroev, Vivian Merk

2:15 PM **323** *In situ high temperature STEM observation of electrical steel;* **Erico Tadeu Fraga Freitas**, Dirceni de Souza Costa Amorim, Daniella Gomes Rodrigues

2:30 PM **324** *Imaging Oxidation and Catalytic Reactions Under Realistic Conditions Using In Situ Environmental TEM;* **Meng Li** (INVITED), Brian Lee, Dmitri Zakharov, Wissam Saidi, Judith Yang

A09.4 Multi-dimensional and Multi-scale Imaging and Advanced Data Processing—Novel Opportunities in Material Science

Tuesday 1:30 PM

1:30 PM **325** *3D In-Situ Characterization of Twinning in Mg-4Al Grains Using Dark-Field X-Ray Microscopy;* **Sangwon Lee** (INVITED), John Allison, Ashley Bucsek, Carsten Detlefs, Veera Sundararaghavan, Evan Rust, CAN YILDIRIM, Qianying Shi, Tracy Berman, Adam Creuziger

2:00 PM **326** *Three-Dimensional X-ray Computed Tomography for Post-Irradiation Examination of TRISO Fuel: Quantifying Kernel Migration and Buffer Fracture;* **Swapnil Morankar**, Joshua Kane, William Chuirazzi, John Stempien, Rahul Kancharla

2:15 PM **327** *CANCELLED: Understanding Vacancy Distribution in Ceria Using iDPC and EELS;* **Tom Slater**, Ella Kitching, Harri Schofield, Joshua de Boer, Aziz Genc, Christopher Allen, Emiel Hensen

2:30 PM **328** *Creating Contrast Where Estimates of SE Yield Have None: Using Sample Variance-Based Micrographs for Material Differentiation;* **Vaibhav Choudhary**, Akshay Agarwal, Vivek Goyal

2:45 PM **329** *An Innovative Laser-Based Technique for 3D Elemental Mapping of Complex Materials;* **Ellen Williams**, Peyton Willis, Andrew Laroche, Jeffrey Williams

A10.3 Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools

Tuesday 1:30 PM

1:30 PM **330** *Detector Development for Electromagnetic Field Imaging: Why I Still Prefer Segmented Detectors?;* **Naoya Shibata** (INVITED)

2:00 PM **331** *Comparison of Analytical Sensitivities of Simultaneously Acquired EELS and XEDS Signals from Same Ionization Processes;* **Masashi Watanabe**, Thomas Hoffman, Kotaro Sakaguchi, Alexander Campos-Quiros, Giulio Guzzinati, Pirmin Kükelhan, Volker Gerheim, Martin Linck, Heiko Müller, Max Haider

2:15 PM **332** *Methodological Developments for Spectroscopy at Low Primary Energies and High Resolution;* **Demie Kepaptsoglou** (INVITED), Quentin M. Ramasse

2:45 PM **333** *SPEAR-EELS: Physically Constrained Attention for Interpretable STEM Spectroscopy;* **Aditya Raghavan**, Utkarsh Pratiush, Sergei Kalinin

Scientific Program

B Biological Sciences Symposia – Tuesday Afternoon

B01.4 3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)

Tuesday 1:30 PM

1:30 PM **334** *Seeing HPV in 3D: Lessons from Cryo-Electron Tomography;* **Renaldo Sutanto** (INVITED), Billy Tsai, Shyamal Mosalaganti, Jaimin Rana

2:00 PM **335** *Beyond Icosahedrons: Exploring the Structural Space of Polymorphic HK97 Family Protein Cages;* **Collin McManus**, Mykhailo Kopylov, Matthew Jenkins, Carolina Hernandez, Alex deMarco

2:15 PM **336** *Quantitative SEM and AFM for Cryo Serial Block Face Imaging of Unstained Vitrified Cells;* **Davis Perez**, Bridget Carragher, David Agard

2:30 PM **337** *Cryo-EM Reveals Mechanisms that Prevent Autoimmunity in Adaptive and Innate Bacterial Anti-Phage Defense;* **Dipali Sashital** (INVITED)

B06.3 Integrative Imaging Approaches for Biological Structure-Function Relationships

Tuesday 1:30 PM

1:30 PM **338** *Label-Free Morpho-Molecular Characterization of Drug-Resistant Breast Cancer Cells; Anoushka Gupta* (INVITED)*,* **Sheetal Parida**, Emma Chambourova, Hidenori Koresawa, Heqi Xi, Smruti Phirake, Dipali Sharma, Ishan Barman, Katsumasa Fujita

2:00 PM **339** *Multimodal Imaging Enables Identification of Regional and Temporal Structural Remodeling Following Myocardial Infarction;* **Catherine Eberman** (INVITED), Colleen Witzenburg

2:15 PM **340** *From Sponge to Barrier: Correlative SEM and CLSM Mapping of Lipid Penetration and Cellular Collapse in Potato Frying;* **Nayely Valeriano-García**, Zaira Elizabeth Delgado-Huerta, Felipe Cervantes Sodi, Maria de Jesús Perea Flores, Josue David Hernández- Varela, José Jorge Chanona-Pérez

2:30 PM **341** *Understanding Cervical Mechanics: A Workflow to Characterize Hyaluronic Acid and Collagen Using Multimodal Microscopy;* **Vivian Su**, Nicholas Gigliotti, Mitra Taheri

C Cross-Cut/Interdisciplinary Sciences Symposia – Tuesday Afternoon

C05.4 Innovative Approaches to Microstructural Analysis: EBSD, ECCI, and 3D Techniques Across Disciplines

Tuesday 1:30 PM

1:30 PM **342** *High-Throughput Crystallographic Mapping of Individual Nanoparticles Using Near-Axis Transmission Kikuchi Diffraction;* **Alp Kulaksizoglu** (INVITED), Tirzah Abbott, Alfred Yan, Roberto dos Reis, Carolin Wahl, Chad Mirkin, Vinayak Dravid

2:00 PM **343** *Optimising Magnetic Domain Imaging in SEM Through 4D-STEM-Assisted Detector Analysis;* **Maximilian Schmid**, Stefan Aschauer, Björn Eckert, Martin Huth, Mozhdeh

2:15 PM **344** *Recent Advances in Maps Detector Technology For EBSD And TKD;* **Kalani Moore**, McLean Echlin, Daniel Gianola, Carter Francis, Barnaby Levin, Josh Baston

2:30 PM **345** *Emerging Tools for Microstructure Analysis: High-Rate MEMS Heating and Advanced Spot/Kikuchi Pattern Analysis;* **Alice Bastos da Silva Fanta** (INVITED), Christina Koenig, Joerg Jinschek, Yuxuan Zhang, Håkon ånes, Jakob Schiøtz

C06.4 Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management

Tuesday 1:30 PM

1:30 PM **346** *Automated Analytical Electron Microscopy Workflows for Understanding Electrocatalyst Degradation;* **David Cullen**, Lynda Amichi, Haoran Yu, Obaidullah Rahamn, Amirkoushyar Ziabari

1:45 PM **347** *pySEA: Unifying Simulation, Experiment, and Analysis for Elastic and Inelastic Electron Scattering;* **Harrison Walker** (INVITED), Sokrates Pantelides, Eric Hoglund, Thomas Pfeifer, Andrew Lupini, Jordan Hachtel

2:15 PM **348** *SpyDE: An Interactive Visualization and Lazy Execution Tool for Large Electron Microscopy Datasets;* **Carter Francis**, Benjamin Bammes, Kalani Moore, Barnaby Levin

2:30 PM **349** *Enhanced Feature Resolution in STEM images using Dictionary Learning;* **Richard Jinschek**, Nigel Browning, Yaochun Shen, Jack Wells, Alex Robinson, Daniel Nicholls, Mario Gianni

2:45 PM **350** *Automated TEM Analysis of Heterogeneous Catalysts for Experimentally Guided AI-Driven Materials Discovery;* Anvesh Nathani, Maxime Boniface, Alexandre Duval, Samuel Gleason

C07.2 Lens on Engagement

Tuesday 1:30 PM

1:30 PM **351** *The NTLS Microscope Prototyping System for Schools;* **Jo Watts** (INVITED), Glen Bull

2:00 PM **352** *Enabling CryoEM Adoption and Training Through Immersive Visualization Technologies;* **Edward Eng**, Muyuan Chen

2:15 PM **353** *ptychohub.com: An AI-Driven Platform for Education and Engagement in Ptychography;* **Yi Jiang**, Zixiao Shi, Yu-Tsun Shao, Chuqiao Shi

2:30 PM **354** *CCEM Academy: Inspiring the Next Generation of Microscopists Through All Stages of Learning;* **Samantha Stambula** (INVITED), Nabil Bassim

Scientific Program

P Physical Sciences Symposia – Tuesday Afternoon

P03.4 Advanced TEM Analysis for Semiconductors

Tuesday 1:30 PM

1:30 PM **355** *Advanced TEM Analysis for Semiconductor Device: Tomography for 3D Reconstruction and Holography, DPC, 4D STEM for Electric Field;* **Yun-Yu Wang** (INVITED), Kenton Burns, Shixin Wang, Zhouguang Wang, Hongqi Li, Ning Lu, Qiang Jin

2:00 PM **356** *Phase Transformation of Ferroelectric HfO2 and HZO Films by Pulsed Excimer Laser Irradiation;* **Bradley De Gregorio**, Margo Staruch, Hans Cho, Virginia Wheeler, Keith Perkins, John Murphy, Saikat Mukhopadhyay, Sarah Brittman, Jude Kessler, Samuel Alpert

2:15 PM **357** *Candidate TLS Defects at the Al-Si Interface in a Superconducting Qubit from STEM-based Structure Refinement;* **Soohyun Im**, Venkata Surya Chaitanya Kolluru, Keith Ray, Vito Iaia, Loren Alegria, Vincenzo Lordi, Yaniv Rosen, Maria Chan, Paul Voyles

2:30 PM **358** *Laser-First Specimen Preparation for TEM and NanoCT;* **Nicholas May**, José Rodrigo Delgadillo Blando, Matthew Maniscalco, Parisa Mahyari, Mohammad Taghi Mohammadi Anaei, Hongbin Choi, Wesley Roser, Peyman Ahmadi, Sina Shahbazmohamadi, Pouya Tavousi

2:45 PM **359** *Low-temperature Thermal ALD enabled Damage-free sample preparation of 2D materials for High Resolution Transmission Electron Microscopy;* **Haw-Tyng Huang**, Yuan-To Lo, Ssu-Yun Lu, Yu-Yun Chi, Mei-Shuan Cheng, Bo-Wei Wang, Shi-Ri Lee, Yin-Cheng Yen, Yu-Chuan Lin, Shao-Pu Tsai

P04.4 Advances in 4D-STEM and In Situ Electron Microscopy for Quantum Materials

Tuesday 1:30 PM

1:30 PM **360** *Multi-Dimensional Electron Microscopy on Nano-Crystals;* **Yao Yang** (INVITED)

2:00 PM **361** *Mechanical Engineering of Diamond;* **Shaobo Cheng**, Jiaqi Zhang, Xing Li, Xigui Yang, Chongxin Shan

2:15 PM **362** *Imaging the Chemical Structure of the Metal-Substrate Interfaces in Tantalum Superconducting Microwave Resonators for Quantum Devices;* **Daniel Tong**, Maciej Olszewski, Lingda Kong, Simon Reinhardt, Valla Fatemi, David Muller

2:30 PM **363** *Towards Quantitative Structural Analysis of 2D Amorphous Materials via 4D-STEM;* **Wu Zhou** (INVITED), Ang Li, Yinhang Ma, Aowen Li, Shuoyuan Huang

P05.4 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis

Tuesday 1:30 PM

1:30 PM **364** *Novel Atomic-scale Insights into Heterogeneous Nucleation in Al Alloys: Solving a Decade-Old Debate with STEM-EELS;* **Demie Kepaptsoglou** (INVITED), Shihao Wang, Changming Fang, Yun Wang, Yijie Zhang, Matthieu Bugnet, Quentin M. Ramasse

2:00 PM **365** *(S)TEM Methods for Chemical Short Range Order Characterization: Application to Wurtzite ScAlN;* **James Hart**, Andrew Lang, James Champlain, Bethany Hudak, Luca Colombo, Matteo Rinaldi, Brian Downey, Matthew Hardy, Saikat Mukhopadhyay, Vikrant Gokhale

2:15 PM **366** *Atomic-Scale Statistical Analysis of Interface Structure and Stability in NiO/Ga2O3 Heterojunctions;* **Michelle Smeaton**, Renae Gannon, Anna Sacchi, Madeline Hoffmann, Krishna Acharya, Vladan Stevanovic, Brooks Tellekamp, Andriy Zakutayev, Steven Spurgeon

2:30 PM **367** *Capturing Real-Time Chemical Bond Formation in a Diplatinum Complex Using Ultrafast Electron Diffraction;* **Nita Ghosh**

2:45 PM **368** *Atomic-Scale Investigation of Anisotropic Yttrium Segregation at a Σ67 Grain Boundary in Magnesium Aluminate Spinel;* **Alexander Campos-Quiros**, Masashi Watanabe, Animesh Kundu

P06.4 Technical and Application Advances in Liquid and Gas Phase TEM

Tuesday 1:30 PM

1:30 PM **369** *In-Situ Transmission Electron Microscopy and Soft X-Ray Spectro-Microscopy to Understand Electrocatalytic Processes;* **Drew Higgins** (INVITED), Chunyang Zhang, Kholoud Abousalem, Ahmed Abdellah, Adam Hitchcock

2:00 PM **370** *Exploring Nanoscale Mechanisms of Cement Hydration with Environmental Transmission Electron Microscopy and Confocal Raman Microscopy;* **Khalil JeBailey**, Mikelis Marnauza, Admir Masic, Frances Ross, Hanglong Wu

2:15 PM **371** *Enhanced In Situ STEM Imaging and EELS Analysis of Catalysts Using Graphene Gas Cells;* **Rui Zhang**, Tom Slater, Sarah Haigh, Matthew Lindley, Matthew Smith, Tom Davies, James Paterson, Dogan Ozkaya, Manfred Schuster, Roman Gorbachev

2:30 PM **372** *In Situ TEM Visualization of Electron Beam–Induced Polymerization in the Gas Phase Using Ultrathin Membrane Chips;* **Zizhen Cai**, Kunmo Koo, Yongfa Cheng, Xiaobing Hu, Vinayak Dravid

2:45 PM **373** *Elucidating Impact of Ocean Acidification on Coral Exoskeletons using an In-Situ (S)TEM Platform;* **Paul J.M. Smeets**, Yu Wen, Yongfa Cheng, Xiaobing Hu

P08.4 Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods

Tuesday 1:30 PM

1:30 PM **374** *Thermal Transport through Defects in Rutile with Atomic Resolution STEM-EELS; Martin Osmera* (INVITED), **Keith Mc Kenna**, Jack Fawcett-Houghton, Paul Zeiger, Jose Angel Castellanos-Reyes, Jan Rusz, Demie Kepaptsoglou, Quentin M. Ramasse, Julio do Nascimento, Shihao Wang

2:00 PM **375** *Defect and Interfacial Phonon Modes in Monoclinic Beta Gallium Oxide;* **Andrew Balog**, Nasim Alem, Saugata Sarker, Venkatraman Gopalan, Steffi Woo

2:15 PM **376** *Position Dependent Vibrational Signal Variations Imaged by Momentum-Selective Vibrational Spectroscopy;* **Xingxu Yan**, Paul Zeiger, Jan Rusz, Xiaoqing Pan, Yifeng Huang

2:30 PM **377** *Orbital Engineering in Epitaxial Graphene on SiC Probed by Cross-Sectional STEM-EELS and FDMNES Simulations;* **Vinod Paidi**, Demie Kepaptsoglou, Yves Joly, Quentin M. Ramasse, Matthieu Bugnet, Guillaume Radtke, Vlado K. Lazarov

P08.4 Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods

Tuesday 1:30 PM

2:45 PM **378** *Low-Energy Electron Interactions in 2D Materials Probed by SLEEM Coupled with Time-of-Flight Spectroscopy;* **Ilona Müllerová**, Ivo Konvalina, Veronika Pizúrová, Jakub Piňos, Lukáš Průcha, Eliška Materna Mikmeková

Scientific Program

A Analytical Sciences Poster Sessions – Tuesday Afternoon

3:00 PM – 5:00 PM **Exhibit Hall**

A02.P1 Advances in 4DSTEM Experimentation, Analysis and Interpretation

POSTER #83

379 *Tilt-Averaged 4D-STEM for Improved Strain and Orientation Mapping;* **Tao Ma**

POSTER #84

380 *Electron Microscopy of Interfaces and Interphases in Laser-Processed Nb-V-Zr Refractory Multi-Principal Element Alloy;* **Gusaimas Akbar**, Ashley Cavanagh, Katharine Padilla, Katharine Flores, Francisco Lagunas

POSTER #85

381 *Towards Machine Learning-Assisted Diffraction Pattern Indexing for Nanocrystalline Materials;* **Ian MacLaren**, Robert Hadfield, Colin Ophus, Nidhi Choudhary, Tom Armstrong, Rory Duffy, Arthur R. C. McCray

POSTER #86

382 *Evaluation of Crystal Rotation around Cracks in SiGe/Ge/Si(111) Using NBD Diffraction Disks and STEM Moiré;* **Junji Yamanaka**, Azusa Baba, Maro Murata, Chiaya Yamamoto, Kentarou Sawano, Keisuke Arimoto

POSTER #87

383 *A Decoder-Only Transformer Model for Robust Bragg Peak Detection in Noisy Liquid-Cell 4D-STEM Data;* **Zhijing Zhang**, Kwanghwi Je, Erik Thiede

POSTER #88

384 *Enhanced Multimodal Workflow Capabilities with EELS and Precession-Assisted 4D STEM;* **Fernando Castro**, Andrew Thron, Liam Spillane

POSTER #89

385 *Progress in Field-Free Magnetic Imaging on Thermo Scientific Transmission Electron Microscopes;* **Ricardo Egoavil**, Bert Freitag, Rafal Dunin-Borkowski, Peter Tiemeijer, Lynette Keeney, Michele Conroy, Pavel Potocek, Andras Kovacs, Ioannis Iatrakis, Eric Van Cappellen

POSTER #90

386 *High-Throughput 4D-Stem Demands Inference-Sufficient Representations: Practical Lessons from Lossless Compression Benchmarks;* **Ondrej Dyck**, Rama Vasudevan, Stephen Jesse, Andrew Lupini, Albina Borisevich, Miaofang Chi

POSTER #91

387 *Machine Learning Assisted 4D-STEM Symmetry Mapping and Dynamics in Zr-Based Metallic Glasses;* **Minhazul Islam**, Yue Fan, Yunzhi Wang, Hee-Suk Chung, Jinwoo Hwang, Sang-Chul Lee, Muchen Wang

POSTER #92

388 *Capturing the Non-uniform Strain Fields of Irradiation-Induced Defects;* **Bailey Rhodes**, Wei-Ying Chen, Matthew Schneider, Minh Vu, Hi Vo, Khanh Dang

POSTER #93

389 *Dynamic Response of the Beam Deflection System for High-Speed 4D-STEM;* **Vishal Kumar**, Henning Stahlberg, Massimo Kube

POSTER #94

390 *Custom Scan Patterns and Hardware Drift Correction for Accelerating 4D STEM in situ 4D STEM;* **Carter Francis**, Scott Dahl, Kalani Moore, Barnaby Levin, Paul Voyles, Benjamin Bammes

POSTER #95

391 *Mapping The Crystallization Mechanism Of Polylactic Acid Under Melt Flow Conditions Via 4D-Stem;* **Nadav Yahalom**, Boris Rybtchinski, Lior Snarski

POSTER #96

392 *Spatially Resolved Pair Distribution Functions from 4D-STEM Total Scattering Across Metal Oxide Interfaces;* **Hye Sol Kim**, Scott Warren, Matthew Boebinger

POSTER #97

393 *Why Ptychography Works Better with Aberrations;* **Desheng Ma**, Steven Zeltmann, David Muller

A04.P1 Advances in Cryogenic Electron Microscopy for Energy and Quantum Materials

POSTER #98

394 *Microcrystal Electron Diffraction (Micro-ED) as a High-Sensitivity Structural Probe for Advanced Battery Materials;* **Zijun Wang**

POSTER #99

395 *Preserving Metastable Quantum Phases in Nickelates with Liquid Nitrogen Cryogenic FIB and STEM;* **Lopa Bhatt**, Micheal Colletta, Noah Schnitzer, Berit Goodge, David Muller

POSTER #100

396 *Charge Expulsion in Quantum Materials: A Liquid Helium Stage Approach to Measuring MIP in BSCCO;* **David Bell**, Avi Auslender, Jules Gardener, Austin Akey

POSTER #101

397 *Quantifying Beam-sensitive Ionomer Distribution Across Fuel Cell Electrodes Using Automated Multi-scale, Low-dose Cryogenic TEM;* **Juhyun Oh**, Kimberly Reeves, Tim Van Cleve, David Cullen, Michael Zachman

POSTER #102

398 *Stable Liquid-Helium-Cooled STEM with Double-Tilting;* **Cameron Johnson**, Miaofang Chi, Jordan Hachtel, Young-Hoon Kim, Michael Hotz, Christopher Madsen, Benjamin Plotkin-Swing, Niklas Dellby, Ondrej Krivanek, Tracy Lovejoy

POSTER #103

399 *Cryo-SEM Probing the Interface in Hard–Soft Electroadhesion;* **Amir Hossein Mohammadi**, Parham Kabirifar, Jiancun Rao, Wen-An Chiou, Srinivasa R. Raghavan

POSTER #104

400 *CryoEM Analysis of a Sequence-Matched Optoelectronic Peptide Pair;* **Li Xing**, Yuyao Kuang, Herdeline Ardoña

A05.P1 Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences

POSTER #105

401 *Martensitic Transformations in NiTi Induced by Manipulator;* **Seyed Aref Golsorkhi**, Dinc Erdeniz, Ugochukwu Philip Ochieze, Melodie Fickenscher, Matthew Steiner

POSTER #106

402 *Beyond Site-Specific Delayering: Metrology-Controlled Broad Ion Beam Milling for Millimeter-Scale Semiconductor Analysis;* **Pawel Nowakowski**, Mike Boccobella, Richard Wei-chi Li, Mary Louise Ray, Paul Fischione

POSTER #107

403 *Enhancing In-Situ Sample Preparation of 2D Materials on MEMS-Based Chips;* **Vesna Srot**, Kenan Elibol, Peter van Aken

POSTER #108

404 *Artifact-free sample preparation of metal thin films using Xe plasma-focused ion beam milling for atomic resolution and in situ biasing analyses;* **Hee-Beom Lee**, Seon Je Kim, Taeseok Seong, Chul gi Song

POSTER #109

405 *Ionic Liquid Ion Sources for Enhanced Focused Ion Beam Milling Applications;* **Rachel Ord**, Bita Pourbahari, Bhaveshkumar Kamaliya, Nabil Bassim

POSTER #110

406 *Plan-View FIB Method to Protect Sensitive Surface Layers in a Scalable Manner;* **Jessica Thompson**, Kalana Halanayake, Danielle Reifsnyder Hickey

A06.P1 Correlative, Multimodal Microscopy, Spectroscopy, and Imaging

POSTER #105

401 *Martensitic Transformations in NiTi Induced by Manipulator;* **Seyed Aref Golsorkhi**, Dinc Erdeniz, Ugochukwu Philip Ochieze, Melodie Fickenscher, Matthew Steiner

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404 *Artifact-free sample preparation of metal thin films using Xe plasma-focused ion beam milling for atomic resolution and in situ biasing analyses;* **Hee-Beom Lee**, Seon Je Kim, Taeseok Seong, Chul gi Song

POSTER #109

405 *Ionic Liquid Ion Sources for Enhanced Focused Ion Beam Milling Applications;* **Rachel Ord**, Bita Pourbahari, Bhaveshkumar Kamaliya, Nabil Bassim

POSTER #110

406 *Plan-View FIB Method to Protect Sensitive Surface Layers in a Scalable Manner;* **Jessica Thompson**, Kalana Halanayake, Danielle Reifsnyder Hickey

POSTER #111

407 *Investigation of Freestanding Macroscopic SiO2/ZnO:Al Nanocomposites Grown by Atomic Layer Deposition and Environmentally Controlled Pressure-Assisted Sintering;* **Zoey Warecki**, Kevin Anderson, Alan Jacobs, Austin Cendejas, Eric Patterson, Daniel Pennachio, Benjamin Greenberg, Todd Brintlinger, Marc Currie, Joseph Prestigiacomo

POSTER #112

408 *Physicochemical and Morphological Evaluation of Zein Nanoparticles Following Botanical Extract Encapsulation;* **Fabian A. Villarreal-Lacarra**, Pedro A. Hernández-Abril, Ana G. Luque-Alcaraz, Cynthia N. Hernández-Téllez, Jose Heredia, Jesus A. Maldonado-Arriola, Iván J. Tolano-Villaverde, Jorge Iriqui-Razcon

POSTER #113

409 *Kelvin Probe Force Microscopy and Raman Spectroscopy of Graphene Grown on 1095 Steel;* **Kaleb Hood**, Samuel Olson, Angela Pham, Jun Jiao

POSTER #114

410 *Machine Perspective Atomic Scale Analysis Framework for Robust Statistical Analysis;* **Seon Je Kim**, HeeBeom Lee, Tae Seok Seong, Chul gi Song

POSTER #115

411 *Comparison of the Corrosion Behavior of Co-Cr and Ni-Cr Alloys in Simulated Body Fluid;* **Cristina Jiménez-Marcos**, Julia Claudia Mirza-Rosca, Anca Fratila, Adriana Saceleanu

POSTER #116

412 *Behavior of MgxZn Bioabsorbable Alloys in Simulated Body Fluid;* **Francisco Miguel Sanchez-Sosa**, Cristina Jiménez-Marcos, Julia Claudia Mirza-Rosca, Ionelia Voiculescu

POSTER #117

413 *Local Glass Composition and Microstructure Mitigate PID Failure in Silicon Solar Cells: A Multimodal In-Situ Biasing Study;* **Steven Hayden**, Caleb Okrucky, Andrew Thron, John Mangum, Ashley Gaulding, Patrick Walker, Katherine Jungjohann

POSTER #118

414 *Sustainable and Eco-friendly Approaches for the Production of Fluorescent Quantum Dots;* **Salomón Borjas-García**, Lexlie Ireri Rangel Vazquez, Julissa Gutierrez Maravilla, D. K. Tiwari, María del carmen Pérez Sánchez

POSTER #119

415 *Preliminary study of the mechanosynthesis of the high entropy oxide YGdBaCaCo3O9;* **Erick A. Juarez-Arellano**, L. I. Morales-Toledo, Alfredo Martinez-Garcia, Carlos G. Garay-Reyes, Roberto Martínez-Sánchez, Febe A. Cazarín-Calderón

Scientific Program

A Analytical Sciences Poster Sessions – Tuesday Afternoon cont.

A06.P1 Correlative, Multimodal Microscopy, Spectroscopy, and Imaging cont.

POSTER #120

416 *Correlative X-Ray Microcomputed Laminography and Electron Microscopy for Failure Analysis in Loaded SiC MOSFETs;* **Sascha Senck**, Till Huesgen, Stephan Kasemann, Simon Zabler, Otto Kreutzer, Matthias Domke, James Bennett, Sarah Heupl

POSTER #121

417 *Understanding the Dynamic Processes in Argyrodite-NMC Based-Solid-State Batteries Using an Advanced Multimodal Operando SEM Approach;* **Yulia Trenikhina**, Rashmi Tripathi, Elias Reisacher, Tim Schubert, Stephen Kelly, William Harris, Bruno Linn, Volker Knoblauch, Pinar Kaya, Amirhossein Erfani

POSTER #122

418 *Microstructural Analysis of Bio-Based Zein Microfibers Produced by Electrospinning;* **Ana G. Luque-Alcaraz**, Cynthia N. Hernández-Téllez, Pedro A. Hernández-Abril, Jorge Iriqui-Razcon

POSTER #123

419 *Using High-resolution Microscopies and Dedicated Sample Preparation to Determine Particle Concentration in Liquid Suspension;* **Vasile-Dan Hodoroaba**, Yuri Diaz Fernandez, Lavinia Doveri, Anusha Chaudhary, Mario Sahre

POSTER #124

420 *Effect of pH on the Morphological Evolution of ZnO Microparticles Synthesized by Chemical Precipitation;* **Fabian A. Villarreal-Lacarra**, Raul Sanchez-Zeferino, Pedro A. Hernandez-Abril

POSTER #125

421 *Morphological Characterization and Parameter Standardization of Zein Microfibers via Open-Source Electrospinning;* **Jesus A. Maldonado-Arriola**, Aldo Zazueta-Raynaud, Jorge Iriqui-Razcon, Jose Heredia, Iván J. Tolano-Villaverde, Fabian A. Villarreal-Lacarra, Pedro A. Hernández-Abril

POSTER #126

422 *Submicron, Label-Free Chemical Imaging of Biological Specimens by Optical Photothermal Infrared (O-PTIR) Microscopy;* **Thomas Tague**

POSTER #127

423 *Real-time Observation of Redox Reaction Induced Fragmentation Dynamics;* **Dmitri Zakharov**, Xiaobo Chen, Meng Li, Sabrina M. Gericke, Seunghwa Hong, Phillip Christopher, Ashley R. Head, Judith Yang

POSTER #128

424 *Developing Workflows for Advanced Nano Characterization of Engineered Biopolymer Composites Leveraging micro-CT and Ultramicrotomy;* **Paul Hart**, Barney Miao, Michael Lepech, David Loftus, Andrew Lesh, Andrew Barnum

POSTER #129

425 *Effect of Grape Pomace Extract Concentration on the Size and Morphology of Zein Nanoparticles Obtained by Anti-Solvent Precipitation;* **Cynthia N. Hernández-Téllez**, Jorge Iriqui-Razcon, Pedro A. Hernández-Abril, Iván J. Tolano-Villaverde, Ana Guadalupe Luque-Alcaraz

B Biological Sciences Poster Sessions – Tuesday Afternoon

B06.P1 Integrative Imaging Approaches for Biological Structure-Function Relationships

POSTER #130

426 *Comparative Effect of Zinc and Yttrium on the Magnesium Temporary Implants for Orthopedic Fixation;* **Jesus Maria Pérez-Reyes**, Carlos Jesús Sánchez-Morales, Julia Claudia Mirza-Rosca, Jing Zhao

POSTER #131

427 *Morphometric Analysis of Storage and Transport Structures in Zingiber officinale;* **Adrián Domingo Álvarez-Garrido**, Macario Vicente Flores, Maria de Jesús Perea Flores, Nayely Valeriano-García, Zaira Elizabeth Delgado-Huerta, Mario Melvin Hernández Aquino, Josue David Hernández- Varela, José Jorge Chanona-Pérez

POSTER #132

428 *Laboratory Soft X-ray Tomography for Native-Contrast Cryogenic 3D Imaging and Correlative Workflows;* **Sergey Kapishnikov**, Kenneth Fahy, William Fyans, Fergal O'Reilly, Tony McEnroe, Paul Sheridan

POSTER #133

429 *Morphological and Histochemical Analysis of Amanita muscaria (L.) Lam. (Agaricales, Basidiomycota) using Scanning Electron Microscopy;* **Michelle Martínez-Pineda**, Tania Raymundo, Rafael Reveles Martinez, Ricardo Valenzuela, Umanel Azazael Hernandez González, Daniel Israel Alaniz-Hernández, Pedro Miguel Alvarez-Cortés, Eduardo Pesquera

POSTER #134

430 *Microscopic Details and Fluorescent Characteristics of the Stromata of Xylaria polymorpha (Pers.) Grev. (Xylariales, Ascomycota);* **Pedro Miguel Alvarez-Cortés**, Jessica L. López-Naranjo, Michelle Martínez Pineda, Javier Hernández, Mabel M. Montenegro-Sustaita, Ricardo Pérez Pastén-Borja, Francisco A. Paredes-Sánchez, Viridiana Rucabado

POSTER #135

431 *Scanning Electron Microscopy of Cookeina sulcipes (Berk.) Kuntze (Pezizales, Ascomycota) from a new location in México;* **Michelle Martínez-Pineda**, Francisco A. Paredes-Sánchez, Jessica L. López-Naranjo, Verónica Herrera-Mayorga, Dulce Maria Lopez Najar, Pedro Miguel Alvarez-Cortés, Flabio Dario Mirelez Delgado, Javier Hernández

POSTER #136

432 *Ultramicroscopic details of Cookeina speciosa (Fr.) Dennis (Sarcoscyphaceae, Pezizales);* **Michelle Martínez-Pineda**, Umanel Azazael Hernandez González, Francisco A. Paredes-Sánchez, Verónica Herrera-Mayorga, Jessica L. López-Naranjo, Dulce Angela Quiané-Ramírez, Pedro Miguel Alvarez-Cortés

POSTER #137

433 *Structural Details of the Hysterotecium of Anteaglonium abbreviatum (Schwein.) Mugambi & Huhndorf;* **Michelle Martínez-Pineda**, Edgar Oliver López-Villegas, María del Rosario Espinoza-Mellado, Víctor Eric López, Ricardo Valenzuela, Umanel Azazael Hernandez González, Jessica L. López-Naranjo, Pedro Miguel Alvarez-Cortés

POSTER #138

434 *B99-SEM Evaluation of Biofilm Formation and Microbiologically Influenced Corrosion Under Varying Nutrient and Salinity Conditions;* **Clarissa Chávez-Burciaga**, Claudia Ramírez-Valdespino, Luisa Campoya-Rascón, Karla Campos Venegas, Víctor M. Orozco-Carmona, Karime Carrera-Gutiérrez, Sofia Maynez-Faudoa

POSTER #139

435 *Ultrastructural Characterization of the Hairs of Lachnum virgineum (Helotiales, Ascomycota) from México;* **Pedro Miguel Alvarez-Cortés**, Michelle Martínez Pineda, Javier Hernández, Luis G. Zepeda-Vallejo, Mabel M. Montenegro-Sustaita, Ana Y. Ibarra-Alcaraz, Jessica L. López-Naranjo

POSTER #140

436 *Evaluation of Changes in the Structure and Morphology of Dosidicus Gigas Muscle Proteins by Convection Heat Treatment for the Development Of Biomaterials and Biocomposites;* **Ivan Tolano-Villaverde**, Pedro A. Hernández-Abril, Cynthia N. Hernández-Téllez, Ana G. Luque-Alcaraz, Jesús A. Maldonado-Arriola, Fabian A. Villarreal-Lacarra, Jorge Iriqui-Razcon, Hisila Santacruz-Ortega, Enrique Marquez-Ríos

POSTER #141

437 *Multimodal Microscopy Reveals Patterns of Ceratopteris richardii Embryonic Root Development;* **Guichuan Hou**

POSTER #142

438 *Characteristics of the Dynamics of NETosis Induced by LPS of E. coli on the HL-60 Cell Line;* **Nikita Motorin**, Egor Pivovarov, Alexey Shaytan

Scientific Program

C Cross-Cut/Interdisciplinary Sciences Poster Sessions – Tuesday

3:00 PM – 5:00 PM **EXHIBIT HALL**

C07.P1 Lens on Engagement

POSTER #143

439 *Deep Lab Engagement within nano@stanford: Hands-on Advanced Microscopy Education;* **Andrew Barnum**, Pinaki Mukherjee

POSTER #144

440 *Science and Art in Exhibitions and Academic Activities as a Replicable Model for Microscopy Engagement;* **Zahava Barkay**

C08.P1 Vendor Symposia

POSTER #145

441 *Seeing Beyond Grayscale: Spectral CT for Polymer Multi-Material Systems;* **Frederik Coppens**

POSTER #146

442 *High-Speed Confocal Raman Microscopy for Advanced Chemical Imaging;* **Miao Zhang**, Peng Wang, Sergey Shilov, Fabian Knechtel

P Physical Sciences Poster Sessions – Tuesday

3:00 PM – 5:00 PM **EXHIBIT HALL**

P05.P1 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis

POSTER # 171

443 *Microstructural Characterization of Surface-Hardened AISI 1045 Steel Using Dehydrated Paste Boriding;* **Ramiro de Jesús García-Mesa**, Andrés López Velázquez, Tomás de la Mora Ramírez, Lizbeth Melo-Máximo, Marco Antonio Doñu-Ruiz, Noé López-Perrusquia, Jesus Rafael González Parra, Agustín L. Herrera-May

POSTER #148

444 *Structural and Atomic-Scale Features of 2D Molybdenum Disulfide Investigated by Transmission Electron Microscopy;* **Yazmin Mariela Hernandez-Rodriguez**, Yunia Verónica Garcia Tejeda, Oscar Eduardo Cigarroa-Mayorga

POSTER #149

445 *Development of a Newly Designed FE-SEM, SU9600, Enabling Improved Integrated Analysis of Surface Morphology and Internal Structure;* **Shunsuke Sato**, Taisei Futakuchi, Kazutoshi Kaji, Takeshi Sunaoshi, Satoshi Okada

POSTER #150

446 *Microscopy-Based Microstructural Analysis of Hybrid Cu–SiC–MWCNT Functionally Graded Composites Fabricated by Powder Metallurgy;* **Luis Carlos Olmos-Villalba**, Yamile Cardona-Maya, Diego Uribe-Suárez, Cesar Isaza

POSTER #151

447 *Effect of Graphite Addition on the Hardening Behavior of Ti-Zr Alloy;* **Claudia Elizabeth Varelas Beltran**, Rafael Reveles Martinez, Flabio Dario Mirelez Delgado, Umanel Azazael Hernandez González, Héctor Abraham Jaramillo Castro, Dulce Maria Lopez Najar, Francisco Alvarado Hernández, Adriana Del Carmen Gallegos Melgar

POSTER #152

448 *Microstructural Analysis of Functionally Graded Al–SiC–MWCNT Metal Matrix Composites by Microscopy Techniques;* **Luis Carlos Olmos-Villalba**, Yamile Cardona-Maya, Cesar Isaza

POSTER #153

449 *Structural and Microstructural Effects of Iron Doping in Hydrothermally Synthesized Potassium Tantalates;* **Guillermo Herrera-Pérez**, S. F. Armendáriz, Francisco Espinosa-Magaña, Pedro Piza-Ruiz

POSTER #154

450 *Microstructural and Morphological Characterization of Magnesium-Assisted Combustion Synthesized $CaTiO_3$ by SEM and HRTEM;* **Daniel Lardizabal-Gutiérrez**, Cesar Leyva-Porras, M. Sánchez-Carrillo, Maria Camacho-Rios, Griselda Mendoza-Gomez, Guillermo Herrera-Pérez

POSTER #155

451 *Laser-Assisted Formation for BaTiO3 Perovskite with Correlative Microscopy and Nanoparticle Simulation Study;* **Maria Camacho-Rios**, Guillermo Herrera-Pérez, Kevin Isaac Contreras-Vargas, Marco Ruiz Esparza-Rodriguez, Mariana Luján-Aguilar, Luis Rodríguez-Pacheco, Griselda Mendoza-Gomez, Daniel Lardizabal-Gutiérrez

POSTER #156

452 *Turbostratic Carbon: Synthesis via Magnesium Self-Propagating Combustion and Microstructural Characterization;* **Maria Camacho-Rios**, Griselda Mendoza-Gomez, Guillermo Herrera-Pérez, Kevin Isaac Contreras-Vargas, Marco Ruiz Esparza-Rodriguez, Mariana Luján-Aguilar, L.M. Valdez-Morales, Daniel Lardizabal-Gutiérrez, J.M. Riega Medina

POSTER #157

453 *Influence of Process Control Agent on the Surface and Structure of FeCoNiCuZn High-Entropy Alloys Produced by High-Energy Planetary Ball Milling;* **Alejandro J. Cortés-López**, Florentino López-Urías, Emilio Muñoz-Sandoval, Luis A. Macclesh del Pino-Pérez, Alfredo Martinez-Garcia, Roberto Martínez-Sánchez, Erick A. Juarez-Arellano, Carlos G. Garay-Reyes

POSTER #158

454 *Aberration Corrected STEM Imaging of Nanopores in Monolayer Materials;* **Alex Hall**, Mohit Saraswat, Aleksandr Noy, John Cumings

POSTER #159

455 *Heat Treatment Effect on Microstructural and Mechanical Properties of Copper-Nickel Alloys Processed by Wire Arc Additive Manufacturing;* **Andres Marquez**, Selda Nayir, Matthew Boebinger, James Burns

POSTER #160

456 *Investigations of van der Waals Materials for Nanochemical Reactors;* **Guangming Cheng**, Nan Yao

Scientific Program

P Physical Sciences Poster Sessions – Tuesday cont.

3:00 PM – 5:00 PM **EXHIBIT HALL**

P08.P1 Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods

POSTER #161

457 *The Impact of Carbonization Temperature on the Electrocapacitive Performance of Mesoporous Carbon Nanoparticles (MCN);* **Wilson Hou-Sheng Huang**, Winson Kuo

POSTER #162

458 *Probing Hydrogen Ordering within Metal in 3D with Multislice Electron Ptychography;* **Himani Mishra**, Zixiao Shi, David Muller

POSTER #163

459 *Probing Ion Exchange Driven Structural and Electronic Changes in One-Dimensional Lepidocrocite TiO2 by Electron Microscopy;* **Fatemeh Karimi**, Mohamed Ibrahim, Hussein O. Badr, Michel W. Barsoum, Robert Klie

POSTER #164

460 *Spectrally Tunable Hybrid Composites Based on Silicon Nanoparticles and Size-Tuned CdTe Quantum Dots;* **Alejandra Córdova**, Alvaro Flores Pacheco, Rosendo Lopez Delgado, Jose Heredia, Aldo Zazueta-Raynaud, Mario Enrique Alvarez Ramos

POSTER #165

461 *Optical and Morphological Characterization of ZnS and ZnO Quantum Dot Nanocomposites for Tunable White-Light Emission;* **Aldo Zazueta-Raynaud**, Alejandra Córdova, Rosendo Lopez Delgado, Jesus A. Maldonado-Arriola, Raul Sanchez, Mario Enrique Alvarez

POSTER #166

462 *Symmetry-Forbidden Oxide Interfaces with Moiré-Type Reconstruction in 3D Stacked Functional Oxides;* **Peter van Aken**, Hongguang Wang, Varun Harbola, Yu-Jung Wu, Jochen Mannhart

POSTER #167

463 *Effect of Oxygen Pressure on the Intrinsic Ferroelectricity of Hafnia Thin Films;* **Jian Huang**, Guodong Ren, Xin Li, Xiaoshan Xu, Rohan Mishra

POSTER #168

464 *Deciphering Natural Twistronics in Ca2MnO4 through Transmission Electron Microscopy;* **Satyam Choudhury**, Joysurya Basu, Rajiv Mandal

POSTER #169

465 *Antipolar and Inversion Domains Induced in A 2D Material by Pseudo-Epitaxy;* **Stephen Funni**, Marshall Frye, Jonathan Chin, Lauren Garten, Judy Cha, Saif Saddique

POSTER #170

466 *Real-Space Visualization of Periodic Lattice Displacements in Charge-Density-Wave LaTe;* **Shih-Chieh Lin**, Ta-Lei Chou, Chia-Nung Kuo, Andrew Koerner, Isaac Mottern, Yunqiu Kelly Luo, Chin-Shan Lue, Ming-Wen Chu, Yu-Tsun Shao

POSTER #171

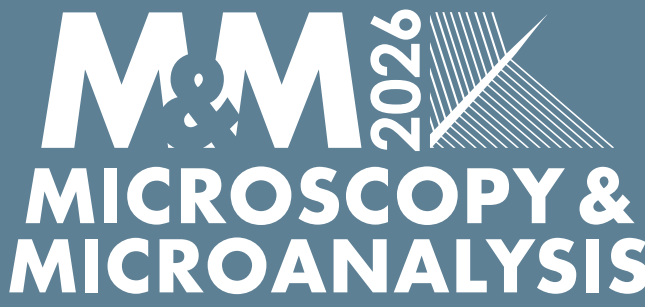
467 *Transmission Electron Microscopy of Novel Functional Multicomponent Layered Perovskite Oxides Designed by Tailoring the Chemistry of the Octahedral Network;* **Satyam Choudhury**, Snehitha Chintoju, Rajiv Mandal, Joysurya Basu

POSTER #172

468 *Probing defects in the Cu rich Cu1-xMn1+ySiTe3;* **Sreekant Anil**, Nasim Alem, Zhiqiang Mao, Vincent Herny Crespi, Boyang Zheng, Weiwei Xie, Yu Liu, Soumi Mondal, Sai Venkata Gayathri Ayyagari, Yuxi Zhang

POSTER #173

469 *Probing Three-Dimensional Structural Order in Layered Quantum Materials from Single Plan-View Electron Diffraction;* **Carly Grossman**, Suyang Xu, Suk Hyun Sung, Ismail El Baggari, Thao Dinh



Wednesday, August 5

Scientific Program

A Analytical/Instrumentation Sciences Symposia – Wednesday Morning

A02.4 Advances in 4DSTEM Experimentation, Analysis and Interpretation

Wednesday 8:30 AM

8:30 AM **470** *Unraveling Ordering Phenomena in Alloys using Advanced TEM Techniques;* **Lilian Vogl** (INVITED), Peter Schweizer, Shunda Chen, Johann Michler, Andrew Minor, Tianshu Li

9:00 AM **471** *Physics-Informed Neural Networks for Sparse 4D-STEM Reconstruction: Quantitative Strain and Electrostatic Field Analysis with Embedded Physical Constraints;* **Roberto dos Reis**, Gabriel dos Santos, Xiaobing Hu, Vinayak Dravid, Yukun Liu

9:15 AM **472** *Optimizing Strain Mapping using Nanobeam Diffraction in 4D-STEM;* **Miti Shah**, Sangjoon Lee, Corrie Barnes, Colin Ophus, Henry Bell, Karen Ehrhardt, Nicholas Marchese, Stephanie Ribet, Arthur R. C. McCray

9:30 AM **473** *Imaging Lattice Strain and Defects in Nanoparticles by 4D-STEM;* **Qian Chen** (INVITED), Xiaokang Wang, Chu-Yun Hwang

A03.5 Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications

Wednesday 8:30 AM

8:30 AM **474** *Atom Probe Tomography Reveals Grain Boundary Segregation and Spinodal Decomposition in One-Step Friction Stir Processed Al-Mg-Al Sandwiched Structure;* **Ahmed Alade Tiamiyu** (INVITED), Mina Dehghan

9:00 AM **475** *Identifying and Measuring Local Enrichment within Grain Boundaries by Atom Probe Tomography;* **Jacob Mack**, Christopher Schuh

9:15 AM **476** *Atom-Probe Tomography of Nanao-Scale α-Al(ΣTM)Si Precipitates in an Additively Manufactured Aluminum Alloy;* **Amir Farkoosh**, David Seidman

9:30 AM **477** *Carbon Clustering and its Associated Precipitation in a Martensitic High Strength Steel;* **Madyson Canulette** (INVITED), Luke Brewer, Gregory Thompson

A05.2 Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences

Wednesday 8:30 AM

8:30 AM **478** *One Laboratory, Many Beams: Understanding and Mitigating Ion-Beam Effects While Balancing Throughput, Area, and Ultimate Thinness in FIB–TEM Workflows;* **Joshua Sugar** (INVITED), Suzy Vitale, Sean Nichols

9:00 AM **479** *PFIB-Based Sample Preparation Workflow for a MEMS Tensile Platform Enabling Correlative In Situ SEM and TEM Studies;* **Daniel Vasquez**, Alexander Fakiner, A. Wahab Shakib, Robert Winkler, Leopoldo Molina-Luna, Yevheniy Pivak, Hugo Pérez-Garza

9:15 AM **480** *Balancing Speed, Damage, and Fidelity: A Four-Method TEM Prep Study on GaN Devices with Plasma FIB, LMIS FIB and CIB Polishing;* **Valerie Brogden**, Yi Zhang, Esaul Garza, Akansha Eling, Carlos Amaral, Cecile Bonifacio, Patrick Darmawi-Iskandar, Clare Smith

9:30 AM **481** *Diamond Nanowire Lift-Out Sample Preparation for TEM Analysis and Mechanical Experiments;* **Tymofii Pieshkov**, Chenxi Li, Bongki Shin, Jun Lou, Yimo Han, Robert Vajtai, Pulickel Ajayan

9:45 AM **482** *Blind High-Precision Focused Ion Beam Patterning;* **Nicholas Rudawski**

A06.4 Correlative, Multimodal Microscopy, Spectroscopy, and Imaging

Wednesday 8:30 AM

8:30 AM **483** *Multimodal TEM and Spectroscopy Characterization of Zeolite-Based Nanocatalysts;* **Alexandre Foucher**, Matthew Rasmussen, Jacklyn Hall, Susan Habas, David Cullen

8:45 AM **484** *Faster Lower Dose Mapping by Compressive EDS;* **Zoe Broad**, Jack Wells, Alex Robinson, Daniel Nicholls, John Wheeler, Nigel Browning

9:00 AM **485** *Sparse-view Multimodal Electron Tomography Using Implicit Neural Representations;* **Cedric Lim**, Arthur R. C. McCray, Corneel Casert, Stephanie Ribet, William Millsaps, Colin Ophus

9:15 AM **486** *Development of a CL-SEM Platform for Nanoscale Optical Characterization;* **Ruofei Zheng**, Germán Sciaini, Patrick Price, Mark Salomons, James Tordiff, Paul Concepcion, Kostyantyn Pichugin, Darren Homeniuk, Ariel Petruk

9:30 AM **487** *Correlative Multimodal Electron Microscopy of $SrTiO_{3-x}H_x$ Across Hydride Loading: Structure and Electronic-State Evolution;* **Elizabeth Griffin**, Gabriel dos Santos, Megan Burrill, Kennedy Agyekum, Roberto dos Reis, Katharine Page, Sossina Haile, Vinayak Dravid

9:45 AM **488** *Nanoscale Cathodoluminescence for Structure–Emission Correlation of Individual Quantum Emitters;* Hanyu Hou, Jianguo Wen, Chaitanya Kolluru, Wei-Ying Chen, Kaijun Yin, Maria Chan, Benjamin Diroll, Thomas Gage, Jian-Min Zuo, **Muchuan Hua**

A07.1 Electronic and Thermal Characterization of Devices with Electron Microscopys

Wednesday 8:30 AM

8:30 AM **489** *Mapping Electromagnetic Fields and Atomic Thermal Vibrations using tDPC-STEM and Atomic-Scale TDS Analysis;* **Takehito Seki** (INVITED), Satoko Toyama, Naoya Shibata

9:00 AM **490** *Faster Lower Dose Mapping by Compressive EDS;* **Zoe Broad**, Jack Wells, Alex Robinson, Daniel Nicholls, John Wheeler, Nigel Browning

9:15 AM **491** *Direct Real-Space Mapping of Nanoscale Polarization Dynamics via In-Situ 4D-STEM;* **Peter van Aken**, Kenan Elibol, Vesna Srot, Chao Yang

9:30 AM **492** *Electrode Grains Template Ferroelectric Domains in a Hafnia-based Capacitor;* **Yueyun Chen**, B.C. Regan, Tristan O'Neill, Ho Leung Chan, Megan Lenox, William Hubbard, Jon Ihlefeld

9:45 AM **493** *STEM EBIC Imaging of Three-Terminal Devices;* **Tristan O'Neill**, Yueyun Chen, Emmanuel Quezada, Suman Datta, B.C. Regan

A08.2 Microscopy and Microanalysis for Real World Problem Solving

Wednesday 8:30 AM

8:30 AM **494** *In Situ Transmission Electron Microscopy as a Tool for Studying Real-World Problems in Energy Materials;* **Hanglong Wu** (INVITED), Frances Ross

9:00 AM **495** *Direct Observation of Stimulus-Dependent Degradation Pathways in Metal Halide Perovskites via Light-Coupled Atmospheric In Situ Gas-Cell TEM;* **Khakimjon Saidov**, Pronoy Nandi, Mercouri Kanatzidis, Vinayak Dravid, Dayne Swearer

9:15 AM **496** *The Degradation of Electrochemical Devices for Hydrogen Technology: Investigation Using Analytical Electron Microscopy;* **Haoran Yu**, Lynda Amichi, David Cullen

9:30 AM **497** *Synthesis Chemical and Characterization of Porous Hybrid $(Cu_2(OH)_3Cl/CuO$ Assisted by Ball-Milling Process;* **L. García**, Gerardo A. González-Martínez, N Cayetano-Castro, Gerardo Rosas Trejo, Salomón Borjas-García

9:45 AM **498** *Micro-XRF Characterization of SEM Coatings Deposited by a Broad Argon Ion Beam Tool;* **Shangshang Mu**, Gerward Weppelman, Cecilia Xu, Steve Coyle, Chris Booth

A10.4 Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools

Wednesday 8:30 AM

8:30 AM **499** *Development of a versatile digital microscope twin for TEM and STEM;* **Thomas Pfeifer**, Eric Hoglund, Andrew Lupini

9:00 AM **500** *Leveraging Large Language Models to Lower Barriers to Python Based Automated Electron Microscopy;* **Benjamin Miller**, Anahita Pakzad

9:15 AM **501** *In-Situ TEM Experiments Utilizing Microheater Arrays;* **Paul Miller**, Frances Ross, Tyler Hill

9:30 AM **502** *Aberration Quantification Based on Beam Phase Retrieval in SEM;* **Surya Kamal**, Kevin Mogere, Richard Hailstone

9:45 AM **503** *Centimetre-Scale TEM: Extreme Parallelisation, Automation and Imaging for VolumeEM and Beyond;* **Lewys Jones** (INVITED), Germano Motta Alves, Theo Andrews, Kim Gruver, Derrick Brittain, Cameron Devine, Xiaoyu Lu, Nuno De Costa, Clay Reid, Jonathan Peters

Scientific Program

B Biological Sciences Symposia – Wednesday Morning

B03.1 Microscopy in Action: Advancing Disease Research and Diagnosis in Humans, Animals, and Plants

Wednesday 8:30 AM

8:30 AM **504** *From Initial Characterization of Macromolecules to Evaluation of Clinical Trials Designed to Correct their Defects: A Timeline Spanning 42 Years as a Microscopist;* **Douglas Keene** (INVITED)

9:00 AM **505** *Applications of Electron Microscopy in Clinical Diagnosis;* **Ashish Gadicherla** (INVITED)

9:30 AM **506** *Structural and Functional Analysis of RNA Virus Replication from Molecular Architecture to Cellular Landscapes;* **Hong Zhan** (INVITED), Paul Ahlquistr

B04.1 Technical Advances and Transformative Applications of CryoEM

Wednesday 8:30 AM

8:30 AM **507** *Observing Protein Dynamics with Microsecond Time-Resolved Cryo-EM;* **Ulrich Lorenz** (INVITED)

8:45 AM **508** *Investigating Spatial and Temporal Dynamics of Intracellular Enterovirus Replication by Automated High-Throughput FIB-Milling and Cryo-Electron Tomography;* **Christian Lamberz**, Oliver Raschdorf, Ron Kelley, Jessica Heebner, Bob Coelingh, Dan Hurdiss, Frank van Kuppeveld

9:15 AM **509** *On-Grid Microfluidic Cryo-EM Resolves Transient States of Proteins;* **Chinmaya KV**, Babatunde Ekundayo, Massimo Kube, Henning Stahlberg

9:30 AM **510** *Pulsed IR Melting and Revitrification of Cryo-EM Specimens for Time-Resolved Experiments;* **Ioana Grigoras** (INVITED), Biplob Nandy, Mathew Peet, Christopher Russo

B07.1 AI-Driven Microanalysis: Transforming Industrial Innovation and Discovery

Wednesday 8:30 AM

8:30 AM **511** *Higher-Dimensional Methods in AFM including Machine Learning;* **Greg Haugstad** (INVITED), Stephan Hubig, Rachel McGinness, Alon McCormick, Klaus Wormuth

9:00 AM **512** *Computational Imaging of the Collagen-Rich Tumor Microenvironment;* **Kevin Eliceiri** (INVITED)

9:30 AM **513** *Writing, Reading, and "Reasoning" in High-Throughput Nanoparticle Discovery;* **Vinayak Dravid** (INVITED)

C Cross-Cut/Interdisciplinary Sciences Symposia – Wednesday Morning

C01.1 Transmission Electron Microscopy for Beam-Sensitive Materials

Wednesday 8:30 AM

8:30 AM **514** *Advances in Cryogenic Transmission Electron Microscopy;* **Yimei Zhu** (INVITED)

9:00 AM **515** *Optimizing Information per Damage Event in Transmission Electron Microscopy and Spectroscopy of Beam-Sensitive Materials;* **Michael Zachman**, Juhyun Oh, David Cullen, Tim Van Cleve, Obeen Kwon, Iryna Zenyuk

9:15 AM **516** *Having Your Beam/Environment-Sensitive Sample In the Microscope, and Applying Monochromated EELS to it Too;* **Jordan Hachtel** (INVITED), Alexander Reifsnyder, David McComb, Michael Zachman, Gabriel Veith, Amanda Musgrove

9:45 AM **517** *Probing Functionalized Carbon and Related Nanomaterials via Cryogenic Spatially-Resolved EELS;* **Raul Arenal**

C06.5 Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management

Wednesday 8:30 AM

8:30 AM **518** *In Situ X-Ray Imaging Reveals Fluid–Structure Load Sharing in Insect Antennae Under Extreme Deformation;* **Adam Puchalski** (INVITED), Konstantin Kornev, Andriy Andreyev

9:00 AM **519** *Closing the Loop in Microscopy Automation: Multi-Agent LLMs for Real-Time Image Acquisition, Image Processing and Experimental Steering Across Scientific Domains;* **Nathan Johnson**, Ian Abshire

9:15 AM **520** *Extracting Dynamics from SAXS Data: A Machine Learning Approach;* **Adam Opperman**, Ahmad Hosseinizadeh

9:30 AM **521** *Synthetic Data Creation of Neurons for Training Machine Learning Segmentation Algorithms Volume Electron Microscopy;* **Zahra Shahbazi**, Sina Shahbazmohamadi, Vincent LaGrotta, Adrian Phoulady, Pouya Tavousi

9:45 AM **522** *Accelerating Electron Tomography Workflows Through Implicit Neural Representations;* **Cedric Lim**, Serin Lee, Jennifer Dionne, Colin Ophus, Arthur R. C. McCray, Corneel Casert, Andrew Barnum

Scientific Program

P Physical Sciences Symposia – Wednesday Morning

P02.1 Probing Phase Transitions from Atomic-Scale Imaging to In Situ Control

Wednesday 8:30 AM

8:30 AM **523** *Lorentz Transmission Electron Microscopy of Topological Magnetic Textures in Thin Films of Chiral Magnets;* **Rafal Dunin-Borkowski** (INVITED), Luyan Yang, Fengshan Zheng

9:00 AM **524** *Electron-Beam-Induced Structural Transformations in FeOCl-Type van der Waals Magnetic Insulators;* **Benjamin Sailors**, Eugene Park, Zdeněk Sofer, Frances Ross, Julian Klein

9:15 AM **525** *Domain-Resolved 4D-STEM Reveals Nanoscale Structural Heterogeneity in the Low-Temperature Phase of $CuIr_2S_4$ Across the Metal–Insulator Transition;* **Sanghyo Lee**, Junsik Mun, Byeongjun Gil, Miyoung Kim, Sang-Wook Cheong, Yimei Zhu, Myung-Geun Han

9:30 AM **526** *SAI-Enhanced Magnetic Imaging and Analysis for Topological Spin Textures;* **Kai He** (INVITED), Scott Kiehn, Min He

P03.5 Advanced TEM Analysis for Semiconductors

Wednesday 8:30 AM

8:30 AM **527** *Next Generation S/TEM Platforms for Semiconductor Pathfinding: an Integrated Multi-modal and Multi-dimensional approach for Advanced Logic and Memory Devices;* **Dominique Delille** (INVITED), Yuchen Deng, Cigdem Ozsoy-Keskinbora, Ioannis Alexandrou, Chu-Ping Yu, Christoph Mitterbauer

9:00 AM **528** *Alternating Bias Assisted Annealing Influences Amorphous Alumina Structure in Superconducting Quantum Resonators;* **Nicholas Hagopian**, Paul Voyles, Yaniv Rosen, Keith Ray, Sayan Patra, Loren Alegria, Vito Iaia, Emily Joseph, Stephanie Ribet, Sean O'Kelley

9:15 AM **529** *Characterizing Native Oxide Layers on CdTe and MgxCd1–xTe Surfaces;* **Noah Kamm**, D. Bruce Buchholz, Arashdeep Thind, Robert Klie, Yong-Hang Zhang, Anthony Nicholson, Amit Munshi, Xiaoyang Liu, Zheng Ju, Xin Qi

9:30 AM **530** *Probing Relaxation Mechanisms during Epitaxial Semiconductor Island Growth on Substrates with Patterned Interlayers;* **Chen Chang**, Do A Kwon, Ne Myo Han, Wiktor Szopa, Jeehwan Kim, Frances Ross, Kuangye Lu, Zhenjing Liu

9:45 AM **531** *Momentum-Resolved STEM Modalities for Polar Imaging of MBE-Grown ScAlN Thin Films;* **Alex Stangel**, Zetian Mi, Danhao Wang, Jeremy Shen, Robert Hovden

P05.5 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis

Wednesday 8:30 AM

8:30 AM **532** *From Prototype to Platform: Scalable Machine Learning and Automated Experimentation in Electron Microscopy;* **Kevin Field** (INVITED), Daniel Caccavelli, Ben Morse, Christopher Field, Hangyu Li, Ian Steigerwald, Justin Hamil, Ethan Polselli, Kai Sun, Cy Tamanaha

9:00 AM **533** *Local Diffractogram Analysis from High Resolution Images for Microstructure Quantification and Phase Detection;* **Albina Borisevich**, Sheng Dai, Andrew Stack, Matthew Boebinger, Parans Paranthaman, Juliane Weber, Saurabh Pethe, Bishnu Thapaliya

9:15 AM **534** *Dictionary Learning and Transfer Methods to Enhance Resolution and Contrast in Atomic Resolution Secondary Electron Images;* **Alex Robinson**, Daniel Nicholls, Joseph Fernando, Joseph Otte, Roger Wepf, Nigel Browning

9:30 AM **535** *AI-Driven Automated Serial Electron Diffraction for the Structural Characterization of Metal-Organic Frameworks;* **Lotan Portal**, Jiaze Wu, Ehsan Nikbin, Kai Huang, Mohamad Moosavi, R.J Dwayne Miller, Robert McLeod, Jane Howe, Kevin Zhang, Sartaaj Khan, Thomas Pruyn

9:45 AM **536** *Simulation-Guided Discrimination of Competing Microstructural Origins of Electron Diffraction Signatures in Complex Thermoelectric Pb-Chalcogenides;* **Ramandeep Mandia**, Hyungseok Lee, Roberto dos Reis, Mercouri Kanatzidis, Vinayak Dravid

P06.5 Technical and Application Advances in Liquid and Gas Phase TEM

Wednesday 8:30 AM

8:30 AM **537** *Understanding Metal Oxidation by Precession-assisted Five-dimensional Scanning Transmission Electron Microscopy (5D STEM);* **Yongwen Sun** (INVITED), Seyedmahmoud Mortazavi, Ying Han, Athanassios S. Galanis, Alejandro Gomez-Perez, Stavros Nicolopoulos, Hugo Pérez-Garza, Adri C. T. van Duin, Yang Yang, Dan Zhou

8:45 AM **538** *Optimized Electrostatic Beam Blanking for Dose-Controlled Liquid Phase In-Situ STEM: Imaging, EELS, and 4D-STEM of Au Nanoparticle Growth Dynamics;* **Liam Spillane**, Mervan Ramadan, Cheng Sun, Marc Willinger

9:15 AM **539** *5D-STEM Mapping of Crystalline Orientation and Assembly Dynamics of Gold Nanostructures in Liquid Phase;* **Parivash Moradifar**, Tim van Driel, Amy McKeown-Green, Alan Dai, Niccolò Bottauscio, Stephanie Ribet, Andrew Barnum, Colin Ophus, Jennifer Dionne

9:30 AM **540** *Quantifying Size and Reaction Mode dependent Oxidation of Individual Carbon Nanotube Filaments by Spatially-resolved Operando ETEM and AI;* **Yuanyuan Zhu**

9:45 AM **541** *Terabytes Without Tears: Scalable Continuous In Situ 4D STEM and EELS;* **Benjamin Miller**, Anahita Pakzad

P07.1 High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments

Wednesday 8:30 AM

8:30 AM **542** *In-situ and 3D Measurements of Dynamic Processes in Nuclear Materials Utilizing Synchrotron High-Energy X-rays;* **Xuan Zhang** (INVITED), Jun-Sang Park, Peter Kenesei, Jonathan Almer, James Stubbins, Meimei Li

9:00 AM **543** *Temperature-Triggered Phase Segregation in Completely Miscible Au–Pd Alloys: An In-Situ TEM Study;* **Raul Arenal**, Abhijit Roy, Simon Hettler

9:15 AM **544** *High Resolution Characterization of Oxide Dispersion Strengthened Steels for Nuclear Applications;* **Sohail Shah**, Ertugrul Demir, Haiming Wen, Enrique Lavernia, Mukesh Bachhav

9:30 AM **545** *Expanding Analytical Efforts on Characterizing the Heterogeneous Effects of Irradiation for Fusion;* **James Haag** (INVITED), Wahyu Setyawan, Andrew Casella, David Senor, Matthew Olszta

P08.5 Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods

8:30 AM **546** *Multislice Electron Ptychography Reveals Hidden Interface Structure in Functional Oxides;* Y**imo Han** (INVITED), Xinyan Li, Chuqiao Shi, Ang Tao, Ramamoorthy Ramesh, Lane Mart*in*

9:00 AM **547** *Fluctuation-Cepstral Analysis of Structural Heterogeneity in Al/AlOx/Al Josephson Junctions;* **Seungkyun Lee**, Pinshane Huang, Harshvardhan Mantry, Wei-Hsiang Peng, Kaushik Singirikonda, Shishir Sudhaman, Angela kou, Wolfgang Pfaff, Rahim Raja, Oliver Wolff

9:15 AM **548** *Structural Distortions in the Quasi-2D Vacancy-Ordered Perovskite EuTa2O6;* **Joshua Maile**, Tobias Schwaigert, Kaveh Ahadi, Salva Salmani-Rezaie

9:30 AM **549** *Atomistic Insights into Magnetostriction Enhancement in Boron-doped Fe80Ga20 Thin Film;* **Haoyang Ni**, Zhixin Zhang, Axel Hoffman, Jian-Min Zuo, Miaofang Chi

9:45 AM **550** *Frustrated Remote Epitaxy Influences on GdAuGe Interfaces and Microstructure;* **Nicholas Hagopian**, Taehwan Jung, Zachary LaDuca, Quinn Campbell, Jason Kawasaki, Paul Voyles, Tamalika Samanta, Anshu Sirohi, Katherine Su, Chengye Dong

P11.1 Unveiling Quantum Order: Cryo-EELS, 4D STEM, and Ptychography at the Nanoscale

8:30 AM **551** *Advanced Operando Electron Microscopy for Disentangling Stability and Orbital Transport at Metallic Interfaces;* **Alejandra Guedeja-Marrón** (INVITED), Libor Kovarik, Yingge Du, Hyoju Park, Juan Carlos Idrobo, Maria Varela, Minju Choi, Matilde Saura-Múzquiz, Gabriel Sánchez-Santolino, Lucas Perez

9:00 AM **552** *Revealing Symmetry-Breaking CDW Domains in LuNb6Sn6 by Liquid Helium Cryogenic 4D-STEM;* **Haoyang Ni**, Miaofang Chi, Nishkarsh Agarwal, Suk Hyun Sung, Yang Zhang, Hsin-Yun Joy Chao, Young-Hoon Kim, Maya Gates, Ismail El Baggari, Robert Hovden

9:15 AM **553** *Twist and Temperature Tuning of Electronic Excitations in CrCl3 van der Waals Magnets via Cryogenic STEM–EELS;* **Hsin-Yun Joy Chao**, Young-Hoon Kim, Miaofang Chi

9:30 AM **554** *How Do You Measure the Temperature of a Thin Sample Near 10 Kelvin?;* **Benjamin Plotkin-Swing**, Ondrej Krivanek, Tracy Lovejoy, Christopher Madsen, Niklas Dellby, Cameron Johnson, Michael Hotz, Amber Nelson-Quillin

9:45 AM **555** *Observation of Excitons in Transition Metal Phosphorus Trichalcogenides with Monochromated Electron Energy-Loss Spectroscopy at Cryogenic Temperature;* **Yifan Wang**, Elizaveta Tiukalova, Miaofang Chi, Jordan Hachtel, David Mandrus, Jinzhao Sheng

Scientific Program

T Technologists' Forum – Wednesday Morning

X30 Career Paths in Microscopy Rountable

Wednesday 8:30 AM

8:30 AM **556** *Career Paths in Microscopy;* **Austin Worden** (INVITED), Tao Ma, Valerie Brogden, Steven Goodman, Tracy Lovsey

A Analytical/Instrumentation Sciences Symposia – Wednesday Late Morning

A02.5 Advances in 4DSTEM Experimentation, Analysis and Interpretation

Wednesday 10:30 AM

10:30 AM **557** *Nanobeam 4DSTEM for Mapping Nanoscale Structural Transitions in Complex Oxide Membranes;* **Hudson Shih** (INVITED), Rohan Dhall, Stephanie Ribet, Huijue Liu, Izoah Snowden, Yayoi Takamura, Seung Sae Hong

11:00 AM **558** *Digital Dark Field: Flexible Imaging from Sparse Data, with some Help from Machine Learning;* **Ian MacLaren**, Trevor Almeida, Rantej Bali, Magnus Nord

11:15 AM **559** *Structural Insight into Multiphase HZO Thin Films via Multi-Angle Nanobeam Precession Electron Diffraction;* **Áshildur Friðriksdóttir**, Colin Ophus, Paul McIntyre, Andrew Barnum, Paul Wallace, Zoe Jacobs, Cristian Ruano

11:30 AM **560** *Accelerated Microstructure Characterization of Ferroelectric Hf0.5Zr0.5O2: A Hybrid Machine Learning Approach to 4D-STEM Analysis;* **Honggyu Kim** (INVITED), Jiyun Song, Timothy Yoo, Garrett Baucom, Kevin Jones

A03.6 Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications

10:30 AM **561** *Autonomous Controls for Atom Probe Tomography and Operando Atom Probe with Bayesian Optimization Algorithms;* **Sten Lambeets** (INVITED), Daniel Perea, Maxim Ziatdinov, Mark Wirth, Andrey Liyu, Andrew Tong, Alexander Smith

11:00 AM **562** *AI-Assisted Automated Acquisition Control for Atom Probe Tomography;* **Lazar Vucicevic**, Gard Groth, Dan Lenz, Katherine Rice

11:15 AM **563** *Automating Cluster Analysis in the Complex, Heterogenous Microstructures Found in Neutron-Irradiated Structural Materials;* **Sara Wonner**, Yalei Tang, Matthew Anderson, Mukesh Bachhav

11:30 AM **564** *Leveraging AutoTEM for Automated Specimen Lift-out for Atom Probe Tomography;* **Jeroen Scheerder**, Kris Paulussen, Richard Morris, Eva Grieten, Claudia Fleischmann

11:45 AM **565** *Extracting Vacancy Associated Atomic Environments From Distorted APT Point Clouds Using Physics-Informed Machine Learning;* **Baishakhi Mazumder**, Shaon Das

A05.3 Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences

10:30 AM **566** *CANCELLED: Low-Damage Oxygen Plasma FIB Preparation for Cross-Sectional Characterization of Protein Fibers in Cultural Heritage and Forensic Samples;* **Clare Smith** (INVITED)

11:00 AM **567** *Large Volume pFIB-SEM 3D Analysis of Variants and Prior Austenite Grain Structures in Steels;* **Ben Britton**, Ruth Birch, Warren Poole

11:15 AM **568** *Diffusion Studies in Al2O3 and Cr2O3 Oxides via Site-Specific Isotope Labelling;* **Bethany Matthews**, Kayla Yano, Tiffany Kaspar, Sten Lambeets, Daniel Schreiber

11:30 AM **569** *Optimization of MoO3–Si Substrate Interactions for Precise Kirigami by Focused Ion Beam;* **Bhaveshkumar Kamaliya**, Caleb Whittier, Rachel Ord, Mehdi Mosayebi, Ramachandra Bangari, Thomas Folland, Ravitej Uppu, Nabil Bassim

11:45 AM **570** *Structural Investigation of Heterostructure Thin Films with Electron Microscopy;* **Yulia Trenikhina**, Georg Duesberg, Stephen Kelly, Sebastian Klenk, Markus Boese, Martina Schenkel, Nikolas Dominik

A06.5 Correlative, Multimodal Microscopy, Spectroscopy, and Imaging

10:30 AM **571** *Correlative Cryogenic Confocal and Hard X-ray Fluorescence Nano-imaging: Deciphering Subcellular Metal Homeostasis in the Native State;* **Joonsu Han**, Kira Slepchenko, Xiaozhi Zhang, Qiaoling Jin, Craig Nunemaker, Si Chen

10:45 AM **572** *CT-Guided Laser Access and Correlative Microscopy from Intact Smartphone Assemblies to Buried Advanced Packages;* **Mohammad Taghi Mohammadi Anaei**, Matthew Maniscalco, Hongbin Choi, Wesley Roser, Parisa Mahyari, Adrian Phoulady, Nicholas May, Peyman Ahmadi, Sina Shahbazmohamadi, Pouya Tavousi

11:00 AM **573** *Effect of Reduced Graphene Oxide on Laser Absorption and Microstructural Evolution in LPBF-Processed Nickel Aluminum Bronze;* **Wen Qian**, Luke Schwaninger, Ava Wiltgen, Joseph Turner

11:15 AM **574** *Correlative EBSD–Nanoindentation for Orientation-Resolved Elastic Characterization of Polycrystals;* **Sungju Kang**, Ryan Leroux, Sergey Prikhodko

11:30 AM **575** *Applications of Nanodevice Characterization in Industrial Workflows and Opportunities for Academic Collaboration;* **Tuo Gao**, Matthew Hauwiller, Stephen Exarhos, Mengdi Bao

11:45 AM **576** *Ameloblast-Mediated Iron Deposition and the Formation of a Distinct Surface Layer in Rodent Incisors;* **Vesna Srot**, Felicitas Predel, Birgit Bussmann, Gregor Kapun, Boštjan Pokorny, Elena Buzan, Bernhard Fenk, Peter van Aken

Scientific Program

A Analytical/Instrumentation Sciences Symposia – Weds. Late Morning cont.

A07.2 Electronic and Thermal Characterization of Devices with Electron Microscopy

10:30 AM **577** *Nanosecond-Resolved Nanothermometry Based on Photon-Electron Pump-Probe Spectroscopy;* **Florian Castioni** (INVITED), Luiz H. G. Tizei, Yves Auad, Jean-Denis Blazit, Xiaoyan Li, Steffi Woo, Takashi Taniguchi, Ching-Hwa Ho, Odile Stéphan, Mathieu Kociak

11:00 AM **578** *Time-Resolved STEM studies of Nanoscale Thermal Transport;* **Mairi McCauley**, Joel Martis, Tolga Wagner, Luca Piazza, Ondrej Krivanek, Tracy Lovejoy, Guillaume Radtke, Christoph Koch, Benedikt Haas, Benjamin Plotkin-Swing

11:15 AM **579** *Roads to Primary Thermometry in Transmission Electron Microscopy;* **Matthew Mecklenburg**, Jordan Hachtel

11:30 AM **580** *Investigating Thermal Depolarization and Repolarization of Ferroelectric HZO with In Situ TEM and STEM EBIC;* **Tristan O'Neill**, Yueyun Chen, Ho Leung Chan, Megan Lenox, William Hubbard, Jon Ihlefeld, B.C. Regan

11:45 AM **581** *Measuring Temperature-Induced Strain Changes using Transmission Kikuchi Diffraction;* **Matthew Mecklenburg**, Xin Yi Ling, B.C. Regan, Yueyun Chen, Jared Lodico

A08.3 Microscopy and Microanalysis for Real World Problem Solving

10:30 AM **582** *Observation and Quantitative Tracking of Oxygen Vacancy Ordering and Diffusion in Ceria by In Situ Transmission Electron Microscopy;* **Yong Ding** (INVITED), Yuzi Liu, Zhong Lin Wang

11:00 AM **583** *Understanding the Morphology of Colloidal Silica Nanoparticles Through Liquid Phase Electron Microscopy;* **Yang Liu**, Maria Vratsanos, Matthew Burch, Haeen Sykora, Kari McGee, Mark Wright, Sonja Mackey

11:15 AM **584** *Multislice Ptychography on an Uncorrected Electron Microscope;* **Anna Li**, Jeffrey Huang, Pinshane Huang

11:30 AM **585** *Correlative Microscopy and Microanalysis for Industrial Problem Solving;* **Chungying Tsai**

11:45 AM **586** *Multi-Analysis Approach to Characterisation of Mining Ores – A Critical Mineral Focus;* **Richard Wuhrer**, Timothy Murphy, Angus Netting, Timothy Lucey, Daniel Fanna, Hyunsung Min, Laurel George, Ken Moran

A10.5 Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools

10:30 AM **587** *Live Image Reconstruction to Increase Acquisition Speed and Dose Efficiency while Optimizing Data Content in Compressed (S)(T) EM;* **Nigel Browning**, Eneith Aguilar, Mounib Bahri, Zoe Broad, Richard Jinschek, Daniel Nicholls, Alex Robinson, Jack Wells, Alex Williams

10:45 AM **588** *Raising the Dose Limit for Counted STEM: Dynamic Retriggering for Electron Pulse Counting;* **Jonathan Peters**, Pietro Zambon, Lewys Jones

11:00 AM **589** *Atomic Resolution Ptychography Movies from 10 Kelvin to Thousands of K, Imaging a Moving Target;* **Niklas Dellby** (INVITED), Michael Hotz, Cameron Johnson, Benjamin Plotkin-Swing, Martin Humphry, Joel Martis, Anton Gladyshev, Christoph Koch, Ondrej Krivanek, Tracy Lovejoy

11:30 AM **590** *From Offline Analysis to Live Feedback: Scripting Workflows for Live Field Mapping in Lorentz STEM;* **Austin Wade** (INVITED), Kristyna Bukvisova, Ricardo Egoavil, Jan Hajduček

B Biological Sciences Symposia – Wednesday Late Morning

B02.1 Development, Challenges, and Biomedical Applications of Tissue Clearing, Expansion Microscopy, and Volumetric Imaging

Wednesday 10:30 AM

10:30 AM **591** *Progress in Optical Tissue Clearing and Light Sheet Microscopy Imaging of Musculoskeletal Tissues;* **Frank Ko** (INVITED), Spencer Fullam, Rachel Miller, Anne-Marie Malfait

11:00 AM **592** *Cell-Type-Specific Imaging of Nanoparticles Throughout the Entire Mouse Body;* **Jie Luo** (INVITED), Donghui Shin, Yu Zhu, Yuewei Wang, Matthew Lam

11:30 AM **593** *Nanoscale Volumetric Fluorescence Imaging via Photochemical Sectioning;* **Wei Wang** (INVITED), Xiongtao Ruan, Gaoxiang Liu, Milkie Daniel, Wenping Li, Eric Betzig, Srigokul Upadhyayula, Ruixuan Gao

B03.2 Microscopy in Action: Advancing Disease Research and Diagnosis in Humans, Animals, and Plants

10:30 AM **594** *Advanced Elemental Analysis in Biology Using Cutting Edge SEM-BEX and EDS Technology;* **Haithem Mansour** (INVITED), Louise Hughes, Yin Chang, Philippe Pinard, Lucia Spasevski, Simon Burgess

11:00 AM **595** *Correlative Histology and Scanning Electron Microscopy to Resolve Plant Disease Mechanisms;* **Denise Caldwell** (INVITED), Anjali Iyer-Pascuzzi

11:30 AM **596** *Bridging Scales and Modalities: Lab-Based Soft X-Ray Tomography for Integrated Disease Imaging;* **Kenneth Fahy** (INVITED), Sergey Kapishnikov, Fergal O'Reilly, William Fyans, Paul Sheridan, Tony McEnroe

B04.2 Technical Advances and Transformative Applications of CryoEM

10:30 AM **597** *IsoNet2 Determines Cellular Structures at Submolecular Resolution Without Averaging;* **Z. Hong Zhou** (INVITED), Xiaoying Zhang, Yun-Tao Liu, Hongcheng Fan, jonathan Jih, Liam Tran

11:00 AM **598** *Cloud-Accelerated and Traceable Processing for CryoEM and CryoET;* **Fabian Eisenstein**, Pascal Störzbach, Pavel Afanasyev

11:15 AM **599** *New Developments for Single Particle Cryo-Em Data Processing in CryoSPARC;* **Ali Punjani**, CryoSPARC Team

11:30 AM **600** *Context-Aware Annotation in Cryo-Electron Tomography;* **Jonathan Schwartz** (INVITED), Hannah Siems, Daniel Ji, Josh Hutchings, David Agard, Bridget Carragher, Dari Kimanius, Utz Ermel, Rahel Woldeyes, Yue Yu

Scientific Program

C Cross-Cut/Interdisciplinary Sciences Symposia – Wednesday Late Morning

C01.2 Transmission Electron Microscopy for Beam-Sensitive Materials

Wednesday 10:30 AM

10:30 AM **601** *Electron Ptychography of Beam-Sensitive Materials;* **David Muller** (INVITED), Desheng Ma, Chia-Hao Lee, Stephen Zeltman, Guanxing Li

11:00 AM **602** *A Physics-Informed Neural Network Approach to Hierarchical Bond Integrity Model in MOFs;* **Gabriel dos Santos**, Roberto dos Reis, Vinayak Dravid

11:15 AM **603** *New Scan Strategies for Spectrum Image Acquisition of Dose-Constrained Materials;* **Andrew Thron**, Liam Spillane, Paul Thomas, Bernhard Schaffer, Ray Twesten

11:30 AM **604** *From Raster to Programmable: Rethinking Dose Delivery in Cryogenic STEM;* **Shelly Michele Conroy** (INVITED)

C04.1 Living on the Edge: Real-Time Processing and Decision Making at the Microscope

10:30 AM **605** *Multistep Decision Making and Experiment Planning in Automated Microscopy;* **Sergei Kalinin** (INVITED), Boris Slautin, Yu Liu

11:00 AM **606** *Bayesian Co-Navigation for Real-Time Coupling of Physical Theory and Autonomous Experiment;* **Boris Slautin**, Reece Emery, Philip Rack, Sergei Kalinin, Yu Liu, Kamyar Barakati

11:15 AM **607** *Streamlining Inference, Decision-Making and Execution for Closed-Loop Electron Beam Processing in the Transmission Electron Microscope;* **Jonathan Hollenbach**, Darian Smalley, Stewart Koppell, Mitra Taheri

11:30 AM **608** *Building Defects on Purpose: Automated STEM for Atomic Precision;* **Matthew Boebinger** (INVITED), Zijie Wu, Kevin Roccapriore, Ayana Ghosh, Raymond Unocic, Kai Xiao, Stephen Jesse, Rama Vasudevan

C06.6 Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management

10:30 AM **609** *SerialEM: A Useful Tool for Automated Electron Microscopy;* **Cindi Schwartz** (INVITED), David Mastronarde

11:00 AM **610** *Rapid Mechanical Property Discovery Across High-Dimensional Composition Spaces via Multimodal Probing of Random Combinatorial Libraries;* **Vivek Chawla**, Dayakar Penumadu, Sergei Kalinin

11:15 AM **611** *High-Throughput Automation of STEM Defect Analysis in WSe2;* **Caitlyn Obrero**, William Millsaps, Anh Tuan Hoang, Dasol Yoon, Stephanie Ribet, Eric Pop, Andrew Mannix, Colin Ophus

11:30 AM **612** *Leveraging Crystallographic Symmetry for Cross-Material Generalization in Deep Learning-Based Structure Classification;* **Jiadong Dan**, Cheng Zhang, N. Duane Loh

P Physical Sciences Symposia – Wednesday Late Morning

P02.2 Probing Phase Transitions from Atomic-Scale Imaging to In Situ Controlent

11:45 AM **613** *Synthetic Micrograph Generation: A Discrete Approach to Enforce Morphological Consistency using Masked Generative Image Transformer;* **Kevin Zhang**, Robert McLeod, Jane Howe, Jason Hattrick-Simpers

10:30 AM **614** *High-Fidelity Atomic Imaging of Quantum Materials at Liquid Nitrogen Temperature by Multislice Electron Ptychography;* **Zhen Chen** (INVITED), Huaicheng Yuan, Xing Huang, Huan Lei, Xingke Fu

11:00 AM **615** *Dynamic Antiferroelectric Transformations Revealed by In Situ Microscopy;* **Menglin Zhu**, Michael Xu, Colin Gilgenbach, James LeBeau, Yun Yu, Liyan Wu, Jonathan Spanier

11:15 AM **616** *Atomic-Scale Investigations of Phase Transition and Synergy in Ferroelectric Thin Films;* **Shiqing Deng** (INVITED), Kefan Wang, Lijun Wu, Yimei Zhu, Jun Chen

11:45 AM **617** *Probing Polar Transitions in Ferroelectric HZO by Oxygen-Resolved STEM;* **Daniel Durham**, Kaijun Yin, Ekanth Sarkar, Emmanuel Quezada, Suman Datta, Supratik Guha, Charudatta Phatak, Jaewon Shin, Hyeonwoo Park

P03.6 Advanced TEM Analysis for Semiconductors

Wednesday 10:30 AM

10:30 AM **618** *Multimodal STEM Analysis of Semiconductor Devices at Low kV: Dose-Efficient Wide-Range EELS and 4D STEM at Extended Camera Length;* **Liam Spillane** (INVITED), Andrew Thron, Fernando Castro, Ray Twesten

11:00 AM **619** *Breakdown Physics of GaN HD-GITs Revealed by Constant-Current Stress and STEM Correlation;* **Lifang Hu**, Abhas Mehta, Sam Shichijo, Moon J. Kim

11:15 AM **620** *Cross-Platform Preparation of Advanced-Node finFET Samples for STEM EBIC;* **William Hubbard**, Cecile Bonifacio, Heiko Stegmann, Gregory Johnson, Hyunhwa Kim, Yagiz Ince, C.K. Ken Yang, B.C. Regan

11:30 AM **621** *In-Situ Observation of Domain Nucleation and Growth in Wurtzite Ferroelectrics;* **Sebastian Calderon** (INVITED), Elizabeth Dickey, Chloe Skidmore, Jon-Paul Maria

P05.6 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis

10:30 AM **622** *Machine Learning Workflows for Large-Scale Nanoparticle Analysis;* **Katherine Sytwu** (INVITED), Luis Rangel DaCosta, Min Gee Cho, Catherine Groschner, Mary Scott

11:00 AM **623** *Defects, Strain, and Stacking Faults in Mo2C Nanoplates Uncovered by Advanced Electron Microscopy;* **David Sanchez**, Chinmay Mundayadan Chandroth, Abigail Rothstein, Nasim Alem, Mauricio Terrones

11:15 AM **624** *Three-Dimensional Geometric Modeling of V_2C Nanoparticles: A Single-Crystal Analysis Integrated with STEM and EDS;* **Paulina Lopez Eligio**, Francisco Robles Hernandez, Orlando Hernández Cristóbal, Pedro Garnica González, Octavio Vázquez Gómez, Hugo Barragán Vargas

11:30 AM **625** *Bridging Atomistic Active Sites and Bulk Performance in Ammonia Synthesis Photocatalysts;* **Lin Yuan**, Peter Ercius, Jungwon Park, jianwei Miao, Jennifer Dionne, Chengyu Song, Colum O'Leary, Yuxuan Liao, Haozhi Sha

11:45 AM **626** *Atomic STEM of Cracks in Cycled Polycrystalline NMC Cathode Particles;* **Maalini Krishna**, Yiyang Li, Robert Hovden, Nishkarsh Agarwal, Juhwan Lim

P07.2 High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments

10:30 AM **627** *TEM Approaches for Microstructure-Informed Prediction of Mechanical Properties in Structural Alloys;* **Yan-Ru Lin** (INVITED), Steven Zinkle, Michael Zachman, Thak Sang Byun, Matt deJong, Emily Proehl

11:00 AM **628** *Atomic-level, Depth-Resolved 3D Imaging of Voids with Electron Ptychography;* **Himani Mishra**, Zixiao Shi, Joseph Veglak, Raymond Schaak, David Muller

11:15 AM **629** *STEM-Moiré Imaging for Texture Analysis of Polycrystalline Samples;* **Caleb Whittier**, Alexandre Pofelski, Bhaveshkumar Kamaliya, Henry Hammer, Ravitej Uppu, Nabil Bassim

11:30 AM **630** *Statistical Analysis of Grain Configuration on Plastic Localizations of Stainless Steel 316L Using Large Area, High-Resolution Digital Image Correlation;* **Will Gilliland**, Fernando Leon Cazares, Coleman Alleman, Chris San Marchi, Joseph Ronevich, Andrew Polonsky, Paul Chao, Chad Hovey, Jessica Duree, Kelly Stephens

11:45 AM **631** *Large-volume 3D EBSD Analysis of Liquid Metal Embrittlement Cracks: Characterization of Crack Propagation Paths and Growth;* **Bita Pourbahari**, Nabil Bassim, Hatem Zurob, Joseph McDermid, Fateme Abdiyan, Mehdi Mosayebi

Scientific Program

P Physical Sciences Symposia – Wednesday Late Morning cont.

P08.6 Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods

10:30 AM **632** *Nano-Optics of Quantum Confined Systems with Electron Spectroscopies;* **Luiz Tizei** (INVITED)

11:00 AM **633** *Low-loss EELS Analysis of Heterogenous Perovskite Interfaces;* **Kory Burns**, Hayden Barry, Erik Rebhorn, Jordan Hachtel

11:15 AM **634** *Unsupervised Disentanglement of EELS Spectra for Probing the Electronic Structure of Ferroic Topologies;* **Issa Saddiq**, Geri Topore, Shelly Michele Conroy, Noah Schnitzer

11:30 AM **635** *Multimodal Electron Microscopy for Plasmonic Materials Discovery;* **Katherine Sytwu** (INVITED), Aeron Tynes Hammack, Christina Boukouvala, Harika Dechiraju, Scott Dhuey, Selven Virasawmy, Shaul Aloni

P11.2 Unveiling Quantum Order: Cryo-EELS, 4D STEM, and Ptychography at the Nanoscale

10:30 AM **636** *Atomic Insights into Hidden Structural Order in Altermagnets and Chirality-Driven Topology;* **Guodong Ren** (INVITED), Filip Křížek, Jan Michalička, Rohan Mishra, Juan Carlos Idrobo, Jonathan DeStefano, Xiaowei Zhang, Arashdeep Thind, José Ángel Castellanos-Reyes, Paul Zeiger

11:00 AM **637** *New Opportunities with the Advent of Monochromated Magnetic-field-free Atomic-resolution Scanning Transmission Electron Microscopy;* **Jaeyeon Jo**, Yohei Tomizawa, James Schultz, keith Koontz, Tatsuhiro Maekawa, Robert Klie

11:15 AM **638** *Quantitative EMCD analysis at Atomic Resolution;* **Klaus Leifer**, Vassilios Kapaklis, Björgvin Hjörvarsson, Anna L Ravensburg2, Sharath Kumar Manjeshwar Sathyanath

11:30 AM **639** *EELS on the Edge: Pushing the Limits of Advanced Electron Spectroscopy for Quantum Materials;* **Berit Goodge** (INVITED)

T Technologists' Forum – Wednesday Late Morning

X31 Professional Development Opportunities for Microscopy Lab Technologists

Wednesday 10:30 AM

10:30 AM **640** *Professional Development Opportunities for Microscopy Lab Technologists;* **D.P. Baluch** (INVITED), R.C. Hsia, M.B. Ard, E. Rosa-Molinar, S. Pawlak

Scientific Program

A Analytical/Instrumentation Sciences Symposia – Wednesday Afternoon

A02.6 Advances in 4DSTEM Experimentation, Analysis and Interpretation

Wednesday 1:30 PM

1:30 PM **641** *Microscopic Defect and Disorder Analysis for Molecular Materials;* **Sean Collins** (INVITED)

2:00 PM **642** *Direct Observation of Facilitated Dynamics in a Supercooled Liquid via Time-Resolved Four-Dimensional Scanning Transmission Electron Microscopy;* **Po-Cheng Kung**, Ajay Annamareddy, Angan Mukherjee, Victor Zavala, Dane Morgan, Paul Voyles

2:15 PM **643** *Probing Medium-Range Order in Amorphous Energy Storage Materials through Fluctuation Electron Microscopy;* **Hyeongjun Koh**, Judith Yang, Sooyeon Hwang, Xidong Chen, J. Murray Gibson

2:30 PM **644** *Toward Robust Spatially Resolved Pair Distribution Functions from 4DSTEM via Deep Learning;* **Karen Ehrhardt**, Arthur R. C. McCray, Caitlyn Obrero, Colin Ophus

2:45 PM **645** *5D STEM for 6D Crystallography in Disordered Materials;* **Corrie Barnes**, Stephanie Ribet, Arthur R. C. McCray, Cedric Lim, Corneel Casert, Colin Ophus

A03.7 Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications

1:30 PM **646** *Atom probe Tomography of Hydrogen Distribution in High-Entropy Alloys;* **Eason Yi-Sheng Chen**, Chao Huang, Rongjian Shi, Ranming Niu, Pang-Yu Liu, Julie Cairney

1:45 PM **647** *Nanoscale Analysis of Hydrogen and Deformation at Steel Carbides;* **Ranming Niu** (INVITED), Eason Yi-Sheng Chen, Julie Cairney, Chao Huang, Pang-Yu Liu, Chun Chen, Bosheng Dong

2:15 PM **648** *Atom Probe Study of Carbon Segregation and its Effect on Hydrogen Trapping at Dislocations in Martensitic Steels;* **Chun Chen**, Pang-Yu Liu, Ranming Niu, Yeon-Seung Jung, Bosheng Dong, Julie Cairney, Eason Yi-Sheng Chen

2:30 PM **649** *Field- and Crystallography-Dependent Behaviour of Hydrogen and Hydride Molecular Ions in Atom Probe Tomography of Different Materials Systems;* **Lorenzo Rigutti**, Aïssatou Diagne, Luis Gonzalez Garcia, Samba Ndiaye, Jonathan Houard, Ivan Blum, Pierre-Matthieu Anglade

2:45 PM **650** *Improving Atom Probe Tomography Specimen Reliability for Hydrogen Analysis via Modified Pt Deposition Chemistry;* **Brandon Lum**, Chad Rue, Arun Devaraj, Eason Yi-Sheng Chen

A05.4 Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences

1:30 PM **651** *Cryo-Plasma FIB Can Do it all and More;* **Lolita Rotkina**, Tessa Burch-Smith, Kirk Czymmek, Ru Zhang, Allyson Angermeier, Dyvia Kanna

1:45 PM **652** *From Cell to Cross-section: Advancements in Cryogenic FIB Methods for Battery Systems;* **Madison King** (INVITED), Katherine Jungjohann, Nikita Dutta, John Watt

2:15 PM **653** *CANCELLED: Processing Effects on the Thickener Structure of Polyurea Greases;* **Matthew Thorseth**, Joseph Harris, Cindy Liu, Lauren Huffman, Clare Leahy, Kevin Capaldo

2:30 PM **654** *Thermal Risk Management in FIB Processing of Sensitive Materials;* **Chengge Jiao**

2:45 PM **655** *Factors Determining Spatial Resolution in Volume EM with a Ga+ FIB Beam;* **Richard Leapman**, Maria Aronova, Guofeng Zhang, Xiaobing Chen, Samuel Fulton, cameron baenen, Joshua Kim, Jed Yang

A06.6 Correlative, Multimodal Microscopy, Spectroscopy, and Imaging

1:30 PM **656** *Development of a Novel Sample Preparation Method for Obtaining Robust Population Statistics of Individual Particles;* **John Cliff**, Jeremy Bougoure, Sarah Leichty, William Chrisler, Mark Wirth, Jayde Aufrecht, Daisy Herrera

1:45 PM **657** *Physico-chemical Characterization of Graphene-Related 2D Materials by Correlative Imaging – Possibilities and Limitations;* **Vasile-Dan Hodoroaba**, Deniz Hülagü, Matthias Weise, Kerstin Jurkschat, Elena Corrao, Alexander Doolin, Paul Mrkwitschka, Loay Madbouly, Robert Schusterbauer, Mario Sahre

2:00 PM **658** *Development of QuEEN-M for Correlative Structural and Optical Characterization of Quantum Emitters;* **Jianguo Wen** (INVITED), Maria Chan, Jian-Min Zuo, Suman Kumari, Kaijun Yin, Muchuan Hua, Thomas Gage, Benjamin Diroll, Hanyu Hou

2:30 PM **659** *From Photons to Electrons: Building Materials Science for the 21st Century;* **Sergei Kalinin** (INVITED), Boris Slautin, Kamyar Barakati, Utkarsh Pratiush, Vivek Chawla, Gerd Duscher, Brandi Cossairt

A07.3 Electronic and Thermal Characterization of Devices with Electron Microscopy

1:30 PM **660** *A FIB-Based Circuit Edit Approach to TEM Sample Preparation of GaN Devices for STEM EBIC and Electrical Characterizations;* **Lifang Hu** (INVITED), Sam Shichijo, William Hubbard, B.C. Regan, Moon J. Kim

2:00 PM **661** *Inspection-Ready Laser-Milled Access Holes for SEM and Confocal Microscopy in Microelectronics Failure Analysis;* **Pouya Tavousi**, Hongbin Choi, Wesley Roser, Peyman Ahmadi, Sina Shahbazmohamadi, Nicholas May, Marcus Emanuel, Matthew Maniscalco, Parisa Mahyari, Mohammad Taghi Mohammadi Anaei

2:15 PM **662** *Advances in Quantitative STEM EBIC;* **Grigore Moldovan**, René Hammer

2:30 PM **663** *Investigating EBIC Signal as Function of Beam Voltage, Current and Thickness;* **A. Wahab Shakib**, Daniel Vasquez, Alexander Fakiner, Leopoldo Molina-Luna, Robert Winkler

2:45 PM **664** *Multi-Modal Ion Beam Preparation of STEM EBIC Specimens: Delayering, FIB Milling, Concentrated Ar Ion Beam Polishing, and Dopant Contrast;* **Cecile Bonifacio**, William Hubbard, Pawel Nowakowski, Richard Wei-chi Li, Mary Louise Ray, Paul Fischione

A08.4 Microscopy and Microanalysis for Real World Problem Solving

1:30 PM **665** *Imaging and Analysis of Volcanic Glasses to Better Understand Critical Element Deportment in Volcano-Sedimentary Deposits;* **Alejandro Cortes-Calderon** (INVITED), Cindy Broderick, Yannick Buret, Ethan Tonks

2:00 PM **666** *Concentrated Argon Ion Milling of Bulk Semiconductor Devices: A Site-Specific Preparation Strategy for AFM Analysis;* **Cecile Bonifacio**, Jason Killgore, Jason Holm, Rosalinda Ring, Richard Wei-chi Li, Mary Louise Ray, Paul Fischione

2:15 PM **667** *Surface Imaging from Microns to Millimeters, for Critical Understanding of Chemical State and Elemental Distribution Across the Top Interface Between a Material and the Environment In Practical Application;* **Chris Moffitt**, Jonathan Counsell, Liam Soomary

2:30 PM **668** *Non-destructive Three-dimensional Elemental Mapping in Intact Plant Tissues Using Confocal X-ray Microscopy;* **Zou Finfrock**, James O'Sullivan, Shelia Macfie

2:45 PM **669** *Measurement of Surface Roughness with SEM;* **Grigore Moldovan**, Matthias Hemmleb

A10.6 Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools

1:30 PM **670** *The Evolution from Hexapole Doublets to Hexapole Triplets;* **Heiko Müller** (INVITED), Peter Hartel, Martin Linck, Stephan Uhleman

2:00 PM **671** *Exploring Electron Energy Loss Spectroscopy in a Scanning Electron Microscope;* **John Simonaitis**, Joseph Alongi, Karl Berggren, Phillip Keathley

2:15 PM **672** *Recent Developments in Aberration Measurement Across Electron Optical Systems;* **Yueming Guo** (INVITED)

2:45 PM **673** *Feedback Controlled PWM of the Electron Beam for Damage Reduction;* **Christopher Nelson**, Ondrej Dyck, Andrew Lupini, Kai Xiao, Stephen Jesse

Scientific Program

B Biological Sciences Symposia – Wednesday Afternoon

B02.2 Development, Challenges, and Biomedical Applications of Tissue Clearing, Expansion Microscopy, and Volumetric Imaging

Wednesday 1:30 PM

1:30 PM **674** *DREAMS: A Modular Agent-Based Protocol for Smart Microscope Control and Automation;* **Kevin Eliceiri** (INVITED), Jenu Chacko, Mike Nelson, Mark Tsuchida

2:00 PM **675** *Development of a Magnify-Based Diagnostic Pipeline as an Alternative to Electron Microscopy in Renal Pathology;* **Ha V. Vo** (INVITED), Xinrui Liu, Angela Sanguino, Aleksandra Klimas, Marilyn Gao, Yongxin Zhao, Madeline Myers

2:30 PM **676** *Multiscale Tissue Imaging Using Automated Expansion Microscopy and High-Throughput Volumetric Imaging;* **Yang Liu** (INVITED), Hongqiang Ma, Shengwei Chen, Chaojie Zhang

B03.3 Microscopy in Action: Advancing Disease Research and Diagnosis in Humans, Animals, and Plants

1:30 PM **677** *Exploring the Ultrastructural Organization of Collagenous Tissues Using Emerging Imaging Modalities;* **Vivian Merk** (INVITED), Edward De La Uz, Claudia Rodrigues, Marianne Porter, Michelle Passerotti, Silja Flenner, Imke Greving

2:00 PM **678** *Immunogold Labeling Made Practical: An automated Workflow;* **R.C. Hsia**, Thomas Strader, Christina Carpenter, Adam Harned

B03.3 Microscopy in Action: Advancing Disease Research and Diagnosis in Humans, Animals, and Plants

2:15 PM **679** *Characterizing Human Bone Quality In Situ Using Colocalized Raman and SEM Imaging;* **Ezekiel Haugen**, Guillaume Mabilleau, Dale Boorman, Jorge Diniz, Tim Prusnick

2:30 PM **680** *In situ Analysis of an α-Synuclein Seeded Cell Model;* **Joshua Pierson**, Elizabeth Wright, Pual Kotzbauer, Jiya Fowler, James Petersson, Juan Sanchez, Dhruva Dhavale

2:45 PM **681** *Altitude-Based Cellular Variation within the Olfactory Neuroepithelium of Fish;* **Gour Maity**, Subrata Kumar De

B04.3 Technical Advances and Transformative Applications of CryoEM

1:30 PM **682** *Preventing Charge Accumulation During Cryo-EM Imaging of Lamellae With A Laser Phase Plate;* **Joshua Dickerson** (INVITED), Laina Hall, Bronwyn Lucas

2:00 PM **683** *Improving Low-Dose Three-Dimensional Imaging with Tilt-Corrected 4D-STEM;* **Steven Zeltmann**, Desheng Ma, David Muller

2:15 PM **684** *Benchmarking Pulsed vs Continuous Electron Illumination for Imaging Dose-Sensitive Biological Specimens;* **Vishal Kumar**, Inayathulla Mohammed, Ricardo Guerrero-Ferreira, Daniel Harder, Dimitrios Fotiadis, Henning Stahlberg, Julika Radecke, Chinmaya KV

2:30 PM **685** *Cryo-EM with a Laser Phase Plate;* **Jessie Zhang** (INVITED)

C Cross-Cut/Interdisciplinary Sciences Symposia – Wednesday Afternoon

C01.3 Transmission Electron Microscopy for Beam-Sensitive Materials

Wednesday 1:30 PM

1:30 PM **686** *Studying Energy and Quantum Materials using Liquid Helium Cooling S/TEM;* **Miaofang Chi** (INVITED), Zhengwu Fang, Haoyang Ni

2:00 PM **687** *Probing Termination Registry and Surface Functionalization in MXenes;* **Fatemeh Karimi**, Di Wang, Dmitri Talapin, Robert Klie

2:15 PM **688** *Damage of Beam-Sensitive Organics from Room Temperature to Liquid Helium;* **Jason Manassa**, Eric Orson, Nishkarsh Agarwal, Kaia Thompson, Ambarneil Saha, Peter Ercius, Robert Hovden

2:30 PM **689** *Every Electron Counts: Dose-Efficient Nanobeam 4D-STEM and Spectroscopy;* **Stephanie Ribet** (INVITED), Sanya Gowda, Kovidh Singh, Niko Vlahakis, Yael Tsarfati, Corneel Casert, Peter Dahlberg, Colin Ophus, Rohan Dhall, Karen Bustillo

C04.2 Living on the Edge: Real-Time Processing and Decision Making at the Microscope

1:30 PM **690** *Integrating a Supercomputing Facility into the Electron Microscopy Pipeline for On-The-Fly 4D-STEM Reconstructions;* **Stephanie Ribet** (INVITED), Sam Welborn, Bjoern Enders, Chris Harris, Georgios Varnavides, Peter Ercius

2:00 PM **691** *Integrating Microscopy, Large Language Models, and High Performance Computing;* **Peter Ercius** (INVITED), Bjoern Enders, Chris Harris, Sam Welborn, Stephanie Ribet, Morgan Wall, Alexander Pattison

2:30 PM **692** *Accelerating Real-Time Autonomous Workflows in Plasma Focused Ion Beam Microscopy;* **Renae Gannon** (INVITED), Steven Spurgeon, Jayden Grunde, Antonino DiMaggio, Anderson Borch

Scientific Program

P Physical Sciences Symposia – Wednesday Afternoon

P02.3 Probing Phase Transitions from Atomic-Scale Imaging to In Situ Control

Wednesday 1:30 PM

1:30 PM **693** *Operando Study of Polar Domain Dynamics in Twisted 2D van der Waals Interfaces;* **Hyobin Yoo** (INVITED)

2:00 PM **694** *Programmable Atomic Order in a Crystal at the Mesoscale;* **Julian Klein**, Kevin Roccapriore, Frances Ross

2:15 PM **695** *Multimodal Ultrafast Scanning Electron Microscopy;* **Leon Kroß**, Claus Ropers, Murat Sivis, Benjamin Schröder, Niklas Wemheuer

2:30 PM **696** *Intercalation of Multilayered Lithium Sheets in a van der Waals Material Discovered by in Situ Multimodal STEM;* **Stephen Funni** (INVITED), Natalie Williams, Sihun Lee, Judy Cha

P05.7 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis

1:30 PM **697** *Deep Learning–Enabled Segmentation and Classification of Complex Electron Microscopy Datasets;* **David Arregui-Mena** (INVITED), Yan-Ru Lin, Obaidullah Rahamn, Amirkoushyar Ziabari, David Cullen, Nidia Gallego, Takaaki Koyanagi

2:00 PM **698** *Metrological Quantification of the HR-EBSD "Pseudo-Strain" Noise Floor;* **Pawel Nowakowski**, Paul Fischione

2:15 PM **699** *High-Throughput Laser Cross-Sectioning for Inspection-Grade Correlative Microscopy of Advanced Microelectronics Packages;* **Sina Shahbazmohamadi**, Pouya Tavousi, Nicholas May, José Rodrigo Delgadillo Blando, Matthew Maniscalco, Parisa Mahyari, Mohammad Taghi Mohammadi Anaei, Hongbin Choi, Adrian Phoulady, Peyman Ahmadi

2:30 PM **700** *Improving the Accessibility and Performance of Deformation, Defect, and Strain Analysis with Electron Backscatter Diffraction (EBSD);* **Matt Nowell**, William Lenthe, Stuart Wright, Rene de Kloe

P05.7 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis

2:45 PM **701** *Twist-Angle-Controlled Defects and Nanostructures at Twisted Metal-2D Semiconductor Interfaces Revealed by Cross-Sectional STEM Imaging;* **Yi Cui**, Robert Sinclair

P07.3 High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments

1:30 PM **702** *In Situ and Ex Situ Characterization of Non-Oxide Nuclear Fuels and their Surrogates Under Irradiation;* **Lingfeng He** (INVITED), Adrian Wagner, Jennifer Watkins, Wei-Ying Chen, Laura Hawkins, Yuhan Li, Jian Gan, Rashed Almasri

2:00 PM **703** *Focused Ion Beam Mesomanufacturing of Mono crystalline Actinide Samples for Electronic and Thermophysical Analysis;* **Nathan Dice**, Krzysztof Gofryk

2:15 PM **704** *Evolution of Helium Bubbles in Palladium Tritide Foils*; **David Robinson**, Dustin Ellis, Russell Jarek, Dale Zschiesche, Joshua Sugar, Stephen House, Norman Bartelt, Ian Winter, An Ta, Daniel Moore

2:30 PM **705** *Fuel Cladding Chemical Interaction and High Temperature Phase Transformation in U-10Zr Metallic Fuel;* **Ericmoore Jossou** (INVITED), Sarah Cole, Tiankai Yao, Anthony Harrup

P08.7 Probing Emergent Phenomena in Functional and Quantum Materials with Advanced Electron Microscopy Methods

1:30 PM **706** *Interface Engineering in a 2D van der Waals Antiferromagnet via UHV Metal Deposition and In Situ Electron Microscopy;* **Eugene Park** (INVITED), Zdenek Sofer, Julian Klein, Frances Ross, Pip Knight, Hanglong Wu, Kate Reidy, Paul Miller

2:00 PM **707** *Interfacial Inversion Domains Induced in a 2D Material by Hetero-Epitaxy;* **Stephen Funni**, Marshall Frye, Jonathan Chin, Saif Saddique, Lauren Garten, Judy Cha

2:15 PM **708** *Layer Resolved Polar Textures in Twisted van der Waals Ferroelectrics by 4D-STEM;* **Kaiwen Yang**, Carter Fox, Zixin Zhai, Bing Iv, Jun Xiao, Yimo Han

2:30 PM **709** *Characterizing Polar Structure in Twisted Tungsten Diselenide;* **Ashley Cavanagh**, Yingjie Luo, Guoxing Wang, Xi Wang, Francisco Lagunas

2:45 PM **710** *Lattice and Electronic Reconstruction at Atomically Sharp Interfaces of Mismatched Perovskite Oxides;* **Yuhan Wang**, Varun Harbola, Yu-Jung Wu, Jochen Mannhart, Peter van Aken, Hongguang Wang

P09.1 Spatiotemporal Optical Response Using Electron Spectroscopies for Nano-Optics

1:30 PM **711** *Precisely Positioned Generation of Perovskite Nano-Light Sources by Electron Beam Irradiation;* **Hikaru Saito** (INVITED), Kanta Hirai, Masato Inamata, Yoshihiro Miki, Midori Ikeuchi, Hidehiro Yamashita

2:00 PM **712** *Characterizing Optically-Induced Sample Instabilities for in situ STEM;* Katherine Sytwu, **Andrew Minor**, Christina Boukouvala, Rohan Dhall, Sophia Arvin, Costas Grigoropoulos

2:15 PM **713** *Correlating Dislocation Structure with Local Optical Response in β-Ga_2O_3 Using Hyperspectral STEM Cathodoluminescence;* **W.-C. David Yang**, Andrew Winchester, Sujitra Pookpanratana

2:30 PM **714** *Imaging and Dynamics of Anisotropic Plasmons in MoOCl2;* **Sarah King** (INVITED), Calvin Raab, Atreyie Ghosh, Aishani Mohan

P11.3 Unveiling Quantum Order: Cryo-EELS, 4D STEM, and Ptychography at the Nanoscale

1:30 PM **715** *Hyperdimensional Atomic-resolution STEM Imaging;* **Ryo Ishikawa** (INVITED)

2:00 PM **716** *High-Precision Oxygen Octahedral Tilt Mapping in Oxide Heterostructures Enabled by Multislice Electron Ptychography;* **Xinyan Li**, Maya Ramesh, Darrell Schlom, Ramamoorthy Ramesh, Yimo Han

2:15 PM **717** *Understanding the layer-by-layer Atomic Structure of La3Ni2O7 Single Crystals;* **Arashdeep Thind**, John Mitchell, Robert Klie

2:30 PM **718** *Navigating the Exciton Landscape in Two-Dimensional Semiconductors in Real and Momentum Space;* **Steffi Woo** (INVITED)

Scientific Program

T Technologists' Forum – Wednesday Afternoon

X32 A Technologists' Guide to Communication and Funding Skills

Wednesday 1:30 PM

1:30 PM **719** *Tech Forum Roundtable- A Technologists' Guide to Communication and Funding Skills;* **Jennifer Carpena-Nunez** (INVITED), Amelia Dempere, Nathan Lord

A Analytical/Instrumentation Sciences Posters – Wednesday

3:00 PM – 5:00 PM **Exhibit Hall**

A07.P1 Electronic and Thermal Characterization of Devices with Electron Microscopy

POSTER #174

720 *Thermal Imaging of Self-Heated Cross-Sections via Mapping of Secondary Electron Emission Currents;* **William Hubbard**, B.C. Regan

POSTER #175

721 *Correlative Nanoscale Spectroscopy and Diffraction of Metastable Phases in Hf0.5Zr0.5O2;* **Nooreen Qureshi**, Thomas Beechem, Kory Burns, Jordan Hachtel, Luke Johnson, Jon Ihlefeld

POSTER #176

722 *Beyond Room Temperature: Accurate Temperature Calibration for Cryogenic In Situ TEM Experiments on MEMS Heating Devices;* **Mia Andersen**, Hugo Pérez-Garza, Yevheniy Pivak, Rafal E. Dunin-Borkowski, Gijs Gugten, Vasilis Papadimitriou, Tianshu Jiang, Leopoldo Molina-Luna, Ricardo Egoavil, Andras Kovacs

A08.P1 Microscopy and Microanalysis for Real World Problem Solving

POSTER #177

723 *Small Features, Big Impact: Accurate Nanoscale Chemical Characterization with EDS for Real-World Biological and Semiconductor Problem Solving;* **Lucia Spasevski**, Simon Burgess, Philippe Pinard, John Zhang, Louise Hughes, Viola Oorschot, Marlene Le Tertre

POSTER #178

724 *Thermogravimetric and SEM–EDS Analysis of Walnut Shell Biochar for Soil Amendment Applications;* **Héctor López-Aguilar**, Daniel Lardizabal-Gutiérrez, Caleb Carreño-Gallardo, Claudia López-Meléndez, Linda Noperi-Mosqueda

POSTER #179

725 *Corrosion Behavior of New High Temperature Ceramic doped with Graphene Nanoplatelets in an Aggressive Marine Environment;* **Alberto Daniel Rico-Cano**, Burak Cagri Ocak, Gultekin Goller, Julia Claudia Mirza-Rosca

POSTER #180

726 *Formation of an Interconnected WC Reinforcement Network in Aluminum Matrix Composites Enabled by Hot Extrusion;* **G. Rodriguez-Cabriales**, M. Sánchez-Carrillo, J. M. Mendoza-Duarte, I. Estrada-Guel, Carlos G. Garay-Reyes, Roberto Martínez-Sánchez, J.C. Guía Tello, JP. Flores-De los Ríos, M. Ramírez-Rojas, J.F. López de Lara-Herrera

POSTER #181

727 *Characterizing Fungal Development in Biocycled Waste Streams;* **Janet Gbur**, Christopher Maurer

POSTER #182

728 *Temperature Dependent Oxidation Kinetics and Phase Transformation in High-Entropy Alloy Nanocrystals;* **Jui-Tai Lin**

POSTER #183

729 *Atomic Force Microscopy of Buried Oxide Layers in Silicon-On-Insulator Cross-Sections;* **Zach Moughamian**, Phil Fraundorf

POSTER #184

730 *Optimized Broad Ion Beam Workflow for Cross-Sectioning Multilayer Polymer Structures;* **Seyed Aref Golsorkhi**, Vighter Iberi, Marc Mamak

POSTER #185

731 *Reinforcement of Polymer Films Using Cellulose Extracted from Mexican Corn Cobs;* **Zaira Elizabeth Delgado-Huerta**, Josue David Hernández- Varela, Lizbeth González -Victoriano, Jairo Ramón Peña-Gutiérrez, Adrián Domingo Álvarez-Garrido, Nayely Valeriano-García, José Jorge Chanona-Pérez, Benjamín Arredondo-Tamayo

POSTER #186

732 *Distribution of Y during the degradation of zirconia, 3Y-TZP, sintering at 1500 °C;* **Rafael Motilla**, Hilda Esperanza Esparza Ponce, María Aragon Duarte, Armando Reyes-Rojas, Miguel Bocanegra

POSTER #187

733 *How to Improve Soil Anti-Adhesion by Studying the Micro Relief of the Cuticle Surface of Digging Beetles: Comparative Study of the Pronotum Topography of Sulcophanaeus batesi, Sulcophanaeus imperator and Sulcophanaeus menelas;* **Lorena Setten**, Eduardo Favret, Noelia Guillén

POSTER #188

734 *Microstructural Evaluation of Wear Mechanisms in AISI 316L Stainless Steel for Orthopedic Applications;* **Elvis Coutiño Moreno**, Tomás de la Mora Ramírez, Marco Antonio Doñu-Ruiz, Noé López-Perrusquia, Christopher René Torres San Miguel, Orlando Soriano Vargas, Daniel Maldonado Onofre, Quirino Estrada Barbosa

POSTER #189

735 *Evaluation of Mechanical Properties and Characterization by SEM of PETG with 40%, 80%, and 100% Material Infill;* **Gerardo Perez Mendoza**, Alejandro Miranda Cid, humiko Yahaira Hernández Acostá, Noé López-Perrusquia, Lizbeth Melo-Máximo, Marco Antonio Doñu-Ruiz

POSTER #190

736 *Surface Modification of ARMCO Pure Iron by Powder-Pack Boron-Nitriding Process;* **Sugey Guadalupe Mata**, Rosalía Trujillo, Samuel Lara, Oscar Armando Gómez, Isaías Simón, Martín Ortiz

POSTER #191

737 *Development of a Porous Material Specifically Designed to Enhance Ion Exchange in Soil;* **D. K. Tiwari**, Ana Coria-Tellez, Héctor Javier Anselmo Villegas Moreno, Danna Torres-Flores, Teresa Herrera-Flores, Salomón Borjas-García

POSTER #192

738 *Sulfur Embedding for Ultramicrotomy;* Anna Sophia Kulenguski, **Rhonda Stroud**

POSTER #193

739 *From Low-Dose to High-Kv: A Large Area Windowless SEM–EDS Approach For Real-World Materials Analysis;* **David Stowe**, Julia Mausz, Sophie Yan, Jens Rafaelsen

Scientific Program

A Analytical/Instrumentation Sciences Posters – Wednesday cont.

POSTER #194

740 *UV-Blocking and Degradation Performance of PLA Composites Reinforced with Functionalized TiO_2 Nanoparticles;* **Monica Mendoza-Duarte**, Jacqueline Bocarando Chacón, J. M. Mendoza-Duarte, Karla Campos Venegas, Alejandro Vega Rios, Iván A. Estrada Moreno

POSTER #195

741 *Role of Processing and Microstructure in the Premature Failure of FDM Printed PLA/BaTiO3 Scaffolds;* **Mariana Luján-Aguilar**, Nestor Uribe-Chavira, Karla Campos Venegas, Maria Camacho-Rios, Daniel Lardizabal-Gutiérrez, Guillermo Herrera-Pérez, Luis Rodríguez-Pacheco, Jesús Uribe-Chavira, Iván A. Estrada Moreno, Caleb Carreño-Gallardo

POSTER #196

742 *Metallization Methods for High-Resolution Scanning Electron Microscopy Imaging of Porous Mudstone Thin Sections: Avoiding Porous Closer for Energy Dispersive Spectroscopy Microanalysis;* **Cauê De Souza Coltinho Nogueira**, Adriele Aparecida de Almeida, Yutao Xing, Mateus Andrade Rodrigues, Renan de Melo Correia Lima

POSTER #197

743 *Microstructural Characterization of Boride Layers Formed on AISI H13 Steel by the Powder-Pack Boriding Process;* **María de Jesús De La Cruz**, Isaías Simón, Arturo Cruz, Martín Ortiz

POSTER #198

744 *Electron Microscopy Analysis of Hydrogen-Induced Embrittlement in Rough and Additive Manufactured Nickel-Based Superalloy;* **Osvaldo Cintho**, Ana Rosa

POSTER #199

745 *Mechanical and Microstructural Characterization of Binder Jet 17-4 PH Stainless Steel As-Sintered and from Heat-Treated Conditions;* **Landry Samuels**, Heshmat Aglan, Phillip Farrington

POSTER #200

746 *Effect of Raw and Calcined Diatomite Addition on the Microstructure of Limestone-Based Alkali-Activated Materials;* **Salomón Borjas-García**, Gerardo Rodríguez Torres, Noemí Ortiz Lara, Juan Zárate Medina, José Lemus Ruiz, Isaí Bustos

POSTER #201

747 *Nanotubular and Lamellar g-C3N4 Morphologies for Photocatalytic Degradation of Tetracycline;* **Deyanira Hernandez-Salinas**, Francisco Paraguay-Delgado, Jose Garcia-Bejar, Marco Ruiz Esparza-Rodriguez, Juan Pantoja-Espinoza, Raul Ochoa-Gamboa

B Biological Sciences Posters – Wednesday

3:00 PM – 5:00 PM **Exhibit Hall**

B02.P1 Development, Challenges, and Biomedical Applications of Tissue Clearing, Expansion Microscopy, and Volumetric Imaging

POSTER # 202

748 *Synaptic Ultrastructural Alterations in Human Focal Cortical Dysplasia: Insights from Volume EM;* **Yang Hoon Huh**, Gyu Hyun Kim, Na- Young Seo, Ji Yeoun Lee, Kea Joo Lee

POSTER #203

749 *Trans-synaptic Nanocolumn Disruption and Misalignment of Central Synapses as a Structural Signature of Alzheimer's Disease;* **Michael Abiola**, Fan Fan, Xuelin Lou

POSTER #204

750 *Unlocking the Power of Unique High-Speed Scanning Electron Microscopy with No Compromise of Superb Imaging Resolution at Low kV for Large Scale Volume Microscopy Applications from CIQTEK;* **Xin Ren**

POSTER #205

751 *Microstructural Evaluation of a 3D-Printed Dental Composite Before and After Mechanical Testing Using SEM and EDS;* **Dennis Durán-méndez**, J.S. Paredes-Martínez, Guillermo Acosta-Barriga, Karime Carrera-Gutiérrez, Laura I. Duarte-Chávez

POSTER #206

752 *Adapting Magnify Expansion Microscopy for Diverse Photosynthetic Organisms;* **Anastasiya Klebanovych**, Keith Duncan, Ru Zhang, Tessa Burch-Smith, Kirk Czymmek, David Huss, Allyson Angermeier, Kevin Cox

POSTER #207

753 *Microstructural Engineering of Architecture-Controlled Stiffness in Open-Cell Porous Titanium Scaffolds;* **Caleb Carreño-Gallardo**, Katia Rivera Vicuña, Claudia López-Meléndez, Jose Herrera Ramirez

POSTER #208

754 *The Application of 3D Cryo-Volume Electron Microscopy to Visualize and Quantify Photosynthetic Anabaena and Chlamydomonas;* **Allyson Angermeier**, Kirk Czymmek, Tessa Burch-Smith, Lolita Rotkina, Divya Kanna, Ru Zhang

B03.P1 Microscopy in Action: Advancing Disease Research and Diagnosis in Humans, Animals, and Plants

POSTER #209

755 *Ultrastructural and Immunogold Electron Microscopy Characterization of Chloroquine-Induced Inclusion Body Myositis–Like Pathology in Skeletal Muscle;* **Hang Yeon Jeong**, Ye Sol Han, Eunyoung Moon, Seohyeong Lee, Ju Yeon Lee, Ju Hwan Song, Ga-Young Chol, Hee-Seok Kweon, Yang Hoon Huh

POSTER #210

756 *Ultrastructural Analysis of Cellular Responses to Oleic and Palmitic Acid Compositions in HepG2 Cells;* **Ye Sol Han**, Hang Yeon Jeong, Eunyoung Moon, Jiyeong Park, Yang Hoon Huh

POSTER #211

757 *Synthesis of AuNPs using Larrea tridentata Extract; Effect of Concentration;* **I. Estrada-Guel**, Pedro Piza-Ruiz, C. Gómez-Esparza, A. Villalobos-Aragón, A. Lui-Chavira, J. M. Mendoza-Duarte, A. Santos-Beltrán, H.M. Medrano-Prieto, E. Rocha-Rangel, Carlos G. Garay-Reyes

POSTER #212

758 *Structural and Cellular Visualization of Fungal Infection Processes in Crop Plants;* **Andrew Bowling**, Heather Pence, Lori Breitweiser

POSTER #213

759 *Dual-layer Absorptive Mounting Preparation for Cryo-SEM Imaging of Hydrated Biological Specimens;* **Joseph Mowery**, Christine Brantner, Tijana Dukic, Ronald Ochoa

POSTER #214

760 *Dimethyl Fumarate Reverses LPS-Induced Mitochondrial Fragmentation in C2C12 Myoblasts;* **Anastasia Arkhipova**, Yaqi Zhang, Sofya Makarova, Yiling Zong, Alina Saidova, Maxim Nosenko

POSTER #215

761 *Silk Fibroin Scaffolds Functionalized with Cistanche deserticola Aqueous Extract for Wound Healing Applications;* **Anastasia Arkhipova**, Huan He, Xinyu Zhang, Qixin Zheng, Alla Ramonova, Liubov Gorbacheva, Adil Bayzhumanov

POSTER #216

762 *Enriched Environment Mitigates Cerebellar and Sensorimotor Deficits After Perinatal Asphyxia in Rats: A Correlative Morphological and Behavioral Study;* **Francisco Capani**, Kelly Cristina de Brito Oliveira, Demilson Huerta Encina, Paloma Martinez Cartier1, Agustina Santos, Juan Pablo Luaces, Marcus D'Ambrósio Andrade, Tamara Kobiec

POSTER #217

763 *Study of the Neurohypophysis in Streptozotocin-Treated rates: Fractal Analysis and Heterochromatin Quantification Approach;* **Sabrina Souttou**, Zineb Bellahreche, Brahim Boutoula, Abdelsamed Tallal Mokrani, Wassila Benhacene, Imene Ouabel, Latifa Drobani-Mamine

POSTER #218

764 *Cell Line-Specific Variability in TGF-β1–Induced Epithelial-Mesenchymal Transition;* **Alina Saidova**, Tatiana Budianskaya, Yufei Zhang

POSTER #219

765 *3D Localisation of Nanoparticles in Whole Cells using Correlative Cryo Soft X-Ray Tomography and Fluorescent Microscopy;* **Kenneth Fahy**, Paul Sheridan, William Fyans, Fergal O'Reilly, Tony McEnroe, Sergey Kapishnikov

POSTER #220

766 *A Semi-Automated ImageJ Macro for the Quantitative Analysis of Collagen Fibril Diameter in Skin and Tendon;* **Sara Tufa**, Apoorva Bhandari, Douglas Keene

POSTER #221

767 *Evaluation of Metal Nanoparticles and Enzymatic Metal Deposition Reactions for Ultrastructural Localization of Antigens in Tissues by Immunoelectron Microscopy and BEX SEM Analysis;* **Mike Reichelt**, Meredith Sagolla, Dave Durham, Eric Zhang, Miriam Baca

Scientific Program

POSTER #222

768 *Antibacterial Activity of Chitosan Nanoparticles Against Resistant Bacteria from Agricultural Impacted Waters;* **Salomón Borjas-García**, Neftali Rangel-García, Gladys Juárez-Cisneros, D. K. Tiwari, Rene Cerritos-Flores

POSTER #223

769 *B99-Chitosan Surface Modification of TiNi Orthodontic Brackets for the Inhibition of S. mutans Biofilm Formation: An In Vitro SEM Study;* **Carlos Sifuentes-Solís**, E.N. Cavazos-López, Patricia Torres-Reyes, Karime Carrera-Gutiérrez

POSTER #224

770 *Modulation of Bacillus sp. Growth and Antioxidant Defense by Ferrite Nanoparticles under Glyphosate and AMPA Exposure;* **Salomón Borjas-García**, Gladys Juárez-Cisneros, René Cerritos Flores, Juan Manuel Sánchez Yáñez, Dhirendra Tiwari, Daniela Fernández Gómez

POSTER #225

771 *Characterising the Plataforms MWCNT's-Fulvic Acids;* **Salomón Borjas-García**, Dhirendra Tiwari, Abraham Nicolás Zanudio, Héctor Javier Anselmo Villegas Moreno

POSTER #226

772 *Histology of Southern Magnolia Woody Stem Using Cryostat Sectioning Technique;* **Yadong Qi**, Kit Chin, Vanessa Ferchaud

B04.P1 Technical Advances and Transformative Applications of CryoEM

POSTER #227

773 *DAQplugin: AI-based Interactive Residue-Wise Validation of Protein Models for Cryo-EM Maps;* **Genki Terashi**, Han Zhu, Daisuke Kihara

POSTER #228

774 *Changes in Single-Particle CryoEM Orientation Distributions upon Vitrification before Diffusion to the Air–Water Interface;* **Anastasiia Gusach**, Christopher Russo

POSTER #229

775 *Exploring Compressive Sensing in 4D-STEM Cryo-ET and FIB for Structural Biology;* **Ömer Dermancı**, Nigel Browning, Alex deMarco, Rohit Kannachel, Alex Robinson, Daniel Nicholls, Roman Sonkinas, Jack Wells

POSTER #230

776 *Super-resolved Integrated Cryo-Fluorescence Imaging for Accurate and Precise cryo-ET Targeting on Lamellae;* **Ellie Johnston**, Elise Perton, Katherine Lau, Arjen Jakobi, Marit Smeets, Max Kaag, Deniz Daviran

POSTER #231

777 *Systematic Evaluation of the Gatan Alpine Camera for Cryo-EM at Lower Voltages;* **Alex Flynn**, Jessalyn Miller, Joshua Mendez, Stephen Mick, Li Li, Anahita Pakzad, Alex deMarco

POSTER #232

778 *Deconvolution Improves Single Particle Cryo-EM Maps;* **Yifan Cheng**, Junrui Li, Wooyoung Choi, Yifei Chen, Shawn Zheng, Angus McDonald, John Sedat, David Agard

POSTER #233

779 *The EMSuite Server for Automatic High-Accuracy Cryo-EM Modeling and Analysis;* **Pranav Punuru**, Joon Hong Park, Genki Terashi, Han Zhu, Yuki Kagaya, Kai Ling, Daisuke Kihara

POSTER #234

780 *CryoSilico: A Versatile MEMS-Based CryoEM Sample Carrier Platform for Diverse Applications;* **Hugo Pérez-Garza**, Evgeniya Pechnikova, Vasilis Papadimitriou, David Westmoreland, Hongkui Zheng, Merijn Pen

POSTER #235

781 *Effects of Denoising on Cryo-EM Single Particle 3-d Reconstructions;* **Alex Williams**, Yaochun Shen, Nigel Browning, Alex Robinson, Konstantinos Tsakalidis

POSTER #236

782 *Lab Based Soft X-Ray Cryo-Tomography for Targeting and Volume Context in Correlative Light, Electron, and X-Ray Microscopy;* **Sergey Kapishnikov**, Maud Dumoux, Roland Fleck, Christoph Kaiser, Michele Darrow, Paul Sheridan, William Fyans, Fergal O'Reilly, Tony McEnroe, Kenneth Fahy

POSTER #237

783 *Developing and Benchmarking a Square Beam Pipeline for High-Resolution Montage cryoET;* **Eugene Chua**, Jake Johnston, Danielle Grotjahn, Alex deMarco, Lambertus Alink, Mykhailo Kopylov, Hamidreza Rahmani, Fabian Eisenstein

POSTER #238

784 *Biohub Cryo-Electron Microscopy Platform;* **Nikki Jean**, Garrett Greenan, Mykhailo Kopylov, Elizabeth Montabana

POSTER #239

785 *An Automated Live-Fluorescence–Guided Pipeline for High-Precision Cryo-FIB Lamella Preparation;* **Sophia Betzler**, David Agard, Garrett Greenan, Bridget Carragher, Julia Peukes, Davis Perez

POSTER #240

786 *HILL: A Web app for Fourier-Bessel Layer Line-Based Indexing of Helical Symmetry Parameters;* **Wen Jiang**, Xiaoqi Zhang, Anika Mathur

POSTER #241

787 *Progress on the Development of a Dual Laser Phase Plate at Biohub;* **Pavel Olshin**, Jonathan Remis, Petar Petrov, Jessie Zhang, Eric Cooper, Elizabeth Montabana, Jeremy Axelrod, Noeli Paz Soldán, Yue Yu, Anchi Cheng

POSTER #242

788 *Performance of Compression Algorithms for Higher Dimensional Transmission Electron Microscopy Dataset Images;* **James Done**, Matthew Mecklenburg, Shervin Nia, Adidlaos Zepeda, Lucas Lee, Peter Ercius, Jung Cho, Ambarneil Saha

POSTER #243

789 *An Integrated Platform for Cryo-EM Facility Data and Remote Instrument Control;* **Matt Larson**, Elizabeth Wright, Yan Zhuang, Jennifer Scheuren

B07.P1 AI-Driven Microanalysis: Transforming Industrial Innovation and Discovery

POSTER #244

790 *CryoEM in Pharma: Bridging Structural Biology and Therapeutics;* **Wei Liu**

C Cross-Cut/Interdisciplinary Sciences Posters – Wednesday

3:00 PM – 5:00 PM **Exhibit Hall**

C06.P1 Automation in Microscopy from Image Acquisition to Image Analysis, Data Visualization, and Management

POSTER #245

791 *Extracting Continuous Structural Conformations of Biomolecules from Cryo-EM Images by Machine Learning;* **Umeshika Dissanayaka**, Ahmad Hosseinizadeh, Peter Schwander, Eduardo Cruz-Chú

POSTER #246

792 *Validation of Machine Learning-Based Segmentation for Automated 3D Reconstruction in Electron Microscopy: Application in Life and Materials Science;* **Miki Tsuchiya**, Yutaka Nagaoka, Toshiyuki Hatano

POSTER #247

793 *Automated Grain Size Analysis in IF Steels Using Digital Image Processing;* **Umanel Azazael Hernandez González**, Dulce Maria Lopez Najar, Flabio Dario Mirelez Delgado, Oscar Eduardo Ceballos Perez, Ubaldo Panuco Sandoval, Adriana Del Carmen Gallegos Melgar, Miguel Fernando Delgado Pamanes

POSTER #248

794 *Trust by Design: Reproducible Workflows for Microscopy;* **Oliver Harder**

POSTER #249

795 *Cancelled: Semi-quantitative Analysis of Phase Morphology in Translucent Polymer Films Using Optical Microscopy;* **Daria Monaenkova**, Ken Xue, Matthew Thorseth, Xiaoyun Chen

POSTER #250

796 *NanoRange: A Modular Framework for Automated Cryo-EM Particle Detection and Morphometric Analysis;* **Seyed Aref Golsorkhi**, Mohammad Javad Raei, Frances Alvarez Joan, Marc Mamak

POSTER #251

797 *CANCELLED: MicroCT-Based Quantification of Porosity and Connectivity in Natural Hierarchical Networks;* **Jose Smokowski**, Sarah Mikula, Andrea Grottoli

POSTER #252

798 *Rapid Prototyping Adaptive Electron Microscopy Workflows with AI-Assisted Programming;* **Remco Geurts**

POSTER #253

799 *Microscopy at Scale: Automated PFM for Combinatorial Ferroelectric Libraries;* **Aditya Raghavan**, Rohit Pant, Ian Mercer, Jon-Paul Maria, Ichiro Takeuchi, Sergei Kalinin, Yu Liu

POSTER #254

800 *Automatic Measurement and Detection of Microhardnesses in Non-Ferrous Alloys Using Computer Vision;* **Perla Gómez Correa**, Erika Sánchez Femat, Umanel Azazael Hernandez González, Adriana Del Carmen Gallegos Melgar, Teodoro Ibarra Pérez

POSTER #255

801 *High-speed Event-Driven Electron Detectors for Scanning Transmission Electron Microscopy;* **Andrew Lupini**, Miaofang Chi, Mathieu Benoit, J. M., Alexander Reifsnyder, Stephen Jesse

Scientific Program

P Physical Sciences Posters – Wednesday

3:00 PM – 5:00 PM **Exhibit Hall**

P02.P1 Probing Phase Transitions from Atomic-Scale Imaging to In Situ Control

POSTER #256

802 *Controlled Manipulation of Single CO Molecules on Metal Surfaces;* **Dingxin Fan**, Pengcheng Chen, Nan Yao

POSTER #257

803 *AFM and Raman Imaging Characterization of Defects in Commercially Available Graphene for Use in Spintronic Devices;* **Samuel Olson**, Kaleb Hood, Jun Jiao

POSTER #258

804 *High Spatiotemporal STEM Using Beam Position Correction via Scan Shaping;* **Jonathan Peters**, Grigore Moldovan, Lewys Jones

POSTER #259

805 *Structural Effects of Small-Scale Ti Doping on Earth Abundant Li- and Mn-rich cathode materials;* **Maksim Sultanov**, Subhadip Mallick, Chun Yuen Kwok, Jason Croy, Jianguo Wen, Mahalingam Balasubramanian, Yasuo Ito

POSTER #260

806 *In-situ TEM Investigation of Optically Induced Domain Wall Motion in BaTiO3;* **Suman Kumari**, Jianguo Wen, Subramanian Sankaranarayanan, Thomas Gage, Sukriti Manna

POSTER #261

807 *Analyzing Structure and Ferroelectric Domains of Rare Earth Manganite High Entropy Oxides using Atomic-Resolution Aberration-Corrected Transmission Electron Microscopy;* **Jeffrey Hodgson**, Sai Venkata Gayathri Ayyagari, Billy Yang, Jon-Paul Maria, Nasim Alem

POSTER #262

808 *Tailoring Structural Defects in a Mn Fe2O4 nanoparticle by a Coupled Hydrothermal Method and In-Situ Electron-Beam Interaction in TEM;* **Yazmin Mariela Hernandez-Rodriguez**, Oscar Eduardo Cigarroa-Mayorga

POSTER #263

809 *Investigating the Atomic Structures of Low-Dimensional Tellurides;* **Kalana Halanayake**, Danielle Reifsnyder Hickey

P02.P2 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis

POSTER #264

810 *Mechanical Ball Milling of Pineapple Crown Leaves for Application in the Pyrolysis Process Aimed at Hydrogen Production;* **L. I. Morales-Toledo**, A. K. Navarro-Mtz, J.M. Juárez-Barrientos, Alfredo Martinez-Garcia, Erick A. Juarez-Arellano

POSTER #265

811 *Observation of Complex Cation Ordering in Ca1-αCeαTiβMn1-βO3 Perovskites;* **Nick Schimp**, Manish Kumar, Natalia Ali, James E. Miller, Ivan Ermanoski, Ellen B. Stechel, Robert B. Wexler, Francisco Lagunas

POSTER #266

812 *Structural Damage Simulation in Urate Crystals due to Electron Beam Doses in Transmission Electron Microscopy Technique;* **Miguel Castillo**, Hector Calderon

POSTER #267

813 *Effect of Yttrium on the Electrochemical Behavior of Magnesium in Simulated Body Fluid;* **Jesus Maria Pérez-reyes**, Carlos Jesús Sánchez-Morales, Julia Claudia Mirza-Rosca, Jing Zhao

POSTER #268

814 *Point, Line, and Planar Defects in Multilayer vdW Moiré Superlattices;* **Kory Burns**, Tinsae Alem, Christopher Smyth, Stephen McDonnell, Jordan Hachtel

POSTER #269

815 *Microstructural and Compositional Analysis of Ti-13Ta-5Cu Alloy Synthesized by Mechanical Alloying;* **Lizbeth Sandoval**, Ariosto Medina-Flores, Luis Olmos, Salomón Borjas-García, Claudio Aguilar

POSTER #270

816 *Real Space STEM Characterization of Shear Defects in P2 Na2/3Ni1/4Mn3/4O2;* **Sadikul Alam**, Xinwei Jiao, Eungje Lee, Jinwoo Hwang, Jehee Park, Sang Hyeog Gong, Jung Hyun Kim

POSTER #271

817 *Nanobeam Diffraction (NBD-TEM) and CrysTBox software to Quantify Local Lattice Parameters in Pr/Ba/Ni/Mn Co-Doped $BiFeO_3$ Thin Films and Rietveld Refinement Evaluation;* **Estefanía Venegas-Contreras**, Hilda Esperanza Esparza Ponce, Armando Reyes-Rojas, Gabriel Rojas-George, Karime Carrera-Gutiérrez, Miguel Márquez-Torres, Marco Ruiz Esparza-Rodriguez

POSTER #272

818 *Multi-Modal Atomic-Scale Characterization of Interfacial Defects in Superconducting Transmon Qubits;* **Kassandra Weber**, Jaeyel Lee, Akshay Murthy, Robert Klie

POSTER #273

819 *Correlations of Microstructural-Electrical/Mechanical Properties of an Al 1350 Alloy Modified with Mg, Zn and Si;* **K. Anchondo-Chavira**, J. M. Mendoza-Duarte, S. González, Roberto Martínez-Sánchez, R. Pérez-Bustamante, Carlos G. Garay-Reyes, Alfredo Martinez-Garcia

POSTER #274

820 *Plasma Focused Ion Beam and Electropolishing Applications for Electron Microscopy;* **Sabrina Calzada**, Caitlin Duggan, Yan-Ru Lin, David Arregui-Mena

POSTER #275

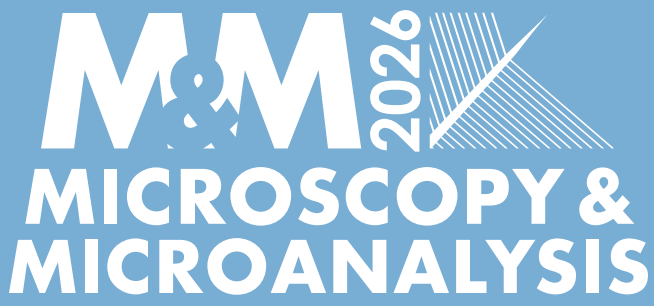
821 *Nanohardness of B2 precipitates in the CoCrFeMnNiAl1.5 high-entropy alloy;* **Leonardo Baylon**, Erick A. Juarez-Arellano, Abel Hurtado, Marco Ruiz Esparza-Rodriguez, Alfredo Martinez-Garcia, Pedro Guerrero, I. Estrada-Guel, J. M. Mendoza-Duarte, Carlos G. Garay-Reyes

POSTER #276

822 *Effect of Cryogenic Straining Temperature on the Fracture Surface of AISI 304 Austenitic Stainless Steel under Uniaxial Tensile Loading: A Scanning Electron Microscopy and Image Analysis Study;* **Osvaldo Cintho**, Henry Fontana, Márcio Hupalo, Alexandre Carvalho, Denilson Aguiar

POSTER #277

823 *Quantifying Geometrically Necessary Dislocation Density in 316L Stainless Steel Fabricated Via Laser Powder Bed Fusion;* **Justin Warner**, Emily Konopka, Sriram Vijayan



Thursday, August 6

A Analytical/Instrumentation Sciences Symposia – Thursday Morning

A03.8 Advances in Atom Probe Tomography: Instrumentation, Reconstruction, and Novel Applications

Thursday 8:30 AM

8:30 AM **824** *Field Emission of Bulk Hexagonal Boron Nitride Via Extreme Ultraviolet Pulsed Atom Probe Tomography;* **Christopher Mead**, Josh Avery, Ann Chiaramonti, James Edgar, Benjamin Caplins, Luis Miaja Avila

8:45 AM **825** *Nanoscale Chemical and Structural Characterisation of Extinct Diprotodon Tooth Enamel via Atom Probe Tomography;* **Yue-Sheng Chen**, Matthew McCurry, Ranming Niu, Eason Yi-Sheng Chen, Julie Cairney, Natalie Holmes

9:00 AM **826** *Statistical Comparison of Nanoscale Mineral Crystals and Organic Precipitates in Human Dental Enamel Across Age Groups;* **Jack Grimm**, Katherine Tang, Cameron Renteria, Arun Devaraj, Dwayne Arola

9:15 AM **827** *Microanalysis of the Fe Oxide Passive Layer Formed On Fe/Carbon Steels Using Atom Probe Tomography;* **Mahlako Mphahlele**, Tim M. Schwarz, Ueli Angst, Stephan Gerstl, Shishir Mundra

9:30 AM **828** *Elucidating Nanoscale Mechanisms in Healing the Corrosion Barrier of Stainless Steels;* **Robert Ulfig**, Sasidhar Narasimha Kasturi, Kumar Sridharan, ISABELLE MARTIN, Yimeng Chen, Katherine Rice

9:45 AM **829** *A Coupled Electromagnetic-Thermal Transport Model for Laser-Tip Interactions in Atom Probe Tomography Specimens;* **Bavley Guerguis**, Nabil Bassim, Bhaveshkumar Kamaliya, Ramya Cuduvally, Richard Morris, Gabriel Arcuri, Brian Langelier

A06.7 Correlative, Multimodal Microscopy, Spectroscopy, and Imaging

8:30 AM **830** *Integrated Waveguide MEMS for Light-Stimulated In-Situ TEM in Liquid and Gas Environments;* **Hongkui Zheng**, Vasilis Papadimitriou, Jiarui Mo, Gijs Gugten, Christian Deen, David Westmoreland, Pushp Raj Prasad, Merijn Pen, Joseph Patterson, Hugo Pérez-Garza

8:45 AM **831** *Elucidating the Exchange Mechanism of Na-NMS using Electron Microscopy;* **Elias Kallon**, Gabriel dos Santos, Roberto dos Reis, Dimitrios Evangelou, Mercouri Kanatzidis, Vinayak Dravid

9:00 AM **832** *Toward Accurate Targeting in Correlative Microscopy;* **Wai Oo**, Samuel Stavis, Andrew Madison, Daron Westly, Natalia Farkas, John Kramar, Ronald Dixson, Craig Copeland

9:15 AM **833** *Multimodal Characterization of Enteric-Coated Pharmaceutical Beads Using Raman Chemical Mapping and SEM–EDX;* **Sarah Miller**, Levi Litwiller

9:30 AM **834** *Correlative Multimodal Microscopy Reveals Phosphate-Driven Phase Transformation and Functional Stabilization of Ceria Nanoparticles in Saliva Substitute;* **Shoaib Masood**, Proloy Nandi, Kassapa Ellepola, Russell Pesavento, Robert Klie

9:45 AM **835** *Corrected Paralyzable Detector Model for Post-Acquisition Pile-Up Correction in Energy Dispersive X-ray Spectroscopy;* **Yueyun Chen**, Matthew Mecklenburg

A08.5 Microscopy and Microanalysis for Real World Problem Solving

8:30 AM **836** *Utilizing the Multifaceted Benefits of Sn-Microalloying to Design Dilute Al-Zr-Sn Conductor Alloys;* **Nicholas Richter** (INVITED), Lawrence Allard, Janet Meier, Christopher Fancher, James Haynes, Amit Shyam

9:00 AM **837** *Interfacial Shear Strength and Microstructure in PVA-Coated Fique Fibers in Thermoset Resin Composites Via SEM Fractography;* **Julio Cuellar**, Johnattan Vargas, Juan Meza, Cesar Isaza

9:15 AM **838** *In-Situ Scanning Electron Microscope Experiments for Microscale Mechanical Testing and Validated Modeling of Fiber Reinforced Thermoplastics;* **Laura Wilson**, Brandon Hearley, Evan Pineda

9:30 AM **839** *Low Voltage SEM–EDS Methodology for Quantitative Characterization of Dispersoids in Aluminum Alloys;* **Emily Vandale**, Jeffrey Tschirhart, Pascal Gauthier, Leticia Marin de Andrade, Mehdi Shafiei, Rajeev Kamat, Raynald Gauvin, Nicolas Brodusch

9:45 AM **840** *Automated 3D Multi-Resolution Characterization of Fine Martensitic Enveloping Voids in Vacuum Arc Remelted 304L Bar;* **Paul Chao**, Christian Harris, Robert Craig, Andrew Polonsky, Jeff Rodelas

A10.7 Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools

8:30 AM **841** *Integrated Computing for Transmission Electron Microscope Sample Holders;* **Alexander Reifsnyder**, Andrew Lupini, Christopher Nelson, Ondrej Dyck, Stephen Jesse

8:45 AM **842** *From Acquisition to Answers: Developing Open-Source Automation and Quantitative Analysis Workflows with Built-In Statistics for Electron Microscopy;* **Alexis Williams**, Lynnicia Massenburg, Sita Madugula, Scott Retterer, Rama Vasudevan, Albina Borisevich, Jennifer Morrell-Falvey, Chanda Harris, Amber Bible, Leah Hochanadel

9:00 AM **843** *Open-Source, Reproducible Automation for 3D Serial Sectioning and FIB-SEM Workflows;* **Andrew Polonsky**, James Lamb, Chad Hovey, Julia Deitz, Luis Jauregui, Damion Cummings, Joshua Sugar, Sean Nichols, Michael Girard, Oceane Bel

9:15 AM **844** *Optimizing High-Performance Cryo-Electron Tomography at 200 kV;* **Ujjayini Ghosh**, Elizabeth Wright, Anna Ratliff, Matt Larson, Yumeng Liu, Steve Garvis, Mason Klawitter, Joshua Pierson

9:30 AM **845** *Electron and X-ray Detectors – in Space and on Earth;* **Björn Eckert**, Lothar Strüder, Heike Soltau, Peter Holl, Adrian Niculae, Martin Huth, Petra Majewski, Robert Hartmann, Andrew Fram

9:45 AM **846** *Benchmarking High-Resolution Cryo-Electron Microscopy and Tomography on a 300 kV Krios 5;* **Anna Ratliff**, Ujjayini Ghosh, Helen Donelick, Jonathan Herrmann, Francis Reyes, Cheri Hampton, Elizabeth Wright, Miles Dickinson, Yumeng Liu, Matthew Larson

Scientific Program

C Cross-Cut/Interdisciplinary Sciences Symposia – Thursday Morning

C01.4 Transmission Electron Microscopy for Beam-Sensitive Materials

Thursday 8:30 AM

8:30 AM **847** *Operando Electrochemical 4D-STEM at Dynamic Energy Materials Interfaces;* **Yao Yang** (INVITED)

9:00 AM **848** *Artemis: Leveraging Rapid Electron Counting for Low Dose In Situ TEM;* **Kalani Moore**, Carter Francis, Barnaby Levin, Maria Letizia De Marco, Nadir Zhamantay, Dris Ihiawakrim, Benjamin Bammes

9:15 AM **849** *Universal Inert Gas Transfer System for Transmission Electron Microscopes;* **Alexander Reifsnyder**, Amanda Musgrove, Michael Zachman, Gabriel Veith, David McComb, Jordan Hachtel

9:30 AM **850** *Operando Electron Microscopy for Li-S Batteries: From Liquid Electrolytes to All-Solid-State;* **Shiyuan Zhou** (INVITED), Khalil Amine, Gui-liang Xu, Yuzi Liu

C02.1 Atomic-Scale Hyperspectral Imaging for Materials Characterization

8:30 AM **851** *SEM-Based Cathodoluminescence Imaging as a High-Performance Screening Tool for Tem Hyperspectral Imaging;* **Herman Duim**

8:45 AM **853** *Hyperspectral Imaging to Disambiguate Structure and Chemistry at Electronic Material Interfaces;* **James LeBeau** (INVITED)

9:15 AM **854** *Machine Learning Assisted Acquisition and Analysis of Spectrum Images;* **Gerd Duscher** (INVITED), Sergei Kalinin, Utkarsh Pratiush, Austin Houston

C03.1 Preservation and Validation of Electron Microscopy Data Across the Biological and Physical Sciences

8:30 AM **855** *Community Data Resources for Electron Microscopy;* **Helen Berman** (INVITED), Kyle Morris

9:00 AM **856** *Open Formats, Standard Metadata, and Benchmarks: A Reproducibility Framework for Materials Electron Microscopy;* **Colin Ophus** (INVITED)

9:30 AM **857** *Electron Microscopy Characterization of Persea Americana Mill Residues for Application in Solid Biofuels in Agro-Industrial Regions of Michoacán;* **Ricardo González Cárabes**, Janneth López-Mercado, Francisco Javier Reynoso Marín, Arturo Aguilera Mandujano, Lis Bernardo López Sosa

9:45 AM **858** *One-Pot Biomolecule-Mediated Synthesis of Hybrid Cu/CuO/Cu2O Nanocubes with an In-Situ Carbonaceous Shell;* **Hector Calderon**, Tetyana Krystab, Hugo Martinez, Rogelio Garcia

C04.3 Living on the Edge: Real-Time Processing and Decision Making at the Microscope

8:30 AM **859** *Combining Structural, Compositional and In Situ Data Into a New and Powerful Workflow;* **Franklin Walden** (INVITED), David Foord, Rachel Osmundsen, Joseph Cline, Huikai Cheng, John Damiano, David Nackashi, Katherine Marusak Stephens

9:00 AM **860** *Closing the Feedback Loop: Live Polarization Analysis for Automated In Situ 4D-STEM and SEM;* **Fintan Hardy**, Noah Schnitzer, Mariana Palos, Liam Spillane, Aron Walsh, Michele Conroy

9:15 AM **861** *Interactive Framework for Real-Time 4DSTEM Analysis and Reconstruction;* **Sangjoon Lee**, Andrew Barnum, Colin Ophus, Dasol Yoon, Karen Ehrhardt, Nicholas Marchese, Cedric Lim, Pinaki Mukherjee, Caitlyn Obrero, William Millsaps

9:30 AM **862** *Event-Driven Detectors as a Tool for an Unconstrained 4D-STEM Experience;* **Arno Annys** (INVITED), Hoelen Lalandec Robert, Saleh Gholam, Jo Verbeeck, Joke Hadermann

P Physical Sciences Symposia – Thursday Morning

P05.8 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis

Thursday 8:30 AM

8:30 AM **863** *Connecting Substitutional Order and Lattice Distortions in a Refractory Alloy using Electron Ptychography;* **Michael Xu**, Shaolou Wei, James LeBeau, Cemal Tasan

8:45 AM **864** *CANCELLED: Three-dimensional Atomic-scale Analysis of Grain Boundaries in δ-doped Er:Ce1-xZrxO2 Using Multislice Electron Ptychography;* **Sooyoon Hwang**, Jon-Paul Maria, James LeBeau, Andrey Shults, Jake Anthony Dechiara

9:00 AM **865** *3D Atomic-Scale Characterization of Defects in Superconducting TiN Resonator with Multislice Electron Ptychography;* **Eegene Clara Chung**, Anand Ithepalli, Naomi Pieczulewski, Noah Schnitzer, Chia-Hao Lee, Steven Zeltmann, Keun-Yeol Park, Debdeep Jena, David Muller

9:15 AM **866** *Quantifying Three-Dimensional Displacement Fields Around Misfit Dislocations in the Ti/Graphene System Using Multislice Electron Ptychography;* **Pip Knight**, Guanxing Li, Kate Reidy, Wiktor Szopa, Eugene Park, David Muller, Frances Ross

9:30 AM **867** *Revealing Distortions and Defects Underlying Embedded Nanoparticle Moiré Patterns Using Multislice Electron Ptychography;* **Aaditya Bhat**, Junghwa Kim, Bonnie Lin, James LeBeau

9:45 AM **868** *Revealing the 3D Dislocation Core Structure in a Refractory Medium Entropy Alloy Using Multislice Electron Ptychography;* **Xiaoyu Chen**, Stephanie Ribet, Velimir Radmilovic, Robert Ritchie, Mark Asta, Satish Rao, Andrew Minor, Wenqing Wang, David Cook, Haozhi Sha

P07.4 High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments

8:30 AM **869** *Driven Defect-Phases in Irradiated Nanocrystalline Ni–Zr Alloys;* **Marie Charpagne** (INVITED), Yen-Ting Chang

9:00 AM **870** *Strain-Dependent Grain Refinement in the CrMnFeNiCo Alloy Under High-Pressure Torsion;* **Daniela Fonseca**, Will Schueller, Jacob Bacino

9:15 AM **871** *Challenges of Using APT and STEM to Characterize Materials Corroded in Lead-Bismuth Eutectic;* **Kayla Yano**, Franziska Schmidt, Matthew Chancey, Saikumaran Ayyappan, Djamel Kaoumi, Daniel Schreiber, Yongqiang Wang, Blas Uberuaga

9:30 AM **872** *Unique Passivation Mechanisms of Aluminide Coatings Formed on Stainless Steels Via Pack Cementation;* **Matthew Olszta**, Kashi Subedi, Jonathan Evarts, Michel Sassi, Mark Bowden, Andrew Casella, Anne Chaka, Krishna Pitike, Ayoub Soulami

9:45 AM **873** *Multiscale Probing of Corrosion Inhibitor Transport Mechanisms in Aircraft Coatings;* **Jing Jiang**, Anthony Hughes, Sam Yang, Robert Hook, Dougal McCulloch

P09.2 Spatiotemporal Optical Response Using Electron Spectroscopies for Nano-Optics

8:30 AM **874** *Probing Low-Energy Reciprocal-Space Excitations in 2D Materials from Atomic Crystals to Nanophotonic Arrays Using Momentum- and Pseudoangular Momentum-Resolved EELS;* **David Masiello** (INVITED)

9:00 AM **875** *Resolving the Dispersion of Longitudinal Excitons in Monolayer WSe2 via Momentum-resolved Electron Energy Loss Spectroscopy;* **Tianxiao Niu**, Hsiang-Hsi Kung, Steve Dierker, Ziliang Ye

9:15 AM **876** *Energy-Momentum and Angular-Resolved Cathodoluminescence in SEM for Nanophotonic Applications;* **Zahava Barkay**

9:30 AM **877** *Developments in Momentum-Resolved Vibrational EELS: Dispersion Surfaces, Amorphous Materials, Laser Pumping and Ptychography-Based Dispersions; Benedikt Haas* (INVITED), **Anton Gladyshev**, Paul Zeiger, Peter Rez, Guillaume Radtke, Tracy Lovejoy, Christoph Koch, Mairi McCauley

P11.4 Unveiling Quantum Order: Cryo-EELS, 4D STEM, and Ptychography at the Nanoscale

8:30 AM **878** *Liquid Helium Temperature Atomic Resolution cryo-STEM Imaging and Multislice Electron Ptychography;* **Noah Schnitzer** (INVITED), Mariana Palos, Geri Topore, Nishkarsh Agarwal, Maya Gates, Suk Hyun Sung, Ismail El Baggari, Robert Hovden, Michele Conroy

9:00 AM **879** *Characterizing Structural Reconstruction in Twisted Bismuth Selenide Using Electron Ptychography and 4D-STEM for Tunable Quantum Materials;* **Katherine Cauffiel**, Layla Mravac, Khanh Duy Nguyen, Pinshane Huang, Gillian Nolan, Shuolong Yang

9:15 AM **880** *Picometer-Scale Disorder and Symmetry Breaking in Self-Intercalated van der Waals Ferromagnets Revealed by Multislice Electron Ptychography;* **Murat Tuna Pamuk**, Yu-Tsun Shao, Linda Ye, Takashi Kurumaji

9:30 AM **881** *4D-STEM for Twisted Moiré Quantum Materials;* **Yimo Han** (INVITED), Chuqiao Shi, Ang Tao, Xinyan Li, Kaiwen Yang

Scientific Program

A Analytical/Instrumentation Sciences Posters – Thursday

10:00 AM – 12:00 PM **Exhibit Hall**

A08.P2 Microscopy and Microanalysis for Real World Problem Solving

POSTER #278

882 *Formation of Al_4C_3 and Al_2Cu Phases During Sintering of Al–Cu–Mg–Gr Composites Produced by High-Energy Ball Milling;* **J. M. Mendoza-Duarte**, Alfredo Martinez-Garcia, Monica Mendoza-Duarte, Pedro Guerrero, Carlos G. Garay-Reyes, Marco Ruiz Esparza-Rodriguez, Roberto Martínez-Sánchez, I. Estrada-Guel

POSTER #279

883 *Influence of the Static Precipitation on Meyer's Number in 2024 Aluminum Alloy Aged Artificially;* **J.C. Guía Tello**, Erick A. Juarez-Arellano, K.A. García-Aguirre, Carlos G. Garay-Reyes, Roberto Martínez-Sánchez, J. M. Mendoza-Duarte, Marco Ruiz Esparza-Rodriguez, Alfredo Martinez-Garcia, H.M Medrano-Prieto, G. Rodriguez-Cabriales

POSTER #280

884 *Microstructural analysis of fertilizer plate on Z-type seeder;* **Daniel Maldonado Onofre**, Víctor Hugo Castrejón Sánchez, Tomás de la Mora Ramírez, Elvis Coutiño Moreno, Marco Antonio Doñu-Ruiz, Noé López-Perrusquia

POSTER #281

885 Architecture-Controlled WC Distribution in Aluminum Composites via Stacked-Disc Hot Extrusion; **G. Rodriguez-Cabriales**, M. Sánchez-Carrillo, C. Modesto-Acosta, M. Ramírez-Rojas, H.M. Medrano-Prieto, Alfredo Martinez-Garcia, I. Estrada-Guel, Carlos G. Garay-Reyes, Roberto Martínez-Sánchez, JP. Flores-De los Ríos

POSTER #282

886 *Structural Features of freeze-drying Purple Creole Avocado Peel: Insights from Confocal and Environmental SEM Analyses;* **Iram Cisneros**, Carla I. Acosta-Ramírez, José I. Valdez-Miranda, Alfonso Totosauas-Sánchez, Diana del C. Martínez-Méndez, Consuelo Martínez-Ruiz, Ricardo Aguilar-Garay

POSTER #283

887 *Electronic Properties of Gold-Decorated Silica Nanoparticles for their Application in Photothermal Therapy;* **Jose Rafael Motilla Montes**, Hilda Esperanza Esparza Ponce, Guillermo Herrera-Pérez

POSTER #284

888 *Glow Discharge Optical Emission Spectrometry Applied to Boriding Treatment;* **Evelin Lizbeth Aguilar**, Jorge Zuno, Gina Moreno, Oscar Armando Gómez, Martín Ortiz, Guillermo Barrios

POSTER #285

889 *Effect of Hydrothermal Temperature on the synthesis of Mesoporous TiO2 Prepared Using Pluronic F127 as an Organic Template;* **Salomón Borjas-García**, Hector Villegas-Moreno, Gerardo Rosas Trejo, Dhirendra Tiwari, Ariosto Medina-Flores, Inti Correa-Correa, Gonzalo Viramontes-Gamboa, Kevin Guillen-Sosa, Juan Toledo-Ahedo

POSTER #286

890 *Synthesis of Mesoporous Neodymium Oxide by Using Cetyl Trimethyl Ammonium Bromide as an Organic Template;* **Salomón Borjas-García**, Erandi Berenice Marcos Mora, Gonzalo Viramontes-Gamboa, Héctor Javier Anselmo Villegas Moreno, Dhirendra Tiwari, Ariosto Medina-Flores, Gerardo Rosas Trejo

POSTER #287

891 *Effect of Mg and Zn Addition on the Microstructure Behavior and Hardness of a 1350 Alloy After Casting and Annealing;* **Alfredo Martinez-Garcia**, Carlos G. Garay-Reyes, Pedro Guerrero, Marco Ruiz Esparza-Rodriguez, J. M. Mendoza-Duarte, Erick A. Juarez-Arellano, S. González, G. Rodriguez-Cabriales, Roberto Martínez-Sánchez

POSTER #288

892 *Influence of hot and cold deformation on the microstructure and tensile stress of Al-Mg-Zn based alloys;* **Alfredo Martinez-Garcia**, Carlos G. Garay-Reyes, Leonardo Baylon, Marco Ruiz Esparza-Rodriguez, J. M. Mendoza-Duarte, Erick A. Juarez-Arellano, S. González, Roberto Martínez-Sánchez

POSTER #289

893 *Syntesis of High-Entropy Oxides: Spinel-type Mg0.2Al0.2Ti0.2Ni0.2Co0.2)3O4 and Inverse Spinel-type (Mg0.2Al0.2Ti0.2Ni0.2Fe0.2)2O3;* **Alfredo Martinez-Garcia**, Carlos G. Garay-Reyes, Víctor M. Orozco-Carmona, Anabel D. Delgado, J. M. Mendoza-Duarte, J. C. Guía-Tello, Erick A. Juarez-Arellano, Roberto Martínez-Sánchez

POSTER #290

894 *Effect of Anodizing Type on Surface Morphology in 6061 Al Alloy with a Modified Electrolyte;* **H.O Cano-Cano**, Jose G. Chacón-Nava

POSTER #291

895 *Routine Counterfeit Pharmaceutical Analysis Workflow;* **Sarah Miller**

POSTER #292

896 *Influence of Laser Surface Texturing on the Corrosion Resistance of Duplex Stainless Steel 2205;* **Miguel Lopez-Rios**, Alberto Daniel Rico-Cano, Carlos Jesús Sánchez-Morales, Julia Claudia Mirza-Rosca, Juan Carlos Lozano-Medina

POSTER #293

897 *Microanalytical Assesment of Biocompatibility and Microbial Interactions of Nanomaterials with Potential Biological Application;* **Dhirendra Tiwari**, Luis Alfonso Hernandéz Villaseñor, Araceli ortega, Ana Coria-Tellez, María Guadalupe Moreno Contreras, Salomón Borjas-García, Luz Alejandra Cervantes Ríos

POSTER #294

898 *Damage Evolution in Aramid/Epoxy Laminates under Three-Point Bending: A Multiscale Study;* **Carlos Andres Espinosa Dominguez**, Noé López-Perrusquia, Marco Antonio Doñu-Ruiz, Gerardo Julián Pérez Mendoza, Juan Pablo Campos López, Helvio mollinedo Ponce de Leon, Lizbeth Melo-Máximo

POSTER #295

899 *Towards Chemical Surface Analysis of Modified Quartz Nanopipettes;* **Vasile-Dan Hodoroaba**, Mario Sahre, Robert Schusterbauer, Melissa Grant, Leonardo Agudo Jácome, Tim Albrecht, Lauren Matthews

POSTER #296

900 *Molybdenum Oxide Micro-Nanosheets Synthesized using The Close-Spaced Vapor Transport (CSVT) Method;* **Carlos Felipe**, Jorge Flores-Moreno, Ariel Guzman-Vargas, Enrique Lima, Oscar Goiz, Ramon Peña-Sierra, Karla Quiroz-Estrada, Fernanda Hernandez-Rodrigez

POSTER #297

901 *Urban Pollution Across State Lines: Metal-Microplastic Interactions & Downstream Contamination in Potomac River Sediments;* **Hayes Johnston**, Barbara Balestra, Andrea Brothers

POSTER #298

902 *Automated Photo-KPFM for High-Throughput Functional Screening of Quasi-2D Perovskite Libraries;* **Boris Slautin**, Sergei Kalinin, Jordan Marshall, Mahshid Ahmadi

POSTER #299

903 *Enhanced light element analysis using dual EDS Detectors in Advanced Semiconductor Structures;* **Taeseok Seong**, Seon Je Kim, Hee-Beom Lee, Chul Gi Song

POSTER #300

904 *Study of Heavy Metal Hyperaccumulators for Reclaiming E-waste and Mining Pollution;* **Sue Okerstrom**, Daniela Esponda

POSTER #301

905 *Obtaining Olefins by Dehydration of Alcohols on Laminar Materials;* **Hector Calderon**, Luz Garcia, Heriberto Esteban

POSTER #302

906 Are Diatoms In Dinosaur Bones Contamination?; **Mark Armitage**

POSTER # 302.5

906.5 *Screen-printed CoFe2O4 coating on BCZT: Microstructural Characterization and Magnetoelectric Response;* **Guillermo Herrera-Perez**, Alejandro Campos-Rodriguez, Miguel Bocanegra, Gabriel Rojas-George, zayde Hernandez-Burgara, Rafael Motilla, Armando Reyes-Rojas

A10.P1 Recent Developments and New Emergent Applications in Hardware, Accessories and Software Tools

POSTER #303

907 *Simulating Phase-Contrast TEM with Quantum Circuits;* Roberto dos Reis, Sean Lam

POSTER #304

908 *High Angular Current Density and Narrow Energy Distribution from a CeB6 Electron Gun in Virtual Source Mode;* **HaRim Lee**, Youngkwon Haam, Junhyeok Hawang, Takashi Ogawa, Jeong-Woong Lee, Haewon Jung, Sora Park, Sangsun Lee, In-Yong Park

POSTER #305

909 *Extending the Aberration-Free Field of View in High-Resolution TEM;* **Dileep Krishnan**, Yasmin Gigi Tokman, Stig Helveg, Joerg Jinschek, Maarten Bischoff, Mikhail Ponomarev, Sander Henstra, Bert Freitag, Maarten Wirix,

POSTER #306

910 *Probe Current Uncertainty and Stability in Thermal and Cold Field Emission SEM Sources;* **In-Yong Park**, HaRim Lee, Youngkwon Haam, Takashi Ogawa, Junhyeok Hawang, Jeong-Woong Lee

POSTER #307

911 *Vibration Isolation Solutions for S/TEM;* **Brian Keith**

POSTER #308

912 *ALCHEMI from nm Area using DM Plug-in QED;* **Akimitsu Ishizuka**, Christoph Koch, Kazuo Ishizuka

POSTER #309

913 *Micro-area Analysis Method for Lithium-ion Battery Reaction Products Using SEM with VUV Spectroscopy and VCA Phase Analysis by EDS;* **Yasuaki Yamamoto**, Mayu Morimoto, Yasuhito Aoki, Shogo Koshiya, Takanori Murano, Kentaro Kato

POSTER #310

914 *Proposal for Interferometric Beam Phase Retrieval in SEM;* **Surya Kamal**

Scientific Program

C Cross-Cut/Interdisciplinary Sciences Posters – Thursday

10:00 AM – 12:00 PM **Exhibit Hall**

C01.P1 Transmission Electron Microscopy for Beam-Sensitive Material

POSTER #311

915 *Nanoscale Evolution of Au Nanoparticles in Tantalum Oxide Heterostructures during TEM Electron-Beam Interaction;* **Oscar Eduardo Cigarroa-Mayorga**, Indira Torres-Sandoval, Yazmin Mariela Hernandez-Rodriguez

POSTER #312

916 *Ultrastructural Characterization of Resin Embedded Biological Samples using STEM-HAADF Mode;* **Bernd Zechmann**

POSTER #313

917 *B99-pH-Dependent Morphological Evolution of Hydroxyapatite Nanostructures;* **Karime Carrera-Gutiérrez**, B.J. Carmona-Conejo, Roberto Gomez-Batres, Víctor M. Orozco-Carmona, Gabriel Rojas-George, Estefanía Venegas-Contreras, Miguel Márquez-Torres, Marco Ruiz Esparza-Rodriguez

POSTER #314

918 *B99-Ion Exchange Incorporation of Fe into Hydroxyapatite Nanofibers A TEM and XPS Study;* **Karime Carrera-Gutiérrez**, Estefanía Venegas-Contreras, Miguel Márquez-Torres, B.J. Carmona-Conejo, Marco Ruiz Esparza-Rodriguez, Y. Esqueda-Barrón, J.N. Díaz de León, Roberto Gomez-Batres, Víctor M. Orozco-Carmona, Gabriel Rojas-George

POSTER #315

919 *Electrochemical Synthesis of Citrate-Stabilized Ag Nanoparticles: Effect of Electrode Microstructure on Particle Growth;* **Hector Calderon**, Tetyana Krystab, Rogelio Garcia

POSTER #316

920 *Structural and Thermal Characterization of Hydrothermally Synthesized Nb4C3Tx MXene;* **Bhoj Gautam**, Peshal Karki, Safal Ghimire

POSTER #317

921 *Exploring TiVCT$_x$ MXene: Structural and Thermal Characterization;* **Bhoj Gautam**, Eric Jones, Peshal Karki

POSTER #318

922 *B99 Mesoporous Calcium-Deficient Hydroxyapatite Nanorods BET and TEM Analysis of a Sol–Gel-Derived System;* **Karime Carrera-Gutiérrez**, Gabriel Rojas-George, Sofia Maynez-Faudoa, Clarissa Chávez-Burciaga, Anabel D. Delgado, Alfredo Martinez-Garcia, Marco Ruiz Esparza-Rodriguez, Roberto Gomez-Batres, Víctor M. Orozco-Carmona, Estefanía Venegas-Contreras

POSTER #319

923 *Bayesian Optimization of Interaction Free Measurement with Electrons;* **Nicolas Puentes**, Ben McMorran

C02.P1 Atomic-Scale Hyperspectral Imaging for Materials Characterization

POSTER #320

924 *Amino-Functionalized Silica Crosslinked Polyimide Aerogels with Enhanced Mechanical Strength;* **Wilson Hou-Sheng Huang**, Shang-Chih Chou, Meng-Tzu Hsiao, Yao-Yi Cheng

POSTER #321

925 *Influence of Zinc Addition to Magnesium and Calcium Alloys in the Simulation of Fever States;* **Francisco Miguel Sanchez-Sosa**, Cristina Jiménez-Marcos, Julia Claudia Mirza-Rosca, Ionelia Voiculescu

POSTER #322

926 *SEM–EDS Classification of Defect-Related Inclusions in Gray Cast Iron: Sand, Coatings, and Oxide/Slag;* **Jorge Acevedo-Dávila**, R. Pérez-Bustamante, Dagoberto Vazquez-Obregon, Mario Rodriguez Reyes

POSTER #323

927 *Identification of Doping in Fluorides by Elemental Analysis and Cathodoluminescence;* **Zhiping Luo**, Thomas Murray, Cameron Lewis

POSTER #323.5

927.5 *Influence of Zr on the Microstructure, Microhardness and Corrosion Resistance of Ti15Mo1Si Alloys for Biomedical Applications;* **Cristina Jiménez-Marcos**, Julia Claudia Mirza-Rosca, Madalina Baltatu, Petrica Vizureanu

C03.P1 Preservation and Validation of Electron Microscopy Data Across the Biological and Physical Sciences

POSTER #324

928 *Electron Microscopy Characterization of Saccharum officinarum L Residues for Application in Solid Biofuels in Agro-Industrial Regions of Michoacán;* **Ricardo González Cárabes**, Lis Bernardo López Sosa, Arturo Aguilera Mandujano, Janneth López-Mercado, Francisco Javier Reynoso Marín

POSTER #325

929 *Evaluation of Electrochemical properties of a Cardiac Resynchronization Therapy Defibrillator CRT-D Sample in Simulated Body Fluid;* **Sofia Sakr-Nassef**, Diana Tint, Julia Claudia Mirza-Rosca, Juan Carlos Lozano-Medina

C04.P1 Living on the Edge: Real-Time Processing and Decision Making at the Microscope

POSTER #326

930 *Beyond Buttons and Knobs: Advancing Autonomous Experimentation for Robust Multi-Modal STEM Data Acquisition;* **Emily Avey**, Jayden Grunde, Michelle Smeaton, John Mangum, Renae Gannon, Steven Spurgeon

POSTER #327

931 *The AI-Augmented Researcher: A Domain-Agnostic LLM Framework for Intelligent Experiment Planning and Instrument Control;* **Anderson Borch**, Jayden Grunde, Emily Avey, Renae Gannon, Steven Spurgeon

POSTER #328

932 *Toward Autonomous Materials Processing in the Plasma Focused Ion Beam;* **Jayden Grunde**, Renae Gannon, Antonino DiMaggio, Steven Spurgeon

POSTER #329

933 *Automatic Microscopic Particle Segmentation (AMPS);* **Benjamin Wyland**, John Mangum, Kae Fink, Renae Gannon, Steven Spurgeon

POSTER #330

934 *Using technology to improve EBSD data quality on the SEM;* **Kim Larsen**, Mark Coleman, Robert Masters, Dave Barker

POSTER #331

935 *Preliminary Steps Toward a Full Magnetic Multislice Treatment of Momentum-Resolved Magnetic Inelastic Scattering Simulations;* **Jorge Luis Briseño-Gómez**, Jan Rusz, José Ángel Castellanos-Reyes

Scientific Program

P Physical Sciences Posters – Thursday

10:00 AM – 12:00 PM **Exhibit Hall**

P01.P1 'Nothing is Perfect': Order and Disorder in the Functional Responses of Molecular Materials

POSTER #332

936 *The Role of Structural Order and Disorder in the Functional LSPR Response of Silver Nanoparticles for Oil Degradation Monitoring;* **Jose Heredia**, Jorge Iriqui-Razcon, Pedro A. Hernández-Abril, Alejandra Córdova, Jesus A. Maldonado-Arriola

POSTER #333

937 *Fluctuation Electron Microscopy Measures Polymer Chain Curvature in Amorphous Polystyrene;* **J. Murray Gibson**, Daniel Hallinan, Kyoungmin Kim, Josh Mysona

POSTER #334

938 *Direct High-Resolution Imaging of Covalent Organic Framework Defects;* **Guanxing Li, Desheng Ma**, David Muller

POSTER #335

939 *Single-molecule Transmission Electron Microscopy Imaging of Laterally π-extended Polyhelicenes;* **Koji Harano**, Koji Kimoto, Hao Wu, Klaus Müllen, Akimitsu Narita

POSTER #336

940 *Microanalysis of Corrosion in a Superduplex Stainless Steel with Biomimetically Inspired Convex Surface Texturing Based on "Barchan" Dunes;* **Juan Carlos Lozano-Medina**, Carlos Jesús Sánchez-Morales, Cristina Jiménez-Marcos, Julia Claudia Mirza-Rosca

POSTER #337

941 *Laser-Textured Hexagonal Patterns for Nucleation Control in Ambient Water Harvesting;* **Matteo Bertapelle**, Carlos Jesús Sánchez-Morales, Julia Claudia Mirza-Rosca, Miguel Ferrer Pareja, Juan Carlos Lozano-Medina

POSTER #338

942 *Needle-Like Polyaniline Microstructures Formed via Acidic Oxidative Polymerization and Linear Aggregation;* **Salomón Borjas-García**, Jorge Ascencio, Ariosto Medina-Flores, Inti Correa

P05.P3 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis

POSTER #339

943 *From Ta4AlC3 MAX Phase to Ta4C3Tx MXene: Aluminum Etching and Structural Characterization;* **Bhoj Gautam**, Peshal Karki, Jianna Evans

POSTER #340

944 *Corrosion Behavior on a Li Modified A356 Al Alloy;* **Pedro Guerrero**, Todaka Yoshikazu, S. González, Alfredo Martinez-Garcia, Erick A. Juarez-Arellano, J. M. Mendoza-Duarte, Víctor M. Orozco-Carmona, Roberto Martínez-Sánchez, Marco Ruiz Esparza-Rodriguez, Carlos G. Garay-Reyes

POSTER #341

945 *Probing 3D Morphological Anisotropy and the Electronic Environment of ZnO Nanoparticles: A Combined TCH–FullProf and Zn 2p Core-Level Photoemission Study;* **Manuel Piñon Espitia**, Joel Carvajal, M.T. Ochoa-Lara, S. verdugo-Miranda, R. Verdugo-Miranda, M. Martínez-Gil, N. flores-Holguín, Hilda Esperanza Esparza Ponce, Armando Reyes-Rojas, A. Duarte-Möller

POSTER #342

946 *Synthesis and Characterization of TiZnO Nanoparticles by Ion Milling;* **Berenice Castañeda**, Hector Calderon

POSTER #343

947 *Comparison of BaTiO3 Synthesis Through Solvothermal and Mechanical Grinding Methods by using XRD and SEM;* **Ysmael Miranda**, Hector Calderon, Berenice Castañeda, Rogelio Garcia

POSTER #344

948 *Deciphering 1D and 3D Commensurate Modulation In Complex Perovskite Derivatives Through Electron Crystallography;* **Satyam Choudhury**, Rajiv Mandal, Joysurya Basu

POSTER #345

949 *Influence of Ni on the Microstructural Properties of Hot Plastic Deformed A356 Heat Treated Alloy;* **H.M Medrano-Prieto**, J. C. Guía-Tello, R. Martínez-Sánchez, M. Santos-Beltrán, Carlos G. Garay-Reyes, G. Rodriguez-Cabriales, I. Estrada-Guel, J.S. castro-Carmona, A Santos-Beltrán, V. Gallegos-Orozco

POSTER #346

950 *Morphological Study of ZnO-CuO Particles for Photocatalytic Degradation of Tetracycline Antibiotic;* **Juan Pantoja-Espinoza**, Ángel O. Mesta-Mendoza, Manuela V. Álvarez-Lozano, Francisco Paraguay-Delgado

POSTER #347

951 *From Cast to Nanocrystalline: Characterizing the Severe Plastic Deformation of AM50 Mg Alloy induced via High-Energy Ball Milling;* **Roberto Bernal**, I. Estrada-Guel, Roberto Martínez-Sánchez, A. Santos-Beltrán, H.M Medrano-Prieto, J. M. Mendoza-Duarte, Alfredo Martinez-Garcia, Pedro Guerrero, Oscar Solis, Carlos G. Garay-Reyes

POSTER #348

952 *Synthesis of a MgAlFeNiCo High Entropy Alloy by High Energy Ball Milling for Application in Glucose Sensing;* **Edgar Ángeles Sánchez**, Alejandro J. Cortés-López, Víctor M. Orozco-Carmona, Carlos G. Garay-Reyes, Roberto Martínez-Sánchez, Alfredo Martinez-Garcia, Erick A. Juarez-Arellano, Anabel D. Delgado

POSTER #349

953 *Powder Refinement in Mechanically Alloyed FeCoNiCuAl via Single and Hybrid Nanoparticle Reinforcements;* **R. Pérez-Bustamante**, J. Camarillo-Cisneros, Alfredo Martinez-Garcia, J.A. Betancourt-Cantera, J.E. Garcia-Herrera, Hugo Arcos-Gutiérrez, L.A. Caceres-Díaz, F. Pérez-Bustamante, N.N. Martínez-Prieto

POSTER #350

954 *Comparative SEM/OM Characterization of two Gray Cast Iron Specimens: Phase Fractions, Pearlite Spacing, Microhardness, and Inclusion Chemistry;* **Jorge Acevedo-Dávila**, Mario Rodriguez Reyes, Dagoberto Vazquez-Obregon, R. Pérez-Bustamante

POSTER #351

955 *Atomic-Scale Stacking Control of Layered Chalcogenides;* **Sahani Iddawela**, Jessica Thompson, Danielle Reifsnyder Hickey, Kalana Halanayake

POSTER #352

956 *Interfacial Graphite Formation and Strain Localization in Mechanically Milled Al–Al_4C_3 Composites;* **A Santos-Beltrán**, Roberto Martínez-Sánchez, Misael Santos gallego, H.M Medrano-Prieto, I. Estrada-Guel, M. Santos-Beltrán, Diana Santos Gallegos, V. Gallegos-Orozco

P07.P1 High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments

POSTER #353

957 *Microstructural Inheritance and Reinforcement Controlled Hardening in Al7075 WC Composites Processed by Short Duration Mechanical Milling;* **R. Pérez-Bustamante**, F. Pérez-Bustamante, Alfredo Martinez-Garcia, J.A. Betancourt-Cantera, S.P. De la Barreda-Alatorre

POSTER #354

958 *Effect of Hydrothermal Treatment Temperature, Amount of Template and Amount of Alkaline Material on the Synthesis of Mesoporous Zinc Oxide Using Pluronic F-127;* **Salomón Borjas-García**, Pablo Genaro Martínez-Torres, Adan Perez-Chavez, Gonzalo Viramontes-Gamboa, Héctor Javier Anselmo Villegas Moreno, Dhirendra Tiwari, Gerardo Rosas Trejo

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959 *Electron Microscopy Analysis of Silver Nanoparticles on ZrO2–TiO2 Heterojunction;* **Hector Calderon**, Diana Guerrero

POSTER #356

960 *Solution + Artificial Aging Post-Welding Heat Treatment Partially Restores the Microstructure of GMAW AA6061-T6: A Comparative Optical Microscopy Study;* **Victor Mercado-Lemus**, Gerardo Altamirano-Guerrero, Juan Carlos Díaz-Guillén, J.A. Betancourt-Cantera, Maricruz Hernández-Hernández, Rocio Maricela Ochoa-Palacios, Isaías E. Garduño-Olvera, Hugo Arcos-Gutiérrez, Jan Mayen, Miguel Pérez-Gáytan

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961 *Development and Characterization of Novel Silver Conductive Pastes;* **Yi-Cang Lai**, Wilson Hou-Sheng Huang, Jyh-Ferng Yang

POSTER #358

962 *Effect of Laser Surface Texturing on the Electrochemical Behavior of B4C Ceramic Doped with CoCrFeNiMo HEA in Marine Environment;* **Alberto Daniel Rico-Cano**, Carlos Jesús Sánchez-Morales, Burak Cagri Ocak, Gultekin Goller, Julia Claudia Mirza-Rosca

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963 *Mechanical Property Characterizations of Annealed UCO-Pd Diffusion Couple;* **Jana Howard**, Kaustubh Bawane, Jahangir Khan Lodhi, Fei Teng, Tanner Mauseth, Elizabeth Sooby, Patrick Warren, Haiyan Zhao, Steven Cavazos

POSTER #360

964 *Size-dependent Strengthening in Metallic Nanowires Owing to Adatom Diffusion and Surface Curvature on Surface Dislocation Nucleation;* **Guangming Cheng**, Nan Yao, Yong Zhu

POSTER #361

965 *Influence of Aluminum Content on the Electrochemical Behavior of CoCrFeNiAlx High Entropy Alloys Doped with Ultra-High Temperature Ceramic;* **Miguel Lopez-Rios**, Gultekin Goller, Göknur Karadeniz, Julia Claudia Mirza-Rosca, Alberto Daniel Rico-Cano

POSTER #362

966 *Corrosion Behavior of Multiple Zigzags Titanium Thin Films;* **Matteo Bertapelle**, Joel Borges, Julia Claudia Mirza-Rosca, Filipe Vaz

POSTER #363

967 *Synthesis and Electron Microscopy Characterization of Gold Nanoparticles Embedded on TiO2 Nanowires;* **Ernesto Neri**, Hector Calderon

POSTER #364

968 *Atomic to Macroscale Assessment of Failure in Irradiated GaAs Solar Cell Microelectronics;* **Alexander Mantilla**, Kayla Yano, Maddison Rex, Jesus Mendoza, Tim Droubay, Jake Bohlke, Joe Ryan, Ben Kowash, Dave Gotthold, Bethany Matthews

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969 *Effect of the Laser Processing on the Surface of 6061-T6 Aluminum Alloy;* **J.E. Garcia-Herrera**, A. Del C. Gallegos-Melgar, J.A. Betancourt-Cantera, R. Pérez-Bustamante, C.A. Poblano-Salas, V.H. Mercado-Lemus, Maria Camacho-Rios, Hugo Arcos-Gutiérrez

POSTER #366

970 *Optimizing Strain Analysis using MapSweeper Pattern Matching;* **Mark Coleman**, Kim Larsen, Louise Hughes

POSTER #367

971 *Microstructural Analysis of a Single Solvent Electrolyte System for Rechargeable Magnesium Batteries;* **JJ Kim**

P09.P1 Spatiotemporal Optical Response Using Electron Spectroscopies for Nano-Optics

POSTER #368

972 *Plasmon Linewidth Modulation by Dipole–Charge-Transfer-Mode Coupling;* **Kenan Elibol**, Peter van Aken

POSTER #369

973 *Correlating Emission, Absorption, and Composition in Perovskite Nanocrystals;* **Sean Collins**, Luiz Tizei, Sang Pham, Xuemei Li, Jingwei Hou

Scientific Program

A Analytical/Instrumentation Sciences Symposia – Thursday Afternoon

A08.6 Microscopy and Microanalysis for Real World Problem Solving

Thursday 1:30 PM

1:30 PM **975** *Characterization of Micro- and Nano-Sized Particulates in Bottled Drinking Water Using SEM, IR, and Raman Spectroscopy;* **Sarah Miller**, Levi Litwiller

1:45 PM **976** *Sample Preparation and Use of a SEM to Count and Size Micro- and Nano-Plastic Particles;* **Abigail Lindstrom**, Diana Ortiz-Montalvo, Nicholas Ritchie, Tae Joon Cho, John Pettibone, Justin Gorham

2:00 PM **977** *Scanning Electron Microscopy (SEM) Investigation of Fiber–Matrix Interactions in Polypropylene/Fique Composites;* **Julio Cuellar**, Julian Narvaez-Romo, Juan Meza

2:15 PM **978** *Correlative Core-Loss and Vibrational EELs for Robust Nanoscale Bonding Quantification in Carbon-Based Materials;* ***Abinash Kumar***, Piyush Haluai, Rhonda Stroud, Kartik Venkatraman, Brenda Prenitzer

C Cross-Cut/Interdisciplinary Sciences Symposia – Thursday Afternoon

C01.5 Transmission Electron Microscopy for Beam-Sensitive Materials

Thursday 1:30 PM

1:30 PM **979** *Streaming Parallax Ptychography for Dose-Efficient Diffractive Imaging;* **Georgios Varnavides** (INVITED), Toma Susi, Clemens Mangler, Alexander Clausen, Willem P.M. de Kleijne, Stephanie Ribet, Peter Ercius, Dieter Weber

2:00 PM **980** *4D-STEM as a Probe of Protein Crystal Mosaicity and Radiation Damage;* **Shervin Nia**, Matthew Mecklenburg, Z. Hong Zhou, Peter Ercius, Ambarneil Saha, Jung Cho

2:15 PM **981** *TEM Observations of Spontaneous Bending and Twisting of Ammonium Urate Biogenic Crystals;* **Hector Calderon**, David Bell, Jeffrey Rimmer, Francisco Robles Hernandez, Weiwei Tang

2:30 PM **982** *High-Resolution and Lattice Defect Imaging of Dry Ice Using Transmission Electron Microscopy;* **Prasanna Sarkar,** Qi Zheng, Yi Cui, Robert Sinclair

2:45 PM **983** *The Crystalline Structure of Extracted Starches from Different Agricultural Residues, Mango and Avocado by Techniques of Microscopy;* **Hector Calderon**, Liliana E Rojas-Candelas

C02.2 Atomic-Scale Hyperspectral Imaging for Materials Characterization

1:30 PM **984** *In Situ Formation of Au–MXene Heterostructures for Hydrogen Evolution Catalysis;* **Francisco Lagunas** (INVITED), Suravi Sarkar, Ashley Cavanagh, Anupma Thakur, Nithin Chandran B.S., Babak Anasori

2:00 PM **985** *Surface Chemistry–Controlled Morphology Evolution in Molten-Salt III–V Core–Shell Quantum Dots;* **Danial Zangeneh**, Jun Hyuk Chang, Dmitri Talapin, Robert Klie

2:15 PM **986** *Synthesis and Nanoscale Chemical Heterogeneity of CrMnFeNiCo High-Entropy Alloy Nanoparticles;* **Daniela Fonseca**, Madeline Jones, Ricardo Castro, Martin Harmer

2:30 PM **987** *Atomic-Scale Hyperspectral Imaging for Next Generation Oxide Dispersion Strengthened Alloys and High Entropy Alloys: Working Towards Predictive Models;* **Robert Williams** (INVITED)

C03.2 Preservation and Validation of Electron Microscopy Data across the Biological and Physical Sciences

1:30 PM **988** *3DEM Map and Model Validation using Q-scores;* **Grigore Pintilie** (INVITED), Chenghua Shao, Zhe Wang, Brian Hudson, Justin Flatt, Michael Schmid, Kyle Morris, Stephen Burley, Wah Chiu

2:00 PM **989** *Secure Network Storage for Shared Instrumentation within nano@stanford;* **Andrew Barnum**, Pinaki Mukherjee

2:15 PM **990** *Microstructural Characterization of a GO–Fe_3O_4/Ag Nanocomposite for the Removal of Cu (II) from Water;* **L. García**, Gerardo Rosas Trejo, Salomón Borjas-García, N Cayetano-Castro

2:30 PM **991** *Synthesis of ZnO Flower-Like Structures Using Carbon Quantum Dots as Growth Nuclei via a Hydrothermal Method;* **L. García**, R. Perez, N Cayetano-Castro, Salomón Borjas-García, Josue Blancas, Gerardo Rosas Trejo

2:45 PM **992** *Microscopical Analysis of Chitosan Patch Functionalized with Clove Essential Oil;* **Lizbeth Sanchez Fuentes**, Noé López-Perrusquia, Marco Antonio Doñu-Ruiz, Celia Massiel Hernández Hernández, Lizbeth Melo-Máximo, Ernesto García

C04.4 Living on the Edge: Real-Time Processing and Decision Making at the Microscope

1:30 PM **993** *Automated Drift Correction by Feedback Control of the Specimen Stage for Atomic-Scale Imaging: Long Exposure Times and Real-Time Phase Visualization;* **Martin Hytch** (INVITED), Christophe Gatel

2:00 PM **994** *Real-time Predictive Drift Compensation for Distortion-free and In-situ STEM;* **Matthew Mosse**, Jonathan Peters, Eoin Moynihan, James Gott, Ana Sanchez, Michele Conroy, Lewys Jones

2:15 PM **995** *Hearing the Microscope: Experimental Characterization of Acoustic Vibrations in High-Performance STEM;* **Kaia Thompson**, Suk Hyun Sung, Robert Hovden

2:30 PM **996** *Automation of the TEM: Under the Hood and Why It Matters;* **Matthew Olszta** (INVITED), Kevin Fiedler, James Haag, Semanti Mukhopadhyay, Kayla Yano, Derek Hopkins

Scientific Program

P Physical Sciences Symposia – Thursday Afternoon

P01.1 'Nothing is Perfect': Order and Disorder in the Functional Responses of Molecular Materials

Thursday 1:30 PM

1:30 PM **997** *Structural Analysis of Chiral Nanocrystals;* **Yanhang Ma** (INVITED), Zhipeng Li

2:00 PM **998** *Monochromated EELS with High Momentum Resolution;* **Michel Bosman** (INVITED), Hue Do

2:30 PM **999** *Atomic Stencil: Molecular Patterning with Precision on Nanoparticles;* **Ahyoung Kim** (INVITED), Chansong Kim, Tommy Waltmann, Thi Vo, Eun Mi Kim, Yu-Tsun Shao, Aaron Michelson, Qian Chen, Kristen Fichthorn, Sharon Glotzer

P05.9 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis

1:30 PM **1000** *Electron-Beam-Driven Atomic Fabrication and Defect Engineering in Silicon-Based Materials;* **Kamyar Barakati**, Utkarsh Pratiush, Austin Houston, Gerd Duscher, Sergei Kalinin

1:45 PM **1001** *Observation of Microstructure and Phase Transformations in Neutron-Irradiated U-10Zr Fuel by In Situ Heated TEM;* **Kourtney Wright,** Karen Wright, Kaustubh Bawane, Laura Hawkins, Tanner Mauseth, Fei Teng, Fidelma Di Lemma, Tiankai Yao

2:00 PM **1002** *Radical-Mediated Amplification of Beam-Induced Damage;* **Jung Cho**, Shervin Nia, Alexander Pattison, Peter Ercius, Matthew Mecklenburg, Ambarneil Saha

2:15 PM **1003** *Revealing Intracrystalline Aragonite Defects in Stony Corals;* **Yu Wen**, Daniel Yi Fisher, Bi-Cheng Zhou, Joshua Voss, Vivian Merk, Paul J.M. Smeets

2:30 PM **1004** *Technique to Differentiate Intergranular and Intragranular Bubbles in Commercially Irradiated High-Burnup Fuel Using Grain Boundary Maps;* **Lauryn Reyes**, Chad Parish, Casey McKinney, Jason Harp, Nathan Capps, Brian Wirth

2:45 PM **1005** *Microscopic Characterization of Helium Implanted Nickel;* **Hikaru Tanaka**, James Davis, Jane Howe, Advay Rao, Yanwen Zhang, Steven Theriault

P07.5 High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments

1:30 PM **1006** *In situ TEM Laser Induced Dealloying of Tungsten-Magnesium;* **Khalid Hattar** (INVITED), Tibra Das Gupta, Logan Howard, Shane Evans, Eric J. Lang, John T. Balk, Elijah Davis

2:00 PM **1007** *In-Situ TEM Investigation of Accelerated Boride to Carbide Transformation in LPBF In625 TiB2 Metal Matrix Composites;* **Elaf Anber**, Sebastian Lech, Tyler D. Dolezal, Emre Tekoglu, Zihan Lin, Ju Li, Mitra Taheri

2:15 PM **1008** *In Situ Transmission Electron Microscopy Analysis of Electron Irradiation-Induced Amorphous to Crystalline Phase Transformations in TiO2 Nanotubes;* **Nicole Keninger**, Janelle Wharry, Tristan Olsen, Cyrus Koroni, Sarah Pooley, Hui Xiong, Sooyeon Hwang

2:30 PM **1009** *Characterization of Deformation and Fracture Behavior Mechanisms of In-service Irradiated Stainless Steel;* **Timothy Lach**, Xiang (Frank) Chen, Maxim Gussev

2:45 PM **1010** *Studying Fluxionality of Pt Nanoparticle Surfaces with Atomic Resolution using in situ TEM;* **Blake Dorame**, Peter Crozier

P09.3 Spatiotemporal Optical Response Using Electron Spectroscopies for Nano-Optics

1:30 PM **1011** *Probing Nanophotonic Dynamics via Ultrafast PINEM and Cathodoluminescence;* **Thomas Gage** (INVITED), Haihua Liu, Jianguo Wen, ibrahim tanriover, Suman Kumari, Benjamin Diroll

2:00 PM **1012** *Phase Space Shaping in Ultrafast Transmission Electron Microscopy Using a V-Band Microwave Cavity;* **Johann Toyfl**, Dennis Naraschkewitz-Epp, Armin Feist, Claus Ropers

2:15 PM **1013** *Structured Electron Beams for Inelastic Phase Resolved Measurements;* **James Haverstick**, Kyle Cole, Ben McMorran

2:30 PM **1014** *Advancements in Two-Grating Electron Interferometry;* **Kyle Cole**, James Haverstick, Ben McMorran

2:45 PM **1015** *Electron-Heralding of Quantum Light at an Integrated Photonic Microchip;* **Armin Feist**, Guanhao Huang, Germaine Arend, Yujia Yang, Jan-Wilke Henke, Zheru Qiu, Hao Jeng, Arslan Sajid Raja, Claus Ropers, Tobias Kippenberg

A Analytical/Instrumentation Sciences Symposia – Thursday Late Afternoon

A08.7 Microscopy and Microanalysis for Real World Problem Solving

Thursday 3:30 PM

3:30 PM **1016** *Plasma-Based Strategies for Mitigating Hydrocarbon Contamination to Improve Imaging and Microanalytical Performance in Electron Microscopy;* **Barbara Armbruster** (INVITED), Ewa Kosmowska, Chongshan Liu

4:00 PM **1017** *Argon Ion Milling for Challenging Industrial Materials: Practical SEM Preparation Strategies from Real-World Case Studies;* **Pawel Nowakowski,** Mary Louise Ray, Paul Fischione

4:15 PM **1018** *Preparing Non Conductive Samples for Correlative Raman-EDS Microscopy;* **Ute Schmidt**, Stefan Kreissl, Alexandra Stavropoulou, Ulrich Rupp, Joshua Lea

4:30 PM **1019** *Improving EPMA Analysis and Mapping of Beam-Sensitive Materials with a Time-Dependent Intensity Correction;* **John Donovan**, Julien Allaz, Anette von der Handt

4:45 PM **1020** *The Removal of Surface Carbon and Silver Oxide from Contaminated Silver Surfaces to Produce Metallic Silver Using Forming Gas in a Downstream Plasma;* **Bryan Tracy**, Michael Hjelmstad

Scientific Program

C Cross-Cut/Interdisciplinary Sciences Symposia – Thursday Late Afternoon

C01.6 Transmission Electron Microscopy for Beam-Sensitive Materials

Thursday 3:30 PM

3:30 PM **1021** *Electron ptychography for Ultralow Dose Imaging of Beam Sensitive Materials at Atomic Resolution;* **Timothy Pennycook** (INVITED), Biao Yuan, Zeyu Wang, Shuchen Zhang, Yu Han, Letian Dou, Yi Yu

4:00 PM **1022** *Electron-Beam-Induced Degradation of Halide Perovskites Revealed by Ultra-Low-Dose Microscopy;* **Yuxi Zhang**, Nasim Alem, Farzaneh Rezaei, Hadas Sternlicht, Sai Venkata Gayathri Ayyagari, Mariana Bertoni, David Fenning, Kelly Vences, Connor Dolan, Arkita Chakrabarti

4:15 PM **1023** *Nanobeam Electron Diffraction and Machine Learning Analysis for Mapping Semicrystalline Order in Polymers;* **Nicholas Marchese**, Arthur R. C. McCray, Yael Tsarfati, Karen Bustillo, Alberto Salleo, Colin Ophus

4:30 PM **1024** *Direct Imaging of Defect-Driven Nanoparticle Localization In Metal-Organic Frameworks;* **Cheng-Yun Wu**, Ranming Niu, Mohana Shivanna, Joshua Sugar, Ken-Tye Yong, Vitalie Stavila, Eason Yi-Sheng Chen

4:45 PM **1025** *Atomic Resolution Studies of Single-Atom Yb3+ Dopants in CrX3 2D Ferromagnets Using Scanning Transmission Electron Microscopy;* **Orlando Salguero**, Guodong Ren, Thom Snoeren, Kimo Pressler, Daniel Gamelin, Juan Carlos Idrobo

C02.3 Atomic-Scale Hyperspectral Imaging for Materials Characterization

3:30 PM **1026** *Hight Spatial Resolution Analysis of Delocalized Excitations with Polarization Selective Monochromated Electron Energy Loss Spectroscopy;* **Jordan Hachtel** (INVITED), Harrison Walker, Eric Hoglund, Sokrates Pantelides

4:00 PM **1027** *Probing Nanoscale Interactions of Mo2Ti2C3Tx MXenes and Au Nanoparticles using Scanning Transmission Electron Microscopy;* **Suravi Sarkar**, Anupma Thakur, Nithin Chandran B.S., Babak Anasori, Francisco Lagunas

4:15 PM **1028** *Noise Mitigation Strategies for High Spatial Resolution Imaging with Electron Energy-Loss Spectroscopy;* **Peter Crozier** (INVITED), Yifan Wang, Piyush Haluai, Mai Tan, Blake Dorame

4:45 PM **1029** *Correlative Nanoscale Analysis of Electronic Disorder and Optical Behavior in Cubic GaN/GaAs;* **Dalaver Anjum**

P Physical Sciences Symposia – Thursday Late Afternoon

P01.2 'Nothing is Perfect': Order and Disorder in the Functional Responses of Molecular Materials

Thursday 3:30 PM

3:30 PM **1030** *Hierarchical Structures of Semicrystalline Polymers Studied by 4D-STEM;* **Hiroshi Jinnai** (INVITED)

4:00 PM **1031** *How Does Charge Injection Reorder the Mesoscale Microstructure of Mixed Ionic–Electronic Conducting Polymers?;* **Yael Tsarfati** (INVITED), Andrew Minor, Alberto Salleo, Rajiv Giridharagopal, Colin Ophus, Junyan Li, Nicholas Marchese, Karen Bustillo, Stephanie Ribet, Karina Masalkovaitė

4:30 PM **1032** *A Chemical Perspective on Radiolytic Damage;* **Ambarneil Saha** (INVITED), Shervin Nia, Jung Cho, Matthew Mecklenburg, Peter Ercius

P05.10 Advances in Electron Microscopy for Defect and Crystallographic Structure Analysis

3:30 PM **1033** *Microstructure Evolution of Aged Superelastic NiTi in a Short Time;* **Seyed Aref Golsorkhi**, Melodie Fickenscher, Le Zhou, Matthew Steiner, Dinc Erdeniz

3:45 PM **1034** *Cold-Spray Coating of AlCrCoFeNi High Entropy Alloy on F-0008 Powder Metal Part;* **Daudi Waryoba**, Ezeck Olinger, Dylan Treaster

4:00 PM **1035** *Grain boundary excess in doped oxide ceramics and its variation due to externally applied electric fields;* **Klaus van Benthem**, William Hahn, Clay Ursu

4:15 PM **1036** *Single-layered Co-Doped Titanium Dioxide (TiO2) Nanotube: Crystallization, Morphology Tuning for Water Splitting Application;* **Isaac Oppong Yeboah**, Francisco C. Robles Hernandez

4:30 PM **1037** *Atomic-Scale Evolution of Nanometallenes: Growth and their Oxide Formation;* **Mishel Rajesh Sherly**, Caroline Andreazza, Rafael Gregorio Mendes

4:45 PM **1038** *Reversible Grain Boundary Segregation in Nanocrystalline Au–Pt Thin Films Correlated with Boundary Energetics;* **Wen-Yu Chen**, Elizabeth Dickey, Gregory Rohrer, Maarten de Boer, Md. Shariful Islam, Sebastian Calderon

P07.6 High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments

3:30 PM **1039** *Electron Microscopy Study of Dislocation Evolution in Multilayer AlGaN/GaN/AlN Under 950 MeV Au Swift Heavy Ion Irradiation;* **Bowen Zhang**, Mahjabin Mahfuz, Maik Lang, Miaomiao Jin, Xing Wang

3:45 PM **1040** *Micro and Nano Structure of Additively Manufactured Al-Ce-Mg/Graphene Metal Matrix Composite;* **Omid Ghaderi**, Swaroop Behera, Kaustubh Rane, Mehran Zare, Asif Mahmud, Prasanna Sarkar, Pawel Czaja, Yongho Sohn, Robert Sinclair, Pradeep Rohatgi

4:00 PM **1041** *Revealing the Atomic Structure and Elemental Distribution of Compositionally Complex III-V Nanocrystals by Scanning Transmission Electron Microscopy;* **Benjamin Hammel**, Zirui Zhou, Justin Ondry, Dmitri Talapin, Sadegh Yazdi, Gordana Dukovic

4:15 PM **1042** *Spectro-Microscopic Analysis of Surface-Structure Evolution in High-Entropy Layered Oxide Cathode Materials;* **Aravind Raji**, Zachary Mansley, Jessica Luo, Melissa Guercio, Cynthia Huang, Shan Yan, Amy Marschilok, Esther Takeuchi, Kenneth Takeuchi, Yimei Zhu

4:30 PM **1043** *Functional Property Insights Into Low-Symmetry, Monoclinic Gallium Oxide Under Dynamic Conditions;* **Andrew Balog**, Nasim Alem, Steffi Woo, Benjamin Dutton, Jani Jesenovec, John McCloy

4:45 PM **1044** *Comparative Spectroscopic and Microscopic Investigation of Microstructure, Magnetic, and Dielectric Properties in Ni^{2+} and Cu^{2+} Substituted $SrFe_{12}O_{19}$ Hexaferrites;* **Deependra Parajuli**

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www.bruker.com

Bruker offers a broad range of systems for enhanced analytical electron microscopy: EDS and WDS X-ray spectrometry, EBSD, micro-XRF, micro CT, and in-situ nanomechanical characterization. We also offer AFM platforms for a broad range of surface characterization and metrology capabilities, including nanoscale IR spectroscopy.

CAMECA/ TMC

BOOTH 803

www.cameca.com

CAMECA is a world leading supplier of microanalytical and metrology instrumentation. Our instruments measure elemental and isotopic composition in materials at atomic resolution and equip government and university labs as well as industrial companies around the world.

Carl Zeiss Microscopy, LLC

BOOTH 929

www.zeiss.com

ZEISS Research Microscopy Solutions is the world's only one-stop manufacturer of light, electron, X-ray and ion microscope systems and offers solutions for correlative microscopy. The portfolio comprises of products and services for life sciences, materials and industrial research, as well as education and clinical practice. Modular software platforms for image acquisition, processing and analysis ensure an optimized data handling for unleashing the full potential of each ZEISS instrument.

CIQTEK Co., Ltd.

BOOTH 718

www.ciqtek.com

CIQTEK is the global developer & manufacturer of high-precision scientific instruments. Our main business includes Electron Microscopes (SEM/FIB, TEM), Magnetic Resonance (EPR/ESR, NMR), Scanning NV Microscopes, and BET Surface Area & Pore Analyzer.

condenZero
BOOTH 342
www.condenzero.com

Newly developed cryo-TEM sample holders for experiments at liquid helium temperatures with heating and electrical biasing capabilities. Standard 3mm grids can be fixed on a sample chip and then slipped into the sample holder. Mechanical stability is enabled by a damping stage counteracting vibrations from the ground and helium flow through a low- noise helium transfer line.

Cordin Scientific Imaging
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www.cordin.com

Correscopy
BOOTH 825
www.correscopy.com

Coxem Co., Ltd
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www.coxem.com

Introducing the new EM-40 Tabletop SEM and full-size SEM systems, featuring advanced software enhanced by our new Live 3D software feature. Both SEM platforms support integrated EDS with automated feature analysis, compatible with Oxford and Bruker. The EM-40 is also available with Bruker's compact EBSD solution. Complete sample preparation solutions are offered with our ion beam polisher, supporting both cross-sectional and flat milling, with an optional air-protection module for air-sensitive samples. "Supported by our North American partner, JH Technologies."

CRYOCAPCELL
BOOTH 1225
www.cryocapcell.com

Deben UK Limited
BOOTH 209
www.deben.co.uk

Deben UK Ltd. are a precision engineering company based in the UK, specialising in the field of in-situ tensile testing, motion control and specimen cooling for microscopy applications. Main product groups are motor control systems, in-situ micro-tensile stages, Peltier heating & cooling stages, detectors for SEMs and electrostatic beam blankers. We also make custom and OEM versions of these products to specifically meet customer requirements.

DECTRIS Ltd.
BOOTH 530
www.dectris.com

DECTRIS develops and manufactures the most accurate X-ray and electron cameras to spark scientific breakthroughs around the world. While photographic cameras capture visible light, DECTRIS cameras count individual X-ray photons and electrons. DECTRIS is the global market leader at synchrotrons.

Diatome US
BOOTH 318
www.diatomeknives.com

Direct Electron, LP
BOOTH 1130
www.directelectron.com

Direct Electron designs, manufactures, and delivers next-generation direct detection cameras for electron microscopy. Our pioneering and award-winning Direct Detection Device (DDD®) sensor technology delivers lower noise, better sensitivity, higher speed, and expanded versatility. Our cameras also deliver full-speed movies to users to enable motion correction, dose filtering, in situ imaging, 4D-STEM data collection and more.

Dragonfly

BOOTH 435

www.comet.tech

As a proud supporter of innovators in science and industry, we develop advanced 3D visualization and analysis software for today's most demanding 2D, 3D, and 4D imaging tasks. Dragonfly is a brand of the Comet Group, a globally leading Swiss technology company with a focus on plasma control and X-ray technology.

Duniway Stockroom Corp.

BOOTH 1104

www.duniway.com

For 49 years, Duniway Stockroom has supplied new and used vacuum equipment to the world. We manufacture new ion pumps and controllers (Terranova®) as well as new vacuum gauge controllers (Terranova®). Large stock of hardware, supplies, and valves. We rebuild ion pumps, diffusion pumps and mechanical pumps as well as sell rebuilt versions of same.

E. Fjeld Co, Inc.

BOOTH 1113

www.efjeld.com

Electron Microscopy Sciences / Quorum Technology

BOOTH 214

www.biolyst.com

Electron Microscopy Sciences will have on display their complete line of accessories, chemicals, supplies and equipment for all fields of microscopy, biological research and general laboratory requirements, as well as our full line of tools, tweezers and dissecting equipment.

EmCrafts Co., Ltd

BOOTH 818

www.emcrafts.com

Meet this self-installable SEM system with great portability and high performance. EmCrafts is a Korea's leading SEM manufacturer and its CubeTM system has a 5nm resolution at 30kV and is also capable of showing SE and BSE simultaneously on two different imaging windows. Every EDS detector from EDS makers can be installed inside CubeTM. Cooling stage is also available for biological samples.

Epic Advanced Materials

BOOTH 903

www.epicbnnt.com

Euclid TechLabs, LLC

BOOTH 1106

www.euclidtechlabs.com

Euclid Techlabs is an R&D-to-manufacturing company that supports the EM community with customized sample holders for high frequency applications, laser-free UEM pulsers, and MeV sources for electron microscopes/accelerators. Our retrofittable UltraFast Pulser provides repetition rates up to 10 GHz with adjustable pulse widths for rapid stroboscopic/low- dose imaging.

Exum Instruments

BOOTH 1117

www.exuminstruments.com

Exum pioneers instruments and software ecosystems for fast and cost-effective materials characterization. Massbox is the first instrument to deliver Laser Ablation Laser Ionization Time of Flight Mass Spectrometry (LALI-TOF-MS), offering unmatched analytical prowess, ensuring thorough analysis of diverse materials, and accelerating development and discovery in research and product development.

Ferrovac

BOOTH 337

www.ferrovac.com

Ferrovac pushes the boundaries of controlled environment sample transfer. We provide true UHV and cryo transfer solutions, from your glovebox, to your FIB, and onwards to your analysis instrument. Come and see our transfer solutions at the booth, and speak to us about your sample transfer needs.

Fischione Instruments

BOOTH 433

www.fischione.com

Fischione Instruments' products are integral to electron microscopy research in many fields, including energy, industry, life sciences, and semiconductors. We offer a comprehensive range of products designed to meet the evolving needs of electron microscopy and nanotechnology research. Our primary product groups are: • Ion beam sample preparation • Plasma cleaning • Conventional TEM specimen preparation tools • TEM tomography specimen holders Fischione Instruments provides superior customer support: Their technical experts offer comprehensive training, prompt assistance, and ongoing guidance to ensure that customers achieve their microanalysis goals.

Gatan/EDAX

BOOTH 809

www.ametek.com

Gatan, Inc. is the world's leading manufacturer of instrumentation and software used to enhance and extend the operation and performance of electron microscopes. Gatan products, which are fully compatible with nearly all electron microscope models and include the EDAX portfolio, cover the entire range of the research process.

h-Bar Instruments

BOOTH 1026

www.hbarinstruments.com

h-Bar Instruments develops transmission electron microscopy instruments for atomic resolution imaging while samples are cooled with liquid helium. The unique liquid flow design enables extended operations times, superior temperature stability, low vibrations conditions, and atomic resolution imaging.

Herzan LLC

BOOTH 334

www.herzan.com

Herzan’s mission is to help researchers maximize the quality of data collected by their instrumentation. To achieve this goal, Herzan designs research-grade environmental solutions to isolate acoustic, vibration, and EMI noise under any ambient lab conditions.

Hexa Robotics

BOOTH 821

Hirox-USA, Inc.

BOOTH 1121

www.hirox-usa.com

Hirox is the pioneer of 3D Digital Microscope System. Our digital microscope system is a versatile tool for measurement, recording, and seeing things “as they truly are”. Hirox’s high-quality optical and lighting designs allow a magnification range of 0x-10,000x, live focus, and real-time 2D/3D tiling with an automated XY stage.

Hitachi High-Tech America, Inc.

BOOTH 622

www.hitachi-hightech.com

Hitachi High-Tech America, Inc. ("HTA") is a privately-owned global affiliate company that operates within the Hitachi Group Companies. HTA sells and services semiconductor manufacturing equipment, analytical instrumentation, scientific instruments, and bio-related products as well as industrial equipment, electronic devices, and electronic and industrial materials.

HREM Research Inc.

BOOTH 1014

www.hremresearch.com

HREM Research is a leading software company for Quantitative Electron Microscopy. We provide the well-known FFT-Multislice HRTEM Image Simulation Package, and the user-friendly plug-ins for DigitalMicrograph: Strain Mapping, Noise Filters for HR(S)TEM, Scan Noise corrector, STEM and EELS Deconvolution, etc. Please visit our booth for more details.

Hummingbird Scientific

BOOTH 918

www.hummingbirdscientific.com

Hummingbird Scientific builds products for electron, X-ray and ion microscopy with an emphasis on transmission electron microscopes (TEM). In close collaboration with our customers, we design and manufacture all aspects of these complex systems, from mechanical, electrical, and software design to fabrication and assembly. We provide pioneering solutions for applications in nanotechnology, materials science, and biology.

ibss Group, Inc.

BOOTH 1123

www.ibssgroup.com

ibss Group has expanded its GV10x models and has customers in EM and synchrotron labs around the world successfully using the GV10x and related products. To ensure quality and safety for users, ibss products are CE, KC, CB and RoHS compliant. Further, the GV10x has been approved for use at its full range of power (10 to 99 watts).

Insight Chips

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JASCO

BOOTH 749

www.jascoinc.com

JEOL USA, Inc.

BOOTH 504

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Since 1949, the JEOL legacy has been one of outstanding innovation in developing instruments used to advance scientific research and technology. JEOL has more than 70 years of expertise in the field of electron microscopy, more than 60 years in mass spectrometry and NMR spectrometry, and more than 50 years of e-beam lithography leadership.

Kashiyama

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Kims Reference Corp.

BOOTH 1235

www.kimsreference.com

Kitware

BOOTH 1222

www.kitware.com

We want to make the world a better place through custom software solutions. Our world-class, interdisciplinary team of technical experts develops custom software for customers in the areas of medical computing, computer vision, and scientific visualization.

Kleindiek Nanotechnik

BOOTH 221

www.kleindiek.us

Kleindiek Nanotechnik specializes in high-precision micromanipulators for integration into SEMs and FIB/SEMs (but also for light microscopy). We provide a wide range of applications from TEM sample liftout to electrical and mechanical characterization at the micro and nanoscale. Nano-assembly and cryo-LiftOut are available as well as specialized stages for eucentric tilt - e.g. to remove curtaining effects during FIB milling.

Kratos Analytical, a Shimadzu Company

BOOTH 1020

www.kratos.com

Kratos Analytical manufactures and supplies leading X-Ray Photoelectron Spectrometers to the surface analysis community in universities, industry and government labs. Shimadzu Analytical Instruments manufactures a broad range of instrumentation, including EPMA, SPM, and many other techniques, supplying instrumentation across the world.

Leica Microsystems

BOOTH 630

www.leica-microsystems.com

Leica Microsystems develops and manufactures microscopes and scientific instruments for the analysis of microstructures and nanostructures. We are a market leader in compound and stereo microscopy, digital microscopy, confocal laser scanning microscopy, electron microscopy sample preparation, optical coherence tomography, and surgical microscopes.

Luxel

BOOTH 917

www.luxel.com

MAS: The Microanalysis Society

BOOTH 1041

www.the-mas.org

The Microanalysis Society (MAS) is a non-profit professional association dedicated to the advancement and dissemination of knowledge concerning the principles, instrumentation, and applications of microanalysis down to the atomic level. Come see us about membership and see what is happening in MAS. Become a member today!

McCrone Group

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Mel-Build

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www.melbuild.com

We are TEM Holder & SEM Stage manufacturer.

Microscopy Innovations, LLC

BOOTH 739

www.microscopyinnovations.com

Fast, reproducible, easy-to-use EM specimen processing — mPrep™ ASP™ auto-processors! Proven technology. Published results. With biological tissue, immunolabeling, grid staining, & volume EM. Can reduce protocol times from days to hours. Capsule-based technology reduces specimen handling, controls reagent use, and cuts hands-on-time.

Midwest Center for Cryo-Electron Tomography

BOOTH 1218

www.wisc.edu

The Midwest Center for Cryo-Electron Tomography (MCCET) is the NIH-sponsored National Cryo-ET Network Hub. Our mission is to work collaboratively with our sister centers: CCET at CU-Boulder, NCITU at the NYSBC, and SCSC at Stanford-SLAC to support the research community with access to and training in cryo-ET.

MIPAR Image Analysis

BOOTH 1204

www.mipar.us

MIPAR Image Analysis is a world-leading algorithm development and image analysis software company. We specialize in efficiently, accurately, and reliably extracting measurements from complex images. From material and life sciences to aerospace and manufacturing solutions, our extensive portfolio can assist a variety of real-world applications. Our flagship MIPAR product offers an intuitive user-experience, drag-and-drop custom algorithm development, and a powerful deep learning toolbox. Combined with expert consultative services, we offer clients an end-to-end solution that suits their particular project needs. MIPAR helps clients implement sophisticated algorithms that save time and cost while increasing accuracy and supervision over results.

MPF Products Inc

BOOTH 425

www.mpfpi.com

MPF Products, Inc. is a leading manufacturer of hermetically sealed, Ultra High Vacuum (UHV) compatible, ceramic-to-metal sealed electrical feedthroughs and viewports. We have been in business nearly 25 years and have over 100 years of combined engineering and manufacturing expertise. We have over 2,200 standard designs on our website, along with capabilities of producing specialty designs.

MSA MegaBooth

BOOTH 742

www.microscopy.org

The MegaBooth provides MSA membership services to meeting attendees. It is comprised of Membership (including LAS and Sustaining Members), Publications (*Microscopy and Microanalysis* and *Microscopy Today*), MSA Committees represented are - Certification Board, Placement Office, Tech Forum, Student Council, Early Career Committee, and Education Outreach.

NanoMEGAS - turnkey 4D-STEM

BOOTH 1112

www.nanomegas.com

NanoMEGAS has pioneered precession-enhanced 4D-STEM in the Transmission Electron Microscope for 20+ years. Works with the latest direct electron detectors for fastest, noise-free data acquisition. Key applications: - Orientation and Phase Mapping - Strain Mapping - Analysis of Amorphous Materials by ePDF Mapping (NEW) - Measurement of Local Electric Fields (eField Mapping) - Structure Determination of Micro- and Nanocrystals.

Nanomotion Inc

BOOTH 1017

www.nanomotion.com

Nanomotion designs and manufactures precision motion systems for microscopes and analytical instruments. Nanomotion's multi-axis stages are designed to optimize the motion performance of Light Sheet, Raman and Digital Microscopes. Vacuum compatible motion systems support SEMs and ION Beam Microscopes.

Nanoscience Instruments

BOOTH 418

www.nanoscience.com

Our booth is your gateway to unlock the full potential of your microscopy research. Stop by for live demonstrations of the industry-leading Phenom tabletop SEMs/STEMs and discover the latest in ion mills, sputter coaters, and cryo-EM sample preparation solutions. For over two decades, we have been committed to your R&D success.

NanoSoft
BOOTH 224
www.nanosoftmaterials.com

NanoSoft develops, manufactures and sells tools, instrumentation, and consumables for the preparation, handling and storage of samples for Cryogenic Electron Microscopy (cryoEM). NanoSoft offers products for all cryoEM workflows, including Single Particle Analysis, cryoFIB/tomography and volume EM. NanoSoft products enhance and improve efficiency, for example, for: vitrification on the Thermo Fisher Vitrobot, clipping cryoEM grids with autogrid/c-clip rings for loading into autoloader based cryoTEMs, storage of samples in LN2, milling with Aquilos/ Hydra cryoFIBs, high pressure freezing of cellular samples, etc.

Noblegen Cryogenics
BOOTH 904
www.noblegencryo.com

NewTec Scientific
BOOTH 237
www.newtec.fr

Norcada, Inc.
BOOTH 338
www.norcada.com

Norcada is the premier manufacturer of high quality ultra-clean SiNx, Si and SiC membranes and other MEMS devices for TEM, SEM and X-Ray microscopy. In-Situ Holders and MEMS solutions such as Heating chips, Biasing chips, Liquid Cells and Electrochemistry devices are our specialty.

NTT Advanced Technology Corporation
BOOTH 823
www.ntt-at.co.jp

Oxford Instruments
BOOTH 730
www.oxinst.com

Celebrating 60 years of scientific excellence and innovation, Oxford Instruments is committed to supporting research and industrial applications in order to develop a deeper understanding of the world through Science & Technology. Our innovative key-enabling technologies and expertise empower customers to accelerate their R&D, increase productivity and make new scientific discoveries. We are proud to be recognised as the leaders in what we do and for the difference we make in the world.

PanoSciEdu
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www.panosciedu.com

PanoScientific, LLC
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www.synchres.com

Photonic Cleaning Technologies, LLC

BOOTH 1024

www.photoniccleaning.com

Physical Electronics

BOOTH 1119

www.phi.com

Physical Electronics is a subsidiary of ULVAC-PHI, the world's leading supplier of UHV surface analysis instrumentation used for research & development of advanced materials in a number of high technology fields including nanotechnology, microelectronics, storage media, bio-medical, & basic materials such as metals, polymers, & coatings. PHI's innovative XPS, AES, and SIMS technologies provide our customers with a full range of instrument types.

PIE Scientific LLC

BOOTH 1213

www.piescientific.com

PIE Scientific specializes in developing advanced plasma cleaning equipment to remove hydrocarbon contamination for TEM, SEM and FIB systems. Tergeo-EM plasma cleaning system is a standalone system for sample cleaning & CryoEM grid activation. EM-KLEEN plasma source can be used for in-situ cleaning of electron microscope chamber and samples.

PNDetector GmbH

BOOTH 1030

www.pndetector.de

PNDetector has been developing and manufacturing advanced radiation detectors for X-ray fluorescence or microanalysis, materials science and quality assurance since 2007. The sensors are fabricated in PNDetector´s own silicon production and packaging line. The emphasis is on Silicon Drift Detectors (SDDs), Backscattered Electron Detectors (BSD) and Charged Coupled Devices (pnCCDs).

point electronic GmbH

BOOTH 329

www.pointelectronic.de

point electronic GmbH specializes in developing and manufacturing, turnkey imaging and scan generators, detectors, analysis systems and complete microscope controls for SEM, FIB, TEM and Microanalyzers. We are a strong OEM partner for customized electronics and software solutions, as well as for custom techniques, such as Topography, EBIC and EBAC/RCI.

Protochips, Inc.

BOOTH 412

www.protochips.com

Protochips' offers in situ TEM solutions that consider every step of the scientific workflow, from sample preparation to publication. Study within gas, liquid, heated, and electrical environments relevant to batteries, catalysts, nanomaterial chemistry, materials science, soft materials, and more.

Psylotech, Inc.

BOOTH 905

www.psylotech.com

Quantum Design, Inc

BOOTH 442

www.qdusa.com

Quantum Design manufactures automated cryomagnetic material characterization systems and distributes SPM and Raman solutions for these platforms. They distribute thermal scanning probe and e-beam nano-lithography for SEM/FIB systems, and a leading-edge AFM solution for seamless integration into SEM/FIB, adding 3D topography, mechanical, electric and magnetic characterization at nanometer scales.

Quantum Detectors

BOOTH 203

www.quantumdetectors.com

Quantum Detectors develops novel detector technologies and systems for EM research. We believe that access to the best detection technology is the fuel behind scientific discovery. Working with the global scientific community, we develop and supply cutting-edge, highly configurable and reliable technologies, bringing you closer to new science.

Queensgate/Prior Scientific

BOOTH 1135

www.prior.com

Prior Scientific is a leader in designing & manufacturing precision positioning devices, optical systems, automation solutions & components. Queensgate produces high-speed, high-precision piezo stages & capacitive sensors with low picometer resolutions for demanding nanopositioning applications. We specialize in customized solutions for microscopy and nanopositioning OEMs.

RAITH America, Inc.

BOOTH 1124

www.raith.com

RAITH provides advanced analytical instrumentation, specializing in high-precision imaging and nanotechnology solutions. We proudly showcase our revolutionary IONMASTER, a state-of-the-art ion microscope with an integrated magnetic sector Secondary Ion Mass Spectrometer (SIMS). Engineered for cutting-edge materials science and nanotechnology applications, the IONMASTER delivers unparalleled SIMS imaging resolution (< 20 nm), exceptional sensitivity (< 10 ppm), and comprehensive analytical capabilities for all elements and isotopes. The IONMASTER combines sophisticated MagSIMS technology with a precision laser interferometer stage, enabling researchers to explore materials at the nanoscale with unprecedented clarity. Its unique capabilities include multi-modal analysis through correlative SIMS and SE ion imaging, CAD-based navigation for precise multi-site analysis, and the ability to capture full mass spectra of each sample pixel simultaneously. From semiconductor development to life sciences, the IONMASTER empowers researchers with the highest spatial resolution and sensitivity while minimizing sample damage.

Rave Scientific

BOOTH 1113

www.ravescientific.com

Renishaw, Inc.

BOOTH 1018

www.renishaw.com

Renishaw is a recognized leader in Raman spectroscopy, producing high performance raman systems, including microscopes, bench-top Raman analyzers and combined systems, for a range of applications. We have decades of experience developing flexible Raman systems that give reliable results, even for the most challenging measurements. Whatever your Raman analysis requirements, Renishaw's teams of scientists and engineers are here to provide you with expert advice, as well as product, technical, and applications support.

RMC Boeckeler

BOOTH 324

www.boeckeler.com

RMC Boeckeler has been proudly manufacturing sample preparation products in Tucson, Arizona for over 65 years. The company has evolved into a worldwide provider of instruments for electron and light microscopy sample preparation, specializing in nano-scale research instruments such as ultramicrotomes and array tomography systems. RMC Boeckeler products are manufactured, sold and maintained by a team of passionate people, dedicated to research, development and customer support.

Royal Microscopical Society

BOOTH 1141

www.rms.org.uk

The Royal Microscopical Society (RMS) is an international society at the forefront of new developments in microscopy, imaging and cytometry. The Society is dedicated to advancing science and developing careers through organising meetings and courses, publishing the *Journal of Microscopy*, outreach activities and more. The RMS is organising IMC21 (21st International Microscopy Congress) in Liverpool, UK, in 2026, and mmc2027 (Microscience Microscopy Congress) in Manchester, UK.

SenseAI

BOOTH 336

www.senseai.vision

SenseAI's compressed sensing technique generates high-quality images from only a fraction of the original pixels. Because it's scanning up to 99% less data, it's significantly faster — enabling adjustments to be made live on the microscope. Using proprietary sub-sampling methodologies, SenseAI can generate the same high-quality images and video feeds with up to 100x less data (1% of the original data). This can massively speed up the imaging process. At its core, SenseAI utilises an ultra-fast implementation of a blind inpainting algorithm — the beta process factor analysis (BPFA) algorithm. BPFA is used to learn a sparse representation of a dataset, which is then used to reconstruct that entire dataset. Blind dictionary learning and inpainting algorithms allow dictionaries to be learned and images to be inpainted directly from subsampled data — no external training data is required. SenseAI also reduces dose (and hence beam damage) by up to 100x and can therefore preserve sample integrity in even the most sensitive environments. By sampling just a fraction of the data, such as only a few percent of the pixels within an image, subsampled data can be produced in real time and processed with much reduced charging effects and beam damage. Applications for SenseAI include STEM, 4D STEM, In Situ, TEM, Volume EM, EBSD, EDS, EEL and Light Microscopy. SenseAI's software is compatible with all leading hardware such as JEOL, Thermo Fisher, Hitachi and ZEISS. Installation takes a matter of hours and it can run locally and securely on a standard PC.

Sigray, Inc.

BOOTH 441

www.sigray.com

Sigray, Inc. is a San Francisco Bay Area company founded with the aim to accelerate scientific progress by providing powerful, synchrotron-grade research capabilities in its laboratory x-ray systems (micro-CT, nano-CT, XAS, and micro-XRF). The breakthrough performance of these systems are uniquely enabled by Sigray's patented innovations in x-ray source, optics, and detector technologies.

Simple Origin Inc.

BOOTH 1010

www.simpleorigin.us

Simple Origin specializes in design and development of TEM holders for advanced cryogenic applications. These include high tilt cryo transfer holders for single particle data acquisition and tomography, vacuum/inert gas cooling holder for energy materials research and variable temperature holders.

SiriusXT Ltd

BOOTH 230

www.siriusxt.com

SiriusXT is transforming cell and tissue imaging with the world's first lab-based, soft X-ray microscope offering high-resolution, natural-contrast 3D insights quickly and cost-effectively. Designed for flexibility, our innovative system enables stand-alone, non-destructive imaging of biological samples as well as seamless correlation with other imaging techniques, empowering researchers to maximise existing resources, reduce costs, and accelerate ground-breaking discoveries.

SmarAct Inc.

BOOTH 1022

www.smaract.com

SmarAct develops and produces piezo-based, high-accuracy positioning and measuring systems for industrial and research applications in the micro and nanometer scale. Comprehensive positioner systems with multiple degrees of freedom and parallel kinematics, microscopy stages and laser interferometers can be assembled to custom-built robotic systems.

SPI Supplies

BOOTH 1003

www.2spi.com

Manufacturer/distributor of sample preparation equipment and consumables for electron, light and atomic force microscopy. Complete line of UV and plasma cleaning tools; traditional and high resolution coating systems. Scribing/cleaving tools and calibration aides. After market tools include Backscatter detectors, tensile stages and Wet Cell II liquid probe system. High quality in-house coated grids. Introducing the NuNano line of AFM Probe tips.

SPT Labtech | Quantifoil

BOOTH 213

www.sptlabtech.com

Quantifoil have set the global standard in cryo-EM sample supports for more than 25 years. We continue to lead the market with innovative, high quality solutions, including our holey gold foil support ranges, HexAuFoil / UltrAuFoil, for better reconstructions in single particle analysis. We offer a wide range of metal (e.g., Gold and Mo) and foil (e.g., SiO2) combinations to suit tomography applications as well as simpler grids for nanoparticle characterization. Quantifoil continues to be the choice for TEM sample support solutions across a broad range of imaging modalities from biological research to drug discovery and materials science.

syGlass, Inc

BOOTH 1220

www.syglass.io

TAGARNO USA, Inc.

BOOTH 1219

www.tagarno.com

Technoorg Linda

BOOTH 424

www.technoorg.hu

Ted Pella Inc.

BOOTH 404

www.tedpella.com

Ted Pella, Inc. is a premier supplier of consumables and specimen preparation tools and accessories for microscopy applications. We carry a wide range of SEM mounts and sample holders, TEM Grids and support films, calibration standards and Cressington sample coating systems. We manufacture and distribute many of our own instruments for sample preparation under our PELCO brand name.

TESCAN

BOOTH 430

www.tescan.com

TESCAN, a global company with local presence all around EMEA, APAC, and the Americas, develops imaging and microanalysis instruments for scientific research and industrial R&D. Founded in 1991, the company supports researchers worldwide. Its portfolio helps microscopists and materials analysts work efficiently and with confidence by combining high-performance instrumentation with workflow-focused software, applications expertise, and service. The company's work spans scanning electron microscopes (SEM), focused ion beam (FIB) systems, micro-computed tomography (micro-CT) platforms for 2D and 3D characterization, and analytical STEM. TESCAN also offers laser-based and ex situ lift-out solutions that extend electron microscopy workflows. Across these areas, TESCAN places increasing emphasis on connected workflows: linking non-destructive 3D screening, site-specific sample preparation, high-resolution imaging, and quantitative analysis in ways that fit how laboratories actually work. Software, applications expertise, and service are part of that approach, helping users establish methods that remain reliable in day-to-day operation, not only under ideal conditions. TESCAN systems are used across materials science, geosciences, life sciences, batteries, semiconductors, and industrial R&D. Common applications include microstructure and defect analysis, porosity and pore-network studies, advanced sample preparation, and 3D investigations that relate internal structure to performance. The company's focus is practical: helping laboratories generate dependable, comparable data while reducing the friction that can slow work in multi-user laboratories and correlative workflows. With more than three decades of experience, TESCAN works with microscopy facilities, core laboratories, and industrial R&D teams as a long-term technology and applications partner. Its current direction reflects broader demand for automation, multimodal characterization, and quantitative 3D analysis. Across that shift, TESCAN is dedicated to making advanced microscopy more usable, more connected, and more relevant to practical laboratory decisions.

Theia Scientific

BOOTH 1212

www.theiascientific.com

Theia Scientific provides cutting-edge platforms for automating scientific and engineering workflows by integrating AI and Machine Learning technologies with embedded edge computing and near-edge hardware.

Thermo Fisher Scientific

BOOTH 204

www.thermofisher.com

Thermo Fisher Scientific is proud of our Mission: To enable our customers to make the world healthier, cleaner and safer. Through our electron microscopy solutions and expertise, we help customers accelerate innovation and enhance productivity across the life sciences, materials science, and semiconductor industries.

TOFWERK

BOOTH 225

www.tofwerk.com

TOFWERK is making the world a cleaner place through innovative solutions for chemical analysis. We design, manufacture, and optimize ultra-sensitive, mobile mass spectrometers to comprehensively characterize the composition and purity of samples and the health of environments. Researchers and industrial customers around the world rely on our technologies for discovery and decision making. TOFWERK's product portfolio spans a diverse range of markets, including ambient air monitoring, food and flavor, semiconductor manufacturing, and material science.

Tousimis

BOOTH 541

www.tousimis.com

Tousimis is a globally recognized manufacturer of highly reliable CPD systems based in the USA with global sales and service support. Our 45 years of CPD experience in both designing and fabricating reliable CPD systems will benefit your work! Our process reproducibly preserves Micro & Nano 3D structures. Current applications include: Biological, Bio-MEMS, Aerogel, MEMS, Graphene, MOF and others... Please visit us to see what is new this year!

Triclinic Labs

BOOTH 423

www.tricliniclabs.com

TVIPS GmbH

BOOTH 1012

www.tvips.com

TVIPS manufactures high-performance camera systems for Transmission Electron Microscopy with resolutions up to 64 megapixel. Image processing software packages allow seamless integration into any type of microscope. Our TEM cameras are based on custom designed CMOS technology with active pixel sensors, featuring high dynamic range and exceptional acquisition speed.

United Mineral and Chemical Corp.

BOOTH 339

www.umccorp.com

UMC has been a leading of source material and vacuum components to many different industries for over 40 years. Partnering with Ferrovac we have very high-quality transfers arms, wobble sticks, manipulators and vacuum suitcases for a variety of different applications. With our leading engineering team we can find a solution for you.

US DOE Nanoscale Science Research Centers

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www.bnl.gov

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MICROSCOPY & MICROANALYSIS

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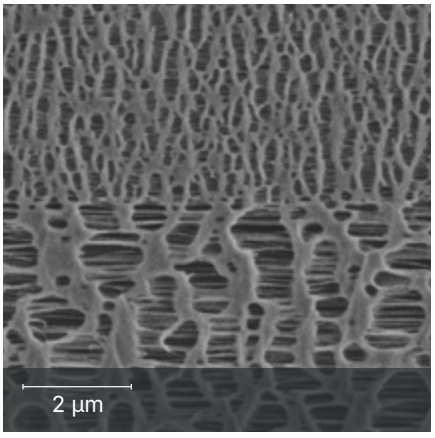
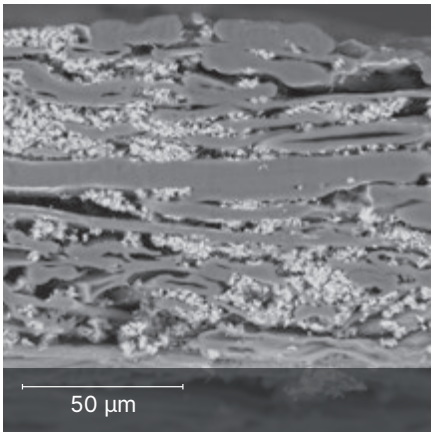
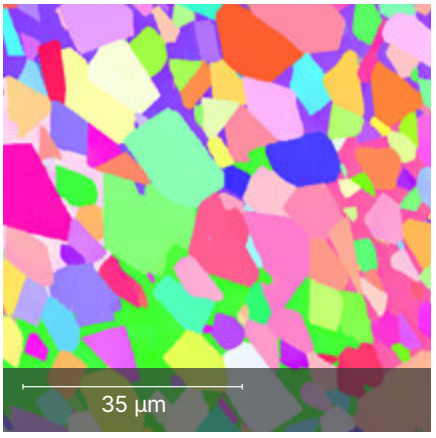


Cross-section of a PE/PP multilayer battery separator membrane, prepared at room temperature



Cross-section of paper, prepared at room temperature



EBSD-ready WC-Co slope-cut at room temperature, prepared in a single step using the Ar-ion beam

US Inquiries

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3D-Micromac AG	1118
condenZero	342
Deben UK Limited	209
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Ferrovac	337
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ibss Group, Inc.	1123
Microscopy Innovations, LLC	739
MPF Products Inc	425
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NanoSoft	224
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PIE Scientific LLC	1213
Quantum Design, Inc	442
SPI Supplies	1003
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AFM / STM Accessories

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Oxford Instruments	730
Quantum Design, Inc.	442
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Anti-Contamination Systems

ibss Group, Inc.	1123
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Atom Probe

Cameca/TMC	803
Ferrovac	337

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Deben UK Limited	209
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PNDector GmbH	1030
SPI Supplies	1003
TESCAN	430

Books

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Calibration and Reference Standards / Reference Materials

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Camera / Digital Camera Systems—CDC, CMOS, Megapixel

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CryoEM Sample Handling

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SenseAI	336
SiriusXT Ltd	230
SPT Labtech | Quantifoil	213
TVIPS GmbH	1012

CryoEM Sample Preparations

Angstrom Scientific Inc.	544
Midwest Center for Cryo-Electron Tomography	1218
NanoSoft	224
SPT Labtech | Quantifoil	213
Thermo Fisher Scientific	204

CryoEM Sample Storage

Ferrovac	337
Midwest Center for Cryo-Electron Tomography	1218
NanoSoft	224
SiriusXT Ltd	230

Cryoequipment

Advanced Microscopy Techniques Corp.	638
Angstrom Scientific Inc.	544
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SiriusXT Ltd	230
SmarAct Inc.	1022
United Mineral and Chemical Corp.	339

Crystallographic Mapping

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Exum Instruments	1117
NanoMEGAS - turnkey 4D-STEM	1112

Detectors

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DECTRIS Ltd.	530
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Nanoscience Instruments	418
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Digital Archiving / Data Storage

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Dual Beam FIB/SEM

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Hitachi High-Tech America, Inc.	622
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E Beam Lithography

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Quantum Design, Inc	442
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EDS Detectors & Systems

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Quantum Design, Inc	442

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Direct Electron, LP	2004
Gatan, Inc. / Edax	1818
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Physical Electronics	2208
TESCAN	1324
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Electron Microprobes / EPMA

JEOL USA, Inc.	504

Failure Analysis

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Thermo Fisher Scientific	204
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FIB Accessories

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Filaments and Filament Rebuilding–Field Emission Sources, Lab6 Sources

Applied Physics Technologies	335

Fixatives

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Tousimis	541

Fluorescence Microscopy

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Leica Microsystems	630
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Sigray, Inc.	441
SiriusXT Ltd	230

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NanoSoft	224
RAITH America, Inc.	1124
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TOFWERK	225
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SPI Supplies	1003
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Image Analysis and Processing

Attolight	1109
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Hirox-USA, Inc.	1121
HREM Research Inc.	1014
MIPAR Image Analysis	1204
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Sigray, Inc.	441

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Optical Filters, Fluorescence Filters

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Raman Spectroscopy / Microscopy

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Oxford Instruments	730
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Scanning Electron Microscopes (SEM)

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ATTOLIGHT	1109
Carl Zeiss Microscopy, LLC	929
CIQTEK Co., Ltd.	718
COXEM CO., LTD	924
EmCrafts Co., Ltd	818
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Nanoscience Instruments	418
Norcada, Inc.	338
point electronic GmbH	329
RAITH America, Inc.	1124
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Scanning Probe Microscope Accessories

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HERZAN LLC	334
SmarAct, Inc.	1022

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Angstrom Scientific Inc.	544
Bruker	614
Coxem Co., Ltd	924
Deben UK Limited	209
EmCrafts Co., Ltd	818
Ferrovac	337
Gatan/EDAX	809
HERZAN LLC	334
ibss Group, Inc.	1123
Kleindiek Nanotechnik	221
Mel-Build	824
NanoSoft	224
Nanoscience Instruments	418
Norcada, Inc.	338
Oxford Instruments	730
PIE Scientific LLC	1213
PNDetector GmbH	1030
point electronic GMBH	329;
Quantum Design, Inc	442
SPI Supplies	1003

Theia Scientific	1212
XEI Scientific, Inc.	417

Secondary Ion Mass Spectrometer (SIMS)

Physical Electronics	1119

SEM / STEM Digital Imaging Systems

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EmCrafts Co., Ltd	818
PNDetecctor GmbH	1030
point electronic GmbH	329
Quantum Detectors	203
RAITH America, Inc.	1124
SenseAI	336
Thermo Fisher Scientific	204

SEM Stages, Mounts and Holders

Angstrom Scientific Inc.	544
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Hitachi High-Tec America, Inc.	622
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Mel-Build	824
NanoSoft	224
Norcada, Inc.	338
Protochips, Inc.	412
Quantum Design, Inc	442
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Service & Repair

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RMC Boeckeler	324

Service Laboratories

Attolight	1109
Nanoscience Instruments	418

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Royal Microscopical Society	1329

Software

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Dragonfly	435
Exum Instruments	1117
HREM Research Inc.	1014
MIPAR Image Analysis	1204
NanoMEGAS – turnkey 4D-STEM	1112
senseAI	336
spyglass, Inc.	1220
Theia Scientific	1212

Specimen Preparation & Handling

3D-Micromac AG	1118
Barnett Technical Services	1111
condenZero	342
Coxem Co., Ltd	924
Fischione Instruments	433
Mel-Build	824
Microscopy Innovations, LLC	739
NANOSOFT	224
Nanoscience Instruments	418
Queensgate/Prior Scientific	1135
RMC Boeckeler	324
Technoorg Linda	424
Ted Pella Inc.	404
United Mineral and Chemical Corp.	339
XEI Scientific, Inc.	417

Specimen Storage

Mel-Build	824
Microscopy Innovations, LLC	739
NanoSoft	224
PIE Scientific LLC	1213
United Mineral and Chemical Corp.	339

Spectrometers

CIQTEK Co., Ltd.	718
Exum Instruments	1117
Gatan/EDAX	809
Nanoscience Instruments	418
Physical Electronics	1119
PNDetector GmbH	1030
Sigray, Inc.	441

Stage Automation

Deben UK Limited	209
point electronic GmbH	329
Queensgate/Prior Scientific	1135
SmarAct, Inc.	1022

Surface Profiling

Angstrom Scientific Inc.	544
Exum Instruments	1117
Hirox-USA, Inc.	1121

Tabletop SEM/TEM

Angstrom Scientific Inc.	544
Coxem Co., Ltd	924
EmCrafts Co., Ltd	818
Hitachi High-Tech America, Inc.	622
JEOL USA, Inc.	504
Nanoscience Instruments	224

TEM Accessories

3D-Micromac AG	1118
Advanced Microscopy Techniques Corp.	638
Angstrom Scientific Inc.	544
Attolight	1109
Barnett Technical Services	1111
Bruker	614
condenZero	342
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Direct Electron, LP	1130
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Euclid TechLabs, LLC	1106
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Herzan LLC	334
Hummingbird Scientific	918
ibss Group, Inc.	1123
Mel-Build	824
NanoMEGAS - turnkey 4D-STEM	1112
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Quantum Detectors	203
SPT Labtech | Quantifoil	213
Ted Pella Inc.	404
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TEM Specimen Holders

Angstrom Scientific Inc.	544
condenZero	342
Euclid TechLabs, LLC	1106
Fischione Instruments	433
Hummingbird Scientific	918
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NanoSoft	224
Norcada, Inc.	338

Testing Equipment

Barnett Technical Services	1111
Exum Instruments	1117
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Hirox-USA, Inc.	1121
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Transmission Electron Microscopes (TEM)

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Advascope s.r.o.	643
CIQTEK Co., Ltd.	718
DECTRIS Ltd.	530
Euclid TechLabs, LLC	1106
Hitachi High-Tech America, Inc.	622
Hummingbird Scientific	918
JEOL USA, Inc.	504
Midwest Center for Cryo-Electron Tomography	1218
NanoMEGAS - turnkey 4D-STEM	1112
NanoSoft	224
Norcada, Inc.	338
point electronic GmbH	329
Quantum Detectors	203
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TESCAN	430
Thermo Fisher Scientific	204

Vacuum Equipment

Angstrom Scientific Inc.	544
Duniway Stockroom Corp.	1104
Electron Microscopy Sciences / Quorum Technology	214
Ferrovac	337
JEOL USA, Inc.	504
Mel-Build	824
MPF Products Inc	425
Norcada, Inc.	338
Physical Electronics	1119
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Vacuum Evaporators

JEOL USA, Inc.	504
SPI Supplies	1003

Vibration Isolation Systems

Herzan LLC	334

WDS Detectors & Systems

Bruker	614
Gatan/EDAX	809
Oxford Instruments	730
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X-ray Analysis Equipment

3D-Micromac AG	1118
Angstrom Scientific Inc.	544
Bruker	614
Carl Zeiss Microscopy, LLC	929
DECTRIS Ltd.	530
Dragonfly	435
Oxford Instruments	730
Physical Electronics	1119
PNDetector GmbH	1030
Sigray, Inc.	441
SiriusXT Ltd	230
SmarAct Inc.	1022
TESCAN	430

2026 Exhibitors by Name *As of June 5, 2026*

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Angstrom Scientific Inc.	910
Applied Physics Technologies	335
attocube systems	333
Attolight	1109
Barnett Technical Services	1111
Bimos Lab Seating	919
Bruker	614
CAMECA/ TMC	910
Carl Zeiss Microscopy, LLC	929
CIQTEK Co., Ltd.	718
condenZero	342
CORDIN SCIENTIFIC IMAGING	229
Correscopy	825
Coxem Co., Ltd	924
CRYOCAPCELL	1225
Deben UK Limited	209
DECTRIS Ltd.	530
Diatome US	318
Direct Electron, LP	1130
Dragonfly	435
Duniway Stockroom Corp.	1104
E. Fjeld Co, Inc.	1113
Electron Microscopy Sciences / Quorum Technology	214
EmCrafts Co., Ltd	818

COMPANY NAME	BOOTH
Epic Advanced Materials	903
Euclid TechLabs, LLC	1205
Exum Instruments	1117
Ferrovac	337
Fischione Instruments	433
Gatan/EDAX	809
h-Bar Instruments	1026
Herzan LLC	334
Hirox-USA, Inc.	1121
Hitachi High-Tech America, Inc.	622
HREM Research Inc.	1014
Hexa Robotics	821
Hummingbird Scientific	918
ibss Group, Inc.	1123
Insight Chips	1224
JASCO	749
JEOL USA, Inc.	504
Kashiyama	444
Kims Reference Corp.	1235
Kitware	1222
Kleindiek Nanotechnik	221
Kratos Analytical, a Shimadzu Company	1020
Leica Microsystems	630
Luxel	917
MAS: The Microanalysis Society	1041
McCrone Group	642
Mel-Build	824
Microscopy Innovations, LLC	739

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2026 Exhibitors by Name *As of June 5, 2026*

COMPANY NAME	BOOTH
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MIPAR Image Analysis	1204
MPF Products Inc	425
MSA MegaBooth	742
NanoMEGAS - turnkey 4D-STEM	1112
Nanomotion Inc	1017
Nanoscience Instruments	418
NANOSOFT	224
NewTec Scientific	237
Noblegen Cryogenics	904
Norcada, Inc.	338
NTT Advanced Technology Corporation	823
Oxford Instruments	730
PanoSciEdu	724
PanoScientific	726
Photonic Cleaning Technologies, LLC	1024
Physical Electronics	1119
PIE Scientific LLC	1213
PNDetector GmbH	1030
point electronic GmbH	329
Protochips, Inc.	412
Psylotech, Inc.	905
QUANTUM DESIGN, INC	442
Quantum Detectors	203
Queensgate/Prior Scientific	1135
RAITH America, Inc.	1124
Rave Scientific	1209
Renishaw, Inc.	1018
RMC Boeckeler	324
Royal Microscopical Society	1141
SenseAI	336
Sigray, Inc.	441
Simple Origin Inc.	1010
SiriusXT Ltd	230
SmarAct Inc	1022
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syGlass, Inc	1220
TAGARNO USA, Inc.	1219
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Theia Scientific	1212
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TOFWERK	225
Tousimis	541
Triclinic Labs	423
TVIPS GmbH	1012
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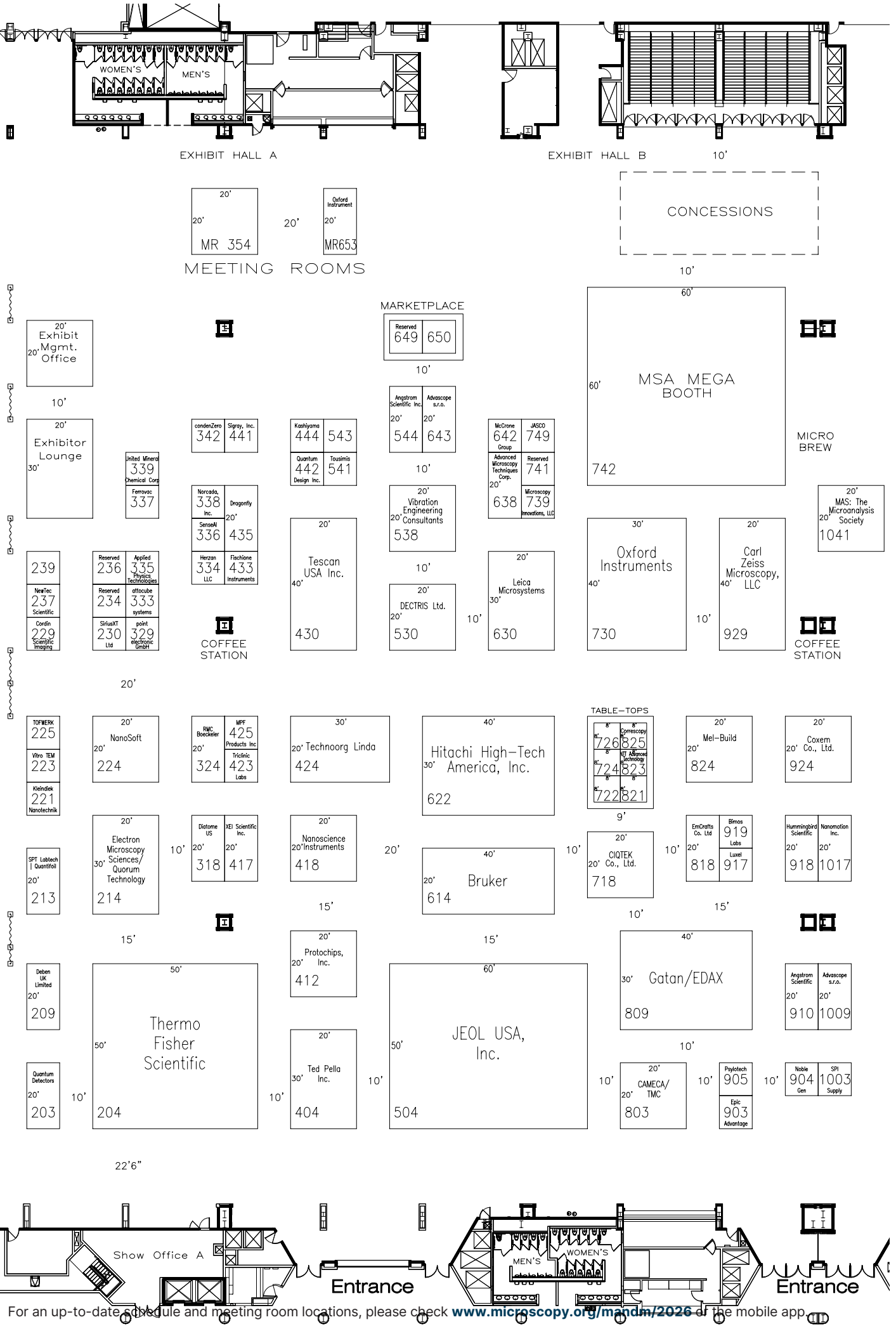
US DOE Nanoscale Science Research Centers	1110
Vibration Engineering Consultants	538
VitriMatics	722
XEI Scientific, Inc.	417
Zaber Technologies	1103



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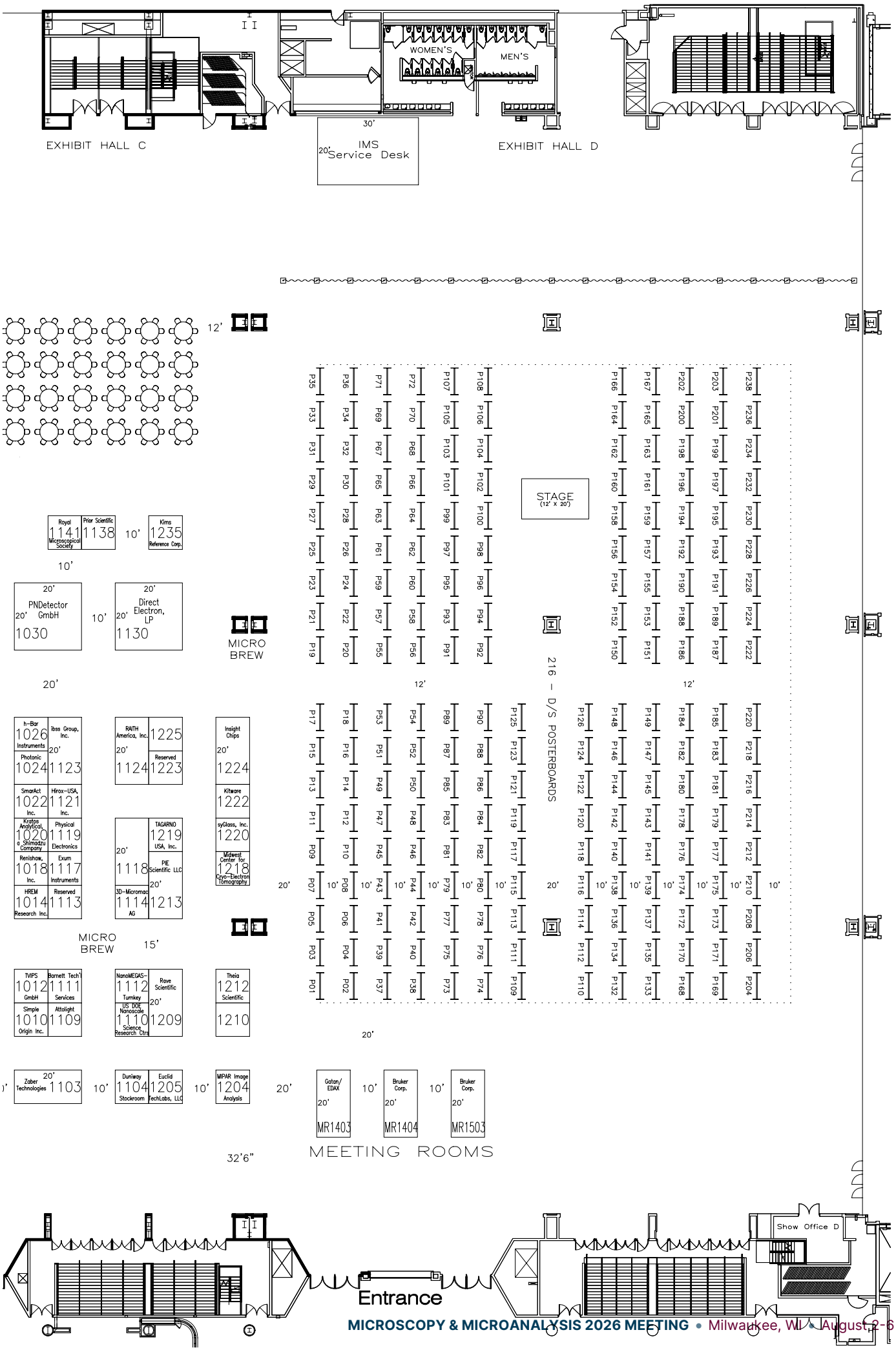
EXHIBIT HALL C
WOMEN'S
MEN'S
30'
20'
IMS
Service Desk
EXHIBIT HALL D
12'
STAGE
(12' x 20')
216 – D/S POSTERBOARDS
MICRO BREW
MICRO BREW
15'
Royal Microscopical Society 1141
Prior Scientific 1138
10'
Kims Reference Corp. 1235
PNDetector GmbH 1030
Direct Electron, LP 1130
h-Bar 1026
Ibss Group, Inc.
Photonic 1024
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SmarAct 1022
HIrox-USA, Inc. 1121
Kratos Analytical, a Shimadzu Company 1020
Physical Electronics 1119
Renishaw, Inc. 1018
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HREM Research Inc. 1014
Reserved 1113
RAITH America, Inc. 1225
Reserved 1223
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Insight Chips 1224
Kitware 1222
syGlass, Inc. 1220
Midwest Center for Cryo-Electron Tomography 1218
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PIE Scientific LLC 1213
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3D-Micromac AG 1114
TVIPS GmbH 1012
Barnett Tech Services 1111
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NanoMEGAS Turnkey 1112
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US DOE Nanoscale Science Research Ctrs 1110
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Gatan/EDAX MR1403
Bruker Corp. MR1404
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MICROSCOPY & MICROANALYSIS

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