M&M2025
MICROSCOPY & MICROANALYSIS

July 27-31 • Salt Lake City, Utah

MSA Microscopy Society of America

MAS Microanalysis Society

Ciasem Interamerican Committee of Societies for Electron Microscopy

Onsite Program Guide & Exhibitor Information

https://mmconference.microscopy.org for up-to-date meeting information

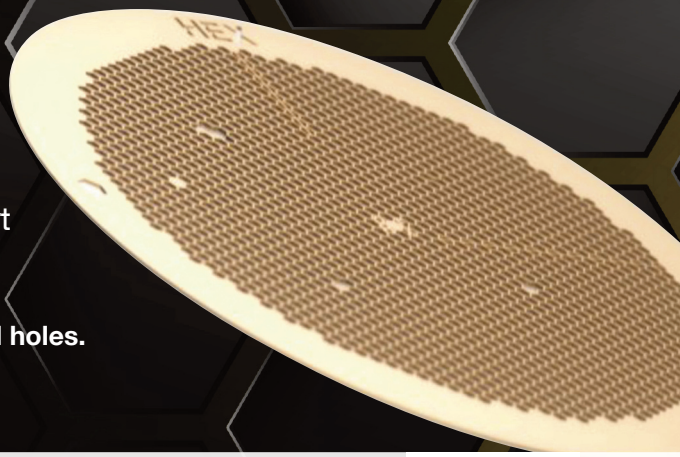
WE LOOK FORWARD TO SEEING YOU! **PLEASE JOIN EMS AND QUORUM TECHNOLOGIES AT M&M 2025 BOOTH 1704.** WE LOOK FORWARD TO SEEING YOU!

HexAuFoil

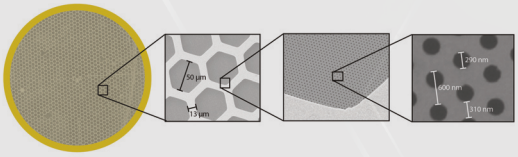
Ultra-Small Hole Gold Support Grids

HexAuFoil® has arrived, the revolutionary sample support that will improve every image.

- **Reduces particle motion to sub-Ångstrom levels.**
- **Unique high-density, hexagonal design with 0.3 µm ultra-small holes.**
- **Delivers fewer, faster data collections.**
- **Provides consistent, thin ice across the grid.**



HexAuFoil® sample supports consist of a holey gold foil on a hexagonal gold mesh grid. The grid hexagons are approximately 50 µm in size with ~10-12 µm diameter bars. The gold foil has 290 nm diameter holes arranged in a hexagonal array with 310 nm spacing, resulting in a 600 nm repeat.



Find out more about HexAuFoil®

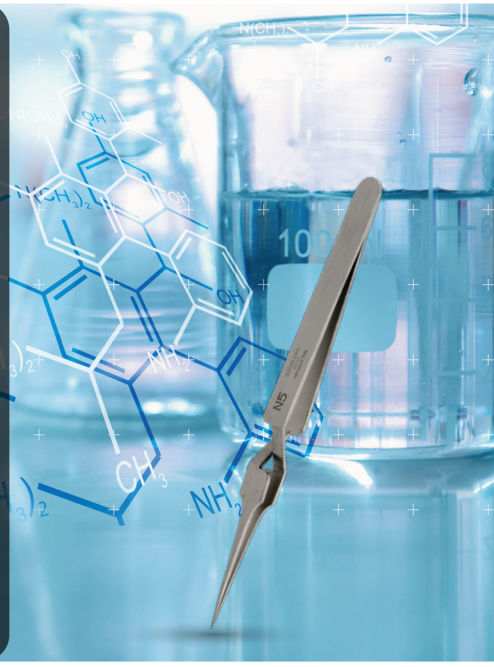
We have your workflow covered...

When it comes to specimen preparation for TEM, Electron Microscopy Sciences has everything a lab could need. From chemicals to grids and everything in between, including:

- **A comprehensive selection of buffers, fixatives, dyes & stains, adhesives, and more.**
- **All the basic lab supplies and consumables that you rely on every day.**
- **World-class instruments such as DiATOME Diamond Knives and Dumont Tweezers.**

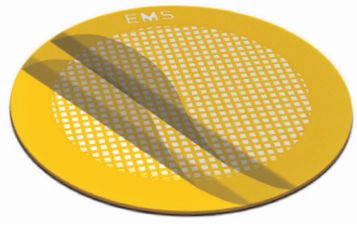
Chemicals Your Way

We will customize chemicals to best fit your lab's unique protocols and recipes. Our lab can follow your specific formulas, or generate one to meet your needs.



...including TEM Grids with Support Films.

- **Formvar**
- **Carbon**
- **Formvar + Carbon**
- **Formvar + Silicon Monoxide**
- **Silicon Monoxide**
- **Lacey Carbon**
- **Lacey Formvar + Carbon**
- **Holey Carbon**
- **Beryllium**
- **Pioloform**



Our Support Film on Grids (except the Beryllium Support Films) have the following options:

- Gold, Copper, or Nickel Grids (Molybdenum also available upon request
- Tomography Grids
- Silicon-free
- Ultra-thin film
- Extra thick film

Holey Carbon and Lacey Carbon are also available with Continuous Ultrathin Carbon and/or Formvar Films.

Electron Microscopy Sciences

POWERED BY BIOLYST

1560 Industry Rd.
Hatfield, Pa 19440
email: info@emsdiasum.com

www.emsdiasum.com

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Questions?

TECHNICAL MEETING CONTENT:
2025 Program Chair
James Evans, Pacific Northwest National Laboratory
MM2025ProgramChair@microscopy.org

EXHIBITS & EXHIBITORS:
Exhibits Manager
anna@corcexpo.com

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Sponsorship Manager
mary@corcexpo.com

REGISTRATION:
Registration Manager
mmregistration@microscopy.org

GENERAL:
Meeting Manager
meetingmanager@microscopy.org

Are You A Member?

Join Today and Save on M&M 2025 Registration Fees!

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

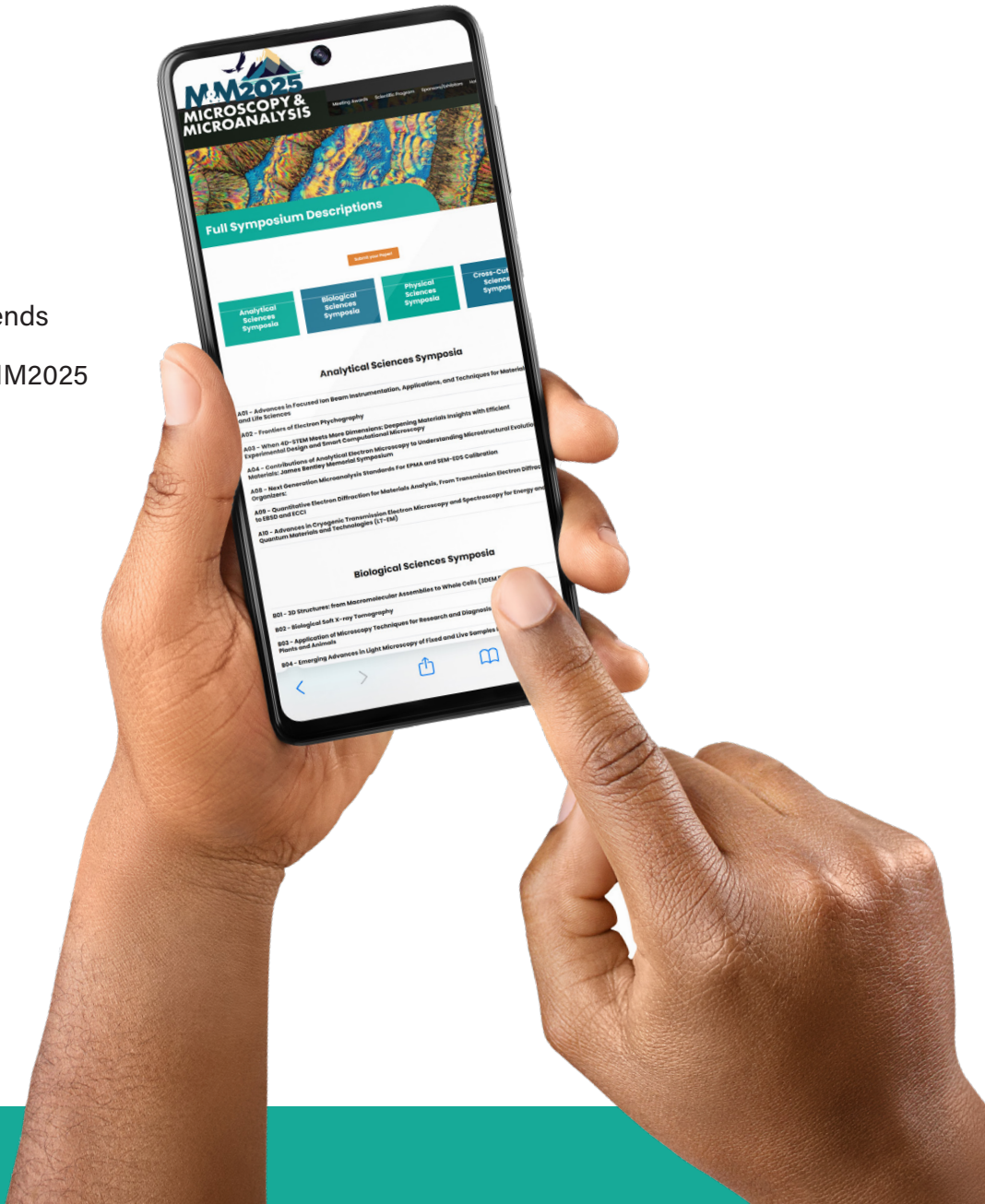
Visit https://the-mas.org to find out the benefits of MAS membership.

Visit https://ciasem.com/contact-us/ for more information.

Navigate the meeting like a pro with the M&M 2025 mobile app, powered by Cadmium.

With the M&M2025 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 #MM2025
- And **much, much more**!



M&M MICROSCOPY & MICROANALYSIS

ANDROID APP ON Google play

Available on the App Store

Letter from the Presidents

On behalf of the Microscopy Society of America and the Microanalysis Society, we are pleased to invite you to join us, in-person, July 27-July 31, 2025, for Microscopy & Microanalysis 2025 in Salt Lake City, UT. Experience the vibrant energy of Salt Lake City, where rich history meets modern innovation against the stunning mountain backdrop of the Wasatch Range.

This year, M&M will host the 18th Interamerican Congress on Microscopy, the meeting of CIASEM, the Interamerican Committee of Societies for Electron Microscopy. The M&M Program Committee, led by James Evans, Stuart Wright (MAS co-chair), and Josefina Arellano (CIASEM co-chair), has developed an exciting group of symposia, spanning advances in instrumentation, technique development, and the analytical, biological, and physical sciences. We encourage you to browse the meeting website for complete symposium descriptions and to view the schedule at a glance.

Before the main meeting, immerse yourself in an in-depth Sunday Short Course or attend one of the four Pre-Meeting Congresses. The MSA Student Council's Annual Pre-Meeting Congress for students and early-career professionals highlights outstanding research and provides professional development.

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

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

M&M 2025 is the premier meeting for microscopy and microanalysis. By attending, you'll stay abreast of the latest technologies, discover new applications across microscopy and microanalysis, and, most importantly, foster meaningful connections with colleagues. Elevate your professional journey with M&M 2025!

We look forward to seeing you at M&M 2025!

MSA Microscopy Society of America

Paul Voyles
University of Wisconsin-Madison
President, Microscopy Society of America

MAS Microanalysis Society

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

Future Meeting Dates

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

August 1–August 4, 2027
PITTSBURGH, PA

July 30–August 3, 2028
SEATTLE, WA

July 29–August 2, 2029
KANSAS CITY, MO

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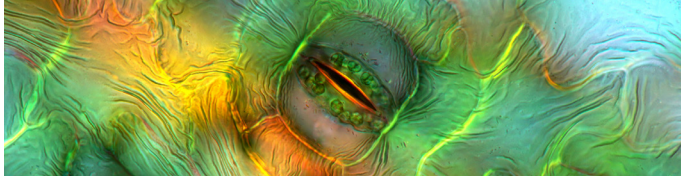
Creating the Connected Lab

Essential Meeting Information



Accessibility

If you require special accommodation in order to participate fully in the meeting, please ask to speak with the meeting manager, or email MeetingManager@microscopy.org. Requests made after July 2 or onsite at the meeting will be accommodated as much as possible.

Awards

Major Society Awards for MSA, MAS, and CIASEM, 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 18, 2025 will be honored less a $65 administrative fee. **No refunds will be issued for cancellations** (for any reason) received on or after June 18, 2025, and no refunds will be issued on-site in Salt Lake City.
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).

Salt Lake City & Regional Visitor Information

Stop by the Visit Salt Lake booth located inside the convention center, to pick up local information, including maps, dining guides and tour info, and visitor information on SLC and surrounding areas.

Internet & E-mail

Free wireless internet is available for M&M attendees in the Salt Palace Convention 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 2026 – Meeting & City Information

Stop by for advance information on the 2026 M&M Meeting in Milwaukee, WI! The 2025 table is located in the main registration area, and has visitors guides, maps, and other important information.

MSA MegaBooth – Booth # 1018

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 Project MICRO, and join the Technologists' Forum.

Proceedings

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

MAS Booth

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 2025 is a smoke-free meeting. If you wish to smoke, you will need to go outside (street level).

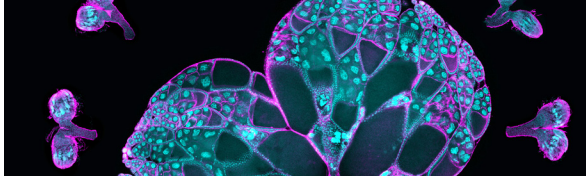
Volunteer Room

The volunteer & student bursary office is in Room 150A on the Exhibit Hall level. Check in here for volunteer assignments and sign-outs.

MICROGRAPH

Stomata
Marek Mis, Marek Mis Photography, Suwalki, Poland

> Calvin L. Rampton Salt Palace Convention Center

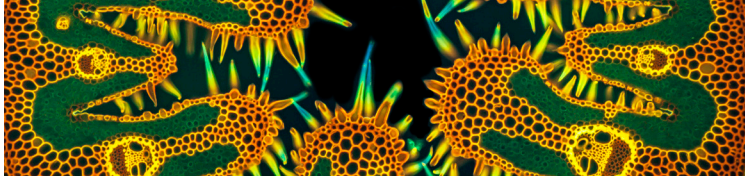


Unless indicated otherwise, all official conference events are being held at the Salt Palace Convention Center, located in downtown Salt Lake City, UT.

MICROGRAPH

Fruit fly ovaries
Wen Lu, Feinberg School of Medicine, Northwestern

Registration Information



Registration Hours:

Friday, July 25*	8:00 am – 1:00 pm
Friday, July 25	1:00 pm – 6:00 pm
Saturday, July 26	7:00 am – 6:00 pm
Sunday, July 27	7:00 am – 7:00 pm
Monday, July 28	7:00 am – 6:00 pm
Tuesday, July 29	7:00 am – 5:00 pm
Wednesday, July 30	7:00 am – 5:00 pm
Thursday, July 31	7:30 am – 3:00 pm

**Exhibitors Only*

Commercial Exhibition Hours:

Monday, July 28	12:00 pm – 5:30 pm
Tuesday, July 29	10:00 am – 5:30 pm
Wednesday, July 30	10:00 am – 5:30 pm
Thursday, July 31	10:00 am – 2:00 pm

Exhibitor Move-In:

Thursday, July 30*	8:00 am – 5:00 pm
Friday, July 25	8:00 am – 5:30 pm
Saturday, July 26	8:00 am – 5:30 pm
Sunday, July 27	8:00 am – 5:30 pm

**Targeted Island Booths Only*

Exhibitor Move-Out:

Thursday, July 31	2:00 pm – 7:00 pm
Friday, August 1	8:00 am – 5:00 pm

Onsite Registration Desk

Salt Palace Convention Center – Located outside of Hall BC Entrance on the Exhibit Level.

Pick up your badge at the Registration desk according to the schedule shared here.

The Sunday Welcome Reception starts at 6:30 PM in the Salt Lake Ballroom in the Hyatt Regency Salt Lake City on Level 2 (take escalator up from the lobby). You must pick up your drink ticket and badge before going to the reception. Tickets will not be given out at the reception.

MICROGRAPH

Oat leaf
Gerd Günther, private laboratory, Düsseldorf, Germany

> Social Events

MICROGRAPH
Bee brain
Denise Yamhure Ramire, University of California-Davis, Davis, CA

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

Organized by MSA Student Council

Saturday, July 26, 2025 |6:30 PM - 8:30 PM

Location: 250 AB

Join us for a dynamic pre-meeting congress designed by and for students, postdocs, and early-career professionals. This event offers a unique platform to present research, share ideas, and gain recognition through peer-voted poster awards. Attendees can also enhance their career readiness through workshops on interviews and career exploration. Connect with a diverse community in a supportive, engaging setting ahead of the main conference.

M&M 2025 Sunday Evening Welcome Reception

Sunday, July 27, 2025 | 6:30 PM - 8:30 PM

Hyatt Regency Salt Lake City – Salt Lake Ballroom, Level 2

One ticket is included with most registrations (see Registration Page for details). **ADDITIONAL TICKETS:** $50 each for adults; $25 each for children 12 and under.
***PLEASE NOTE:** Onsite availability of tickets is not guaranteed. Register for the meeting and buy extra tickets early to be sure that you're able to attend.

Step into the heart of Salt Lake city with our locally sourced menu and beers; and catch up with friends and colleagues.

Student Mixer

Monday, July 28, 2025 | 5:30 PM - 7:30 PM

Room: 255 EF

Don't miss the M&M Student & Postdoc Mixer —Meet fellow students and Postdocs, exchange ideas, and build relationships that can shape your career. This is your chance to engage with peers and future collaborators from across the field.

M&M 2025 Early Career Professional Development Event

Organized by the MSA Early Career Group

Tuesday, July 29, 2025 | 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 2025 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.

DEI Reception

Wednesday, July 30, 2025 | 5:30 PM - 7:30 PM

The DEI Committee aims to promote the visibilty and discussion of DEIA+ (Diversity, Equity, Inclusion, Accessibility) topics within the Society and microscopy-at-large and to facilitate increased attendance and involvement of underserved groups within the Society, at Society-related events, and among Society leadership positions.

MAS Social Event – for MAS Members Only!

Wednesday, July 30, 2025 | 6:30 PM - 8:30 PM

Stop by the MAS booth in the lobby to check your membership status and pick up your ticket for the MAS social event on Wednesday evening, July 30 – 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.

> Thank you to our Sustaining Members *As of May 2025*

Advanced Microscopy Techniques

Applied Physics Technologies

Boeckeler Instruments, Inc.

Bruker Nano Analytics

Carl Zeiss Microscopy, LLC

CEOS GmbH

Dectris Ltd.

Diatome US

Direct Electron LP

Duniway Stockroom Corp.

Electron Microscopy Sciences

EMSIS GmbH

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Hitachi High-Tech America, Inc.

HREM Research Inc.

Hummingbird Scientific

ibss Group, Inc.

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JEOL USA, Inc.

Kleindiek Inc.

Ladd Research

Lehigh Microscopy School

Micron, Inc.

Microscopy Innovations LLC

NanoSpective

Oxford Instruments

PNDetector GmbH

Probe Software, Inc.

Protochips, Inc.

Quantum Design

Quantum Detectors Ltd.

Scientific Instrumentation Services, Inc.

SEMTech Solutions, Inc.

Ted Pella Inc.

TESCAN

Thermo Fisher Scientific

Tousimis

XEI Scientific, Inc.

> Committee/Ancillary Meeting Schedule

All events held at Salt Palace Convention Center unless otherwise noted.

Saturday, July 26, 2025

8:00 AM – 5:30 PM	MSA Council	

Sunday, July 27, 2025

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

Monday, July 28, 2025

7:15 AM – 8:15 AM	Technologists' Forum Board	
7:15 AM – 8:15 AM	FIG FOM Meeting	
7:15 AM – 8:15 AM	M&M Meeting Awards Committee	
12:15 PM – 1:15 PM	MAS Meal with a Mentor	
12:15 PM – 1:15 PM	International Committee	
12:15 PM – 1:15 PM	FIG: Atom Probe Field Ion Microscopy	
12:15 PM – 1:15 PM	FIG: 3D EM in the Biological Sciences	
12:15 PM – 1:15 PM	FIG: EM in Liquids and Gases	
3:30 PM – 5:00 PM	Technologists' Forum Business Meeting	
4:30 PM – 6:00 PM	MSA Elemental Microscopy	
5:30 PM – 7:00 PM	Student Mixer	
5:45 PM – 6:45 PM	Vendor Tutorials *(Sign up at Vendor Booths)*	EXHIBIT HALL

Tuesday, July 29, 2025

7:15 AM – 8:15 AM	MSA Local Affiliated Societies & MAS Affiliated Regional Societies Breakfast	
7:15 AM – 8:15 AM	*Microscopy Today* Editorial Board Meeting	
7:15 AM – 8:15 AM	MSA Standards Committee Meeting	
7:15 AM – 8:15 AM	FIG: Low Temperature Electron Microscopy	
10:00 AM – 12:00 PM	M&M 2026 Program Planning Meeting	
12:15 PM – 1:15 PM	MSA Distinguished Scientist Awardee Lectures	

> Committee/Ancillary Meeting Schedule cont.

MICROGRAPH

Carpet beetle
David Bird, Chalford, England, UK

3:30 PM – 4:30 PM	FIG Business Meeting	
6:00 PM – 7:30 PM	Early Career Professional Development Event	
5:45 PM – 6:45 PM	Vendor Tutorials *(Sign up at Vendor Booths)*	EXHIBIT HALL
6:30 PM – 8:30 PM	Presidents' Reception *(Invitation Only, Offsite)*	

Wednesday, July 30, 2025

7:15 AM – 8:15 AM	MSA Certification Board	
7:15 AM – 8:15 AM	MaM Editorial Board	
12:15 PM – 1:15 PM	MSA Members' Meeting	
5:30 PM – 6:30 PM	MAS Business Meeting	
5:30 PM – 7:30 PM	Diversity and Inclusion Mixer	
5:45 PM – 6:45 PM	Vendor Tutorials *(Sign up at Vendor Booths)*	EXHIBIT HALL
6:30 PM – 8:00 PM	CIASEM General Assembly	
6:30 PM – 8:30 PM	MAS Members Social—See MAS Booth for Details	OFFSITE
8:30 PM	CIASEM Social Reception	OFFSITE

Thursday, July 31, 2025

8:30 AM – 9:30 AM	M&M Sustaining Members Meeting
12:15 PM – 1:15 PM	FIG: MicroAnalytical Standards
12:15 PM – 1:15 PM	FIG: Aberration Corrected EM (ACEM) Meeting

> Be Prepared!

In case of fire, medical emergency, or another emergency situation, **DO NOT CALL** 911. Call Building Guest Services at (385) 468-2220 from your cell phone or pick up any white house phone and it will directly connect you to Guest Services.

- Tell them the type of emergency (fire, medical) and the location and level.
- Remain calm and follow directions.
- Use (385) 468-2220 to report any other security concerns

Should you encounter a suspicious package:

- Do not touch or move the package.
- Move away, locate the nearest house phone, and call Security.
- **Do not call 911**. Do not use your cell phone

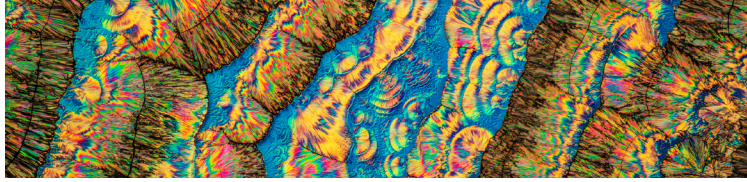
In case of fire:

Call Guest Services at (385) 468-2220. Tell them the type of fire (rubbish, oil, etc.), the location of the fire, and the status (uncontrolled, controlled).

Other Information:

The Salt Palace Convention Center's Lost and Found department may be contacted at (385) 468-2220. Check M&M 2025 registration first for any lost & found items first.

Highlights and Awards



Plenary Session

Monday, July 28, 2025 | Salt Palace Convention Center — Grand Ballroom

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

Juan Carlos Idrobo, PhD

Associate Professor, University of Washington, Materials Science and Engineering

Technicolor at the Nanoscale is Heating Up: How Monochromation and Liquid He/N_2 Cryogenic Holders are Revolutionizing STEM

Bridget Carragher, PhD

Founding Technical Director, Chan Zuckerberg Imaging Institute

Tools and Technologies for Cryo-EM and Cryo-ET

MSA Distinguished Scientist Award & Talks

Tuesday, July 29, 2025, 12:15 PM
Salt Palace Convention Center

DISTINGUISHED SCIENTIST – BIOLOGICAL SCIENCES
Lucy Collinson, The Francis Crick Institute

DISTINGUISHED SCIENTIST – PHYSICAL SCIENCES
Marc De Graef, Carnegie Mellon University

MSA Major Society Award Winners

ALBERT CREWE AWARD
Sandhya Susarla, Arizona State University

BURTON MEDAL – BIOLOGICAL SCIENCES
Dmitry Lyumkis, Salk Institute for Biological Studies

BURTON MEDAL – PHYSICAL SCIENCES
Steven Spurgeon, National Renewable Energy Laboratory

MSA Major Society Award Winners cont.

CHUCK FIORI AWARD FOR OUTSTANDING TECHNOLOGIST, PHYSICAL SCIENCE
Kim Kisslinger, Brookhaven National Laboratory

GEORGE PALADE AWARD
Ellen D. Zhong, Princeton University

HILDEGARD H. CROWLEY AWARD FOR OUTSTANDING TECHNOLOGIST IN THE BIOLOGICAL SCIENCES
Shawn Zheng, Chan Zuckerberg Imaging Institute

MASER AWARD
Stephen Carmichael, Retired/Mayo Clinic

MAS Major Society Award Winners

PRESIDENTIAL SCIENCE AWARD
Chris Kiely, Lehigh University

PRESIDENTIAL SERVICE AWARD
Vin Smentkowski, GE Vernova Advanced Research Center

PETER DUNCUMB AWARD FOR EXCELLENCE IN MICROANALYSIS
Marc De Graef, Carnegie Mellon University

KURT F.J. HEINRICH AWARD
Kayla Nguyen, University of Oregon

BIRKS – BEST CONTRIBUTED PAPER
Michael Colletta, Cornell – *Cryogenic FIB Lift-Out Reveals Atomic-Scale Photoactive Homojunctions in Cadmium Yellow Paint from Matisse's "Flower Piece"*

CASTAING – BEST STUDENT PAPER
Yueyun Chen, UCLA – *Detecting Chemical Shifts with Energy Dispersive Spectroscopy*

COSSLETT – BEST INVITED PAPER
Zsanett Pintér, CSIRO – *Unravelling Multi-Stage Formation and Deformation Events of RE-Rich and RE-Poor Anhydrite via Hyperspectral Cathodoluminescence Mapping and Analysis*

MACRES – BEST INSTRUMENTATION/SOFTWARE PAPER
Richard Wuhrer, Western Sydney University – *Utilising the WDS-SD for Obtaining Better Estimations of Backgrounds and Mass Attenuation Coefficients*

MICROGRAPH AT TOP: *Vitamin C*
Nathan Myhrvold, The Cooking Lab, Bellevue, WA

> Meeting Awards

RALEIGH & CLARA MILLER MEMORIAL SCHOLARSHIP AWARDEE

Kaylee Patterson – University of Utah
Motahareh Helli – The Ohio State University

ERIC SAMUEL MEMORIAL SCHOLARSHIP AWARDEE

Aurys Šilinga – University of Glasgow

STUDENT SCHOLAR AWARDEES

Sponsored by MSA Microscopy Society of America

Hayeon Baek – Seoul National University
Abigail Carbone – Stanford University
Tamazouzt Chennit – University of Antwerp
Alejandra Coronel-Zegarra – Florida Atlantic University
Blake Dorame – Arizona State University
Andrew Ducharme – University of Oregon
Solinus Farrer – Brigham Young University
Elizabeth Griffin – Northwestern University
Fintan Hardy – Imperial College London
Patrick Hays – Arizona State University
Ziria Herdegen – Ludwig-Maximilians University Munich
Malik Hollis – University of Oregon
Xiang-Lin Huang – Lehigh University
Minhazul Islam – The Ohio State University
Nicole Kerrison – University of Arizona
Rishabh Kothari -Massachusetts Institute of Technology
Berk Kucukoglu – EPFL
Chuhang Liu – Stony Brook University
Adan Mireles – Smalley-Curl Institute, Rice University
Kevin Nyaburi Mogere – Rochester Institute of Technology
Rahim Raja – University of Illinois at Urbana-Champaign
Joaquin E. Reyes-Gonzalez – McMaster University
Ioannis Siachos – University of Liverpool
Nikita Singhi – University of Utah
Daniela Tamayo-Jaramillo – The University of Utah
Yoshiyuki Tsuchiya – Nagoya University
Daniel Vasquez – TU Darmstadt
Xiaowang Wang – University of California, Irvine
Yupeng Wu – Binghamton University

STUDENT SCHOLAR AWARDEES

Sponsored by MAS Microanalysis Society

Yutong Bi – University of California Irvine
Robert Busch – University of Illinois Urbana-Champaign
Alexander Kling – Purdue University
Amy McKeown-Green – Stanford University
Chris McRobie – North Carolina State University
Eugene Park – Massachusetts Institute of Technology
Beau Prince – University of Arizona
Linna Qiao – Binghamton University
Jacques Reddinger – University of Oregon
Nayely Valeriano García – Instituto Politécnico Nacional

ROBERT P. APKARIAN MEMORIAL SCHOLARSHIP AWARDEES

BIOLOGICAL SCIENCE AWARDEE

Ryan Hylton – Max Planck Institute of Molecular Physiology

PHYSICAL SCIENCE AWARDEE

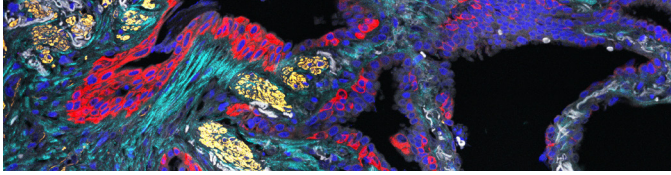
Stephen Funni – Cornell University

POSTDOCTORAL SCHOLAR AWARDEES

Sponsored by MSA Microscopy Society of America

Wyatt Curtis – EPFL
Matthew Gaines – University of Wisconsin, Madison
Antonia Kotronia – CNRS/Institut des Matériaux de Nantes Jean Rouxel
Guanxing Li – Cornell University
Arthur McCray – Stanford University
Juhyun Oh – Oak Ridge National Laboratory
Eduardo Ortega – Fritz Haber Institute of the Max Planck Society
Jana Pilatova – Lawrence Berkeley National Laboratory
Chuqiao Shi – Rice University
Hongbin Yang – University of California, Irvine
Shengbo You – Friedrich-Alexander Universität Erlangen-Nürnberg

> Meeting Awards cont.



POSTDOCTORAL SCHOLAR AWARDEES

Sponsored by MAS Microanalysis Society

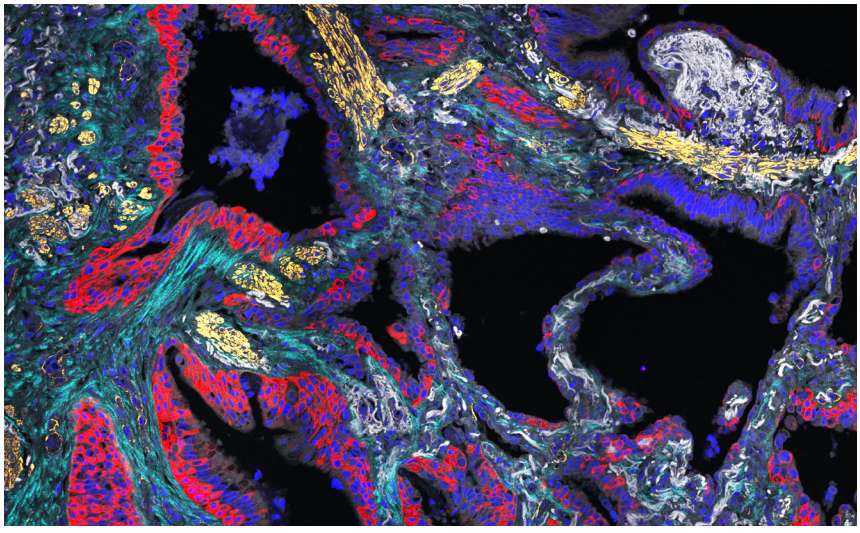
Young-Hoon Kim – Oak Ridge National Laboratory
Eveline Postelnicu – Stanford University
Amir Rezaei Farkoosh – Northwestern University
Yu Wen – Northwestern University
Yu-Mi Wu – Cornell University

M&M 2025 PROFESSIONAL TECHNICAL STAFF AWARDS

Genki Terashi – Purdue University
Haoran Yu – Oak Ridge National Laboratory

M&M CIASEM TRAVEL AWARD

Berenice Castañeda – Escuela Superior de Fisica y Matematicas del Instituto Politecnico Nacional
Ingrid Augusto – Biophysics Institute Carlos Chagas Filho/UFRJ
Sofia Bordet – Centro de Altos Estudios en Ciencias Humanas y de la Salud (CAECIHS, CONICET)
Mauricio Castilla Pulido – Centre for Nanoscience and Nanotechnology, National and Autonomous University of Mexico
Yazmin Mariela Hernández Rodriguez – UPIITA-IPN
Jorge Briseño Gómez – UNAM
Harby Alexander Martinez Rodriguez – Centro de Investigación en Materiales Avanzados
Aaron Guerrero Basilio – Universidad Politécnica del Valle de México
Nikki Kosari – Utah State University



MICROGRAPH
Idiopathic pulmonary fibrosis
Frédéric Fercoq, National Museum of Natural History, Paris, France

Saturday, July 26

8:00 AM – 5:30 PM	**MSA Council**	*Salt Palace Convention Center*
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, July 27

8:30 AM – 5:00 PM	**Sunday Short Courses**	
	X10 EM Data Analysis with the HyperSpy Ecosystem	
	X11 Cryo-EM for Materials Sciences: Hardware, Applications and Data Acquisition	
	X12 Focused Ion Beam Theory & Methods	
	X13 Machine Learning for Electron Microscopy: from Data Analysis to Active Experiments	
	X14 From Obscure to Clear: A Dive into Tissue Clearing and Expansion Microscopy	
8:30 AM – 5:30 PM	**Pre-Meeting Congress**	
	X61 Transformative High-Resolution Cryo-Electron Microscopy ***Organized by the 3D Electron Microscopy in Biological Sciences (3DEM) Focused Interest Group***	
	X63 Management Training for Local Affiliated Society Leadership ***Organized by the MSA Local Affiliated Societies Focused Interest Group***	
	X64 Progress in Focused Ion Beam Technology and Practical Aspects for Cryo, Multi Modal, and Beam-Matter Interactionsr ***Organized by the MSA Focused Ion Beam Focused Interest Grou***	
6:30 PM – 8:30 PM	**M&M 2025 Welcome Reception**	*Hyatt Regency, Salt Lake Ballroom*
8:30 PM	**Symposium Organizers' Reception**	*Offsite (by invitation only)*

Monday, July 28

7:15 AM – 8:15 AM	**FIG FOM Meeting**	
7:15 AM – 8:15 AM	**Travel Awards Committee**	
8:30 AM – 12:00 PM	**Technologists' Forum Board**	
8:30 AM – 12:00 PM	**M&M 2025 Plenary Sessions**	*Ballroom, Salt Palace Convention Center*
	Opening Welcome	
	Plenary Talk #1: **Juan Carlos Idrobo, PhD** ***Associate Professor, University of Washington, Materials Science and Engineering*** **Technicolor at the Nanoscale is Heating Up: How Monochromation and Liquid He/N_2 Cryogenic Holders are Revolutionizing STEM**	
	MAS Awards Presentation MSA Awards Presentation M&M Meeting Awards Presentation	
	Plenary Talk #2: **Bridget Carragher, PhD** ***Founding Technical Director, Chan Zuckerberg Imaging Institute*** **Tools and Technologies for Cryo-EM and Cryo-ET**	
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**	

For an up-to-date schedule and meeting room locations, please check **www.microscopy.org/mandm/2025** or the mobile app.

Monday, July 28 (Cont.)

12:15 PM – 1:15 PM	**MSA International Committee**
12:15 PM – 1:15 PM	**FIG: 3D EM in Biological Sciences**
12:15 PM – 1:15 PM	**FIG: Atom Probe Ion Microscopy**
12:15 PM – 1:15 PM	**FIG: EM in Liquids and Gases**
1:30 PM – 3:00 PM	**P.M. Symposia & Sessions**
	A01.1 Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences
	A02.1 Frontiers of Electron Ptychography
	A06.1 Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens
	B01.1 3D Structures: from Macromolecular Assemblies to Whole Cells ***(3DEM FIG)***
	B06.1 Microscopy in Cell and Molecular Biology across the Americas ***(CIASEM)***
	P01.1 Advanced Characterization of Nuclear Fuels and Materials
	P03.1 Characterization of Collective Excitations by Electron Microscopy with High Spatial, Energy, Momentum, and Temporal Resolution
	P04.1 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance
	P05.1 Advances in Imaging and Spectroscopy Beyond Ambient Conditions
	P10.1 Innovative *In situ* Imaging Techniques for Material Characterization, Synthesis, and Processing
	C01.1 Microscopy and Microanalysis of Interfaces and/or Interactions Among Organic and Inorganic Matter
	C07.1 Towards Functional Imaging of Materials: Advances and Insights from Phase Contrast Techniques
	X93 STEM Workshop
3:00 PM – 5:00 PM	**Monday Poster Presentations** *Post-Deadline Posters will be presented on this day.*
	A01.P1 Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences
	A02.P1 Frontiers of Electron Ptychography
	A06.P1 Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens
	B06.P1 Microscopy in Cell and Molecular Biology across the Americas (CIASEM)
	P01.P1 Advanced Characterization of Nuclear Fuels and Materials
	P03.P1 Characterization of Collective Excitations by Electron Microscopy with High Spatial, Energy, Momentum, and Temporal Resolution
	P04.P1 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance
	P04.P2 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance
	P05.P1 Advances in Imaging and Spectroscopy Beyond Ambient Conditions
	C01.P1 Microscopy and Microanalysis of Interfaces and/or Interactions Among Organic and Inorganic Matter
	C02.P1 Lens on Diversity: Empowering Engagement in the Microscopy Sciences
	C07.P1 Towards Functional Imaging of Materials: Advances and Insights from Phase Contrast Techniques
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 Mixer**
5:45 PM – 6:45 PM	**Vendor Tutorials** *(Sign up at individual exhibitors' booths)*

Tuesday, July 29

7:15 AM – 8:15 AM	**MSA Local Affiliated Societies & MAS Affiliated Regional Societies**	
7:15 AM – 8:15 AM	***Microscopy Today* Editorial Board**	
7:15 AM – 8:15 AM	**MSA Standards Committee**	
7:15 AM – 8:15 AM	**FIG: Low Temperature Electron Microscopy**	
7:15 AM – 8:15 AM	**MSA Standards Committee**	
8:30 AM – 10:00 AM	**A.M. Symposia & Sessions**	
	A01.2	Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences
	A02.2	Frontiers of Electron Ptychography
	A05.1	Latest Advances in Atom Probe Tomography
	A06.2	Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens
	A08.1	Next Generation Microanalysis Standards For EPMA and SEM-EDS Calibration
	A09.1	Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI
	B01.2	3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)
	B05.1	Development, Challenges and Biomedical Applications of Tissue Clearing, Expansion Microscopy and Volumetric Imaging
	B06.2	Microscopy in Cell and Molecular Biology across the Americas (CIASEM)
	B08.2	Advances in Cryo-EM technology
	P01.2	Advanced Characterization of Nuclear Fuels and Materials
	P03.2	Characterization of Collective Excitations by Electron Microscopy with High Spatial, Energy, Momentum, and Temporal Resolution
	P04.2	Energy Materials: Transport Pathways, Interfaces, & Durability for Performance
	P05.2	Advances in Imaging and Spectroscopy Beyond Ambient Conditions
	P09.1	Unconventional Electron Probes
	P10.2	Innovative *In situ* Imaging Techniques for Material Characterization, Synthesis, and Processing
	C01.2	Microscopy and Microanalysis of Interfaces and/or Interactions Among Organic and Inorganic Matter
	C03.1	Microscopy and Microanalysis in Industry
	C07.2	Towards Functional Imaging of Materials: Advances and Insights from Phase Contrast Techniques
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	**M&M 2026 Symposium Organizers' Planning Meeting**	
10:30 AM – 12:00 PM	**A.M. Symposia & Sessions**	
	A01.3	Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences
	A02.3	Frontiers of Electron Ptychography
	A04.1	Contributions of Analytical Electron Microscopy to Understanding Microstructural Evolution in Materials: James Bentley Memorial Symposium
	A05.2	Latest Advances in Atom Probe Tomography
	A06.3	Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens
	A08.2	Next Generation Microanalysis Standards For EPMA and SEM-EDS Calibration
	A09.2	Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI
	B01.3	3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)
	B05.2	Development, Challenges and Biomedical Applications of Tissue Clearing, Expansion Microscopy and Volumetric Imaging

For an up-to-date schedule and meeting room locations, please check **www.microscopy.org/mandm/2025** or the mobile app.

Tuesday, July 29 (Cont.)

10:30 AM – 12:00 PM	**A.M. Symposia & Sessions cont.**	
	P01.3	Advanced Characterization of Nuclear Fuels and Materials
	P03.3	Characterization of Collective Excitations by Electron Microscopy with High Spatial, Energy, Momentum, and Temporal Resolution
	P04.3	Energy Materials: Transport Pathways, Interfaces, & Durability for Performance
	P05.3	Advances in Imaging and Spectroscopy Beyond Ambient Conditions
	P08.1	Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials
	P09.2	Unconventional Electron Probes
	P10.3	Innovative *In situ* Imaging Techniques for Material Characterization, Synthesis, and Processing
	C01.3	Microscopy and Microanalysis of Interfaces and/or Interactions Among Organic and Inorganic Matter
	C03.2	Microscopy and Microanalysis in Industry
	C07.3	Towards Functional Imaging of Materials: Advances and Insights from Phase Contrast Techniques
12:00 PM – 1:30 PM	**Lunch Break in the Exhibit Hall**	
12:15 PM – 1:00 PM	**MSA Distinguished Scientist Awardee Lecture**	
1:30 PM – 3:00 PM	**P.M. Symposia & Sessions**	
	A01.4	Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences
	A02.4	Frontiers of Electron Ptychography
	A04.2	Contributions of Analytical Electron Microscopy to Understanding Microstructural Evolution in Materials: James Bentley Memorial Symposium
	A05.3	Latest Advances in Atom Probe Tomography
	A06.4	Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens
	A09.3	Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI
	B01.4	3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)
	B07.1	Cryo-Electron Tomography: Progress and Potential
	P01.4	Advanced Characterization of Nuclear Fuels and Materials
	P03.4	Characterization of Collective Excitations by Electron Microscopy with High Spatial, Energy, Momentum, and Temporal Resolution
	P04.4	Energy Materials: Transport Pathways, Interfaces, & Durability for Performance
	P05.4	Advances in Imaging and Spectroscopy Beyond Ambient Conditions
	P08.2	Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials
	P09.3	Unconventional Electron Probes
	P10.4	Innovative *In situ* Imaging Techniques for Material Characterization, Synthesis, and Processing
	C01.4	Microscopy and Microanalysis of Interfaces and/or Interactions Among Organic and Inorganic Matter
	C03.3	Microscopy and Microanalysis in Industry
	C06.1	Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy
	C07.4	Towards Functional Imaging of Materials: Advances and Insights from Phase Contrast Techniques
3:00 PM – 5:00 PM	**Tuesday Poster Presentations**	*Exhibit Hall*
	A04.P1	Contributions of Analytical Electron Microscopy to Understanding Microstructural Evolution in Materials: James Bentley Memorial Symposium
	A05.P1	Latest Advances in Atom Probe Tomography
	A09.P1	Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI

Tuesday, July 29 (Cont.)

3:00 PM – 5:00 PM	**Tuesday Poster Presentations (Cont.)**	*Exhibit Hall*
	B05.P1 Development, Challenges and Biomedical Applications of Tissue Clearing, Expansion Microscopy and Volumetric Imaging	
	B08.P1 Advances in Cryo-EM Technology	
	P04.P4 **P04.P5** Energy Materials: Transport Pathways, Interfaces, & Durability for Performance	
	P08.P1 **P08.P2** Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials	
	P09.P1 Unconventional Electron Probes	
	P10.P1 Innovative *In situ* Imaging Techniques for Material Characterization, Synthesis, and Processing	
	C03.P1 Microscopy and Microanalysis in Industry	
3:30 PM – 4:30 PM	**FIG Business Meeting**	
5:00 PM – 5:30 PM	**Student Poster Awards**	*Exhibit Hall Poster Stage*
5:45 PM – 6:45 PM	**Vendor Tutorials** *(Sign up at exhibitors' booths)*	
6:00 PM – 7:30 PM	**PostDoc & Early Career Development Event**	
6:30 PM	**Presidents' Reception** *(Invitation Only)*	*Offsite*

Wednesday, July 30

7:15 AM – 8:15 AM	**MaM Editorial Board**	
7:15 AM – 8:15 AM	**MSA Certification Board**	
8:30 AM – 10:00 AM	**A.M. Symposia & Sessions**	
	A02.5 Frontiers of Electron Ptychography	
	A03.1 When 4D-STEM Meets More Dimensions: Deepening Materials Insights with Efficient Experimental Design and Smart Computational Microscopy	
	A04.3 Contributions of Analytical Electron Microscopy to Understanding Microstructural Evolution in Materials: James Bentley Memorial Symposium	
	A06.5 Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens	
	A07.1 Advances in SEM Instrumentation, Application and Techniques	
	A09.4 Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI	
	B01.5 3D Structures: from Macromolecular Assemblies to Whole Cells (*3DEM FIG*)	
	B02.1 Biological Soft X-ray Tomography	
	B04.1 Emerging Advances in Light Microscopy of Fixed and Live Samples Below the Diffraction Limit	
	B07.2 Cryo-electron tomography: Progress and Potential	
	P03.5 Characterization of Collective Excitations by Electron Microscopy with High Spatial, Energy, Momentum, and Temporal Resolutions	
	P04.5 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance	
	P05.5 Advances in Imaging and Spectroscopy Beyond Ambient Conditions	
	P06.1 Multimodal Data Acquisition and Analysis of Materials Under Real-Word Conditions Using Advanced Electron Microscopy	
	P08.3 Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials	
	P10.5 Innovative *In situ* Imaging Techniques for Material Characterization, Synthesis, and Processing	
	C05.1 The Relevance and Advancement of Microscopy across the Americas (CIASEM)	
	C06.2 Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy	
	C08.1 Vendor Symposia	
	TF|X30 Team of One	

Wednesday, July 30 (Cont.)

10:00 AM – 10:30 AM	**Coffee Break in the Exhibit Hall**
10:00 AM – 5:30 PM	**Exhibit Hall Open**
10:30 AM – 12:00 PM	**A.M. Symposia & Sessions**
	A03.2 When 4D-STEM Meets More Dimensions: Deepening Materials Insights with Efficient Experimental Design and Smart Computational Microscopy
	A04.4 Contributions of Analytical Electron Microscopy to Understanding Microstructural Evolution in Materials: James Bentley Memorial Symposium
	A06.6 Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens
	A07.2 Advances in SEM Instrumentation, Application and Techniques
	A09.5 Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI
	A10.1 Advances in Cryogenic Transmission Electron Microscopy and Spectroscopy for Energy and Quantum Materials and Technologies
	B02.2 Biological Soft X-ray Tomography
	B04.2 Emerging Advances in Light Microscopy of Fixed and Live Samples Below the Diffraction Limit
	B08.1 Advances in Cryo-EM technology
	P02.1 Electron Microscopy for Ferroic Materials: From Atomic-scale Imaging to *In situ* Control
	P04.6 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance
	P05.6 Advances in Imaging and Spectroscopy Beyond Ambient Conditions
	P06.2 Multimodal Data Acquisition and Analysis of Materials Under Real-Word Conditions Using Advanced Electron Microscopy
	P07.1 High-Resolution Microscopy and Microanalysis of Materials subjected to Extreme Environments
	P08.4 Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials
	P10.6 Innovative *In situ* Imaging Techniques for Material Characterization, Synthesis, and Processing
	C05.2 The Relevance and Advancement of Microscopy across the Americas (CIASEM)
	C06.3 Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy
	C08.2 Vendor Symposia
	TF | X31 Working with Image Data
12:00 PM – 1:30 PM	**Lunch Break in the Exhibit Hall**
12:15 PM – 1:15 PM	**MSA Members' Meeting**
1:30 PM – 3:00 PM	**P.M. Symposia & Sessions**
	A03.3 When 4D-STEM Meets More Dimensions: Deepening Materials Insights with Efficient Experimental Design and Smart Computational Microscopy
	A04.5 Contributions of Analytical Electron Microscopy to Understanding Microstructural Evolution in Materials: James Bentley Memorial Symposium
	A07.3 Advances in SEM Instrumentation, Application and Techniques
	A09.6 Quantitative Electron Diffraction
	A10.2 Advances in Cryogenic Transmission Electron Microscopy and Spectroscopy for Energy and Quantum Materials and Technologies
	B02.3 Biological Soft X-ray Tomography
	B04.3 Emerging Advances in Light Microscopy of Fixed and Live Samples Below the Diffraction Limit
	B08.2 Advances in Cryo-EM Technology
	P02.2 Electron Microscopy for Ferroic Materials: From Atomic-scale Imaging to *In situ* Control
	P04.7 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance
	P05.7 Advances in Imaging and Spectroscopy Beyond Ambient Conditions
	P06.3 Multimodal Data Acquisition and Analysis of Materials Under Real-Word Conditions Using Advanced Electron Microscopy

Wednesday, July 30 (Cont.)

1:30 PM – 3:00 PM	**P.M. Symposia & Sessions (Cont.)**	
	P07.2	High-Resolution Microscopy and Microanalysis of Materials subjected to Extreme Environments
	P08.5	Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials
	P10.7	Innovative *In situ* Imaging Techniques for Material Characterization, Synthesis, and Processing
	C05.3	The Relevance and Advancement of Microscopy across the Americas (CIASEM)
	C06.4	Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy
	C08.3	Vendor Symposia
	TF|X32	Mental Health in Microscopy
3:00 PM – 5:00 PM	**Wednesday Poster Presentations**	*Exhibit Hall*
	A07.P1	Advances in SEM Instrumentation, Application and Techniques
	B01.P1	3D Structures: from Macromolecular Assemblies to Whole Cells (3DEM FIG)
	B02.P1	Biological Soft X-ray Tomography
	B07.P1	Cryo-electron tomography: Progress and Potential
	P02.P1	Electron Microscopy for Ferroic Materials: From Atomic-scale Imaging to *In situ* Control
	P06.P1	Multimodal Data Acquisition and Analysis of Materials Under Real-Word Conditions Using Advanced Electron Microscop7
	P07.P1	High-Resolution Microscopy and Microanalysis of Materials subjected to Extreme Environments
	P08.P3	Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials
	P10.P1	Innovative *In situ* Imaging Techniques for Material Characterization, Synthesis, and Processing
	C05.P1	The Relevance and Advancement of Microscopy across the Americas (CIASEM)
	C06.P1	Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy
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	**Diversity and Inclusion Mixer**	
5:45 PM – 6:45 PM	**Vendor Tutorials** *(Sign up at exhibitors' booths)*	
6:30 PM – 8:00 PM	**CIASEM General Assembly**	
6:30 PM – 8:30 PM	**MAS Members' Social** *(See MAS Booth for Details—Offsite)*	
8:30 PM	**CIASEM Social Reception** *(Offsite)*	

Thursday, July 31

8:30 AM – 9:30 AM	**M&M Sustaining Members Meeting**	
8:30 AM – 10:00 AM	**A.M. Symposia & Sessions**	
	A03.4	When 4D-STEM Meets More Dimensions: Deepening Materials Insights with Efficient Experimental Design and Smart Computational Microscopy
	A07.4	Advances in SEM Instrumentation, Application and Techniques
	A09.7	Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI
	A10.3	Advances in Cryogenic Transmission Electron Microscopy and Spectroscopy for Energy and Quantum Materials and Technologies
	B03.1	Application of Microscopy Techniques for Research and Diagnosis of Diseases in Humans, Plants and Animals

For an up-to-date schedule and meeting room locations, please check **www.microscopy.org/mandm/2025** or the mobile app.

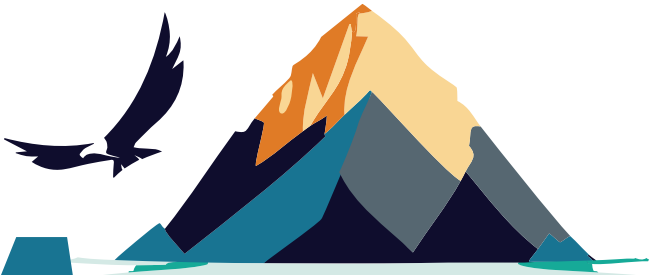
Thursday, July 31 (Cont.)

8:30 AM – 10:00 AM	**A.M. Symposia & Sessions**	
	B08.3	Advances in Cryo-EM technology
	P02.3	Electron Microscopy for Ferroic Materials: From Atomic-scale Imaging to *In situ* Control
	P04.8	Energy Materials: Transport Pathways, Interfaces, & Durability for Performance
	P05.8	Advances in Imaging and Spectroscopy Beyond Ambient Conditions
	P06.4	Multimodal Data Acquisition and Analysis of Materials Under Real-Word Conditions Using Advanced Electron Microscopy
	P07.3	High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments
	P08.6	Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials
	P10.8	Innovative *In situ* Imaging Techniques for Material Characterization, Synthesis, and Processing
	C02.1	Lens on Diversity: Empowering Engagement in the Microscopy Sciences
	C06.5	Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy
10:00 AM – 12:00 PM	**Coffee Break and Poster Session in the Exhibit Hall**	
10:00 AM – 2:00 PM	**Exhibit Hall Open**	
10:00 AM – 12:00 PM	**Thursday Poster Presentations**	*Post-Deadline Posters will be presented on this day*
	A03.P1	When 4D-STEM Meets More Dimensions: Deepening Materials Insights with Efficient Experimental Design and Smart Computational Microscopy
	A07.P2	Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens
	A08.P1	Next Generation Microanalysis Standards For EPMA and SEM-EDS Calibration
	A10.P1	Advances in Cryogenic Transmission Electron Microscopy and Spectroscopy for Energy and Quantum Materials and Technologies
	B03.P1	Application of Microscopy Techniques for Research and Diagnosis of Diseases in Humans, Plants and Animals
	P10.P2	Innovative *In situ* Imaging Techniques for Material Characterization, Synthesis, and Processing
	C05.P2	The Relevance and Advancement of Microscopy across the Americas (CIASEM)
	C06.P2	Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy
12:00 PM	**Student Poster Awards**	*Exhibit Hall - Poster Area Stage*
12:15 PM – 1:15 PM	**FIG: Microanalytical Standards**	
12:15 PM – 1:15 PM	**FIG: Aberration Corrected EM (ACEM)**	
12:00 PM – 1:30 PM	**Lunch Break**	
1:30 PM – 3:00 PM	**P.M. Symposia & Sessions**	
	A03.5	When 4D-STEM Meets More Dimensions: Deepening Materials Insights with Efficient Experimental Design and Smart Computational Microscopy
	A07.5	Advances in SEM Instrumentation, Application and Techniques
	A09.8	Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI
	A10.4	Advances in Cryogenic Transmission Electron Microscopy and Spectroscopy for Energy and Quantum Materials and Technologies
	B03.2	Application of Microscopy Techniques for Research and Diagnosis of Diseases in Humans, Plants and Animals
	B08.4	Advances in Cryo-EM technology

Thursday, July 31 (Cont.)

1:30 PM – 3:00 PM	**P.M. Symposia & Sessions**	
	P02.4	Electron Microscopy for Ferroic Materials: From Atomic-scale Imaging to *In situ* Control
	P06.5	Multimodal Data Acquisition and Analysis of Materials Under Real-Word Conditions Using Advanced Electron Microscopy
	P07.4	High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments
	P08.7	Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials
	P10.9	Innovative *In situ* Imaging Techniques for Material Characterization, Synthesis, and Processing
	C06.6	Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy
3:00 PM – 3:30 PM	**Coffee Break**	
3:30 PM – 5:30 PM	**Late P.M. Symposia & Sessions**	
	A03.6	When 4D-STEM Meets More Dimensions: Deepening Materials Insights with Efficient Experimental Design and Smart Computational Microscopy
	A10.5	Advances in Cryogenic Transmission Electron Microscopy and Spectroscopy for Energy and Quantum Materials and Technologies
	B03.3	Application of Microscopy Techniques for Research and Diagnosis of Diseases in Humans, Plants and Animals
	B08.5	Advances in Cryo-EM Technology
	P02.5	Electron Microscopy for Ferroic Materials: From Atomic-scale Imaging to in-situ Control
	P06.6	Multimodal Data Acquisition and Analysis of Materials Under Real-Word Conditions Using Advanced Electron Microscopy
	P07.5	High-Resolution Microscopy and Microanalysis of Materials subjected to Extreme Environments
	P08.8	Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials
	C06.7	Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy

For an up-to-date schedule and meeting room locations, please check **www.microscopy.org/mandm/2025** or the mobile app.



M&M2025

MICROSCOPY & MICROANALYSIS

July 27-31 • Salt Lake City, Utah

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:
Danial Zangeneh, University of Illinois Chicago

PROGRAM CO-CHAIR:
Chuhang Liu, Stony Brook University

PHYSICAL SCIENCES CO-CHAIR:
Ramandeep Mandia, Arizona State University

BIOLOGICAL SCIENCES CO-CHAIR:
Abayomi Adegboyega, Purdue University

POST-DOC SUBCOMMITTEE CHAIR:
Bryan Lim, Ph.D., Oak Ridge National Lab

SOCIAL CHAIR: Essance Ray, University of Washington

SPONSOR LIAISON: Matthew Patrick, Columbia University

X61 Transformative High-Resolution Cryo-Electron Microscopy

Organized by the 3D Electron Microscopy in Biological Sciences (3DEM) Focused Interest Group

ORGANIZERS:

Ed Eng, New York Structural Biology Center

Claudia Lopez, Oregon Health and Science University

Julia Brasch, University of Utah

X63 Management Training for Local Affiliated Society Leadership

Organized by the Microscopy Society of America Local Affiliated Societies Focused Interest Group

ORGANIZERS:

Bernd Zechmann, Baylor University

Page Baluch, Arizona State University

SPEAKERS:

Page Baluch, Arizona State University [AIMS: Arizona Imaging and Microanalysis Society]

Aubrey Funke, Carl Zeiss Microscopy

Tingting Gu, Oklahoma University [OMS: Oklahoma Microscopy Society]

Andres Marquez, MSA Student Council Past President

Jeffrey Pigott, Case University [MSNO: Microscopy society of Northeastern Ohio]

Brian Van Devener, University of Utah [GBMS: Great Basin Microscopy Society]

Bernd Zechmann, Baylor University [TSM: Texas Society for Microscopy]

X64 Progress in Focused Ion Beam Technology and Practical Aspects for Cryo, Multi Modal, and Beam-Matter Interactions

Organized by the Focused Ion Beam Focused Interest Group

ORGANIZERS:

Shize Yang, Yale University

Stephan Kraemer, Harvard University

Renae Gannon, National Renewable Energy Laboratory

Matthew Thorseth, The Dow Chemical Company

> 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 EM Data Analysis with the HyperSpy Ecosystem

LEAD INSTRUCTORS:

Joshua Taillon, NIST
Eric Prestat, United Kingdom Atomic Energy Authority
Carter Francis, Direct Electron

X11 Cryo-EM for Materials Sciences: Hardware, Applications and Data Acquisition

LEAD INSTRUCTORS:

Ismail El Baggari, Harvard University
Myung-Geun Han, Brookhaven National Laboratory
Michael Zachman, Oak Ridge National Laboratory

X12 Focused Ion Beam Theory and Methods

LEAD INSTRUCTORS:

Lucille Gianuzzi, EXpressLO, LLC
Joseph Michael, Sandia National Laboratory (ret.)

X13 Machine Learning for Electron Microscopy: From Data Analysis to Active Experiments

LEAD INSTRUCTORS:

Sergei Kalinin, University of Tennessee, Knoxville
Maxim Ziatdinov, Oak Ridge National Lab
Kevin Roccapriore, Oak Ridge National Lab

X14 From Obscure to Clear: A Dive into Tissue Clearing and Expansion Microscopy

LEAD INSTRUCTORS:

Yongxin (Leon) Zhao, Carnegie Mellon
Alan Watson, University of Pittsburgh
Adam Glaser, Allen Institute for Neural Dynamics

MICROGRAPH

Intestinal blood vessels
Satu Paavonsalo, University of Helsinki, Helsinki, Finland

Monday, July 28

Scientific Program

SESSION CHAIRS:

Paul Voyles, President, Microscopy Society of America
Andrew Herzing, President, Microanalysis Society
James Evans, M&M 2025 Program Chair

MONDAY 8:30 AM – 12:00 PM

Salt Palace Convention Center – Grand Ballroom

OPENING WELCOME:

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

Program Chair Welcome Remarks

8:45 AM **1** PLENARY SESSION | *Technicolor at the Nanoscale is Heating Up: How Monochromation and Liquid He/N_2 Cryogenic Holders are Revolutionizing STEM;* **Juan Idrobo** (Invited)

9:35 AM MAS Awards Presentation

9:45 AM Coffee Break

10:30 AM MSA Awards Presentation

10:45 AM M&M Meeting Awards Presentation

11:00 AM **2** PLENARY SESSION | *Tools and Technologies for Cryo-EM and Cryo-ET;* **Bridget Carragher** (Invited)

11:55 PM **Program Chair Closing Remarks**

12:00 PM Lunch Break / Exhibit Hall Opens

A Analytical/Instrumentation Sciences Symposia – Monday Afternoon

A01.1 Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences

PLATFORM SESSION
Monday 1:30 PM

1:30 PM **3** *From Thin Film to Battery: FIB-SIMS with TOF Technology for High Resolution Chemical Imaging;* **Lex Pillatsch** (Invited), James Whitby, Valentine Riedo-Grimaudo

2:00 PM **4** *Advanced Characterization of Materials at the Nanoscale Using SIMS*; **Peter Gnauck**, Alexander Ost, Torsten Richter

2:15 PM **5** *Automated FIB Cross-Sectioning for 3D SIMS: Local Volume and Global Volume 7Li+ Distribution in NMC811;* **Chengge Jiao**

2:30 PM **6** *Enhancing TEM Sample Preparation Efficiency with an Adjustable Nanomanipulator Tip for FIB-SEM Systems;* **Valerie Brogden**, Jeff Garman, Steve Wiemholt

2:45 PM **7** *The Effect of Ion Energy Application on Damage Induced in (S)TEM Samples and the Area of their Creation Respectively to the Sample Surface using Different Ion Species and Techniques;* **Martin Sláma**, Shibabrata Basak, Lucille A Giannuzzi, Lara Ahrens, Rüdiger-A. Eichel

A02.1 Frontiers of Electron Ptychography

PLATFORM SESSION
Monday 1:30 PM

1:30 PM **8** *What Electron Ptychography Can and Can't Do (Yet);* **David Muller** (Invited)

2:00 PM **9** *Quantitative Structure and Composition Determination by Including Thermal Vibrations in Inverse Multislice Ptychography;* **Ziria Herdegen**, Knut Müller-Caspary

2:15 PM **10** *Start-from-Scratch Reconstruction of Challenging Objects with Local-Orbital Ptychography;* **Wenfeng Yang**, Rong Yu

2:30 PM **11** *Three-Dimensional Domain Structure of BiFeO3 by Multislice Electron Ptychography;* **Xinyan Li**, Maya Ramesh, Chuqiao Shi, Yi Jiang, Darrell Schlom, Ramamoorthy Ramesh, Yimo Han

2:45 PM **12** *Direct Observation of the Hydrated Active and Degraded Structures of Cu-Exchanged Zeolite Catalysts using Electron Ptychography;* **Masahiko Shimizu**, Katsuaki Nakazawa, Kazutaka Mitsuishi, Hajime Matsumoto, Hisashi Shima, Takahiko Takewaki, Ayako Hashimoto

A06.1 Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens

Monday 1:30 PM

1:30 PM **13** *Nanoscale Properties of Cortical Bone Tissue within Peri-Lacunar Regions;* **Wen Qian**, Luke Schwaninger, Eleftherios Paschalis, Laura Graeff-Armas, Susan Bare, Joseph Turner, Robert Recker, Mohammed Akhter

1:45 PM **14** *Analysis of Human Tooth Enamel Crystals by Electron Microscopy;* **Jose Reyes Gasga**, Etienne Bres

2:00 PM **15** *Depth information from Backscattered Scanning Electron Microscope Images Using Multiple Beam Energies and Parameter Estimation Methods;* **Martin Ritter**, Trushal Sardhara, Matthias Hemmleb

2:15 PM **16** *Deep Learning-Driven High-Throughput High-Resolution TEM Analysis of Surface Characteristics during Nanocrystal Growth;* **Min Gee Cho**, Luis Rangel DaCosta, Katherine Sytwu, Myounghwan Oh, Mary Scott

2:30 PM **17** *Near and Sub-Surface Damage Evolution During Cyclical Bending in Tension, and its Relation to Elongation of CP-Ti;* **David Fullwood** (Invited), Nicholas Pitkin, Nathan Miller, Philip Noell, Michael Miles, Marko Knezevic

Scientific Program

B Biological Sciences Symposia – Monday Afternoon

B01.1 Biological Applications of Quantitative Label-Free Imaging

Monday 1:30 PM

1:30 PM **22** *Computationally Enhanced Quantitative Phase Imaging for Label-Free Transparent Structures and Three-Dimensional Spheroids;* (Invited) **Xi Chen**

1:30 PM **18** *Microcrystal Electron Diffraction for Macromolecular Crystallography;* **Brent Nannenga** (Invited)

2:00 PM **19** *NEMO for cryo-EM Facility Data Pipeline Management and Automation;* **Thomas Edwards**, Vladimir Veremeychik

2:15 PM **20** *Folding Interrupted: Defective Folding of Mutant Gβ5 by the CCT Chaperone Complex;* **Deirdre Mack**, Mikaila Sass, Barry Willardson, Peter Shen

2:30 PM **21** *A Comprehensive Calibration Standard for CryoEM Workflow Validation;* **Edward Eng**, Mahira Aragon, Daija Bobe, Cathleen Castello, Eugene Chua, Elina Kopylov, Misha Kopylov, Jessalyn Miller, Aaron Owji, Christina Zimanyi

2:45 PM **22** *Survey of AlphaFold 3 Multimer Models for Recent Medium-Resolution Cryo-EM Maps;* **Changrui Li**, Thu Nguyen, Willy Wriggers, Jing He

B06.1 Microscopy in Cell and Molecular Biology across the Americas (CIASEM)

Monday 1:30 PM

1:30 PM **23** *The Cell and Molecular Pathology of Tau Protein in Alzheimer's Disease;* **Francisco Garcia-Sierra** (Invited), Benjamín Florán Garduño

2:15 PM **24** *Damage induced in the Central Nervous System by Perinatal Asphyxia. Neuroprotective effects;* **Francisco Capani** (Invited), Tamara Kobiec, Sofia Bordet, Malena Garcia, Norkellys Parra, Claudia Mardaraz, Carlos Kusnier, Marcos Andrade, Juan Pablo Luaces, Rodolfo Kolijer-Frers

2:45 PM **25** *Probing Cytotoxic and Oxidative Stress Effects of Nanoplastics on Human intestinal Caco-2 Cells: Insights from Raman Spectroscopy and Machine Learning;* **Nikki Kosari**, Bryan Gustafson, Anhong Zhou

C Cross-Cut/Interdisciplinary Sciences Symposia – Monday Afternoon

C01.1 Microscopy and Microanalysis of Interfaces and/or Interactions Among Organic and Inorganic Matter

Monday 1:30 PM

1:30 PM **26** *Recent Advances in Focused Ion Beam Methodologies for 3D Analysis of Biomineralizing Tissues across Multiple Length Scales;* **Tengteng Tang** (Invited)

2:00 PM **27** *Inorganic Cretaceous Dinosaur Remains are Colonized by Specialized Communities of Fungi that Thrive Within Bones and Support Fungivore Nematodes;* **Kersten Peterson**, Mark Armitage

2:15 PM **28** *An Organic Food Web Exists Within the Bioapatite Inorganic Bone Surfaces of Cretaceous Dinosaurs;* **Mark Armitage**

2:30 PM **29** *Exploring Structure and Properties of Diseased Coral Exoskeletons using Multi-scale Electron Diffraction Techniques;* **Yu Wen**, Edward De La Uz, Joshua Voss, Vivian Merk, Paul Smeets

2:45 PM **30** *Deciphering the Intricate Shell Microstructures of the 2700-meter Deep-sea Mussel Bathymodiolus marisindicus;* **Zhehan Ying**, Shi Wang, Wai Chuen Wong, Shengling Xiang, Xiangbin Cai, Xuemeng Feng, Yao Xiao, Yuan Cai, Peiyuan Qian, Ning Wang

C07.1 Towards Functional Imaging of Materials: Advances and Insights from Phase Contrast Techniques

Monday 1:30 PM

1:30 PM **31** *A Comparative Analysis of STEM Phase Retrieval Techniques: Evaluating Transfer of Information and Dose Efficiency;* **Georgios Varnavides** (Invited), Stephanie Ribet, Julie Marie Bekkevold, Berk Küçükoğlu, Henning Stahlberg, Lewys Jones, Mary Scott, Colin Ophus

2:00 PM **32** *Unveiling Interface Defects and Dislocations in Epitaxial Superconducting Nitrides with Multislice Electron Ptychography;* **Eegene Clara Chung**, Naomi Pieczulewski, Anand Ithepalli, Keun-Yeol Park, Steven Zeltmann, Chia-Hao Lee, Celesta Chang, Debdeep Jena, David Muller

2:15 PM **33** *Improving Iterative Ptychographic Reconstructions with Generative Neural Networks;* **Arthur R. C. McCray**, Stephanie Ribet, Georgios Varnavides, Colin Ophus

2:30 PM **34** *STEM Holography of Electric and Magnetic Potentials;* **Benjamin McMorran** (Invited), Andrew Ducharme, Eric Fullerton, Sergio Montoya, William Parker, Jacques Reddinger, Georgios Varnavides, Fehmi Yasin

Scientific Program

P Physical Sciences Symposia – Monday Afternoon

P01.1 Advanced Characterization of Nuclear Fuels and Materials

Monday 1:30 PM

1:30 PM **35** *Automated Electron Microscopy for Nuclear Materials Analysis;* **Matthew Olszta** (Invited)

2:00 PM **36** *Transfer Learning for Dislocation Defect Quantification;* **Michael Wu**, Jeremy Sharapov, Matthew Anderson, Yu Lu, Yaqiao Wu

2:15 PM **37** *Inherent Defects and Behavior of ALD-grown ZnO Thin Films During Electron Irradiation;* **Francisco Lagunas**, Shi Li, Zachary Hood, Jessica Jones

2:30 PM **38** *The Essential Role of Advanced Materials Characterization in Understanding Irradiation Effects in Structural Materials;* **M. Grace Burke** (Invited), Jonathan Hyde, Julio Spadotto, Brian Connolly, Joven Lim

P03.1 Characterization of Collective Excitations by Electron Microscopy with High Spatial, Energy, Momentum, and Temporal Resolutions

Monday 1:30 PM

1:30 PM **39** *The Next Generation of Analytical and Experimental Approaches for Collective Excitations with Monochromated Electron Energy-Loss Spectroscopy;* **Jordan Hachtel** (Invited)

2:00 PM **40** *Diffuson Dispersion of Amorphous Carbon Measured at the Nanoscale;* **Benedikt Haas**, Christoph Koch, Peter Rez

2:15 PM **41** *Detecting Phonon Polaritons in Nanomaterials via STEM-EELS;* **Peng Gao**, Peiyi He

2:30 PM **42** *Probing Surface Vibrational Modes in Catalytic Nanoparticles By Electron Energy-Loss Spectroscopy;* **Peter Crozier** (Invited), Yifan Wang

P04.1 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance

Monday 1:30 PM

1:30 PM **43** *Kinetic Insights from Operando Synchrotron Microscopy Analysis of Energy Materials at Elevated Temperatures;* **Yu-chen Karen Chen-Wiegart** (Invited)

2:00 PM **44** *In Situ ETEM Observations of Degradation in Cobalt Oxide Thermochemical Materials;* **Madeline Van Winkle**, Stephen House, Katherine Jungjohann, John Mangum

2:15 PM **45** *Subsurface Properties of Si Microholes Fabricated by Nanosecond UV Laser Beam;* **Ashif Chowdhury**, Heayoung Yoon

2:30 PM **46** *Heating and Cooling Electrochemical Liquid-Cell STEM;* **Yao Yang** (Invited), Sungin Kim, Zhijing Zhang, Shikai Liu, Wenqi Li

P05.1 Cryo-Microscopy

Monday 1:30 PM

1:30 PM **47** *In-Situ Cryo STEM of Quantum Materials for Nanoscale Effects;* **Judy Cha** (Invited), Saif Siddique, Mehrdad Kiani, Jason Schibler, Myung-Geun Han, Yimei Zhu

2:00 PM **48** *Manipulating the Structure of 2D Organic-Inorganic Hybrid MXenes using Cryogenic STEM;* **Francisco Lagunas**, Chenkun Zhou, Di Wang, Anupma Thakur, Babak Anasori, Dmitri Talapin, Zachary Hood, Robert Klie

2:15 PM **49** *The Electronic Structure of Transition Metal Oxides in Electron Energy Loss Spectroscopy;* **Ioannis Iatrakis**, Ricardo Egoavil, Zitao Zhang, Dileep Krishnan, Nick Tasios, Frank de Groot

2:30 PM **50** *Resolving Quantum Phase Transitions with Liquid Nitrogen and Liquid Helium Cryogenic S/TEM;* **Lopa Bhatt** (Invited), Noah Schnitzer, Nishkarsh Agarwal, Suk Hyun Sung, Robert Hovden, Ismail El Baggari, Berit Goodge, David Muller

P10.1 Innovative *in-situ* Imaging Techniques for Material Characterization, Synthesis, and Processing

Monday 1:30 PM

1:30 PM **51** *Liquid phase electron microscopy study of the atomic dynamics of electrified solid-liquid interfaces;* **Haimei Zheng** (Invited), Yi Chen, Qiubo Zhang

2:00 PM **52** *Monolayer MoS_2 as a Window Material for High-Resolution Liquid-Phase Electron Microscopy and Spectroscopy;* **Shoaib Masood**, Robert Klie

2:15 PM **53** *Understanding Lithiation Dynamics in micro-Si-C Composite Anodes by in situ Electrochemical Liquid-Cell Transmission Electron Microscopy;* **Ihnkyung Jung**, Hayoung Park, Jungwon Park

2:30 PM **54** *Fabrication of massive Graphene Liquid Cells (mGLCs) for In Situ TEM;* **Proloy Nandi**, Nathalie Claes, Robert Klie, Sara Bals

2:45 PM **55** *Development of a Double-tilt Liquid Cell Holder for Zone-axis Incidence Imaging of FIB-prepared Single Crystal Samples;* **Masaki Takeguchi**, Jonathan Lueke, Baibing Zhao, Ayako Hashimoto

A Analytical Sciences Poster Sessions – Monday

3:00 PM – 5:00 PM **EXHIBIT HALL**

A01.P1 Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences

POSTER # 1

56 *Multi-Ion Plasma FIB for Advanced TEM Lamella Preparation: A Comparative Study Toward (SE)EBIC-Enabled Analysis;* **Daniel Vasquez**, Robert Winkler, Alexander Fakiner, A. Wahab Shakib, William Hubbard, Leopoldo Molina-Luna

POSTER # 2

57 *Cryogenic Focused Ion Beam Preparation of Organic-Inorganic Hybrid Perovskite FAPbI3 for Transmission Electron Microscopy;* **Yuxi Zhang**, Hadas Sternlicht, Sai Venkata Gayathri Ayyagari, Farzaneh Rezaei, Arkita Chakrabarti, Kelly Vences, Sean Dunfield, Mariana Bertoni, David Fenning, Nasim Alem

POSTER # 4

59 *Effects of Sample Size and Geometry on Phase Transformation of Nanograined NiTi Micropillars;* **Parham Kabirifar**, Wen-An Chiou, Qingping Sun

POSTER # 5

60 *Exploring Three-Dimensional Cathodoluminescence Technique with FIB-SEM;* **Yuhei Nakajima**, Naoto Kuga, Kazuhiro Ikeda, Osamu Suzuki, Hideki Matsushima

POSTER # 6

61 *Regressive Prediction of Focused Ion Beam Milling Depth for Electron Diffraction Gratings;* **Kyle Cole**, Benjamin McMorran

POSTER # 7

62 *Site-Specific Sectioning and SEM Imaging of MOSFET Active Regions for Device Failure Analysis;* **Sean Nichols**, Brandon Gunn, Albert Talin, Joshua Sugar

A02.P2 Frontiers of Electron Ptychography

POSTER # 8

63 *A Deep Learning Framework for Accelerated Electron Ptychography with Balanced Accuracy and Efficiency;* **Linhan Liu**, Yuhao Liu, Jizhe Cui, Wenfeng Yang, Rong Yu

POSTER # 9

64 *Aberration Measurement by Electron Ptychography and Consistency Among Different Algorithms;* **Tizian Lorenzen**, Benedikt Diederichs, Charles Otieno Ogolla, Benjamin Butz, Knut Müller-Caspary

POSTER # 10

65 *Decoding Moiré Patterns of Small, Embedded SiC Nanoparticles in Si with Multislice Electron Ptychography;* **Aaditya Bhat**, Junghwa Kim, Yeghishe Tsaturyan, Nazar Delegan, Bonnie Lin, David Awschalom, James LeBeau

POSTER # 11

66 *Imaging Hydrogen, its 3D Inhomogeneity and Strain Mapping of Palladium Hydride (PdH) Nanoparticle by Ptychography;* **Zixiao Shi**, Qihao Li, Guanxing Li, Chia-Hao Lee, Héctor Abruña, David Muller

POSTER # 12

67 *Investigating the Effect of Update Strengths for Atomic-Resolution Low-Dose Imaging in Iterative Ptychography;* **Tamazouzt Chennit**, Songge Li, Christoph Hofer, Nadine Schrenker, Andrew Maiden, Hoelen Lalandec Robert, Sara Bals, Timothy Pennycook, Johan Verbeeck

POSTER # 13

68 *Non-Iterative Electron Ptychography With Relaxed Real-Space Sampling;* **Colum O'Leary**, Haozhi Sha, Georgios Varnavides, Peter Ercius

POSTER # 14

69 *Searching for Nitrogen-Vacancy Centers in Diamond with Multislice Electron Ptychography;* **Eleanor Schnee**, Kayla Nguyen, Casey Clark, Christopher Hendon, Hailin Wang

A06.P1 Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens

POSTER # 15

70 *Characterization of ALD-Grown Al2O3Thin Films Transferred from Sacrificial Polymer Substrates;* **Gillian Boyce**, Alex Hall, Nicholas Blumenschein, John Cumings, Raymond Phaneuf, Aubrey Hanbicki, Adam Friedman

POSTER # 16

71 *Microscopy Analysis of Wear Mechanisms of Reinforced Composites Materials;* **Edgar Vera**, M. Moreno-Rios, A. I. Martínez-Pérez, Erika Osiris Avila Dávila

POSTER # 17

72 *Characterization of Ag Dendrites Deposited on Al Surfaces by Electrodeposition Process;* **Carlos Andrés Espinosa Domínguez**, Isis Hernandez-Arevalo, Noé López-Perrusquia, Marco Antonio Doñu Ruiz, Carolina Hernández-Navarro, Ernesto García

POSTER # 18

73 *Characterization of Pyrotechnic Mixtures using High Resolution Scanning Electron Microscopy (SEM) and X-Ray Fluorescence;* **Adam Pimentel**, Robert Knepper

POSTER # 19

74 *Effect of Hot Extrusion on a Li-modified A356 Al alloy;* **P. A. Guerrero-Seañez**, C.G. Garay-Reyes, X. Atanacio-Sánchez, A. Martínez-García, Jose Mendoza-Duarte, I. Estrada-Guel, R. Martínez-Sánchez

POSTER # 20

75 *Effects of Heat Treatment on the Microstructural Morphology of Additively Manufactured 316L Stainless Steel;* **Abinran Allie**, Zafar Bangash, Heshmat Aglan

POSTER # 21

76 *High Resolution STM Images Achieved Using an Open-Source Microcontroller-Enabled Tungsten Tip Etching System;* **Samuel Olson**, Kaleb Hood, Jun Jiao

Scientific Program

A Analytical Sciences Poster Sessions – Monday cont.

POSTER # 22

77 *High-Speed Atomic Force Microscopy Revealed Dynamic Polymerization of MamK Cytoskeleton for Magnetosome Positioning;* **Yuanyuan Pan**, Azuma Taoka

POSTER # 23

78 *Investigation of Structural and Thermal Properties of Nb2CTX MXenes at Elevated Temperature;* **Bhoj Gautam**, Nisha Hiralal Makani, Angela Wilson, Joshua Abbott

POSTER # 24

79 *Lateral-Force AFM Study of Graphene Thickness Effects for Reduced Steel Friction;* **Kaleb Hood**, Samuel Olson, Adan Velasquez, Jun Jiao

POSTER # 25

80 *Microscale Pore Analysis Using Broad Beam Ion Milling of Free Surfaces;* **Oliver Fowler**, Mark Atwater

POSTER # 26

81 *Microscopic and Elemental Characterization of Biosubstrates for Application in Biosensor;* **Maricela Villanueva-Ibáñez**, Ariadna-Itzel Reyes-Aparicio, Diana Lesem García-Rubio

POSTER # 27

82 *Observation of Magnetosome Structures Isolated from Magnetotactic Bacterium Solidesulfovibrio Magneticus RS-1;* **Rino Shimoshige**, Azuma Taoka

POSTER # 28

83 *Selective Surface Processing on Cutting Tool;* **Aaron Guerrero Basilio**, Miguel Ángel Camacho Tapia, Leopoldo García Vanegas, Marco Antonio Doñu Ruiz, Milton Elías Espinosa, David Sánchez Huitron, Noé López-Perrusquia

POSTER # 29

84 *Surface Characterization on Agricultural grade steel with Boriding Treatment;* **Carlos Andrés Espinosa Domínguez**, Noé López-Perrusquia, Marco Antonio Doñu Ruiz, Ernesto David García Bustos, Christopher René Torres San Miguel, Jorge Victor Cortes Suarez

POSTER # 30

85 *Texturing Copper Powder via Annealing for Increased Optical Absorbance;* **Adan Velasquez**, Kaleb Hood, Junaid Dar, Samuel Olson, Dong Lin, Jun Jiao

POSTER # 31

86 *Ultra-High-Speed Rotor for Improved Characterization of Microparticle-Surface Adhesion;* **Hillary Owuor**, Elijah Pehrson

POSTER # 32

87 *Which Instrument Should You Use for High Lateral Resolution Chemical Analysis - SEM/EDS or ToF-SIMS?;* **Vincent Smentkowski**, Deliang Guo, Felix Kollmer

A09.P1 Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI

POSTER # 33

88 *Automated Experimental Diffraction Pattern Indexing in pyEMAPS;* **Jian-Min Zuo**, Xiurong Zhu

POSTER # 34

89 *Crystal-Orientation-Dependent Image Contrast for Largely Defocused HAADF STEM Imaging;* **Ziria Herdegen**, Naveen Goyal, Sebastian Sturm, Tizian Lorenzen, Fabian Hölzl, N Ravishankar

POSTER # 35

90 *EBSD Crystallographic and Microstructure Characterization of Laser 3D-Printed Lunar Regolith Simulants for Off-world Construction;* **Tirzah Abbott**, Laura Gardner, Katie Koube, Valerie Svaldi, Thao Nguyen, Jennifer Edmunson, Steven Jacobsen

POSTER # 36

91 *Unraveling the Mechanism of Phase Segregation Phenomena in IGZO Compounds via Precession Electron Diffraction and In-Situ TEM;* **Pradyumna Parida**, Marta Agati, Harold Dekkers, Athanassios Galanis, Olivier Richard, Eva Grieten

POSTER # 37

92 *Using HREBSD to Measure Strain of Second Phase Particles in Aluminum Alloy 2219;* **Laura Vietz**, Tim Ruggles, Thomas Bennett, Will Gilliland, Philip Noell

B Biological Sciences Poster Sessions – Monday

B06.P1 Microscopy in Cell and Molecular Biology across the Americas (CIASEM)

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 # 39

94 *Electrochemical Synthesis and Characterization of Silver Nanoparticles;* **Alejandra Domínguez-Garay**, Roberto Gómez-Bátres, Victor Orozco, Karime Carrera-Gutiérrez, Carlos Arzate-Quintana, Celia María Quiñonez Flores, Alva R. Castillo-González, María Alejandra Favila-Pérez

POSTER # 40

95 *Preparation and Imaging of Monhysterid Nematodes from the Great Salt Lake with a Scanning Electron Microscope;* **Solinus Farrer**, Abigail Borgmeier, Julie Jung, Michael Werner, Byron Adams

POSTER # 41

96 *Characterization morphology of Palo Azul (Eysenhardtia polystachya) by Scanning Electron Microscopy;* **Liliana Edith Rojas-Candelas**, Janet Aguilar-Fermin, Felipe Cervantes Sodi, Juan Méndez-Méndez

POSTER # 42

97 *Characterization of the Morphology of Starch Extracted from Agricultural Residue, Specifically Mango Seed;* **Liliana Edith Rojas-Candelas**, Héctor Calderón Benavides, Juan Méndez-Méndez

POSTER # 43

98 *Effect of Biotic-Origin Carbon Nanotubes Biotransformed by Trichoderma sp. on the Development of Avena Sativa;* **Salomón Borjas**, Nestor Munoz, Javier Villegas-Moreno, Gladys Juárez Cisneros, Homeo Reyes de la Cruz

POSTER # 44

99 *Morphology of Non-Commercial Chitosan Films with and without Propolis SEM Analysis; Alejandra Delgado-Lozano, Carlos Arzate-Quintana, César Leyva-Porras, Manuel Román-Aguirre, Alva Rocío Castillo-González, Celia María Quiñonez Flores*

POSTER # 45

100 *Multiwalled Carbon Nanotubes in Synergy with Glycine-Betaine Improve the Germination of Zea mays and Mitigate the Negative Effects Caused by Water Stress;* **Salomón Borjas**, Nicolás Zamudio Durán, Javier Villegas-Moreno, Gladys Juárez Cisneros

POSTER # 46

101 *Optical Properties of Hydrothermally Synthesized Ti3C2 MXene Quantum Dots and their Application in Biosensor;* **Nisha Hiralal Makani**, Jett Wu, Jose Florentino, Shubo Han, Bhoj Gautam

POSTER # 47

102 *The Production of Nanocellulose from Organic Waste and its Assessment through Spectroscopic and Microscopic Methods.;* **Salomón Borjas**, Julissa Gutierrez Maravilla, Dhirendra Kumar Tiwari

Scientific Program

C Cross-Cut/Interdisciplinary Sciences Poster Sessions – Monday

C01.P1 Microscopy and Microanalysis of Interfaces and/or Interactions Among Organic and Inorganic Matter

POSTER # 48

103 *Environmental-like Microplastic & Nanoplastic (eMNPs) Visualization and Characterization: Challenges and Future Outlooks;* **Jaromír Bačovský**, Ondřej Pěnčík, Hoang-Anh Cao, Milada Vodová, Vendula Hrabalová, Janka Tomeková

POSTER # 49

104 *Strontium Sulfate Crystals Using Multimodal Microscopy and Spectroscopy;* **Vivian Merk**, Celina Detwiler Gray, Alejandra Coronel-Zegarra, Andrienne Martin, Eshita Samajpati, Alberto Perez-Huerta

POSTER # 50

105 *First Report of Fossil Insect Mandibles, Cadavers and Larval Molt Casts fromDecalcified Bones of Cretaceous Dinosaurs (Edmontosaurus, Triceratops andNanotyrannus): Scavengers Feeding on Organic Sources within Inorganic Bones;* **Jonas Cruz**, Mark Armitage

POSTER # 51

106 *In-situ Characterization of Dust Nodules in Ice Cores from the Tibetan Plateau;* **Daniel Veghte**, Austin Weber, Emilie Beaudon, Lonnie Thompson

POSTER # 52

107 *Interface Bone-Implant with an Osteoinductive Treatment;* **Sofia Sakr-Nassef**, Julia Mirza-Rosca, Mircea Horia Tierean

POSTER # 53

108 *Interlaminar Analysis of Aluminum Matrix Reinforced with SiC Particles by Microscopy Techniques;* **Andrés E. Zapata**, Yamile Cardona-Maya, José Herrera-Ramirez, Cesar Augusto Isaza Merino

POSTER # 54

109 *Investigating the Stability of Zeolitic Imidazole Frameworks (ZIFs) Metal-Organic Framework in Operational Environments: Potential Candidate of Host-Guest Chemistry;* **Joerg Jinschek**, Pritam Banerjee, Kathrin L. Kollmannsberger, Roland A. Fischer

POSTER # 55

110 *Nanostructured UiO-66 Gel for Efficient PFAS Remediation: Electron Microscopy Insights;* **Joerg Jinschek**, Giuseppe Di Palma, Pritam Banerjee, Kasper Enemark-Rasmussen, Sara Talebi Deylamani

POSTER # 56

111 *The Effect of Zn Addition on Bioabsorbable Mg Alloys;* **Alberto Daniel Rico-Cano**, Francisco Miguel Sanchez-Sosa, Julia Mirza-Rosca, Victor Geanta, Ionelia Voiculescu

C02.P1 Lens on Diversity in the Microscopy and Microanalysis Community

POSTER # 57

112 *A Study of High-Temperature Polyimide Fiber Synthesis and Analysis;* **Wilson Hou-Sheng Huang**, Ping-Chin Chuang, Yao-Yi Cheng, Yung-Chu Chuang, Shang-Chih Chou, Syang-Peng Rwei

POSTER # 58

113 *Diffraction Study of Epitaxial ZnO with Au Catalyst on Sapphire Substrate;* **Lihua Zhang**, Kim Kisslinger, Xuegang Chen, Zhen Zhang, Tao Li, Zonghuan Lu, Neha Dhull, Toh-Ming Lu, Gwo-Ching Wang

C07.P1 Towards Functional Imaging of Materials: Advances and Insights from Phase Contrast Techniques

POSTER # 59

114 *Advanced Characterization of Multilayer Films Using Combined SEM-EDS-Raman Approach;* **Naoki Kikuchi**, Jinfeng Lu, Tamae Omoto, Hayato Takayama, Yuji Hasebe, Ryuichi Kato, Yasuaki Yamamoto, Hiroshi Onodera

POSTER # 60

115 *Differential Phase Contrast using Precession Illumination at pn Junction in GaAs;* **Hayato Miura**, Kei-ichi Fukunaga, Hirokazu Sasaki, Seiichi Suzuki, Takeshi Hanada

POSTER # 61

116 *Experimental Guidelines for Fast 4D STEM Experiments Applied to Beam-Sensitive Samples;* **Daniel Stroppa**, Cailing Chen, Yiqiang Chen, Qingxiao Wang

POSTER # 62

117 *Field-free Imaging and Analysis for Magnetic Materials;* **Ricardo Egoavil**, Maarten Waaijer, Eric Van Cappellen, Peter Tiemeijer, Lynette Keeney, Maarten Wirix, Maria Meledina, Shelly Michele Conroy

POSTER # 63

118 *Measurement of Self-coherence in the Transmission Electron Microscope for Detecting Time-dependent Coherent-inelastic Electron Scattering in the Heisenberg Limit;* **Christian Kisielowski**, Petra Specht, Joerg Jinschek, Stig Helveg

POSTER # 64

119 *Measuring Dislocation Line Charge in GaN using Scanning Precession Electron Diffraction;* **Edwin Supple**, Kris Bertness, Matthew Brubaker, Alexana Roshko

POSTER # 65

120 *Determination of Fresnel integrals for X-ray phase Contrast Imaging with the Fast Fourier Transform;* **Xingchi Yan**, Gerald Diebold

POSTER # 66

121 *Electron Microscopy of 2D Layered Double Hydroxides for Antigen Loading and Realease;* **Hector Calderon**

POSTER # 67

122 *Measuring Dynamic Diffraction for quantitative HREM;* **Rodney Herring**

P Physical Sciences Poster Sessions – Monday

P01.P1 Advanced Characterization of Nuclear Fuels and Materials

POSTER # 70

125 *Chemical Interaction of Palladium in Uranium Oxycarbide Nuclear Fuel Kernel;* **Jana Howard**, Guang Yang, Haiyan Zhao, Patrick Warren, Tiankai Yao, Steven Cavazos

POSTER # 71

126 *High-MAN backgrounds: EPMA of Trace-Element Doped Uranium Metals;* **Joseph Boro**, Naomi Marks, Kara Luitjohan

POSTER # 72

127 *In-Situ Investigations of Tensile and Fracture Behavior of Lattice Structures for Advanced Reactor Applications;* **Swapnil Morankar**, Calvin Downey, Cameron Howard, Obaidullah Rahman, Amir Ziabari, William Chuirazzi, Max Nezdyur, Lynn Munday, Jakub Toman

POSTER # 73

128 *In-situ Ion Irradiation of a Spent UO2 Fuel: Evolution of Fission Products and Nanograins with Radiation Dose;* **Sadman Sakib**, Yunyuan Lu, Cameron Howard, Jatuporn Burns, Wei-Ying Chen, Linu Malakkal, Sudipta Biswas, Fabiola Cappia, Lingfeng He

POSTER # 74

129 *Investigating the EELS Signal Produced from Einsteinium-254;* **Trevor Arino**, Sarah, Dalton Stanley, Peter Ercius, Ambarneil Saha, Andrew M Minor, Rebecca Abergel

POSTER # 75

130 *Minimizing Waste from Electropolishing Radioactive Samples for EBSD Data Collection;* **Daniel Morrall**, Gavin Mattingly, Dale Hitchcock

POSTER # 76

131 *Multiscale Characterization of Dislocation Cell Structures in LPBF Processed 316L Stainless Steels;* **Justin Warner**, Sriram Vijayan

P03.P1 Characterization of Collective Excitations by Electron Microscopy with High Spatial, Energy, Momentum, and Temporal Resolutions

POSTER # 77

132 *Comparing the Dynamic Charge Response Measured with Transmission- and Reflection EELS;* **Niels De Vries**, Eric Hoglund, Dipanjan Chaudhuri, Sanghyun Bae, Gillian Nolan, Jin Chen, Pinshane Y. Huang, Jordan Hachtel, Peter Abbamonte

POSTER # 78

133 *Observation of Strong Phonon Anisotropy Across Dislocation Region in Oxide Freestanding Film;* **Yifeng Huang**, Xingxu Yan, Toshihiro Aoki, Xiaoqing Pan

POSTER # 79

134 *Understanding the Momentum-Resolved Phonon EELS Signal Through Multi-Modal Simulation;* **Thomas Pfeifer**, Harrison Walker, Henry Aller, Samuel Graham, Jordan Hachtel, Sokrates Pantelides, Patrick Hopkins

POSTER # 80

135 *Applications of a Novel CEOS Energy Filtering and Imaging Device for the Investigation of Electronic Structures of Delafossite CuFeO2 Single Crystals Growth by Optical Floating Zone Method;* ***Xiang-Lin Huang***, Sz-Chian Liou, Alexander Campos Quiros, Masashi Watanabe, Guo-Jian Shu

POSTER # 81

136 *Detecting Magnon-Phonon Coupling with STEM-EELS; Alexander Reifsnyder, Mohamed Nawwar,* **Minyue Zhu**, Jordan Hachtel, Joseph Heremans, David McComb

POSTER # 82

137 *Exploring Local Phonon Behavior on Oxide Nanoparticle Surfaces;* **Yifan Wang**, Peter Crozier

POSTER # 83

138 *Mapping Phonons Induced by Polarization using Differential Momentum Resolved Scanning Transmission Electron Microscopy-Electron Energy Loss Spectroscopy;* **Mahir Manna**, Shayantan Chaudhuri, Surya Prakash Reddy Mandalreddy, Sujit Das, Katherine Inzani, Jan Rusz

POSTER # 84

139 *Nanoscale Near Field Imaging of Surface Plasmons by Ultrafast Electron Microscopy;* **Haihua Liu**, Ibrahim Tanriover, Thomas Gage, Ilke Arslan

POSTER # 85

140 *Probing Chiral Atomic and Nanoscale Materials with Structured Electrons—Emerging Possibilities; Marc Bourgeois, David Masiello*

POSTER # 86

141 *Probing Nanoscale Vibrational Properties In Monoclinic Beta Gallium Oxide Via Vibrational EELS; Andrew Balog, Benjamin Dutton, Jani Jesenovec, John McCloy, Steffi Woo, Nasim Alem*

POSTER # 87

142 *Probing Spatial and Temporal Dynamics of High-Q Dielectric Metasurfaces with Ultrafast Electron Microscopy;* **Parivash Moradifar**, Darrell Omo-Lamai, Amy Green, Haihua Liu, Jennifer Dionne

POSTER # 88

143 *Probing Ultra-Confined Terahertz Surface Phonon Polaritons in Few-Unit-Cell Freestanding SrTiO3 Membranes by STEM-EELS;* **Peiyi He**, Jiade Li, Peng Gao

POSTER # 89

144 *Stability and Viability of Off-Axis Photoemission Geometries in 4D Ultrafast Electron Microscopy;* **Swarit Shadman**, Simon Willis, Jialiang Chen, David Flannigan

POSTER # 90

145 *Visualizations of Polarization-Induced Atomic Vibrational Anisotropies Using Momentum Selective Vibrational Spectroscopy;* ***Xingxu Yan***, Paul Zeiger, Yifeng Huang, Jan Rusz, Xiaoqing Pan

Scientific Program

P Physical Sciences Poster Sessions – Monday continued

P04.P1 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance

POSTER # 91

146 *Confinement of Ti3C2Tx MXene Nanosheets within a Polymer Matrix via In-situ Polymerization and Deposition on Carbon Cloth for Supercapacitors;* **Bishnu Bastakoti**, Shanna Alonzo

POSTER # 92

147 *Development of A Novel Fiber-Type Supercapacitor by Hydrothermal Recrystallize Method;* **Wilson Hou-Sheng Huang**, Chun Yi Chen

POSTER # 93

148 *Exploring Intergrowth Formation in Superconductor YBaCuO7-δ Thin Films;* **Francisco Guzman**, Levi Brown, Shane Cybart, Sreekar Vattipalli, Rochelle Qu, Jay LeFebvre, Nicole Chin, Xiaoqing Pan

P04.P2 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance

POSTER # 94

149 *EELS Mapping to Reveal the Spatial Distribution of Cation Valance and Oxygen Deficiency at the Cation-Disordered Oxide Cathode;* **Chongmin Wang**, Linze Li, Chongmin Wang

POSTER # 95

150 *Electrochemically Induced Intraparticle Separated States in LFP Probed with STEM-EELS;* **Francisco Ruiz-Zepeda**, Jože Moškon, Klemen Zelič, Igor Mele, Tomaž Katrašnik, Miran Gaberšček

POSTER # 96

151 *Elucidate Phonon Dynamic of Grain Boundaries in Perovskite Solid-State Electrolytes by Electron Microscopy;* **Chaojie Du**, Yifeng Huang, Tom Lee, Shu-Ting Ko, Jingjing Yang, Shantal Adajian,Fanghao Zhang, Bolin Liao, Jian Luo, Xiaoqing Pan

POSTER # 97

152 *Real-Time In-Situ TEM Insights into the Electrochemical Behavior of Hybrid Polymer Network Cathodes in Lithium-Sulfur Batteries;* **Yaobin Xu**, Meng Liao, Donghai Wang, Chongmin Wang

POSTER # 98

153 *Surface Structural Evolution of Air-Exposed Carbon-Coated $LiFePO_4$ from Supercritical Hydrothermal Synthesis;* **Hao Zhen**, Jae-Ho Park, Yasuo Ito, Youngho Shin, Jianguo Wen

P05.P1 Advances in Imaging and Spectroscopy Beyond Ambient Conditions

POSTER #99

154 *Surface Atomic Defects and Conserved CO Coverage on Cu(111): Insights from High-Resolution Scanning Probe Microscopy;* **Dingxin Fan**, Pengcheng Chen, Annabella Selloni, Jianqing Fan, Nan Yao

POSTER # 100

155 *Comparison of ultramicrotomy and electropolishing for TEM observations of Al-Mg-Zn thin foils;* **Sriram Vijayan**, Erico Freitas

POSTER # 101

156 *Determining Core-Shell Colloidal Quantum Dot Structures from Various Synthesis Methods Using Cryo-STEM;* **Danial Zangeneh**, Jun Hyuk Chang, Dmitri Talapin, Robert Klie

POSTER # 102

157 *Identification of Unique Pd-based Compounds in Twisted MoTe2 Nanojunctions;* **Guangming Cheng**, Nan Yao

POSTER # 103

158 *Phonon Modes of High-Tc YBa2Cu3O7-δ Films: Effects of Doping and Isotope Substitution;* **Joaquin E. Reyes-Gonzalez**, Charles Zhang, Rainni Chen, John Wei, Maureen Joel Lagos

POSTER # 104

159 *STEM Defocus Influenced Misinterpretations in Imaging Exciton Confinement;* **Sriram Sankar**, Medha Dandu, Patrick Hays, Daria Blach, Sefaattin Tongay, Peter Ercius, Jordan Hachtel, Mit Naik, Archana Raja, Sandhya Susarla

Tuesday, July 29

Scientific Program

A Analytical/Instrumentation Sciences Symposia – Tuesday Morning

A01.2 Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences

Tuesday 8:30 AM

8:30 AM **160** *Quantifying Focused Ion Beam Milling Damage During Cryo-Lamella Preparation;* **Laina Hall** (Invited), Joshua Dickerson, Joshua Paul, Bronwyn Lucas

9:00 AM **161** *Role of Ga Ion Implantation in Providing High Z-Resolution in FIB Volume EM;* **Richard Leapman**, Jed Yang, Joshua Kim, Cameron Baenen, Samuel Fulton, Guofeng Zhang, Xiaobing Chen, Maria Aronova

9:15 AM **162** *Developing Techniques for Focused Ion Beam Milling and In-Situ Micro-Compression to Characterize Orientation-Dependent Mechanical Properties of Molecular Crystals;* **Kerry-Ann Stirrup**, Daniel Bufford, Danielle Hartstein, Dustin Ellis, Adam Pimentel

9:30 AM **163** *Precision Sputtering of Diamond and Boron Carbide with Plasma Focused Ion Beams for High-aspect-ratio Milling;* **Swanee Shin**, Daniel Goodelman, Leonardus Bimo Bayu Aji, Jean-Baptiste Forien, Eunjeong Kim, Sergei Kucheyev

A02.2 Frontiers of Electron Ptychography

Tuesday 8:30 AM

8:30 AM **164** *Fluency and Damage Reduction in Defocussed Probe Ptychography;* **Angus Kirkland** (Invited), Judy Kim, Amirafshar Moshtaghpour, Abner Velazco-Torrejon, Chen Huang, Ivan Lobato

9:00 AM **165** *A Non-Iterative Phase Retrieval Method for Defocused, Coarsely Scanned 4D-STEM Data;* **Steven Zeltmann**, Desheng Ma, David Muller

9:15 AM **166** *Imaging Built-in Electric Fields and Light Matter by Fourier-precession TEM;* **Tizian Lorenzen**, Benjamin März, Tianhao Xue, Andreas Beyer, Kerstin Volz, Thomas Bein, Knut Müller-Caspary

9:30 AM **167** *Cryo-Electron Ptychography (Cryo-EPty) for Biological Imaging;* **Liqi Zhou** (Invited), Xudong Pei, Yu Lei, Huang Huang, Judy Kim, Peter Nellist, Angus Kirkland, Peng Wang

A05.1 Latest Advances in Atom Probe Tomography

Tuesday 8:30 AM

8:30 AM **168** *Terahertz Atom Probe Tomography;* **Angela Vella** (Invited), Jonathan Houard, Matteo De Tullio, Michella Karam, Ivan Blum, Marc Ropitaux, Martin Andersson, Gustav Eriksson, Ammar Hideur

9:00 AM **169** *Advances In Atom Probe Tomography Analyses Of Silica Embedded Proteins;* ***Gustav Eriksson***, David Mayweg, Mats Hulander, Mattias Thuvander, Martin Andersson

9:15 AM **170** *Proposal of Photoionization and Photofield Tunneling of Electrons as (Indirect) Evaporation Mechanisms During Laser-Assisted Field Evaporation of Insulators;* **Severin Jakob**, Jonathan Poplawsky, Anna Jelinek, David Mayweg, Mattias Thuvander

9:30 AM **171** *Influence of Laser Wavelength and Pulse Energy on Composition in the APT Analysis of Proton and Heavy-Ion Irradiated GaN;* **Kayla Yano**, Christina Doty, Jenna Bilbrey, Daniel Perea, Khalid Hattar, Bethany Matthews

9:45 AM **172** *Flowing and Freezing: Correlative Operando Liquid Cell Electrochemistry and Cryogenic Atom Probe Tomography of Nanoscale Liquid-Solid Interfaces;* **Neil Mulcahy**, Ramin Jannat, Geri Topore, Lukas Worch, James Douglas, Baptiste Gault, Mary Ryan, Shelly Michele Conroy

A06.2 Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens

Tuesday 8:30 AM

8:30 AM **173** *Tracking Charge Dynamics by High Speed and Time Resolved Kelvin Probe Force Microscopy;* **Liam Collins** (Invited), Marti Checa, Ruben Millan Solsona, Stephen Jesse

9:00 AM **174** *Chirped Contact Resonance for Enhanced Simultaneous Nanoscale IR and Mechanical Property Measurements;* **Bede Pittenger** (Invited), Martin Wagner, Qichi Hu, Peter De Wolf

9:30 AM **175** *Quantitative Measurement of Conservative and Dissipative Shear Forces Using Quartz Tuning Fork;* **Keunhan Park** (Invited), Cedric Shaskey Amun Jarzembski

A08.1 Next Generation Microanalysis Standards For EPMA and SEM-EDS Calibration

Tuesday 8:30 AM

8:30 AM **175.1** *Microanalytical Reference Material Development at the USGS: Outlining Historical Progress and Future Directions;* **Jay Thompson** (Invited), Lissie Connors Heather Lowers, Rae Ann Orkild-Norton

9:00 AM **175.2** *Comparison of Bulk and Micro Sampling Techniques for the Elemental Analysis of SRM 610 and 612;* **Nicholas Sharp**, Maria Vega-Martinez, Ruthmara Corzo, Blaza Toman, Rick Paul, Savelas Rabb, Jamie Weaver, Jack Prothero

9:15 AM **175.3** *Mineral Reference Standards for EPMA-WDS and SEM-EDS: Instrumental Calibration, Standards Comparison, and Quality Control;* **Paul Carpenter**

9:30 AM **175.4** *Standards and Reference Materials for Quantitative Microanalysis: Current Availabilities, Database Status, and Future Avenues with FIGMAS;* **Julien Allaz** (Invited), Anette von der Handt, Owen Neill, Emma Bullock, William Nachlas, Abigail Lindstrom, Andrew Mott

A09.1 Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI

Tuesday 8:30 AM

8:30 AM **176** *Multislice-Based Quantitative Convergent-Beam Electron Diffraction and the Interrogation of Chemical Bonds and Point Defects Associated with Nanostructures in "Real" Materials;* **Philip Nakashima** (Invited), Laure Bourgeois, Jian-Min Zuo

09:00 AM **177** *PyExtal: A Python Package for Electron Structure and Structure Factor Refinement using Quantitative Convergent-Beam Electron Diffraction Intensities;* **Hsu-Chih Ni**, Robert Busch, Jian-Min Zuo

09:15 AM **178** *Large Area Real-Space Crystallography and Thickness Determination of Mesoscopic Semiconductor Membranes Using Zone Axis Patterns and Correlative SEM-S/TEM Modes;* **Vladimir Oleshko**, Glenn Holland, Daron Westly, John Villarrubia

09:30 AM **179** *Quantitative Local Structure Analysis of Crystal Interfaces Using 4D-STEM;* **Kenji Tsuda** (Invited)

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 **180** *Structural Studies of ESCRT-III Filaments;* **Wesley Sundquist** (Invited)

9:00 AM **181** *Structural Changes in Apis mellifera Indirect Flight Muscle Thick Filaments During Maturation;* **Maryam Feghhi**, Hosna Rastegarpouyani, James Ellis, Kenneth Taylor

9:15 AM **182** *Viral Nucleoprotein-Induced Microtubule Disruption: A Novel Pathogenic Strategy;* **Sergio Barata García**, Sophie Schaerlaekens, Inmaculada Galindo, Miguel Angel Cuesta-Geijo, Covadonga Alonso, Maria Angela Oliva, Laura Fuertes-Monge

9:30 AM **183** *Genetically Encoded Multimeric (GEM) Tags for Intracellular Protein Localization in Cellular Cryo-ET;* **Herman Fung** (Invited), Yuki Hayashi, Veijo Salo, Anastasiia Babenko, Ievgeniia Zagoriy, Andreas Brunner, Jan Ellenberg, Christoph Müller, Sara Cuylen-Haering, Julia Mahamid

B05.1 Development, Challenges and Biomedical Applications of Tissue Clearing, Expansion Microscopy and Volumetric Imaging

Tuesday 8:30 AM

8:30 AM **184** *Achieving Optical Transparency in Live Animals via the Kramers-Kronig relations;* **Guosong Hong** (Invited)

9:00 AM **185** *Tissue Clearing and Expansion for Multiscale Anatomy;* **Kevin Cao** (Invited), Naveen Ouellette, Rajvi Javeri, Molly Logsdon, Adam Glaser, Jayaram Chandrashekar

9:30 AM **186** *Enhancing Large Image Acquisition, Sharing, and Understanding With Web-Based Workflows;* **Ashley Anderson**, Chi-Li Chiu

B06.2 Microscopy in Cell and Molecular Biology across the Americas (CIASEM)

Tuesday 8:30 AM

8:30 AM **187** *Contribution of Microscopy to a Better Understanding of the Nano Anatomy of Parasitic Protists;* **Wanderley De Souza** (Invited), Marlene Benchimol

9:00 AM **188** *Engaging with the EMSL 1000 Fungal Protein Project;* **James Evans**

9:15 AM **189** *Three-dimensional Architecture of Basal Bodies and the Mastigont System in Trichomonas vaginalis;* **Marlene Benchimol**, Sharmila Ortiz, Raphael Verdan

9:30 AM **190** *Nucleolar Compartments Visualized by Atomic Force Microscopy;* **Luis Jiménez-García**, María Lourdes Segura-Valdez

9:45 AM **191** *Resolving Macromolecules by Rotary Shadowing, Negative Staining and Atomic Force Microscopy: A Comparison of Methods Applied to Identical Samples;* **Sara Tufa**, Sergey Budko, Elena Pokidysheva, Douglas Keene

C Cross-Cut/Interdisciplinary Sciences Symposia – Tuesday Morning

C01.2 Microscopy and Microanalysis of Interfaces and/or Interactions Among Organic and Inorganic Matter

Tuesday 8:30 AM

8:30 AM **192** *Advanced Electron Microscopy to Study the Collagen-Mineral Nanocomposite in Human Bone: From On-Axis Electron Tomography to 4D-STEM;* **Chiara Micheletti** (Invited), Alex Lin, Peter Ercius, Aurélien Gourrier, Furqan Shah, Anders Palmquist, Kathryn Grandfield

9:00 AM **193** *Iron-Rich Enamel: Paradigm Shift in Understanding Enamel of Rodent Teeth;* **Vesna Srot**, Gregor Kapun, Felicitas Predel, Birgit Bussmann, Sophia Houari, Boštjan Pokorny, Elena Buzan, B. Fenk, Peter A. van Aken

9:15 AM **194** *Raman and SEM Enabled Development of Natural Organic Fructose Thin Films for Resistive Switching Memory in Neuromorphic Computing Applications;* **Feng Zhao**, Md Shakil Mahmud Jiban, Kaleb Hood, Zoe Templin, Jun Jiao

9:30 AM **195** *CeO2-Based Nanoparticles Immobilizing on Chitosan Films, Studied by Different Microscopy Techniques;* **Limny Perez-Jimenez**, Erik Morales, Francisco Paraguay-Delgado, Lizeth Rojas-Blanco, Marcela Arellano-Cortaza

9:45 AM **196** *CLSM and SEM Analysis of Extracted Lignin from Walnut Shell (Carya illinoinensis) by Alkaline Treatment;* **Nayely Valeriano-García**, Lizbeth Gonzalez Victoriano, Josué Hernández-Varela Susana Gallegos-Cerda, Benjamín Arredondo-Tamayo, Oscar Mendoza-Sánchez, Hoziel Lugo-Martínez, José Jorge Chanona-Pérez

C03.1 Microscopy and Microanalysis in Industry

Tuesday 8:30 AM

8:30 AM **197** *Effects of Infill Patterns on Mechanical Properties of Chopped Carbon Fiber Reinforced Composites Produced by Fused Deposition Modeling;* **Jonathon Tran**

8:45 AM **198** *Microscopic Insights into Strain and Failure Mechanisms in Advanced Semiconductor Packaging;* **Pawel Nowakowski**, Richard Li, Mary Ray, Paul Fischione

9:00 AM **199** *Microscopy and Microanalysis Methods for Diagnosing Plastic Part Molding Defects – Real-World Case Studies;* **Amy Rue**

9:15 AM **200** *Nano Libris – Long-Term Human-Readable Data Storage;* **Armando Carreon Romero**, Joshua Isaacson, Joshua Santos, Felipe Rivera, Barry Lunt

9:30 AM **201** *New Capabilities for Comprehensive Multimodal Microanalysis in the Inspection and Characterisation of Materials and Components;* **Marek Kotrlý**, Josef Uher, Jana Bohacova, Jan Jakubek, Ivana Turková, Petr Cejka

C07.2 Towards Functional Imaging of Materials: Advances and Insights from Phase Contrast Techniques

Tuesday 8:30 AM

8:30 AM **202** *Ferroelastic Fantastic: Probing Dynamically Induced Multiferroic Polarization via in-situ 4D-STEM;* **Michele Shelly Conroy** (Invited)

9:00 AM **203** *Interfacial Structure in GaAsAl0.55Ga0.45As Asymmetric Coupled Quantum Wells Revealed by Advanced Scanning Transmission Electron Microscopy;* **Han-Hsuan Wu**, Yiwei Ju, Levi Brown, Moaz Waqar, Xingxu Yan, Rithvik Ramesh, Amberly Ricks, Seth Bank, Xiaoqing Pan

9:15 AM **204** *STEM-iDPC Imaging for Resolving Atomic Structural Features of Stacking Faults and Domain Connections in the Li- and Mn-rich Cathode;* **Peng Zuo**, Pavan Badami, Subhadip Mallick, Jason Croy, Daniel Abraham, Chongmin Wang

9:30 AM **205** *3D Visualization of Phase Boundaries by Multislice Electron Ptychography*; **Naomi Pieczulewski**, Katie Gann, Thaddeus Asel, Brenton Noesges, Michael Thompson, David Muller

9:45 AM **206** *Measurement of Space Charge Layers using Multislice Electron Ptychography;* **Colin Gilgenbach**, Thomas Defferriere, Harry Tuller, James LeBeau

Scientific Program

P Physical Sciences Symposia – Tuesday Morning

P01.2 Advanced Characterization of Nuclear Fuels and Materials

Tuesday 8:30 AM

8:30 AM **207** *Nondestructive Examination of Tristructural Isotropic Fuel Forms using Computed Tomography;* **William Chuirazzi** (Invited), John Stempien, Joshua Kane, Swapnil Morankar, Rahul Kancharla

9:00 AM **208** *Interpreting Powder Morphology of Uranium Ore Concentrates Using Machine Learning and Scanning Electron Microscopy for Nuclear Forensics Applications;* **Ouyanatu Maina**, Joseph Boro, Alizé Griffin, Naomi Marks

9:15 AM **209** *Microstructural Analysis of Silicon Carbide Cladding Using 4-Dimensional Scanning Transmission Electron Microscopy;* **Guang Yang**, Tiankai Yao, Fei Xu, Peng Xu, Sean Gonderman, Jack Gazza

9:30 AM **210** *Advanced Characterization and Modeling of Microstructure in Irradiated UO2;* **Lingfeng He** (Invited), Sadman Sakib, Cameron Howard, Mukesh Bachhav, Jatuporn Burns, Linu Malakkal, Chao Jiang, Sudipta Biswas, Fabiola Cappia, Wei-Ying Chen

P03.2 Characterization of Collective Excitations by Electron Microscopy with High Spatial, Energy, Momentum, and Temporal Resolutions

Tuesday 8:30 AM

8:30 AM **211** *Atomic Vibrational Anisotropy and Electron-Phonon Coupling via Momentum-Selective Electron Microscopy;* **Xiaoqing Pan**, Xingxu Yan, Hongbin Yang, Yifeng Huang, Ruqian Wu

8:45 AM **212** *Twisted Optics: Probing Phonon Polaritons in Twisted Low Symmetry Crystals;* **Maureen Joel Lagos**

9:00 AM **213** *Phonon Damping in Amorphous Nitrides and Oxides Observed with Vibrational EELS;* **Kory Burns**, Abhijit Biswas, Anand Puthirath, Pulickel Ajayan, Jordan Hachtel

9:15 AM **214** *Utilizing Tunable Spatial-Momentum Resolution to Understand Collective Excitations in Solids;* **Eric Hoglund**, Harrison Walker, Niels De Vries, Thomas Pfeifer, Dipanjan Chaudhuri, Patrick Hopkins, Sokrates Pantelides, Andrew Lupini, Peter Abbamonte, Jordan Hachtel

P04.2 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance

Tuesday 8:30 AM

8:30 AM **215** *Correlative in-situ Electrochemistry and Cryogenic Microscopy to Probe the Complex Interfaces of Energy Materials;* **Michele Shelly Conroy** (Invited)

9:00 AM **216** *Cross-sectional STEM Imaging of the Interfacial Structure and Defects in Twisted Epitaxial MoS Heterostructures;* **Yi Cui**, Pawel Czaja, Kun Xu, Yi Cui, Robert Sinclair

9:15 AM **217** *Interfacial Charge Transport in ZnO-Based Metal-Insulator-Metal Devices Probed by Electron-Beam-Induced Current;* **Alexander Fakiner**, Robert Winkler, Daniel Vasquez, A. Wahab Shakib, Leopoldo Molina-Luna

9:30 AM **218** *In-situ Observation of Electron Beam-Sensitive Nano analysis Function;* **Toshie Yaguchi**, Akiko Wakui, Keiji Tamura, Yasuhira Nagakubo, Kenji Nakayama

9:45 AM **219** *TEM-STEM Studies of Twisted Epitaxial Ag Nanodisks Encapsulated Between Misoriented MoS2 Bilayers;* **Pawel Czaja**, Yi Cui, Prasanna Sarkar, Yi Cui, Robert Sinclair

P05.2 Advances in Imaging and Spectroscopy Beyond Ambient Conditions

Tuesday 8:30 AM

8:30 AM **220** *Imaging Degradation of III-V Quantum Dots using Liquid-Phase TEM;* **Chang Liu** (Invited), Woonhyuk Baek, Arashdeep Thind, Robert Klie, Paul Alivisatos

9:00 AM **221** *Investigating Structural Transformations During Nanoparticle Oxidation in an Environmental TEM;* **John Watt**, Agus Poerwoprajitno, Yash Gandhi, C. Barry Carter, Dale L. Huber, Rajiv Kalia

9:15 AM **222** *Mapping the Intercalation-Induced Phase Transitions in LaTe3 via In Situ Multimodal STEM;* **Stephen Funni**, Natalie L. Williams, Sihun Lee, Judy Cha

9:30 AM **223** *Electrochemical Liquid Phase Electron Microscopy at Elevated Temperatures;* **Thilini Dissanayake** (Invited), Robert Klie

P09.1 Unconventional Electron Probes

Tuesday 8:30 AM

8:30 AM **224** *Coupling Single Electrons to Single Photons and Probing their Entanglement;* **Jan-Wilke Henke** (Invited), Hao Jeng, Claus Ropers

9:00 AM **225** *Automated Data Analysis for Event-Driven Scanning Transmission Electron Microscopy (Tempo-STEM);* **Bryan Reed**, Daniel Masiel, Jonathan Peters, Lewys Jones

9:15 AM **226** *Towards Robust Low-Spatial-Frequency Imaging with Ptychographic Holography;* **Andrew Ducharme**, Georgios Varnavides, Stephanie Ribet, Colin Ophus, Benjamin McMorran

9:30 AM **227** *Development and Application of Ultrafast Scanning Transmission Electron Microscopy with Pixelated Detector;* **Takahiro Shimojima** (Invited)

P10.2 Innovative in-situ Imaging Techniques for Material Characterization, Synthesis, and Processing

Tuesday 8:30 AM

8:30 AM **228** *In-situ Characterization of High-Temperature Transitions in Materials for Next Generation Computing via STEM Imaging and EELS;* **Michelle Smeaton**, Elena Salagre, Elliot Fuller, Lance Wheeler, Katherine Jungjohann

8:45 AM **229** *Application of Inpainting Methods for the Improvement of STEM-Based Time-Resolved Elemental Mapping;* **Eduardo Ortega**, See Wee Chee, Nigel Browning, Beatriz Roldan Cuenya

9:00 AM **230** *Molecular Electron Microscopy for Imaging and Analysis of Soft Materials;* **Koji Harano**

9:15 AM **231** *Imaging Photoexcited Carrier Dynamics in Strontium Titanate Photocatalysts using Photomodulated Electron Energy-Loss Spectroscopy;* **Levi Palmer**, Wonseok Lee, Thomas Gage, Scott Cushing

9:30 AM **232** *In-situ Observation of Hydrogen Interactions with Highly Strained Ni Twin Boundaries;* **Dongsheng Li** (Invited), Hyoju Park, Ozgur Caprza, Kelly White, Kelsey Stoerzinger, Peter Sushko

Scientific Program

A Analytical/Instrumentation Sciences Symposia – Tuesday Late Morning

A01.3 Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences

Tuesday 10:30 AM

10:30 AM **233** *Roadmap for Focused Ion beam Technologies;* **Gregor Hlawacek** (Invited)

11:00 AM **234** *Investigating Laser and Plasma-Focused Ion Beam Interactions for Precise Material Modification in Energy Technologies;* **Renae Gannon**, Madeline Hoffmann, Addison Salvador, Grace Guinan, Steven Spurgeon

11:15 AM **235** *Evaporated Si Protective Coatings for FIB-prepared High-Quality S/TEM Lamellas;* **Nicholas Rudawski**, Marco Downing

11:30 AM **236** *Lift-out Technique for Ultra-thin Plan-view Lamella Preparation Using Focused Ion Beam;* **Mengkun Tian**, Nashrah Afroze, Josh Kacher, Asif Islam Khan

11:45 AM **237** *S/TEM Analysis of Protective FIB Coatings;* **Lucille A Giannuzzi**, Anna Mian, Sharang Sharang

A02.3 Frontiers of Electron Ptychography

Tuesday 10:30 AM

10:30 AM **238** *PtyRAD: A High-performance and Flexible Ptychographic Reconstruction Framework with Automatic Differentiation<;* **Chia-Hao Lee** (Invited), Steven Zeltmann, Dasol Yoon, Desheng Ma, David Muller

11:00 AM **239** *Electron Ptychography via Differentiable Programming;* **Debangshu Mukherjee**, Ramanan Sankaran, Matthew Boebinger

11:15 AM **240** *Accelerating Ptychography Algorithm Development with Reasoning Large Language Models;* **Xiangyu Yin**, Chuqiao Shi, Yimo Han, Yi Jiang

11:30 AM **241** *Deep Learning Enhancements of 4DSTEM Ptychographic Reconstruction;* **Colin Ophus** (Invited), Arthur R. C. McCray, Georgios Varnavides, Stephanie Ribet

A04.1 Contributions of Analytical Electron Microscopy to Understanding Microstructural Evolution in Materials: James Bentley Memorial Symposium

Tuesday 10:30 AM

10:30 AM **242** *Chemical Analysis in the TEM: the Bentley Factor;* **C. Barry Carter** (Invited)

11:00 AM **243** *Remembering Jim Bentley and his Influence on my Career;* **Paul Kotula** (Invited)

11:30 AM **244** *EFTEM Reimagined: Bridging Legacy Methods with Machine Learning for Advanced Materials Analysis;* **Jafar F. AlSharab**

11:45 AM **245** *Iron Enrichment at Grain Boundaries in SrTiO3: Does It Stay or Does It Go?;* **Klaus van Benthem**, William Hahn, Bin Feng, Naoya Shibata, Yuichi Ikuhara

A05.2 Latest Advances in Atom Probe Tomography

Tuesday 10:30 AM

10:30 AM **246** *Atom Probe Analysis of Nuclear Materials: From Microstructure to Mechanisms;* **Paul Styman** (Invited)

11:00 AM **247** *Activation Analysis of Arsenic-Doped Silicon Substrates Using Atom Probe Tomography (APT) and Differential Hall Effect Metrology (DHEM);* **Kun-Lin Lin**, Yu-Neng Wang, Tung-Huan Chou, Yu-Chen Yang, Yu-Lin Huang, Chia-He Chang

11:15 AM **248** *Insights into Nanoparticles Formation Achieved by Powder Metallurgy Processing Routes of Zn-Mg-(Ag) Alloys for Bioresorbable Implants;* **Selase Torkornoo**, Jiří Kubásek, David Nečas, Miroslav Čavojský, Črtomir Donik, Vojtěch Hybášek, Jaroslav Fojt, Martina Ruffino, Raymond Nutor, Jaroslav Čapek

11:30 AM **249** *Exploring the Chemical and Structural Complexity of Far-From-Equilibrium Oxi-Carbo-Nitride Nanoprecipitates in Additively Manufactured Steels;* **Amir Rezaei Farkoosh**, Roberto dos Reis, Dieter Isheim, Vladimir Popov, Noam Eliaz, David Seidman

11:45 AM **250** *Mapping the formation of Plutonium Oxide via Field Ion Microscopy and environmental-Atom Probe Tomography;* **Daniel Perea**, Sten Lambeets, Dallin Barton, Mark Wirth, Jacqueline Royer, Matthew Athon, Dallas Reilly

A06.3 Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens

Tuesday 10:30 AM

10:30 AM **251** *Advancing Nanoscale Characterization: State-of-the-Art Applications of Auger Electron Spectroscopy;* **Jennifer Mann** (Invited), Juergen Scherer

11:00 AM **252** *Application of various Loe Energy Electron Microscopy, LEEM Techniques to Quantum Materials;* **David Bell**, Austin Akey

11:15 AM **253** *Auger Electron Spectroscopy; A Complementary Technique to Scanning Electron Microscopy;* **James Poston**

11:30 AM **254** *Challenges and Insights from using Surface Analysis to Understand the Corrosion of Pu-Ga Alloys;* **Scott Donald** (Invited)

A09.2 Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI

Tuesday 10:30 AM

10:30 AM **255** *Quantitative Large Angle Rocking Beam Electron Diffraction;* **Robert Busch** (Invited), Hsu-Chih Ni, Jian-Min Zuo

11:00 AM **256** *Nanoscale Mapping of Strain and Grain Orientation in Polycrystalline Materials using a Novel Scanning Precession Electron Diffraction Method;* **Gustav Persson**, Matthew Bryan, Jean-Luc Rouvière, Nicolas Bernier

11:15 AM **257** *Collection of Quasi-Kinematical 4D STEM Data with DigitalMicrograph;* **Fernando Castro**, Robin Harmon, Anahita Pakzad

11:30 AM **258** *Optimizing Parameters for High Resolution Near Axis Transmission Kikuchi Diffraction;* **Mark Coleman**, Kim Larsen, Louise Hughes, Angus Bewick, Joe Maguire, Robert Masters

11:45 AM **259** *Photoinduced Domain Evolution Revealed by Quantitative MeV Ultrafast Electron Diffraction Analysis and Monte Carlo Based Dynamic Diffraction Simulation;* **Lijun Wu**, Wei Wang Yimei Zhu

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 **264** *Surface Morphometrics 2.0: Incorporating Protein Localization and Density Sampling for Contextual Structural Analysis with Cryo-Electron Tomography;* **Benjamin Barad** (Invited), Michaela Medina, Ya-Ting Chang, Hemanth Kapa, Danielle Grotjahn

11:00 AM **265** *Cellular Architecture and Osmoregulation in Trypanosoma cruzi: Bridging Structure and Function with Cryo-ET;* **Ingrid Augusto**, Moara Lemos, Veronica Jimenez, José de Anchieta José de Anchieta de Oliveira Filho, Pedro Pascutti, Wanderley De Souza, Kildare Miranda

11:15 AM **266** *Structure and Organization of Full-Length Epidermal Growth Factor Receptor in Extracellular Vesicles by Cryo-Electron Tomography;* **Zunlong Ke**, Monica Gonzalez-Magaldi, Anurandha Gullapali, Ophelia Papoulas, Chang Liu, Adelaide Leung, Luqiang Guo, Axel Brilot, Edward Marcotte, Daniel J. Leahy

11:30 AM **267** *Structural Determination of Subviral Particles of Hepatitis B Virus using Cryo-Electron Microscopy and Cryo-Electron Tomography;* **Chang Liu**, Aditi Dhawan, Alexandra Beaver, Helen Chen, Stefan Seitz, Zunlong Ke

11:45 AM **268** *Binding Sites of a Positron Emission Tomography Radioligand with Nanomolar Affinity to Alpha-Synuclein Fibrils;* **Juan Sanchez**, Collin Borcik, Ryann Perez, E. Petersson, Chad Rienstra, Elizabeth Wright

B05.2 Development, Challenges and Biomedical Applications of Tissue Clearing, Expansion Microscopy and Volumetric Imaging

Tuesday 10:30 AM

10:30 AM **269** *Improved Prediction of Trimodality Therapy Response in Muscle-invasive Bladder Cancer Using Deep Learning and Pathology-Optimized Expansion Microscopy;* **Long (Jason) Nguyen** (Invited), Laurence Gao, Feifei Fu, Juncheng Li, Dongbo Sun, Jose Mansure, Wassim Kassouf, Yongxin Zhao

11:00 AM **270** *Multiplexed Expansion Microscopy of Neuronal Barcodes, Synaptic Markers, and Neuronal Morphology to Enable Molecular Connectomics;* **Sven Truckenbrodt** (Invited), Andrew Payne, Jun Axup, Kathleen Leeper, Johan Winnubst, Rosa Park, Julia Michalska, Hugo Damstra, Arlo Sheridan, Stephanie Chan

11:30 AM **271** *Lightsheet Microscopy Pipelines for Mammalian Brain Connectivity Mapping Across Spatial Scales;* **Kevin Takasaki** (Invited), Adam Glaser, Emily Turschak, Ayana Hellevik, Steven Cook, Kareena Villalobos, Wan-qing Yu, Soumya Chatterjee, Xiaoyun Jiang, Clay Reid

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

C01.3 Microscopy and Microanalysis of Interfaces and/or Interactions Among Organic and Inorganic Matter

Tuesday 10:30 AM

10:30 AM **272** *Uncovering Hidden Nutrient Dynamics in Algal-Bacterial Consortia: Nanoscale Stable Isotope Probing in the Phycosphere;* **Wei Li** (Invited), Xavier Mayali

11:00 AM **273** *The Role of Enzyme Spatial Distribution in Enzyme Metal-Organic Frameworks using Cryogenic Electron Microscopy (CryoEM), Cryogenic Electron Energy Loss Spectroscopy (CryoEELS), and Energy-Filtered TEM (EF-TEM);* **Elisa Olivas**, Stephen House, John Watt, Joe Patterson

11:15 AM **274** *Designing Antifouling and Antimicrobial Interfaces: Structural Characterization using CryoEM, Automated Microscopy, and AI Image Segmentation;* **Alexis Williams**, Lynnicia Massenburg, Sita Madugula, Scott Retterer, Jennifer Morrell-Falvey, Ruben Millan Solsona, Spenser Brown, Amber Bible, Rajeev Kumar, Yue Yuan

11:30 AM **275** *Dose-Fractionated Spectrum Imaging for the Analysis of Organic and Inorganic Interfaces;* **Andrew Thron**, Liam Spillane, Robert Colby, Gong-Her Wu, Wah Chiu, Ray Twesten

11:45 AM **276** *Nanoscale Characterization of Enzyme-MOF Nanocomposites Using Advanced Electron Microscopy;* **Joerg Jinschek**, Sara Talebi Deylamani, Zsofia Bognar, Pritam Banerjee, Giuseppe Di Palma, Stig Helveg

C03.2 Microscopy and Microanalysis in Industry

Tuesday 10:30 AM

10:30 AM **277** *Microscopic Evaluation of Temperature Effects on Gelatin Support Bath for 3D Bioprinting;* **Rachel Shubella** (Invited), Alexander Hunt

11:00 AM **278** *Microscopy and Microanalysis Investigations of Liquid Phase Sintered Composites for Use in Mining Applications;* **Richard Wuhrer**, Paul Huggett, Ken Moran, Daniel Fanna

11:15 AM **279** *The Role of Pretraining in High-Throughput Laminography Restoration;* **Shiqi Xu**, Zijing Guo, Kamyar Majlan, Zeyu Zhou, Moran Xu, Andriy Andreyev, Johannes Ruoff, Matthew Andrew

11:30 AM **280** *Streamlining Cathodoluminescence Data Collection and Analysis using Autonomous Control;* **Douglas Cameron**, Liam Spillane

11:45 AM **281** *Enhancing Semiconductor Wafer Inspection: Resolving Peak Overlap with Simultaneous EDS-WDS Analysis; Shangshang Mu, David Stowe*

C07.3 Towards Functional Imaging of Materials: Advances and Insights from Phase Contrast Techniques

Tuesday 10:30 AM

10:30 AM **282** *Advancing Lorentz Microscopy For Studying Magnetic Configurations in Next Generation Spintronic Devices And 3D Curved Magnets;* **Trevor Almeida** (Invited), Kayla Fallon, Danian Dugato, Andras Kovacs, David Cooper, Flavio Garcia, Thomas Moore, Christopher Marrows, Rafal Dunin-Borkowski, Stephen McVitie

11:00 AM **283** *Investigation of Dipole-Stabilized Skyrmions in Amorphous Centrosymmetric FeGdPt Multilayers using 4D-STEM;* **Malik Hollis**, Eric Fullerton, Sergio Montoya, Kayla Nguyen

11:15 AM **284** *Towards Imaging of Antiferromagnetic Ordering at the Atomic Scale;* **Reed Yalisove**, Georgios Varnavides, Mary Scott

11:30 AM **285** *Electrostatically-induced Unconventional Interface Magnetism in La0.7Sr0.3MnO3;* **Qianqian Lan** *(Invited),* Michael Schnedler, Philipp Ebert, Rafal Dunin-Borkowski

Scientific Program

P Physical Sciences Symposia – Tuesday Late Morning

P01.3 Advanced Characterization of Nuclear Fuels and Materials

Tuesday 10:30 AM

10:30 AM **286** *Choosing the Appropriate Preparation and Technique for the Advanced Characterization of Nuclear Fuels and Materials;* **Stephen Taller** (Invited), Yan-Ru Lin, Caleb Massey

11:00 AM **287** *Characterization of Helium Bubbles and Hydrogen/Tritium Interactions in Palladium Alloys Using Advanced Electron Microscopy; Joshua Sugar (Invited), Norman Barelt, Stephen House, Chris Smyth, Dustin Ellis, Xiaowang Zhou, David Robinson*

11:30 AM **288** *Embrittlement in tungsten alloys under ion irradiations simulating damage of fusion reactors; Tianyi Chen (Invited), Ana Caraveo, Golamur Khan, Spencer Doran, James Haag, Weilin Jiang, Zhihan Hu, Lin Shao, Wahyu Setyawan*

P03.3 Characterization of Collective Excitations by Electron Microscopy with High Spatial, Energy, Momentum, and Temporal Resolutions

Tuesday 10:30 AM

10:30 AM **289** *Probing Moiré Strain with Bragg Interferometry in 4DSTEM;* **Colin Ophus** (Invited), Isaac Craig Madeline Van Winkle, D. Kwabena Bediako

11:00 AM **290** *Nanosecond Nanothermometry with Time-Resolved EELS in a STEM;* **Luiz Tizei**

11:15 AM **291** *Imaging the Waltz of Atoms: Using Phase-Shaped Beams to Determine the Rotational Motion of Atoms;* **Paul Zeiger**, Jan Rusz

11:30 AM **292** *Conformally Invariant Charge Fluctuations in a Strange Metal Measured with meV-resolved EELS;* **Peter Abbamonte** *(Invited)*

P04.3 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance

Tuesday 10:30 AM

10:30 AM **293** *Inert Gas Transfer Cryogenic Cooling Holder Applications and Implications for Electron Microscopy of Battery Interfaces;* **Thomas Marchese** (Invited), Shuang Bai, James Burrow, Minghao Zhang, Nestor J. Zaluzec, Shirley Meng

11:00 AM **294** *Visualizing Interfacial Structure and Reaction Behaviour of Li-Chalcogen Batteries;* **Shiyuan (Stanley) Zhou**, Gen Li, Yuzi Liu, Hong-Gang Liao, Guiliang Xu, Khalil Amine, Shi-Gang Sun

11:15 AM **295** *Multimodal Electron Microscopy Characterization of Electrochemically Formed δ Phase in Manganese-Rich Rocksalt Cathodes;* **Tara Mishra**, Tucker Holston, Han-Ming Hau, Colin Ophus, Karen Bustillo, Gerbrand Ceder

11:30 AM **296** *Advancement of Single Crystal Cathode Development via in-operando Scanning Electron Microscopy;* **Libor Novak**, Liu Zhao, Jie Xiao, Bingbin Wu, Yaobin Xu

11:45 AM **297** *In Situ Investigation of Degradation Processes of Undoped and Doped Mn-rich High-voltage Cathodes;* **Ioannis Siachos**, Xiaodong Liu, Rajashree Konar, B. Layla Mehdi

P05.3 Advances in Imaging and Spectroscopy Beyond Ambient Conditions

Tuesday 10:30 AM

10:30 AM **298** *Imaging Local Magnetic Moments with Atomic-Scale Electron Vortex Beams via EMCD in BaFe11TiO19;* **Pohl Darius** (Invited), Hitoshi Makino, Sebastian Schneider, Rolf Erni, Arthur Ernst, Jan Rusz, Devendra Negi, Bernd Rellinghaus

11:00 AM **299** *Atomic-Scale Structure and Chemistry of yttrium-doped Σ3 and Σ67 Grain Boundaries in Magnesium Aluminate Spinel;* **Alexander Campos Quiros**, Animesh Kundu, Masashi Watanabe

11:15 AM **300** *Investigation of Atomic Structure and Oxygen Sublattice in La3Ni2O7 Single Crystals;* **Arashdeep Thind**, Xinglong Chen, John Mitchell, Robert Klie

11:30 AM **301** *Interface-Induced Modifications on the Atomic and Electronic Structures of La3Ni2O7;* **Hwangsun Kim**, Ling-Fang Lin, Yang Zhang, Steffi Woo, Andrew Lupini, Miaofang Chi

P08.1 Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials

Tuesday 10:30 AM

10:30 AM **302** *Crystal Nucleation and Growth in High-Entropy Alloys Revealed by Atomic Electron Tomography;* **Jianwei Miao** (Invited), Yakun Yuan, Saman Moniri, Yao Yang, Jihan Zhou, Peter Ercius, Dennis Kim, Yongsoo Yang, Chenyang Li, Wei Chen

11:00 AM **303** *Investigating Vibrational Modes in High Entropy Oxides using Electron Energy Loss Spectroscopy;* **Sai Venkata Gayathri Ayyagari**, Tara Karimzadeh Sabet, Matthew Webb, Aleksander Mosberg, Saeed Almishal, Jon-Paul Maria, John Heron, Ismaila Dabo, Quentin Ramasse, Nasim Alem

11:15 AM **304** *Unraveling the Origin of Glassy Thermal Transport in Medium-Entropy Semiconductors: From Nanoscale Phase Segregation to Atomic-Scale Lattice Distortion;* **Roberto dos Reis**, Yukun Liu, Stephanie Ribet, Mercouri Kanatzidis, Vinayak Dravid

11:30 AM **305** *Imaging of Short Range Order with Electron Microscopy: From High Performance Alloys to Semiconductor Thin Films;* **Andrew M Minor (Invited)**

P09.2 Unconventional Electron Probes

10:30 AM **306** *Ferromagnetic Phase Nucleation Kinetics in FeRh Mediated by Ultrafast Laser Pulses In-Situ in TEM;* **Jan Hajduček** (Invited), Antoine Andrieux, Jon Arregi, Fabrizio Carbone, Vojtěch Uhlíř, Thomas LaGrange

11:00 AM **307** *Ultrafast Electron Diffraction and Microscopy at Megahertz Rates;* **Sophie Schaible**, Till Domröse, Claus Ropers

11:15 AM **308** *Can You Outrun Vanadium Dioxide Structural Insulating to Metal Transition?;* **Alexandre Pofelski**, Chuhang Liu, Spencer Reisbick, Myung-Geun Han, Lijun Wu, Shayan Mousavi, Marcelo Rozenberg, Shriram Ramanathan, Ivan Schuller, Yimei Zhu

11:30 AM **309** *Dynamics of Topological Spin Structures and Photocarriers Visualized by Ultrafast Electron Microscopy;* **Xuewen Fu** (Invited), Zefang Li, Jiangteng Guo, Yaqing Zhang, Xiang Chen, Cuntao Gao, Fang Liu

P10.3 Innovative in-situ Imaging Techniques for Material Characterization, Synthesis, and Processing

10:30 AM **310** *Enhancing In Situ TEM Characterization of RRAM Devices via Optimized Chip Carrier Designs;* **Leopoldo Molina-Luna** (Invited), Robert Eilhardt, Daniel Vasquez, Alexander Fakiner, A. Wahab Shakib

11:00 AM **311** *Direct Observation of Electron Tunneling from Plasmonic Nanostructures under Electron Beam Irradiation;* **Kenan Elibol**, Vesna Srot, Chao Yang, Sayooj Satheesh, Serkan Arslan, Marko Burghard, Harald Giessen, Peter A. van Aken

11:15 AM **312** *The Crucial Role of TEM Specimen Preparation in STEM EBIC Analysis of Advanced Semiconductor Devices;* **Cecile Bonifacio**, William Hubbard, Richard Li, Mary Ray, Paul Fischione

11:30 AM **313** *Perspectives and Limitations of STEM EBIC Measurements for the Characterization of Semiconductor Devices;* **Sebastian Schneider**, Pohl Darius, Bernd Rellinghaus

11:45 AM **314** *SE For Free: Constructing Secondary Electron Images from Two-Channel STEM EBIC;* **William Hubbard**, B. C. Regan

Scientific Program

A Analytical/Instrumentation Sciences Symposia – Tuesday Afternoon

A01.4 Advances in Focused Ion Beam Instrumentation, Applications, and Techniques for Materials and Life Sciences

Tuesday 1:30 PM

1:30 PM **315** *Cryogenic Atom Probe Specimen Preparation and Advanced In-Situ Coating;* **Se-Ho Kim** (Invited), Chang-gi Lee, I-Jun Ro, Gyumin Park

2:00 PM **316** *Evaluating APT Specimen Survivability: Site-specific Post-FIB Ar Ion Milling in Controlled Environments;* **Cecile Bonifacio**, Daniel Perea, Pawel Nowakowski, Mary Ray, Paul Fischione

2:15 PM **317** *Basic Contrast Mechanisms in Electron-Beam Induced Current (EBIC) Images of High Impedance Samples;* **Fernando Camino**, Byeongjun Gil, Armando Rua, Kim Kisslinger, Myung-Geun Han, Daniel Hayes, Juan Alban, Rakesh Agrawal, Miyoung Kim, Yimei Zhu

2:30 PM **318** *Nanoscale RRAM Device Fabrication via Electron-Beam Deposition and Ga-Free Multi-Ion Plasma FIB Milling;* **A. Wahab Shakib**, Robert Winkler, Daniel Vasquez, Alexander Fakiner, Leopoldo Molina-Luna

A02.4 Frontiers of Electron Ptychography

Tuesday 1:30 PM

1:30 PM **319** *Sub-Ångstrom 3D Resolution, Large-Volume Imaging, and Automation Advances in Electron Ptychography;* **Philipp Pelz** (Invited), Shengbo You, Nikita Palatkin, Mingjian Wu

2:00 PM **320** *Tuning the Atomic Number Sensitivity in Multislice Electron Ptychography;* **Bridget Denzer**, Colin Gilgenbach, James LeBeau

2:15 PM **321** *Evaluating Depth Sectioning and its Systematic Errors in Multislice Ptychography;* **Harikrishnan K. P.**, Steven Zeltmann, Zhen Chen, Yi Jiang, Chia-Hao Lee, Dasol Yoon, David Muller

2:30 PM **322** *Electron Ptychography in the Fresnel Diffraction Regime;* **Andrew Maiden** (Invited), Peng-Han Lu, Shengbo You, Frederick Allars

A04.2 Contributions of Analytical Electron Microscopy to Understanding Microstructural Evolution in Materials: James Bentley Memorial Symposium

Tuesday 1:30 PM

1:30 PM **323** *The Evolution of Analytical Metrology for High Spatial Resolution and Sensitivity in the Analytical Transmission Electron Microscope;* **Nestor Zaluzec** *(Invited)*

2:00 PM **324** *The Evolution of Analytical Electron Microscopy Instrumentation and Techniques During the Career of Jim Bentley;* **J. K. Weiss** *(Invited)*

2:30 PM **325** *Advantages of an Electrostatic Beam Blanker in STEM;* **Ricardo Egoavil**, Pavel Potocek, Eric Van Cappellen, Maria Meledina, Maarten Wirix, Bert Freitag

2:45 PM **326** *A New Approach for Quantification of EELSpectra;* **Pavel Potapov**, Giulio Guzzinati

A05.3 Latest Advances in Atom Probe Tomography

Tuesday 1:30 PM

1:30 PM **327** *Unsupervised Clustering Approach to Identify Chemical Segregation in Atom Probe Tomography Reconstructions;* **Jenna Bilbrey** (Invited), Christina Doty, Mark Wirth, Mengkong Tong, Jacqueline Royer, David Senor, Arun Devaraj

2:00 PM **328** *Role of Atom Probe Tomography in Sustainable Materials Recycling and Design;* **Se-Ho Kim**, Chang-gi Lee, I-jun Ro, Gyumin Park

2:15 PM **329** *Automated Mass Spectrum Labelling in Atom Probe Tomography;* **Jingrui Wei**, Robert Ulfig, David Reinhard, David Larson, Paul Voyles

2:30 PM **330** *Application of Simulated Evaporation Shapes to Adaptive Reconstruction;* **David Reinhard**, Brian Geiser, Ty Prosa, Isabelle Martin, Joe Bunton, David Larson

2:45 PM **331** *Microstructural Analysis of TaAlN Nitride MAX Phases by Atom Probe Tomography;* **Keith Knipling**, Scott Katzer, Evgeniya Lock

A06.4 Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens

Tuesday 1:30 PM

1:30 PM **332** *From Electrical Characterization to Surface Contamination: The Role of Electrical-based Scanning Probe Microscopy Techniques;* **Corey Carlos** *(Invited)*

2:00 PM **333** *Multi-Modal Approach for Quality Control and Failure Analysis of Metal Lines for Chiplets Integration;* **Kerim Arat**, Darshit Jangid, Hajo Frerichs, William Neils, Stefano Spagna

2:15 PM **334** *Improving Precision and Time to Knowledge in Atom Probe Tomography Data Analysis;* **Robert Ulfig** (Invited), David Reinhard, Paul Voyles, Jingrui Wei, Mike Keenan, David Larson

A09.3 Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI

Tuesday 1:30 PM

1:30 PM **335** *Simulation-based Super-Resolution EBSD;* **Aimo Winkelmann** (Invited), Grzegorz Cios, Konrad Perzynski, Tomasz Tokarski, Klaus Mehnert, Lukasz Madej, Piotr Bała

2:00 PM 336 Fast Kikuchi Spheres for Forward Model EBSD Indexing; **William Lenthe**, Stuart Wright, Matthew Nowell, Rene de Kloe

2:15 PM 337 Sensitivity Study of Parameters Surrounding Spherical Indexing of Electron Backscatter Diffraction Patterns; **Stuart Wright**, William Lenthe, Matthew Nowell, Rene de Kloe

2:30 PM338 EMsoftOO: an Open Source Object-Oriented Software Package for Electron Scattering Simulations; **Marc De Graef (Invited)**

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 **339** *E. coli LetA Defines a New Transporter Family Mediating Inter-Membrane Lipid Trafficking;* **Cristina Santarossa** (Invited), Yupeng Li Sara Yousef, Hale Hasdemir, Carlos Rodriguez, Max Haase, Minkyung Baek, Nicolas Coudray, John Pavek

2:00 PM **340** *Cryo-EM Structure of Infective Sindbis Virus at 3.1 Å Resolution Reveals Insights into Alphavirus Host-Cell Entry and Assembly;* **Qibin Geng**, Wei Zhang

2:15 PM **341** *Visualizing the Chaperone-Mediated Folding Trajectories of the G protein β Subunit β-Propellers By High Resolution Cryo-EM;* **Mikaila Sass**, Shuxin Wang, Yujin Kwon, Sadie Larson, Margot Riggi, Janet Iwasa, Peter Shen, Barry Willardson

2:30 PM **342** *Determining The Structure and Binding Properties of DPS – A Nucleoid Associated Protein;* **Matthew Gaines**, Kaylee Rajek, Elizabeth Wright, Steve Garvis, Daniel Parrell

2:45 PM **343** *Investigating the Structural Mechanisms of DnaT in the PriA-PriB Replication Restart Pathway Using Single-Particle Cryo-Electron Microscopy;* **Peter Ducos**, Alexander Duckworth, James Keck, Timothy Grant

B07.1 Cryo-electron Tomography: Progress and Potential

Tuesday 1:30 PM

1:30 PM **344** *The CZ cryoET Data Portal: Enabling Collaborative Analysis Of Standardized CryoET Data Using Machine Learning Methods;* **Utz Ermel** (Invited), Anchi Cheng, Jun Xi Ni, Jessica Gadling, Manasa Venkatakrishnan, Janeece Pourroy, Jeremy Asuncion, Kandarp Khandwala, Zun Shi Wang, Bridget Carragher

2:00 PM **345** *Strategies Towards High-Resolution Subtomogram Averaging;* **Jae Yang**, Bryan Sibert, Daniel Parrell, Eric Montemayor, Matthew Gaines, Anil Kumar, Priyank Maindola, Matthew Larson, Elizabeth Wright

2:15 PM **346** *Improving Continuous-Rotation Tomography of Cellular Specimens;* **Philip Baldwin**, Erik Anderson, Benjamin Bammes, Steven Ludtke

2:30 PM **347** *Tools to Streamline In Situ Structural Analysis using cryo-ET;* **Alberto Bartesaghi** (Invited)

C Cross-Cut/Interdisciplinary Sciences Symposia – Tuesday Afternoon

C01.4 Microscopy and Microanalysis of Interfaces and/or Interactions Among Organic and Inorganic Matter

Tuesday 1:30 PM

1:30 PM **348** *Atomic-scale Observation of NiO Nucleation During Nickel Oxidation;* **Linna Qiao** (Invited), Jianyu Wang, Xiaobo Chen, Shuonan Ye, Dmitri Zakharov, Meng Li, Kim Kisslinger, Judith Yang, Guangwen Zhou

2:00 PM **349** *Adhesive Strength of Carbon Nanotubes Grown on Various Substrates;* **Alexander Michas**, Tauris Germany, Felipe Rivera, Brian Jensen, Richard Vanfleet

2:15 PM **350** *Analysis of the Crystallographic Orientation at the Interface Between Carbon Nanotubes and Magnesium Alloy Matrix;* **Luis Carlos Olmos Villalba**, Yamile Cardona-Maya, Cesar Augusto Isaza Merino

2:30 PM **351** *BiOCl Photocatalyst at Different Temperatures: TEM Insights into Structural Modifications and Photocatalytic Efficiency>;* **Hector Calderon**

2:45 PM **352** *Electron Microscopy of Ag nanoparticles on ZrO2-TiO2 Heterojunction to improve the Photocatalytic Arsenic Oxidation;* **Hector Calderon**

C03.3 Microscopy and Microanalysis in Industry

Tuesday 1:30 PM

1:30 PM **353** *Mitigation of erosion in wind turbine using nanoparticles of alumina;* **Luis Ramirez Peña**

1:45 PM **354** *Electron Probe Micro Analysis (EPMA) of Heterogeneous Catalyst Pellets in the Petrochemical Industry;* **Tao Wei**, Kaustav Chaudhuri, Hung Khuu, Shengzu Yang

2:00 PM **355** *Investigation of the Valence Band Edge of ONO Cells in Flash Memory Using Z-contrast Imaging;* **Suhyun Kim**, Juhee Lee, Seunga Shin

2:15 PM **356** *A BKM by Analytical TEM to Effectively Characterize Electromigration Voids versus Grain Orientations in the Integration and Evaluation of Subtractive Ru BEOL Interconnect;* **Wayne Zhao**, Yu Zhu, Michael Iwatake, Lukas Tierney, Brian Grzeskowiak, Haojun Zhang, Huai Huang, Christopher Penny, Kisik Choi

2:30 PM **357** *Mathematical Methods in Particle Size Distributions for Catalysts Applications;* **Eneith Aguilar**, Son Le, Haribabu Bathula, Alexandros Katsoulidis, B. Layla Mehdi, Matthew Rosseinsky, Nigel Browning

2:45 PM **358** *AMICS, Microanalysis, X-ray Mapping, and XRD Characterization to create a REE Concentrate Analysis Workflow;* **Tim Murphy**, Daniel Fanna, Hyunsung Min, Ken Moran, Angus Netting, Richard Wuhrer

C06.1 Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy

Tuesday 1:30 PM

1:30 PM **359** *Keeping Artificial Intelligence for Microscopy FAIR: Findable, Accessible, Interoperable, and Reproducible;* **Paul Voyles** (Invited), Jingrui Wei, Ryan Jacobs, Ben Blaiszik, KJ Schmidt, Dane Morgan

2:00 PM **360** *3D Ptychographic Inverse Imaging with Generative Diffusion Models;* **Chia-Hao Lee**, Christian Belardi, Yingheng Wang, Justin Lovelace, Kilian Weinberger, Carla Gomes, David Muller

2:15 PM **361** *Parameter-Free Deep Sub-Ångstrom Resolution Electron Ptychography Reconstructions using Neural Networks;* **Rahim Raja**, Kieran Loehr, Xiaochuan Ding, Bryan Clark, Pinshane Huang

2:30 PM **362** *Empowering Electron Ptychography with Generative Artificial Intelligence and Agentic Workflows;* **Yi Jiang** (Invited), Xiangyu Yin, Chuqiao Shi, Benjamin Fein-Ashley, Yu-Tsun Shao, Yimo Han

C07.4 Towards Functional Imaging of Materials: Advances and Insights from Phase Contrast Techniques

Tuesday 1:30 PM

1:30 PM **363** *Phase Contrast 4D-STEM Tomography of Thick Biological Specimens;* **Berk Küçükoğlu** (Invited), Massimo Kube, Wen-Lu Chung, Georgios Varnavides, Stephanie Ribet, Daniel Stähli, Jean Daraspe, Julika Radecke, Colin Ophus, Henning Stahlberg

2:00 PM **364** *Segmented Detector Digitization and the Role of Denoising for Increasing Achievable Temporal Resolution in Phase Characterization;* **Julie Marie Bekkevold**, Taichi Kusumi, Georgios Varnavides, Jonathan Peters, Ryo Ishikawa, Naoya Shibata, Lewys Jones

2:15 PM **365** *Driving in the Dark: Realtime Denoising of Minimally Dosed High-speed Digital Electron Counted STEM;* **Lewys Jones**, Akimitsu Ishizuka, Jonathan Peters, Ryo Ishikawa, Julie Marie Bekkevold, Naoya Shibata, Koji Kimoto, Kazuo Ishizuka

2:30 PM **366** *Advancing Cryo-Electron Tomography with tilt-corrected bright-field STEM (tcBF-STEM);* **Yue Yu** (Invited), Shawn Zheng, Elizabeth Montabana, Garrett Greenan, Nikki Jean, Stephanie Ribet, Georgios Varnavides, Colin Ophus

Scientific Program

P Physical Sciences Symposia – Tuesday Afternoon

P01.4 Advanced Characterization of Nuclear Fuels and Materials

Tuesday 1:30 PM

1:30 PM **367** *Understanding Metal Corrosion by Four-Dimensional Scanning Transmission Electron Microscopy (4D-STEM);* **Yang Yang** *(Invited)*

2:00 PM **368** *Nanoscale Characterization of Zirconium Alloy Corrosion: Dissolved Oxygen-Induced Microstructural Transformations;* **Rajat Nama** (Invited), Chris Grovenor, Sergio Lozano-perez

2:30 PM **369** *Understanding Pb Transport and Stress Corrosion Cracking using Advanced Characterization Techniques;* **Suraj Persaud** (Invited), Nicolas Huin, Jaganathan Ulaganathan, Hooman Gholamzadeh, Kevin Daub, Adil Shaik

P03.4 Characterization of Collective Excitations by Electron Microscopy with High Spatial, Energy, Momentum, and Temporal Resolutions

Tuesday 1:30 PM

1:30 PM **370** *Probing Spatial and Temporal Hierarchies in Quantum Materials: Advances in High-Throughput Femtosecond Electron Microscopy;* **Chong-Yu Ruan** (Invited), Xiaoyi Sun, Sarchin Sharma, Shuaishuai Sun, Nelson Sepulveda

2:00 PM **371** *Nanobeam Ultrafast Electron Diffraction of Structural Phase Transformations in Charge-Density Wave Materials;* **Till Domröse**, Sophie Schaible, Claus Ropers

2:15 PM **372** *Advancing Ultrafast Electron Microscopy with RF-Driven and Frequency Tunable Pulser;* **Ryan Gnabasik**, Eric Montgomery, Chunguang Jing, Alexei Kanareykin

2:30 PM **373** *Revealing Defect-Seeded and Interfacial Generation Mechanisms of Photoinduced Coherent Phonons with 4D Ultrafast Electron Microscopy;* **David Flannigan** (Invited), Yichao Zhang

P04.4 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance

Tuesday 1:30 PM

1:30 PM **374** *Operando Optical Microscopy of Lithium Metal Anodes for High-Energy-Density Batteries;* **Neil Dasgupta (Invited)**

2:00 PM **375** *Real-Time Observation of Lithium-ion Storage in Conversion-Type Electrode Materials after Initial Cycle;* **Sooyeon Hwang**

2:15 PM **376** *Analysis and Control of the Microstructure of Electrodeposited Alkali-Metals in "Anode-free" Solid-State Batteries using Electron-Backscatter Diffraction with and without Interlayers*; **Till Fuchs**, Till Ortmann, Juri Becker, Catherine Haslam, Christian Lerch, Jeff Sakamoto, Jürgen Janek

2:30 PM **377** *Analysis of the Microstructural Evolution of Lithium Metal during Electrodeposition and Subsequent Dissolution in "Anode-free" Solid-State Batteries using Electron-Backscatter Diffraction on Millimeter-Sized Cross-Sections;* **Juri Becker**, Till Fuchs, Till Ortmann, Luca Schuster, Sascha Kremer, Felix Richter, Jürgen Janek

2:45 PM **378** *Quantifying the Lithiation Heterogeneities in Aged Thick Gr-Si Electrodes for Battery Applications;* **François Cadiou**, Tom Kirstein, Alice Robba, Orkun Furat, Julie Villanova, Marion Chandesris, Volker Schmidt, Sandrine Lyonnard, Victor Vanpeene

P05.4 Advances in Imaging and Spectroscopy Beyond Ambient Conditions

Tuesday 1:30 PM

1:30 PM **379** *Simultaneous Spectrum-Imaging Acquisition in High-Energy Electron Energy-loss Spectrometry and X-ray Energy Dispersive Spectrometry;* **Masashi Watanabe**, Alexander Campos Quiros, Giulio Guzzinati, Pirmin Kükelhan, Volker Gerheim, Martin Linck, Heiko Müller, Max Haider, Thomas Hoffman, Kotaro Sakaguchi

1:45 PM **380** *Evaluating TEM Sample Thickness for Enhanced Temperature Precision in Plasmon Energy Expansion Thermometry (PEET);* **Joerg Jinschek**, Yi-Chieh Yang, Luca Serafini, Nicolas Gauquelin, Johan Verbeeck

2:00 PM **381** *Quantifying the Thermochemical Hydrogen Redox Activity and Structure of Al-doped BaFe2O4 Decomposition Phases Using Multidimensional Analytical TEM.;* **Arielle Clauser**, Keith King, Maria Syrigou, Tyra Douglas, Anthony McDaniel,

Nicholas Strange, Sean Bishop, Joshua Sugar

P08.2 Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials

Tuesday 1:30 PM

1:30 PM **382** *An Overview of Applications of Electron Nanodiffraction to Studying the Structure and Dynamics of Amorphous Solids and Liquids;* **Paul Voyles** (Invited), Shuoyuan Huang, Carter Francis, Po-Cheng Kung, Ajay Annamareddy, Dane Morgan

2:00 PM **383** *Observation of Crystallization Process in Fe-base Amorphous via 5D-STEM;* **Katsuaki Nakazawa**, Kodai Niitsu, Takahiro Yamazaki

2:15 PM **384** *Revealing Medium Range Ordering in Zr-based Metallic Glasses Using Machine Learning Analysis of 4D-STEM Nanodiffraction;* **Minhazul Islam**, Sang-Chul Lee, Hee-Suk Chung, Jinwoo Hwang

2:30 PM **385** *In Situ Temperature and Beam-Driven Relaxation Dynamics;* **Martin Peterlechner** *(Invited)*

P09.3 Unconventional Electron Probes

Tuesday 1:30 PM

1:30 PM **386** *Towards Time-Resolved Electron Tomography and 4D-STEM;* **Michael Yanna**i (Invited), Ido Kaminer

1:45 PM **387** *Attomicroscopy Imaging of Electron Motion in Action;* **Mohammed Hassan** *(Invited)*

2:15 PM **388** *Non-equilibrium Phononic Phenomena on nm × ps Scale Revealed by Five-dimensional Scanning Transmission Electron Microscopy;* **Asuka Nakamura,** Takahiro Shimojima, Kyoko Ishizaka

2:30 PM **389** *Time-Resolved Magnetic Imaging with Ultrafast Electron Pulser: Spin-Wave Generation in Topological Spin Textures;* **Chuhang Liu** (Invited), Yimei Zhu

P10.4 Innovative in-situ Imaging Techniques for Material Characterization, Synthesis, and Processing

Tuesday 1:30 PM

1:30 PM **390** *Combining In-Situ Transport Experiments with Real Space Imaging and Resonant Elastic X-Ray Scattering: Chiral Magnets in a Transmission Electron Microscope;* **Bernd Rellinghaus** (Invited), Andy Thomas, Moritz Winter, Marein Rahn, Alexandr Sukuhanov, Alexander Tahn, Sebastian Schneider, Alessandro Pignedoli, Maria Azhar, Karin Everschor-Sitte

2:00 PM **391** *Development of Lorentz Four-Dimensional Scanning Transmission Electron Microscopy for Quantitative Measurements of In-Situ Current-Driven Magnetic Domain Wall Deformations;* **Fehmi Yasin**, Jan Masell, Max Birch, Kosuke Karube, Yasujiro Taguchi, Takahisa arima, Yoshinori Tokura, Xiuzhen Yu, Andrew Lupini

2:15 PM **392** *Development of MEMS Based In-situ TEM Chips and its Applications;* **Youhong Jiang**, Hong-Gang Liao

2:30 PM **393** *Imaging spin waves by Electron Holography;* **Marine Resano**, Christophe Gatel, Nicolas Biziere

2:45 PM **394** *Endotaxial Stabilization of 2D 1T-TaS2 Charge Density Waves via In Situ Electrical Current Biasing;* **Alex Stangel**, Jeremy Shen, Tony Chiang, Maya Gates, Suk Hyun Sung, Ismail El Baggari, John Heron, Robert Hovden

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Scientific Program

A Analytical Sciences Poster Sessions – Tuesday Afternoon

3:00 PM – 5:00 PM **Exhibit Hall**

A04.P1 Contributions of Analytical Electron Microscopy to Understanding Microstructural Evolution in Materials: James Bentley Memorial Symposium

POSTER # 105

395 *Microstructural Characterization of Nb-Added Maraging 18Ni Steel;* **Maria Vittoria Moraschini Reis**, Sergio Maior Tavares, Hamilton Ferreira Gomes de Abreu, Geronimo Perez

POSTER # 107

397 *Advanced STEM Analysis of Anion Void Lattice and Defects Evolution in Electron Irradiated CaF;* **Lingfeng Zhou**, Lumin Wang

POSTER # 108

398 *BUGEM: Fast and Robust Algorithm for Extracting EndMembers in STEM Spectrum-Image;* **Pavel Potapov**

POSTER # 109

399 *Eco-Friendly Synthesis of ZnO Nanoparticles via Purple Corn Extract: Microstructural Analysis and Antibacterial Potential Against RAM Bacteria;* **Leticia-Sarahí Morocho-López**, Maricela Villanueva-Ibáñez, Diana Lesem García-Rubio, Socorro-Sandra Martínez-Robles

POSTER # 110

400 *Effect on Microstructure and Microhardness of MgO (24%)-Stabilized Zirconia Coatings Produced by Atmospheric Plasma-Spraying and Laser Cladding;* **Ali Khalil**, Mohamed Hafez

POSTER # 111

401 *Ex-situ Heat Treatment of TEM Foils in a Custom Titanium Fixture: A Case Study on Ni-based Superalloy;* **Stoichko Antonov**, Chang-Yu Hung, Yuan Tian, Martin Detrois, Paul D. Jablonski

POSTER # 112

402 *In-situ spectroscopy and post-corrosion electron microscopy study of pure Vanadium in LiCl-KCl-EuCl3 molten chloride salt;* **Aaron Penders**, Kaustubh Bawane, Stephanie Baldivieso, Alejandro Ballesteros, Ruchi Gakhar

POSTER # 113

403 *Microscopic Insights into the Role of High-Valence Elements in Stabilizing Nickel-Based Cathodes for High-Energy Batteries;* **Hari Adhikari**, Jinghao Huang, Maksim Sultanov, Tao Zhou, Joseph A. Libera, Yasuo Ito, Jianguo Wen, Feng Wang

POSTER # 114

404 *Microstructural Analysis of $BaTiO_3$: Influence of the Barium Precursor and HCl Treatment;* **Salomón Borjas**, Inti Correa, Jorge Ascencio, Ariosto Medina

POSTER # 115

405 *Microstructural Characterization and Antibacterial Study of Ag Nanoparticles Synthesized by Aqueous Extract of Jatropha dioica;* **Maricela Villanueva-Ibáñez**, Victoria Perla Camargo-Pérez, Jarvy-Francisco Cruz-Hernández

POSTER # 116

406 *Morphological Characterization of Chemically Cross-linked Carboxymethylcellulose Hydrogel Incorporating Doxycycline for Drug Release;* **Laura Subervier-Ortiz**, Maricela Villanueva-Ibáñez, Blanca Estela Jaramillo-Loranca

POSTER # 117

407 *Quantitative Study of Electron Beam Damage in Metal Halide Perovskites using Nanobeam Diffraction;* **Byeongjun Gil**, Myung-Geun Han, Yimei Zhu, Ray Egerton, Miyoung Kim

A05.P1 Latest Advances in Atom Probe Tomography

POSTER # 118

408 *A Nanoscale Investigation of Plasma Electrolytic Oxidation Coatings on Mg Alloy: The Role of Electrolyte;* **Selase Torkornoo**, Baptiste Gault, Thomas Imwinkelried, Eric woods, Yongqiang Kang, Marc Bohner

POSTER # 119

409 *Analysis of Commercial Semiconductor Devices with Atom Probe Tomography;* **Robert Ulfig**, Katherine Rice, Isabelle Martin, Yimeng Chen

POSTER # 120

410 *Atom Probe Analysis for Hydrogen Catalyst Materials;* **Gyumin Park**, Se-Ho Kim, Chang-gi Lee

POSTER # 121

411 *Complementary 3D STEM-EELS and APT Analysis for Chemical Composition Analysis of DRAM Contact Area;* **Jun-woo Park**, Jongchan Han, Sungho Hong, Yoonbaek Park, Wooyoung Jung, Juhee Lee, Sungho Lee, Seunga Shin

POSTER # 122

412 *Enhancing Cluster Identification in Atom Probe Tomography Data Using a Density-Based Framework;* **Yalei Tang**, Anshul Kamboj, Mukesh Bachhav, Mattew Anderson

POSTER # 123

413 *Local Calibration of APT Data Scaling for Diffusion Calculations;* **Daniel Schreiber**, Christina Doty, Sandra Taylor, Tiffany Kaspar, Aaron Kohnert, Kayla Yano

POSTER # 124

414 *Study on the Effect of Oxygen in Fe-Ti Hydrogen Storage Alloy with Phase and Microstructure Analysis;* **I-JUN Ro**, Chang-gi Lee, Se-Ho Kim

POSTER # 125

415 *The Hydrogen Trapping potential of Cr-rich M23C 6 and M7C 3 Carbides in Hybrid steel alloys investigated by Atom Probe Tomography;* **Severin Jakob**, Birhan Sefer, Steve Ooi, Mattias Thuvander

A09.P2 Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI

POSTER # 126

416 *Assessing Radiation Induced Stress Relaxation in Strained Epitaxial Films with HREBSD;* **Tim Ruggles**, Shei Su, Michael Titze

POSTER # 127

417 *Femtosecond Laser-Induced Crystallization of Cytosine Monohydrate for Serial Nano Electron Diffraction Analysis;* **Man Sze Cheng**, Sreelaja Pulleri Vadhyar, Ehsan Nikbin, Yasuchika Suzuki, Harmanjot Grewal, Manoel L. da Silva-Neto

POSTER # 128

418 *Improvement of the Accuracy of Lattice Spacing Measurements using NBD Disks Obtained from Precipitates in Ni-Al-Ti Alloy;* **Junji Yamanaka**, Joji Furuya, Azusa Baba, Kosuke Hara, Minoru Doi, Keisuke Arimoto

POSTER # 129

419 *Measuring Hydrostatic Dilation by High-Resolution Electron Back-Scatter Diffraction;* **Dominique Loisnard**, Qiwei Shi, Dominique Loisnard, Stephane Roux, Maxime Mollens

POSTER # 130

420 *Microstructures Causing Structural Instability: Applying Electron Backscatter Diffraction (EBSD) to Samples of Pyrrhotite Oxidation-Induced Concrete Degradation;* **Michael Mengason**, Stephanie Watson

POSTER # 132

422 *Real Time Diffraction Calculator;* **Lisa Zhou**, Saif Siddique, Noah Schnitzer, Judy Cha

POSTER # 133

423 *Revisiting the Effects of Sample Preparation on EBSD Performance in the Era of Forward Model Indexing;* **Matthew Nowell**, Parker Mancuso

POSTER # 134

424 *Registration of EBSD and HRDIC scans for the Identification of Active Slip Systems in Ti-6Al-4V;* **Blake Jensen**, Brigham Stacey, Tyson Neville, David Fullwood, Michael Miles, Talukdder Oishi, Marko Knezevic, Brad Kinsey

Scientific Program

B Biological Sciences Poster Sessions – Tuesday Afternoon

3:00 PM – 5:00 PM **Exhibit Hall**

B05.P1 Development, Challenges and Biomedical Applications of Tissue Clearing, Expansion Microscopy and Volumetric Imaging

POSTER # 135

425 *Advanced Microscopy Techniques for Imaging New Alternative Methods;* **Shabnam Ghiasvand**, Dayananda Siddappa Thimmanahalli, Caroline Morel, Peter Piepenhagen, Dinesh Bangari

POSTER # 136

426 *Advancing Biological Electron Microscopy: Versatile 3D-Printed Solutions for Automated Sample Processing;* **Zhongyuan Zuo**

POSTER # 137

427 *ExPOSE: a Revealing Look at Plant Cells Through Expansion Microscopy;* **Anastasiya Klebanovych**, Kevin Cox, Sarah Pardi, David Huss, Lily O'Connor, Kirk Czymmek

POSTER # 138

428 *Overcoming the Challenges of Integrating Diverse EM Tools into a Unified Research Framework;* **Han-I Yeh**, Nevaeh Jones, Kelly Zhang, Khloe Dischbein, Min Su

B08.P1 Advances in Cryo-EM Technology

POSTER # 139

429 *Feasibility of Using Desktop SEM Equipped With STEM for Low-Cost Efficient Screening of Negatively Stained Samples in the Cryo-EM Workflow;* **Bob Ashley**, Michael Stoller, Ron Allen, Cliff Mathisen

POSTER # 140

430 *Low Energy Ion Thinning of Frozen Biological Specimens for Electron Cryomicroscopy;* **Mathew Peet**, Christopher Palmer, Katerina Naydenova, Christopher Russo

POSTER # 141

431 *Quantum C100, a Wafer Scale CMOS Detector Optimised for 100 keV Cryo Electron Microscopy;* **Sam W Hutchings**, Herman Larsen, Mohamed El Sharkawy, Matthew Hart, Iain Sedgwick, Jonathan Barnard, Matt Callahan, Liam O'Ryan, Nicola Guerrini, Angus Kirkland

POSTER # 142

432 *Storage of Plasma Functionalised Surfaces On Cryoem Specimen Supports for Years;* **Mathew Peet**, Christopher Russo

POSTER # 143

433 *Accelerating Outreach and Training at the Pacific Northwest CryoEM Center Through Advanced Sample Preparation with the Vitrojet;* **Omar Davulcu**, Marcelo de Farias, Rose Marie Haynes, Nancy Meyer, Marzia Miletto, Sean Mulligan, Janette Myers, Vamseedhar Rayaprolu, Claudia Lopez, Craig Yoshioka

POSTER # 144

434 *Back to the Future: Modern, Parametric Manual Plunge-Freezer for Cryo-EM;* **Sean Mulligan**, Rose Marie Haynes, Nancy Meyer, Janette Myers, Craig Yoshioka, Claudia Lopez

POSTER # 145

435 *Critical Assessment of a Novel Vitrification Platform with Enhanced Robustness Using a Grid Quality Framework with AI-based Image Scoring;* **Albert Konijnenberg**, Patricia Dijkman, Xue Wang, Christian Lamberz, Jolet de Ruiter, Leander de Boer, Natalya Dudkina, Maarten Kuijper, Aurelien Botman, Edward Pryor

POSTER # 146

436 *Data Compression in Transmission Electron Microscopy;* **James Done**, Ambarneil Saha, Jung Cho, Shervin Nia, Lucas Lee, Peter Ercius

POSTER # 147

437 *Development of several workflows for the cryo-FIB/TEM;* **Naoki Hosogi**, Rintaro Kawano, Hideki Matsushima, Chikako Nakayama, Noriaki Mizuno

POSTER # 148

438 *Efficient Accessibility and Opportunities for Antibody Structural Study Using Cryo-EM and Protein Engineering;* **Kiju Choi**, Hyunbum Jeon, Kunwoong Park, Hyeon-Nae Jeon

POSTER # 149

439 *Employing Xe Plasma FIB for Fast and Precise Sample Preparation;* **Jana Bartoňková**, Martina Zánová, Samuel Záchej, Martin Uher

POSTER # 150

440 *Empowering Cryo-EM research across the southeastern U.S. through SECM4;* **Jiawei Li**, Nebojsa Bogdanovic, Carter Cascio, Joshitha Vakiti, Scott Stagg

POSTER # 151

441 *Fully automated screening workflow with Smart EPU;* **Fanis Grollios**, Edward Pryor, Julio Ortiz, Reint Boer Iwema

POSTER # 152

442 *Innovative Solutions for Higher Efficiency and Throughput in Cryo-Electron Microscopy and Tomography;* **Martin Obr**, Marc Storms, Reint Boer Iwema, Fanis Grollios, Eliza Nieweglowska, Matt Joens

POSTER # 153

443 *New Developments For Single Particle Cryo-EM Data Processing in CryoSPARC;* **Ali Punjani**, CryoSPARC Team

C Cross-Cut/Interdisciplinary Sciences Poster Sessions – Tuesday

3:00 PM – 5:00 PM **EXHIBIT HALL**

C03.P1 Microscopy and Microanalysis in Industry

POSTER # 154

444 *Characterization Study of a Level IV Ballistic Plate;* **C.D. Gómez-Esparza,** A.E. Lui-Chavira, I. Estrada-Guel, A. Villalobos-Aragón, D. Espejel-García, R. Martínez-Sánchez, J.A. Durán-Alvarado

POSTER # 155

445 *Effect of WC Addition on the hardness of Ti-Zr Alloy;* **Umanel Hernandez-Gonzalez**, Hector Abraham Jaramillo-Castro, Francisco Alvarado-Hernandez, Víctor Hugo Baltazar, Flabio Mirelez-Delgado, Raúl Pérez-Bustamante, Jazmin Abigail Mena-Zamora, Adriana del Carmen Gallegos-Melgar

POSTER # 156

446 *Focus Stacking for 3D Morphology Analysis in Optical Microscopy;* **Ofelia Hernández-Negrete**, Javier Hernández Paredes, Víctor E Alvarez Montaño

POSTER # 157

447 *A Study on Compressive Properties of Carbon Fiber-Reinforced Nylon (ePA-Cf);* **Gerardo Pérez Mendoza**, Humiko Yahaira Hernández Acostá, Alejandro Miranda Cid, Marco Antonio Doñu Ruiz, Noé López-Perrusquia, Aline Hernández García

POSTER # 158

448 *Best Practices to Clean Ultrathin Carbon and Graphene Film Grids for TEM Analysis;* **John Mangum**, Katherine Jungjohann, Bryan Tracy, Vince Carlino, Larry Tracy, Sean Morales

POSTER # 159

449 *Characterization of Diamond-like Carbon Coatings under Extreme Service Conditions;* **Cristina Jimenez-Marcos**, Julia Mirza-Rosca, Dorin-Ioan Feldiorean, Mircea Horia Tierean

POSTER # 160

450 *Comparison and Evaluation of the Corrosion Behavior of Two Innovative B4 C Samples Doped with 0.5% and 3% FeNiCoCrMo High-Entropy Alloy;* **Alberto Daniel Rico-Cano**, Julia Mirza-Rosca, Burak Cagri Ocak, Gultekin Goller

POSTER # 161

451 *Comparison of Corrosion Behavior of 316 and Duplex Stainless Steels in 7% NaCl Solution;* **Juan Carlos Lozano-Medina**, Federico Antonio Leon-Zerpa, Cristina Jimenez-Marcos, Julia Mirza-Rosca

POSTER # 162

452 *Dissolution and Physical Characterization of Oral Nicotine Products;* **Christa Gonzales**, Sean Platt, Pashupati Pokharel, Seok Chan Park, Akchara Sriram, Steven Thorpe, Abaigeal Ritzenthaler, Fadi Aldeek

POSTER # 163

453 *Evaluating Acid Penetration Effects on Geopolymer integrity using Microscopy and Microanalysis;* **Richard Wurner**, Pooja Chaggar, Bijan Markhali, Mariam Darestani, Kazem Javan, Hyunsung Min, Daniel Fanna

POSTER # 164

454 *Image Texture and Confocal Study of Starch-Based Extrudates Reinforced with Vegetal and Animal Protein as Snack Alternatives;* **Nayely Valeriano-García**, Vanessa García-Rojas, Alberto Ríos-Moreno, Josué Hernández-Varela, Rosalva Mora-Escobedo, José Jorge Chanona-Pérez

POSTER # 165

455 *Impact of Cooling Media on the Microstructure of AA6061 After High-Temperature Solution Treatment;* **Ofelia Hernández-Negrete**, Axel Ochoa-Castillo, Javier Hernández Paredes, Víctor E Alvarez Montaño, Fabian Coronado-Delacruz, María Bracamontes-Landavazo, Francisco Brown-Bojorquez

POSTER # 166

456 *Microstructure, Microhardness and Corrosion Behavior of a High Entropy Heat Treated Alloy;* **Cristina Jimenez-Marcos**, Santiago Brito-Garcia, Julia Mirza-Rosca, Ionelia Voiculescu

POSTER # 167

457 *Nanoscale Compositional Analysis of NiSix with Electron Energy Loss Spectroscopy (EELS);* **Zhengxin Li**, Noel Casarin-Forrette

POSTER # 168

458 *New Possibilities in the Customization of Materials to Improve their Performance and Functionality: Hexagonal Laser Texturing;* **Juan Carlos Lozano-Medina**, Carlos Sanchez-Morales, Julia Mirza-Rosca, Mariana Hernandez-Perez

POSTER # 169

459 *Utilising Microscopy and Microanalysis Techniques to Investigate Debris on Filters;* **Richard Wuhrer**, Rob Simmonds, Daniel Fanna, Laurel George

POSTER # 170

460 *UV-Light Coupling as a Method for Enhancing Optical Microscopy Imaging of Fluorescent Materials;* **Javier Hernández Paredes**, Ofelia Hernández-Negrete, Víctor E Alvarez Montaño

Scientific Program

P Physical Sciences Poster Sessions – Tuesday

3:00 PM – 5:00 PM **EXHIBIT HALL**

P01.P3 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance

POSTER # 171

461 *Ferrite-Dichalcogenide Nanocomposites for Energy Storage Applications;* **Dalaver Anjum**, Zeyad Abdulhamid

POSTER # 172

462 *Investigation of a-V₂O₅ as a Cathode Material for Magnesium Ion Batteries Using Atomic Resolved Scanning Transmission Electron Microscopy;* **Danial Zangeneh**, Anwesa Samanta, Arashdeep Thind, Jordi Cabana, Robert Klie

POSTER # 173

463 *Liquid Metal Coatings on Lithium Metal Anodes Protect Against Capacity Fade: A Cryo Electron Microscopy Study;* **Madison King**, Renae Gannon, Tylan Watkins, Katherine Jungjohann, John Watt

POSTER # 174

464 *Microstructure Study for the Effect of Ionotropic Gelation in COOH-Based Binders in Multivalent Ion Batteries;* **Jae Jin Kim**

POSTER # 175

465 *Quantitative Analyses of Mesopores in Carbon Electrode Materials via Low-Voltage SEM;* **Dian Yu**, Raunaq Bagchi, Patrick Woo, Keryn Lian, Jane Howe

P04.P4 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance

POSTER # 176

466 *Analytical STEM Study of Bi2O3 Catalyst for Selective Chemical Looping Combustion;* **Rishi Raj**, Matthew Jacob, Huy Nguyen, Matthew Neurock, Aditya Bhan, K. Andre Mkhoyan

POSTER # 177

467 *Characterization of CdTe Back-Contacts with Thick Alumina Reflectors; Etee Kawna Roy, Ashraful Mamun, Heayoung Yoon*

POSTER # 178

468 *Development of a crystallographic model of the interface from HRTEM images and the effect the CL in the electron density distribution of the Perovskite Solar cells;* **Mario Millán Franco**, Cornelio Delesma, Samanta Pérez, Jose Reyes Gasga

POSTER # 179

469 *Incorporation of Ru in BaTiO3 for Improved Electrocatalytic Activity;* **Bishnu Bastakoti**, Binod Raj KC

POSTER # 180

470 *Low Dosage In-situ and Ex-situ S/TEM Characterization of Hybrid Organic-Inorganic MAPbI3;* **Hadas Sternlicht**, Nitin Padture

POSTER # 181

471 *Observing Atomic-Scale 3D Structural Evolution of Nanocatalysts;* **Yongsoo Yang**, Chaehwa Jeong, Juhyeok Lee, Hyesung Jo, SangJae Lee, KwangHo Lee, Colin Ophus, Peter Ercius, EunAe Cho

P04.P5 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance

POSTER # 182

472 *How Interface Evolution at the Nanoscale Dictates Protonic Ceramic Cell Behavior;* **Gabriel dos santos**, Elizabeth Griffin, Paul Chery, Yongfa Cheng, Sossina M. Haile, Roberto dos Reis

POSTER # 183

473 *Investigating H_2 Production Kinetics of Nano-Si Powders in Water via Liquid-Phase TEM;* **Chuan-Pu Liu**, Arijit Mitra, Wen-Huei Chu

POSTER # 184

474 *Morphological Analysis and Chemical Composition of a SOFC Stack by Tape Casting and Screen Printing;* **Harby Martinez-Rodríguez**, Armando Reyes-Roja

POSTER # 185

475 *Real-Time environmental TEM Investigation of Perovskite Electrode Degradation in Solid Oxide Cells;* **Zhongtao Ma**, Christodoulos Chatzichristodoulou, Kristian Speranza Mølhave, Søren Simonsen

POSTER # 186

476 *Revealing the Role of Individual Metal-Support Interactions in Hydrogen Production for Heterogeneous Photocatalysts via 4DSTEM Techniques*; **Levi Brown**, Wenjie Zang, Bradley Layne, Zejie Chen, Shane Ardo, Xiaoqing Pan

P08.P1 Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials

POSTER # 187

477 *4D-STEM Investigation of Medium-Range Ordering in Bulk Metallic Glasses: Structural Evolution in Shear Bands and Annealing-Induced Relaxation;* **Minhazul Islam**, Gabriel Calderon Ortiz, Jinwoo Hwang

POSTER # 188

478 *Fluctuation Electron Microscopy with 4D STEM Reveals Structural Heterogeneity in Amorphous Functional Nanostructures;* **Shuoyuan Huang**, Sooyeon Hwang, Murray Gibson, Paul Voyles, Xidong Chen, Judith Yang

POSTER # 189

479 *Atomic-Scale Investigation of Cation Intercalation in 1D Lepidocrocite Titanate Nanofilaments via STEM-EELS;* **Fatemeh Karimi**, Hussein O. Badr, Michel W. Barsoum, Robert Klie

POSTER # 190

480 *Electron Beam-Induced Formation of MWCNT-Ag Nanostructures in a Transmission Electron Microscope;* **Oscar Cigarroa-Mayorga**, Yazmin Hernandez, Y. V. Garcia-Tejeda, M. R. Munguia-Fuentes, Indira Torres-Sandoval

POSTER # 191

481 *Mechanosynthesis of the High Entropy Oxide Al2TiV2Y2ZrO15 and its Physicochemical Characterization;* **C.O. Villatoro-Tolentino**, A. Martínez-García, C.G. Garay-Reyes, T. Pérez-López, E. A. Juarez-Arellano

POSTER # 192

482 *Microstructural Characterization of Electrochemically Pulsed Disordered Rocksalt Cathodes;* **Meghan Shen**, Eunryeol Lee, Tucker Holston, Mary Scott, Tara Mishra

POSTER # 193

483 *Nanoscale Insights into Charge Trap Layer Engineering in Flash Memory Devices;* **Abinash Kumar**, Matthew Cheng, Stephen Schwarz, Edward Perko, Brenda Prenitzer

POSTER # 194

484 *Restructuring of Defective PtSe2 Nanoparticles into Stable Catalyst for Oxygen Reduction Reaction;* **Guangming Cheng**, Nan Yao

POSTER # 195

485 *Visualization and Characterization of Bulk Oxygen Nanobubbles using Fluid Peak Force Quantitative Nano-Mechanical Atomic Force Microscopy;* **Nikita Singhi**, Bobby Duersch, Andy Hong

P08.P2 Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials

POSTER # 196

486 *Addressing Oxide Shell Formation in Harmonic Zinc Alloys for Improved Mechanical Integrity;* **Anna Boukalová**, Jiří Kubásek, David Nečas, Jan Pokorný, Peter Minárik

POSTER # 197

487 *Advancing Statistical ALCHEMI: Efficient Dopant Distribution Analysis at nm-scale from Sparse Spectrum Observations;* **Akimitsu Ishizuka**, Masahiro Ohtsuka, Shunsuke Muto

POSTER # 198

488 *Directed Energy Deposition of NiTi Shape Memory Alloys: Comparison of Ni-Ti Powder Mixture vs. Pre-alloyed Powder Feedstock;* **Pavel Salvetr**, Michal Brázda, Ján Džugan, Kristýna Kubášová, Matej Daniel, Monika Losertová

POSTER # 199

489 *Dual-phase Coexisting Structure of Crystalline Nickel Shell Combined with the Amorphous Copper Prussian Blue Analogue (CuHCF) Core;* **Wilson Hou-Sheng Huang,** Kevin Chi-Wen Wu

POSTER # 200

490 *Effects of Ligands on Synthesized Process of Perovskite Crystals by Reprecipitation Method;* **Wilson Hou-Sheng Huang**, Yu-Yen Chiang, Ruei-Han Gu

POSTER # 201

491 *Optimization of Yttrium Incorporation in 316L Steel and Pure Iron via High-Energy Milling;* **Jan Pokorný**, David Nečas, Anna Boukalová, Jiří Kubásek

POSTER # 202

492 *The Power of Open-Hardware Solutions for Improving Transmission Electron Microscopy Experiments;* **Alexander Reifsnyder**, Jordan Hachtel, Jacob Smith, Adrián Pedrazo-Tardajos, Alexis Williams, Stephen Jesse, Andrew Lupini, David McComb

POSTER # 203

493 *Three-dimensional Analysis of the Lattice Bending Strain by Iterative Phase Retrieval of Electron Rocking Curves;* **Yoshiyuki Tsuchiya**, Koh Saitoh

POSTER # 204

494 *Unraveling the Microstructures of Additively Manufactured Multi-Component Alloys Through Multi-Scale Characterization: Insights from SEM and Advanced STEM Techniques;* **Ping Lu**, Luis Jauregui, Christian Harris, Erin Barrick, Frank Delrio, Todd Monson, Don Susan, Eric Theisen, Andrew Kustas

P09.P1 Unconventional Electron Probes

POSTER # 205

495 *Development of Ultrafast Four-dimensional Precession Electron Diffraction;* **Toshiya Shiratori**, Koga Jumpei, Kyoko Ishizaka, Takahiro Shimojima, Asuka Nakamura

POSTER # 206

496 *Precise Measurements of Spatial Coherence of Electron Beams and Axial Brightness of Electron Emitters;* **Jun Yamasaki**, shuhei Hatanaka

POSTER # 207

497 *Probing Low-Energy Reciprocal-Space Excitations in 2D Materials from Atomic Crystals to Nanophotonic Arrays Using Momentum- and Pseudoangular Momentum-Resolved EELS;* **David Masiello**

POSTER # 208

498 *Progress in Squeezed States of Electron Illumination;* **Surya Kamal**, Richard Hailstone

POSTER # 209

499 *Technological Advancements in the Tunability and Applications of Electrically Driven Ultrafast Electron Microscopy;* **Spencer Reisbick**, Alexandre Pofelski, Chuhang Liu, Yimei Zhu

POSTER # 210

500 *Phase Structured Electron Beams to Probe Chiral Plasmons;* **James Haverstick**, Benjamin McMorran

Scientific Program

P Physical Sciences Poster Sessions – Tuesday cont.

P10.P1 Innovative in-situ Imaging Techniques for Material Characterization, Synthesis, and Processing

POSTER # 211

501 *In Situ Laser Ablation for the Supply of Atomized Material for E-beam Fabrication;* **Ondrej Dyck**, Olugbenga Olunloyo, Kai Xiao, Ben Wolf, Thomas Moore, Andrew Lupini

POSTER # 212

502 *In Situ TEM with Simultaneous Nanocalorimetry of the Crystallization of Phase Change Materials;* **Tamara Koledin**, Izak McGieson, Karen Bustillo, John Pettibone, William Osborne, Feng Yi, David LaVan, Melissa Santala

POSTER # 213

503 *Modulating Metal Support Interactions for Durable and Selective CO₂ Hydrogenation Reaction: An Operando Transmission Electron Microscopy Study;* **Hector Hugo Perez Garza**, Hongkui Zheng, Pritam K. Chakraborty, Ronald Spruit, Yevheniy Pivak, Hongyu Sun, Shibabrata Basak, Rüdiger-A. Eichel

POSTER # 214

504 *Multi-modal In-situ High-pressure Gas Heating Electron Microscopy and Spectroscopy of Heterogenous Catalysts;* **Calvin Parkin**, George Hollyer, Dmitri Zakharov, Eric Stach, Daan Hein Alsem

POSTER # 215

505 *Observation of Switching Anion Filament In Phase-Separated 2D Halide Memristor;* **Hee Joon Jung**, Nam-Suk Lee

POSTER # 216

506 *Structural Evolution of Au-Ag Core-Shell Nanoparticles Under Electron Beam Exposure: Insights into Atomic Migration and Alloy Formation;* **Yazmin Hernandez**, Oscar Cigarroa-Mayorga, Esperanza Baños-López, Claudia Haydee González de la Rosa

POSTER # 217

507 *Time-Resolved Spectral Micro-CT for Investigating Dynamic Processes in Pore Structures;* **Jan Dewanckele**, Marijn Boone, Bert Masschaele, Wesley De Boever, Denis Van Loo

POSTER # 218

508 *Using Water Droplet Reactor Strategy to Directly Observe Disassembly Process of Pt Micelle in Liquid Phase Transmission Electron Microscopy;* **Xiaoben Zhang**, Rui Ding, Nestor Zaluzec, Junhong Chen

Wednesday, July 30

Scientific Program

A Analytical/Instrumentation Sciences Symposia – Wednesday Morning

A02.5 Frontiers of Electron Ptychography

Wednesday 8:30 AM

8:30 AM **509** *3D Imaging of Defects, Buried Interfaces, and Strain with Multislice Electron Ptychography;* **Shake Karapetyan** (Invited), Steven Zeltmann, Prosun Santra, Johannes Biskupek, Ta-Kun Chen, Vincent D.-H. Hou, Glen Wilk, Arkady Krasheninnikov, Ute Kaiser, David Muller

9:00 AM **510** *Structural and Electronic Properties of 3C/4H-SiC Interface using Multislice Electron Ptychography;* **Junghwa Kim**, Colin Gilgenbach, Aaditya Bhat, Katherine Harmon, F. Joseph Heremans, Matthew Highland, Stephan Hruszkewycz, James LeBeau

9:15 AM **511** *Low-Dose Programmable Scanning Patterns for Correlative Ptychography and EELS in Ferroelectric Thin Films;* **Mariana Palos**, Stephanie Ribet, Liam Spillane, Yaqi Li, Umair Saeed, José Manuel Caicedo Roque, David Pesquera, Colin Ophus, Shelly Michele Conroy

9:30 AM **512** *Electron Ptychography Resolves Individual Atomic Layers in Twisted Super-Moiré;* **Chuqiao Shi**, Yanxing Li, Giovanny Espitia, Rwik Dutta, Yao Yang, Yi Jiang, Mit Naik, Chih-Kang Shih, Yimo Han

9:45 AM **513** *Ripples in 2D Materials Revealed by Multislice Electron Ptychography With Adaptive Free Path;* **Jizhe Cui**, Yi Zheng, Kang Sun, Haozhi Sha, Wenfeng Yang, Rong Yu

A03.1 When 4D-STEM Meets More Dimensions: Deepening Materials Insights with Efficient Experimental Design and Smart Computational Microscopy

Wednesday 8:30 AM

8:30 AM **514** *In situ 4D-STEM: The Best of Both Worlds;* **Andrew M Minor** *(Invited)*

9:00 AM **515** *In-situ Study of Electromigration in a Cu Thin Films by Multi-modal STEM;* **Min-Hyoung Jung**, Hu Young Jeong, Young-Min Kim

9:15 AM **516** *In Situ 4D-STEM Mapping of Crystalline Orientation and 3D Topology of Gold Nanorods in Liquid Phase;* **Parivash Moradifar**, Amy Green, Stephanie Ribet, Alan Dai, Colin Ophus, Jennifer Dionne

9:30 AM **517** *4D-STEM Insights into Amorphous Structure and Recrystallization Dynamics;* **Ellis Kennedy**, Yongqiang Wang, Stephanie Ribet, Miguel Pena, Colin Ophus, Blas Uberuaga, Samuel Greer, Benjamin Derby

A04.3 Contributions of Analytical Electron Microscopy to Understanding Microstructural Evolution in Materials: James Bentley Memorial Symposium

Wednesday 8:30 AM

9:00 AM **518** *Atomic-resolution Li analysis in Al-Li Alloy System by Electron Energy-loss Spectrometry in an Aberration-Corrected Scanning Transmission Electron Microscope;* **Masashi Watanabe** (Invited), Alexander Campos Quiros, Giulio Guzzinati, Pirmin Kükelhan, Volker Gerheim, Martin Linck, Heiko Müller, Max Haider, Thomas Hoffman, Kotaro Sakaguchi

9:30 AM **519** *Analytical Electron Microscopy Studies of Simulated Solar Wind Implantation into Lunar Soil Analogs;* **Rhonda Stroud**, Aaron Olson, Elizabeth Frank

9:45 AM **520** *TEM Studies of Nanostructure in Aluminium-Copper Welds Made by Solid State Joining;* **Randi Holmestad**, Jørgen Andre Sørhaug, Per Erik Vullum, Tina Bergh, Håkon Longva Korsvold, Elisabeth Thronsen, Øystein Grong

A06.5 Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens

Wednesday 8:30 AM

8:30 AM **521** *Hybrid SIMS: Secondary Ion Mass Spectrometry Imaging with High Mass Resolving Power;* **Felix Kollmer** (Invited), Julia Zakel, Henrik Arlinghaus, Alexander Pirkl

9:00 AM **522** *ToF-SIMS Imaging and Analysis of Light Isotopes in Irradiated Materials;* **Xiao-Ying Yu**, Jiyoung Son, Tanguy Terlier, David Senor

9:15 AM **523** *Microstructure of Lignocellulosic Biopolymeric Membranes: Implications for Functional Applications;* **Mayela Garcia De Alva**, Juan Antonio Carmona García, Mariano Norzagaray Campos, Brenda Camacho Diaz, Hector Calderon, Heriberto Esteban Benito, Luz A. Garcia Serrano

9:30 AM **524** *The promise of Low Energy Ion Scattering for Probing the Outermost Atomic Layers Of Materials. An Important Method that is Complementary to X-ray Photoelectron Spectroscopy;* **Matthew Linford** (Invited), Stanislav Prusa, Joshua W. Pinder, Alvaro J. Lizarbe

A07.1 Advances in SEM Instrumentation, Application and Techniques

Wednesday 8:30 AM

9:00 AM **525** *Scanning Electron Microscopy and Correlated Techniques to Study Li-ion Batteries;* **Ute Golla-Schindler**, Kathrin Geiger, Judith Blau, Christian Weisenberger, Volker Knoblauch, Gerhard Schneider

9:15 AM **526** *In operando SEM Imaging of Li-ion Battery Structural Changes During Cycling;* **Liu Zhao**, Ondřej Klvač, David Trochta, Libor Novak Bihag Anothumakkool, Tomáš Kazda

9:30 AM **527** *Dose Control and Pulse-Counting Imaging for SEM;* **Noriyuki Inoue**, Tatsuro Nagoshi, Kanako Kobayashi, Yoshiyuki Kubota, Bryan Reed, Ruth Bloom, Lewys Jones, Jonathan Peters, Yasuyuki Okano

9:45 AM **528** *Inpainting for the Recovery of Low Dose EDS Datasets;* **Zoë Broad**, Jack Wells, Alex Robinson, Daniel Nicholls, John Wheeler, Nigel Browning

A09.4 Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI

Wednesday 8:30 AM

8:30 AM **529** *Exploring the Challenges and Opportunities in using Compact Direct Electron Detectors for Electron Backscatter Diffraction (EBSD);* **Ben Britton** (Invited), Tianbi Zhang

9:00 AM **530** *Sparse Sampling and Four-dimensional Inpainting in EBSD Imaging;* **Zoë Broad**, Jack Wells, Alex Robinson, Daniel Nicholls, Amirafshar Moshtaghpour, Robert Masters, Louise Hughes, Professor Kirkland, Nigel Browning

9:15 AM **531** *Extreme signal efficiency and ultrafast detectors powered by pixelated sensor technology designed for EBSD;* **Daniel Goran**, Thomas Schwager, Marcus Noack, Paolo Trigilio, Luca Bombelli

9:30 AM **532** *Comparative Analysis of Diffraction Techniques in SEM for Advanced Materials characterization based on Direct Electron Detection;* **Jakub Holzer**, Tomáš Vystavěl, Stepan Gamanov, Petr Zakopal, Chris Stephens

9:45 AM **533** *A Direct Detector can Measure and Monochromate the Energy of Backscattered Electrons;* **Kalani Moore**, Benjamin Bammes, Barnaby Levin, Nicolo Maria Della Ventura, Marc De Graef, Daniel Gianola, McLean Echlin

Scientific Program

B Biological Sciences Symposia – Wednesday Morning

B01.5 3D Structures: from Macromolecular Assemblies to Whole Cells *(3DEM FIG)*

Wednesday 8:30 AM

8:30 AM **534** *Structural Insights into Antibody-based Inhibition of the Angiotensin Receptor;* **Skiba Meredith** (Invited), Sarah Sterling, Shaun Rawson, Morgan Gilman, Andrew Kruse

9:00 AM **535** *Mechanism of VCP Inhibition by a Novel Covalent Inhibitor;* **Daniela Tamayo-Jaramillo**, Subramanya Hedge, Xuan Jia, Hari Vankayalapati, Alex W Stark, David Bearss, Kevin Jones, Peter Shen

9:15 AM **536** *Structure of the Ribosome-associated Quality Control Complex;* **Peter Shen**, Wenyan Li

9:30 AM **537** *Towards a Mechanistic Understanding of Ap4A production by LysRS during HIV Infection;* **Annalise Holland** (Invited), Charles Bou-Nader

B02.1 Biological Soft X-ray Tomography

Wednesday 8:30 AM

8:30 AM **538** *Soft X-ray Tomography: From Concept to Awards;* **Carolyn Larabell**, Mark Le Gros

8:45 AM **539** *Advancing Soft X-ray Tomography: Enhancing Resolution, Speed, and Applications in Biomedical Research;* **Venera Weinhardt** *(Invited)*

9:15 AM **540** *Soft X-ray Microscopy for the Investigation of the Extracellular Matrix;* **Aurélie Dehlinger**, Valentina Alberini, Christian Seim, Holger Stiel, Céline Dyhring, Antje Ludwig, Stephan Werner, Birgit Kanngießer

9:30 AM **541** *Deciphering Cellular Pathology: Soft X-ray Tomography as a Tool for Disease Research;* **Jian-Hua Chen**, Axel Ekman, Venera Weinhardt, Valentina Loconte, Mark LeGros, Carolyn Larabell

B04.1 Emerging Advances in Light Microscopy of Fixed and Live Samples Below the Diffraction Limit

Wednesday 8:30 AM

8:30 AM **542** *Fast Tracking with SPADs from Binary 1-Bit Per Pixel Output: Single-Photon Single-Particle Tracking;* **Steve Presse** (Invited), Weiqing Xu, Nathan Ronceray, Marianna Mitsioni, Aleksandra Radenovic

9:00 AM **543** *Modular Optical Ptychography through Differentiable Programming;* **Debangshu Mukherjee**, Marea Blake, Benjamin Doughty

9:15 AM **544** *Expansion Microscopy Using Tensile Force;* **Lydia Kisley (Invited)**

B07.2 Cryo-electron Tomography: Progress and Potential

Wednesday 8:30 AM

8:30 AM **545** *Resolving the Structural Heterogeneity of Macromolecules In Situ: tomoDRGN Updates and Applications;* **Barrett Powell** (Invited), Joseph Davis

9:00 AM **546** *Advancing Particle Identification in Cryo-Electron Tomograms with Deep Learning;* **Jonathan Schwartz**, Saugat Kandel, Zhuowen Zhao, Kyle Harrington, Hannah Siems, Clinton Potter, Daniel Serwas, Bridget Carragher, Shawn Zheng, Dari Kimanius

9:15 AM **547** *Training Generalized Segmentation Networks Using Real and Synthetic Data.;* ***Matthew Swulius***, Linh Nguyen, Carson Purnell

9:30 AM **548** *Lowering Charging on Lamellae without Pt, Because Every Electron Counts;* **Alex de Marco** (Invited), Michael Martynowycz

C Cross-Cut/Interdisciplinary Sciences Symposia – Wednesday Morning

C05.1 The Relevance and Advancement of Microscopy across the Americas (CIASEM)

Wednesday 8:30 AM

8:30 AM **531** *Brief Review of CIASEM;* **Jose Reyes Gasga** (Invited)

9:00 AM **550** *Advances and perspectives of Mexican Microscopy, Part I: Materials Science;* **Arturo Ponce**, Rodrigo Esparza Muñoz, Daniel Bahena, Vicente Garibay Febles, David Rios-Jara

9:15 AM **551** *Advances and Perspectives of Mexican Microscopy, Part II: Biological Sciences;* **Hilda-Araceli Zavaleta-Mancera**, Alfredo Rafael Vilchis-Nestor, Mónica Ramírez-Vázquez, Carlos Esteban Villegas-Mercado, Luis Jiménez-García

9:30 AM **552** *National System of Microscopy: Advances in the Organization of Microscopy Equipment Accessibility in Argentina;* **Francisco Capani** *(Invited)*

C06.2 Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy

Wednesday 8:30 AM

8:30 AM **553** *Towards Machine-Learning Enabled Automated Analysis of Heterogeneous Nanomaterials;* **Mary Scott** (Invited)

9:00 AM **554** *Small Data Is All You Need – Machine Learning-based Feature Identification in Scanning Transmission Electron Microscopy (STEM) Images of MoS2;* **Zijie Wu**, Matthew Boebinger, Kevin Roccapriore, Rama Vasudevan

9:15 AM **555** *Quantitative Electron Microscopy of Zeolites Using Aberration Corrected (S)TEM and Machine Learning;* **Tahmid Choudhury**, Huang Huang, Aakash Varambhia, Alessandro Turrina, Mervyn Shannon, Dogan Ozkaya, Angus Kirkland

9:30 AM **556** *Gaussian Differential Assessment of Sequential STEM Radiation Damage in Beam-Sensitive Materials;* **Hao Wang**, Hongkui Zheng Xiwen Chen, Abolfazl Razi, Kai He

9:45 AM **557** *STEM Orchestrator: Managing Multi-Hardware-Component STEM Automation Seamlessly;* **Utkarsh Pratiush**, Austin Houston, Paolo Longo, Remco Geurts, Sergei Kalinin, Gerd Duscher

C08.1 Vendor Symposium

Wednesday 8:30 AM

8:30 AM **558** *4D-STEM and Ptychography from Room Temperature to 8.8 Kelvin;* **Benjamin Plotkin-Swing**, Cameron Johnson, Michael Hotz, Niklas Dellby, Martin Humphry, Anton Gladyshev, Christoph Koch, Toma Susi, Ondrej Krivanek, Tracy Lovejoy

8:45 AM **559** *Advances in Light Injection and Related Techniques for SEM and STEM;* **Nicholas Morgan**, Christian Monachon, Nicolas Tappy, Maïté Blank

9:00 AM **560** *Methods for Dynamic Re-Focussing of an Electron Energy-Loss Spectrum;* **Heiko Müller**, Pirmin Kükelhan, Julia Raju, Giulio Guzzinati, Martin Linck, Stephan Uhlemann

9:15 AM **561** *New STEM Detection in TEM: Pneumatic Retractable Arm and Multi-Channel Amplification System;* **Mozhdeh Abbasi**, Maximilian Schmid, Adam Meisel, Yassine Imari, Alessia Mafodda, Stefan Aschauer

9:30 AM **562** *Statistical Coincidence Suppression for Energy-Dispersive X-Ray Spectroscopy using Pulse Width Modulation;* **Bryan Reed**, Daniel Masiel, Kazuki Yagi, Yuhiro Segawa, Akiho Nakamura, Yuji Konyuba, Kouji Miyatake, Ryuichi Isobe

9:45 AM **563** *Development of a Retractable CMOS Camera for Transmission Electron Microscope;* **Wataru Yajima**, Shoko Shibagaki, Yutaka Kazama, Keito Aibara, Katsunori Ichikawa, Hayato Miura, Wakaba Yamamoto, Haruka Aoki, Akira Yasuhara, Yuji Konyuba

Scientific Program

P Physical Sciences Symposia – Wednesday Morning

P03.5 Characterization of Collective Excitations by Electron Microscopy with High Spatial, Energy, Momentum, and Temporal Resolutions

Wednesday 8:30 AM

8:30 AM **564** *Unveiling Plasmonic and Photonic Modes in CuS Nanocrystals via Correlative EELS and Cathodoluminescence;* **Kenan Elibol**, Fatemeh Davoodi, Urvi Parekh, Masoud Taleb, Stefan Scheel, Marko Burghard, Peter A. van Aken, Christian Klinke, Nahid Talebi, Rostyslav Lesyuk

8:45 AM **565** *Using Electron Energy-Gain Spectroscopy to Understand the Thermal Excitation of Plasmons in Complex Lithographically-Patterned Nanostructures;* **Gordon Duddy** (Invited), Jon Camden, Jordan Hachtel, Bernadeta Srijanto

9:15 AM **566** *Insights into the Shape and Intensity of Plasmonic Fields in and around Individual Au/Ag@Au Nanorattles and their Conglomerations;* **Eric Formo**, Jordan Hachtel, Casey Rowe, Evangeline Formo, Pedro Camargo

9:30 AM **567** *Spatially-Resolved Plasmon EELS for Determining Thermal Properties and Phase Transitions;* **Robert Klie**, Bibash Sapkota

9:45 AM **568** *Photon-Induced Near Fields of Oxide-Modified Aluminum Nanoparticles;* **Dayne Swearer**, Matthew Hershey, Haihua Liu

P04.5 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance

Wednesday 8:30 AM

8:30 AM **569** *In situ and Operando X-ray Microscopy for Aqueous Batteries;* **Johanna Weker** (Invited), Anamika Poduval, Chi Cao, David Agyeman-Budu

9:00 AM **570** *Real-Time Imaging of Li-Ion Diffusion and Phase Boundary Movement in Solid-State Batteries Using Operando STEM-EELS;* **Yuki Nomura**, Kazuo Yamamoto, Naoaki Kuwata, Tsukasa Hirayama

9:15 AM **571** *Correlative AFM-in-SEM Characterization Of Next-Gen Batteries;* **Jan Kramář**, Veronika Hegrova, Tomáš Kazda, Torsten Scherer, Ruizhuo Zhang, Zděnek Nováček, Jan Neuman

9:30 AM **572** *High-Resolution Characterization of Ceramic Nanorods and Their Surfaces to Optimize Ion Transport in Composite Polymer/Ceramic Electrolytes;* **Albina Borisevich**, Tao Wang, Ji-Young Ock, Lauren Shepard, Susan Sinnott, Sheng Dai, Xi Chelsea Chen, Valentino Cooper

9:45 AM **573** *STEM Investigation of Structural and Chemical Stability of Na-Ion Cathode Materials;* **Sadikul Alam**, Jehee Park, Xinwei Jiao, Jung Hyun Kim, Eungje Lee, Jinwoo Hwang

P05.5 Advances in Imaging and Spectroscopy Beyond Ambient Conditions

Wednesday 8:30 AM

8:30 AM **574** *Detecting Magnons with High Resolution Electron Energy Loss Spectroscopy;* **Demie Kepaptsoglou** *(Invited)*

9:00 AM **575** *Resolving Vibrational Modes at the FeSe/SrTiO3 Interface with Atomic-Scale Momentum-Selective Dark-Field EELS;* **Hongbin Yang**, Yinong Zhou, Guangyao Miao, Jan Rusz, Paul Zeiger, Jiandong Guo, Ruqian Wu, Xiaoqing Pan

9:15 AM **576** *"Seeing" (Sub) Nanoscale Moiré Excitons with Mev Scale Energy Resolution;* **Sriram Sankar**, Medha Dandu, Patrick Hays, Daria Blach, Sandhya Susarla, Archana Raja, Sefaattin Tongay, Peter Ercius, Jordan Hachtel, Takashi Taniguchi

9:30 AM **577** *Advancing High-Resolution Electron Microscopy and Spectroscopy through Integrating the CEOS Energy-Filtering and Imaging Device into the Monochromated JEOL Atomic-Resolution Multi-Dimensional TEM at the Max Planck Institute for Solid State Research;* **Peter A. van Aken** (Invited), Tobias Heil, Heiko Müller, Stephan Uhlemann, Kenan Elibol, Pirmin Kükelhan, Martin Linck, Hongguang Wang, Akiho Nakamura, Masaki Mukai

P06.1 Multimodal Data Acquisition and Analysis of Materials Under Real-World Conditions Using Advanced Electron Microscopy

Wednesday 8:30 AM

8:30 AM **578** *Advancements in Single-Nanoparticle Photocatalysis: Dispersing and Probing Doped SrTiO3 via Liquid-Phase TEM;* **Pushp Raj Prasad**, Justin Mulvey, Joe Patterson

8:45 AM **579** *Origin of Nanoscale Degradation in Thermal Energy Storage Materials Using Environmental TEM;* **John Mangum** (Invited), Madeline Van Winkle, Stephen House, Yuxiang Peng, Yu-chen Karen Chen-Wiegart, Katherine Jungjohann

9:15 AM **580** *In-situ S/TEM Observation of Electromechanical Strain in Antipolar and in Ion-Conductive Semiconductors;* **Jinsong Wu** *(Invited)*

9:45 AM **581** *Tracking Morphology Changes During Metal Oxidation Over a Broad Pressure Range Using ETEM With Simultaneous Secondary Electron and STEM Imaging;* **Hanglong Wu**, Paul Miller, Frances Ross

P10.5 Innovative in-situ Imaging Techniques for Material Characterization, Synthesis, and Processing

Wednesday 8:30 AM

8:30 AM **582** *Graphene Sandwiches with Controlled Surface Functionalization for Room-Temperature TEM Imaging of Uniformly Encapsulated Solvated Proteins;* **Minyoung Lee**, Jungwon Park

8:45 AM **583** *High Throughput Specimen for in-situ Transmission Electron Microscopy;* **Paul Miller**, Tyler Hiller, Mark Polking, Frances Ross

9:00 AM **584** *Engineering Advanced Graphene Grids for Imaging of Multi-Component Nanoparticles;* **NaHyeon Hong**, Minyoung Lee, Sungsu Kang, Jungwon Park

9:15 AM **585** *Temperature-Dependent Operando Liquid Cell S/TEM: Modulating Electrochemical Kinetics and Beam-Induced Effects;* **Katherine Marusak Stephens**, Franklin Walden, Nelson Luis Marthe Jr., Patrick Smith Wellborn, Zayna King, Jennifer McConnell, Yao Yang, John Damiano

9:30 AM **586** *Real-Time In-Situ Insights: Dynamic Mapping with 4D STEM;* **Benjamin Miller**, Bernhard Schaffer, Cory Czarnik

9:45 AM **587** *Investigation of Interfacial Radiolysis of Water At Liquid Phase TEM Chip Membranes and Strategies to Minimize Radiolysis by Utilizing Graphene;* **Hayeon Baek**, Minyoung Lee, Jungwon Park

P08.3 Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials

Wednesday 8:30 AM

8:30 AM **589** *Atomic Structure Determination of Amorphous Solids;* **Jian-Min Zuo** (Invited), Robert Busch, Saran Pidaparthy, Jeong Hyewon, Hanyu Hou, Kaijun Yin, Zihao Xu, Peilin Lu, Paul V Braun

9:00 AM **590** *Time-Resolved 4D STEM Reveals Facilitated Dynamics in a Multicomponent Metallic Glass Forming Liquid;* **Shuoyuan Huang**, Shiyi Qin, Ludovic Berthier, Camille Scalliet, Victor Zavala, Paul Voyles

9:15 AM **591** *4D-STEM Angular Correlation Analysis of Amorphous SiO2_Si Interface for Spin Qubit Devices;* **Binzhi Liu**, Gabriel Calderon Ortiz, Deanna Campbell, Preston Allen Valiant, Quinn Campbell, Shashank Misra, Jinwoo Hwang

9:30 AM **592** *Revealing Deformation Mechanism in Disordered Materials Using 4D STEM;* **Christoph Gammer** (Invited), Huaping Sheng, Simon Fellner, Lukas Schretter, Jürgen Eckert

Scientific Program

T Technologists' Forum – Wednesday Morning

X30 Team of One

Wednesday 10:30 AM

8:30 AM **588** *Me, Myself and I: The Challenges of Managing a University Core Facility Solo;* **Vania Almeida**, Melodie Fickenscher, Kéziah Milette

A Analytical/Instrumentation Sciences Symposia – Wednesday Late Morning

A03.2 When 4D-STEM Meets More Dimensions: Deepening Materials Insights with Efficient Experimental Design and Smart Computational Microscopy

Wednesday 10:30 AM

10:30 AM **593** *4D SEM" aka EBSD – Lessons Learned & Opportunities Presented;* **Ben Britton** (Invited), Ruth Birch

11:00 AM **594** *Structure and Texture of Sb2S3 and Sb2Se3 Thin Films Investigated with Precession-Assisted 4D-STEM and EBSD;* **Mingjian Wu**, Martin Dierner, Maissa Barr, Pei-Chun Liao, Johannes Will, Peng-Han Lu, Rafal Dunin-Borkowski, Julien Bachmann, Erdmann Spiecker

11:15 AM **595** *Characterization of Dilute Mn Implantation in Bi₂Se₃ Films via 4D-STEM and EELS;* **Tigran Simonian**, Geri Topore, Mariana Palos Sanchez, Joshua Freeman, Craig Knox, Maddison Coke, Richard Curry, Satoshi Sasaki, Liam Spillane, Michele Shelly Conroy

11:30 AM **596** *Phase Transformation Mechanisms and Plastic Deformation in Shocked High-Pressure Minerals Using Near-Axis TKD and 4D-STEM;* **Tirzah Abbott** (Invited), Stephanie Ribet, Karen Bustillo, Michael Hjelmstad, Colin Ophus, Roberto dos Reis, Vinayak Dravid, Steven Jacobsen

A04.4 Contributions of AEM to Understanding Microstructural Evolution in Materials

Wednesday 10:30 AM

10:30 AM **597** *Diffusional Phase Transformation Microstructures: Nano-scale Analytical Characterization;* **Guillermo Solorzano (Invited)**

11:00 AM **598** *Phase Transformations in 2D materials: Some Insights using Electron Microscopy;* **N Ravishankar**, Naveen Goyal

11:15 AM **599** *Metal Hydride Phase Transformation Mechanism Using In-situ S/TEM;* **Joerg Jinschek**, Gopi Krishnan, Svetlana Korneychuk, Lars Bannenberg, Herman Schreuders, Bernard Dam

11:30 AM **600** *Use of FIBxTEM to Investigate the Carbon Nanotube to Substrate Interaction of Direct and Indirect CNT Growth by Catalytic Chemical Vapor Deposition;* **Joshua Hancock**, Richard Vanfleet, Felipe Rivera, Brian Jensen, Alexander Michas

11:45 AM **600.5** *Synthesis and Early Stage Sintering of Ultrafine HEA Nanoparticles;* **Daniela Fonseca**, Martin Harmer, Ricardo Castro

A06.6 Surface and Subsurface Microscopy and Microanalysis of Physical and Biological Specimens

Wednesday 10:30 AM

10:30 AM **601** *Femtosecond Laser Ablation (fs-LA) – A New Approach to XPS Depth Profiling;* **Tim Nunney** (Invited), Simon Bacon, Charlie Chandler, Mark Baker, Stephen Sweeney, Dhilan Devadasan, Adam Bushell, Helen Oppong-Mensah

11:00 AM **602** *NAP HAXPES from Tender X-ray Energies;* **Paul Dietrich**, Andreas Thissen

11:15 AM **603** *Advanced Sample Handling for Surface Chemical Analysis in Materials Development;* **Chris Moffitt** (Invited), Jonathan Counsell, Liam Soomary

A07.2 Advances in SEM Instrumentation, Application and Techniques

Wednesday 10:30 AM

10:30 AM **604** *4-Dimensional Reflection High Energy Electron Diffraction on 2-Dimensional Materials in a Scanning Electron Microscope;* **Jason Holm**

10:45 AM **605** *Automated In-Situ Mechanical Testing to Enhance Data-Driven Analysis of Additively Manufactured 316L Stainless Steel;* **Mark Atwater**

11:00 AM **606** *Comparison of Microscopy and Image Processing Techniques to Quantify Recrystallization Fraction in HSLA Steel Grades;* **Koushik Karthikeyan Balasubramanian**, Malavikha Rajivmoorthy, Eliseo Hernandez, Margaret Matuska, Rebekah Smith

11:15 AM **607** *Impact of SEM Parameters on Electron Beam-Induced Heating: Experimental and Simulation Insights;* **Joerg Jinschek**, Christina Koenig, Alice Fanta

11:30 AM **608** *The Role of Dwell Time on Advancing 3D Nano-printing of Complex Iron Nanostructure Geometries using Focused Electron Beam Induced Deposition;* **Sameh Okasha**, Trevor Almeida

11:45 AM **609** *Imaging Strategies of Non-Conductive Biological Silk Samples;* **Gabriela Jijon**, Lillian Davis, Paul Frandsen, Michael Standing

Scientific Program

A Analytical/Instrumentation Sciences Symposia – Weds. Late Morning cont.

A09.5 Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI

Wednesday 10:30 AM

10:30 AM **610** *Scanning Precession Electron Diffraction - Beyond Orientation and Phase Mapping;* **Tina Bergh** *(Invited)*

11:00 AM **611** *Quantitative Analysis of Battery Cathode Nanoparticles using 4D-STEM and EELS;* **Chu-Yun Hwang**, Oliver Lin, Jian-Min Zuo, Qian Chen

11:15 AM **612** *Structure Solution of a Quasicrystal Approximant Embedded Within an Aluminum Matrix by SPED and 3DED;* **Randi Holmestad**, Emil Frang Christiansen, Antonius T. J. van Helvoort, Oskar Ryggetangen, Sigurd Wenner, Tina Bergh

11:30 AM **613** *Non-Destructive, Depth-Resolved Imaging of Polar Domains in Multiferroic Heterostructures with Multi-Modal Electron Microscopy;* **Yu-Tsun Shao** (Invited), Ting-Ran Liu, Koushik Jagadish, Zijian Hong, Maya Ramesh, Peter Meisenheimer, Hongrui Zhang, Amir Avishai, Darrell Schlom, Ramamoorthy Ramesh

A10.1 Advances in Cryogenic Transmission Electron Microscopy and Spectroscopy for Energy and Quantum Materials and Technologies

Wednesday 10:30 AM

10:30 AM **614** *Electron Spectroscopy of Collective Excitations in Superconductors;* **Maureen Joel Lagos** (Invited)

11:00 AM **615** *Quantum Confined Luminescence in Two Dimensions;* **Luiz Tizei**

11:15 AM **616** *Emergent Polar Order at Low Temperatures Revealed by Atomic-Resolution Cryogenic Electron Microscopy;* **Yang Zhang**, Suk Hyun Sung, Colin B Clement, Sang-Wook Cheong, Meng Wang, Ismail El Baggari

11:30 AM **617** *Rare-earth Nickelate Single Crystals at the Atomic-Scale: From Infinite-layer LaNiO2 to High-pressure Superconductor La3Ni2O7;* **Y. Eren Suyolcu** (Invited), Yu-Mi Wu, Pablo Sosa-Lizama, Pascal Puphal, Masahiko Isobe, Matthias Hepting, Bernhard Keimer, Bernhard Keimer

B Biological Sciences Symposia – Wednesday Late Morning

B02.2 Biological Soft X-ray Tomography

Wednesday 10:30 AM

10:30 AM **618** *Patterns and Regulation of Organelle Interactions and Cell Anatomy Revealed by SXT: A High-Throughput Study in S. Cerevisiae and Cross-Modality Synthesis of the Whole-Cell Imaging Literature;* **Mary Mirvis**, Jian-hua Chen, Axel Ekman, Bieke Vanslembrouk, Mark Le Gros, Carolyn Larabell, Christopher T. Lee, Honor Akenuwa, Steven Goodman, Wallace F. Marshall

10:45 AM **619** *Quantitative Mapping of Insulin Hormone Maturation via Soft X-Ray Tomography;* **Kate White** (Invited), Aneesh Deshmukh, Kevin Chang, Janielle Cuala, Wen Lin, Valentina Loconte

11:15 AM **620** *Towards Integrating Soft X-ray tomography with Infrared Imaging for Building Whole Cell Models;* **Ashwin Bale**, Seth Kenkel, Minsung Kwon, Sun Woong Hur, Kenneth Fahy, Sergey Kapishnikov, Tony McEnroe, Brendan Harley, Rohit Bhargava

11:30 AM **621** *Soft X-ray Tomography for Quantitative Ultrastructural Mapping;* **Valentina Loconte**

11:45 AM **622** *Soft X-Ray Reveals Chromatin Remodeling in Human CD4 T cells;* **Fariha Mahzabin Annesha**, Ayse Erozan, Swetha Ananth, Oliver T. Fackler, Venera Weinhardt

B04.2 Emerging Advances in Light Microscopy of Fixed and Live Samples Below the Diffraction Limit

Wednesday 10:30 AM

10:30 AM **623** *High-Throughput Imaging for Everyone: New Designs for Parallel Multiwell Imaging;* **Gil Bub** (Invited), Miguel Sepulveda, Pouria Tirgar, Allen Ehrlicher, Caroline Muellenbroich, Alex Corbett Laura Diaz-Maue, Stefan Luther

11:00 AM **624** *Scalable Cellular Image Analysis: Adapting Cellpose for High-Throughput Server-Based Processing;* **Jonathan Boyd**, Bartholomew Starich, Ali Alishahedani, Jan Martinek, Daniela Dinulescu

11:15 AM **625** *Improving the Spatiotemporal Resolution in Light-Sheet Fluorescence Microscopy.;* **Bingying Chen** (Invited), Reto Fiolka

B08.1 Advances in Cryo-EM technology

Wednesday 10:30 AM

10:30 AM **626** *Simulation-Based Inference Of Molecular Conformations using cryo-EM images;* **Pilar Cossio** *(Invited)*

11:00 AM **627** *Rotational Quantization: A robust, improved Analysis for Particle Identification in Single Molecule Cryo-EM images;* **Raison Dsouza**, Timothy Grant

11:15 AM **628** *STEM for Biological Low Dose Structure Imaging;* **Ondrej Krivanek**, Benjamin Plotkin-Swing, Joel Martis, Niklas Dellby, Martin Humphry, Tracy Lovejoy

11:30 AM **629** *Sealed Samples for High-Resolution, Microsecond Cryo-EM;* **Wyatt Curtis**, Jakub Hruby, Constantin Kruger, Sarah Barrass, Marcel Drabbels, Ulrich Lorenz

11:45 AM **630** *Crafting a Lower CC Lens for Reducing Cost and Specimen Damage in Cryo-EM;* **Theo Andrews**, Patrick McBean, Maixent Cassagne, Lewys Jones

Scientific Program

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

C05.2 The Relevance and Advancement of Microscopy across the Americas (CIASEM)

Wednesday 10:30 AM

10:30 AM **631** *Nanomaterials and Microscopy: Pushing Scientific Frontiers in Brazil;* **Giovanna Machado** (Invited), Felipe Sousa, Suzana peripolli, Paula Jardim, Lia Medeiros, Hernandes Carvalho

11:00 AM **632** *Electron Microscopy of Co-Catalyst Co, Cu and Pd Nanoparticles on Black SnO2-TiO2 Heterojunction to Improve the Photocatalytic Hydrogen Production;* **Hector Calderon**, Angeles Mantilla

11:15 AM **633** *Overcoming barriers to Transmission Electron Microscopy with Low Voltage Electron Microscopy (LVEM): A Case Study Across the Caribbean, Central, and South America;* **Emad Shahnam**, Daniela Vieira, Raynald Gauvin, Jared Lapkovsky

11:30 AM **634** *Scanning Electron Microscopy and the Study of Technological Styles in Archaeology;* **Adrian Velazquez-Castro** *(Invited)*

C06.3 Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy

Wednesday 10:30 AM

10:30 AM **635** *Segmentation and Classification Algorithm for CNT Quantification;* **Pawan Vedanti** (Invited), Robert Colby, Eric Stach

11:00 AM **636** *Emittance Minimization for Aberration Correction via Machine Learning and Bayesian Optimization;* **Desheng Ma**, Steven Zeltmann, Chenyu Zhang, Yu-Tsun Shao, Zhaslan Baraissov, Cameron Duncan, Auralee Edelen, Jared Maxson, David Muller

11:15 AM **637** *Recipes for Successful Transfer Learning for Neural Network Analysis of High-Resolution Transmission Electron Microscopy Data;* **Luis Rangel DaCosta**, Henry Oill, Mary Scott

11:30 AM **638** *In situ Scanning Transmission Electron Microscopy (Stem) Imaging of Atomic Behavior at Solid Liquid Interfaces Enabled by Deep Learning Data Analysis;* **Sarah Haigh** (Invited), William Thornley, Sam Sullivan-Allsop, Nick Clark, Matthew Lindley, Roman Gorbachev

C08.2 Vendor Symposia

Wednesday 10:30 AM

10:30 AM **639** *Introduction of Python®† scripting for TEM Control by using PyJEM Library;* **Eiji Okunishi**, Daichi Maekawa, Masashi Nishikawa, Osamu Hirahara, Isamu ishikawa

10:45 AM **640** *Machine Learning Tool for Automated Analysis of Electron Microscopy Images;* **Carl Aune**, Saber Naserifar, Evan Gurnick, Glenn Judd

11:00 AM **641** *Applications of New Hyper Spectral Map Method by Auger Electron Spectroscopy;* **Kenichi Tsutsumi**, Konomi Ikita, Fuyuki Nabeshima, Tatsuya Uchida, Kazushiro Yokouchi, Akihiro Tanaka, Toshiyuki Ohama, Noboru Taguchi

11:15 AM **642** *Unlocking Strain Analysis using MapSweeper;* **Mark Coleman**, Kim Larsen, Louise Hughes

11:30 AM **643** *Multivariate Volume Data: Advances in Visualization and Analysis Techniques;* **Patrick Avery**, Sankhesh Jhaveri, Christos Tsolakis, Sebastien Jourdain, Aishik Deb, Ayush Kumar, Xinyu Zhang, Hanfei Yan, Xiaojing Huang, Klaus Mueller

11:45 AM **644** *MIPAR Spotlight: Integrating Zero-Shot, Deep Learning, and Conventional Processing for Advanced Micrograph Analysis;* **John Sosa**, Pavel Sul, Lawrence Small

P Physical Sciences Symposia – Wednesday Late Morning

P02.1 Electron Microscopy for Ferroic Materials: From Atomic-scale Imaging to in-situ Control

Wednesday 10:30 AM

10:30 AM **645** *Probing Charge and Spin Order in Ferroic Materials with Time-Resolved Electron Microscopy;* **Yimei Zhu** (Invited), Junsik Mun, Myung-Geun Han, Zefang Li, Xuewen Fu

11:00 AM **646** *Using Electrons to 3D-Print Ferromagnetic Nanostructures and Characterise their 3D Magnetic States Using Tomographic Model Based Iterative Reconstruction;* **Aurys Šilinga**, Andras Kovacs, Stephen McVitie, Rafal Dunin-Borkowski, Kayla Fallon, Trevor Almeida

11:15 AM **647** *Oscillating Grain Boundaries and Their Effects on Grain Growth: Observations in Skyrmion Bicrystals;* **Xiaotian Fang**, Valeria Viteri-Pflucker, Alexander King, Jian Wang, Jiaqiang Yan, Liqin Ke, Lin Zhou

11:30 AM **648** *Control of Topological Objects via In-Situ Advanced Microscopy Techniques;* **Xiuzhen Yu** *(Invited)*

P04.6 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance

Wednesday 10:30 AM

10:30 AM **649** *Multimodal Characterization of Factors Related to Efficiency and Reliability of Photovoltaic Devices;* **Harvey Guthrey** *(Invited)*

11:00 AM **650** *Understanding Oxide Formation on CdTe via EELS Edge Fine Structure;* **Noah Kamm**, Anthony Nicholson, Arashdeep Thind, Zheng Ju, Xin Qi, D. Bruce Buchholz, Amit Munshi, Yong-Hang Zhang, Robert Klie

11:15 AM **651** *Cross-Sectional Backscattered Electron Imaging of Mechanically Polished Organic-Inorganic Perovskite Photovoltaics;* **Abigail Carbone**, Reinhold Dauskardt, Robert Sinclair

11:30 AM **652** *Low-dose STEM Characterizations of Halide Perovskite Photovoltaics' Intragrain Defects, Interfaces and Evolutionary Behaviors;* **Songhua Cai**, Zhipeng Shao, Zhipeng Li, Shuping Pang, Yuanyuan Zhou

11:45 AM **653** *Correlating Optical and Structural Properties of Core/Shell GaN Nanowires for Optoelectronic Applications Using Advanced Electron Microscopy*; **Saghar Rezaie**, Gunnar Kusch, Rafal Ciechonski, Lars Samuelson, Jakob Birkedal Wagner, Sadegh Yazdi

P05.6 Advances in Imaging and Spectroscopy Beyond Ambient Conditions

Wednesday 10:30 AM

10:30 AM **654** *Extreme Objective Lenses for Outlandish Imaging;* **Lewys Jones**, Germano Motta Alves, Theo Andrews, Kim Gruver, Derrick Brittain, Nuno da Costa, Clay Reid, Patrick McBean, Fletcher Thompson, Jonathan Peters

10:45 AM **655** *Advancing Cryogenic Electron Microscopy for Correlated Electronic Materials: Methods, Liquid Helium Cooling And Applications;* **Ismail El Baggari (Invited)**

11:15 AM **656** *Evaluating Temporal Resolution Limitations by Exploiting Latest Developments in Detector Hardware and AI-based Denoising Algorithm in Application to Environmental TEM;* **Dmitri Zakharov**, Azriel Goldshmid, Brian Lee, Shigeki Misawa, John Joseph, Alexandr Zaytsev, Armin Karcher, Xiaohui Qu, Peter Denes, Judith Yang

11:30 AM **657** *Aluminum-Silicon Alloy Microstructure Analysis with High Resolution Phase Contrast Imaging and lab-DCT Techniques;* **Kaushik Yanamandra**, Hrishikesh Bale

P06.2 Multimodal Data Acquisition and Analysis of Materials Under Real-World Conditions Using Advanced Electron Microscopy

Wednesday 10:30 AM

10:30 AM **658** *Revealing Structural and Optical Changes of Ammonia-Catalysts Under Realistic Reactor Conditions via Multimodal and in situ Electron Microscopy;* **Amy Green**, Parivash Moradifar, Alan Dai, Briley Bourgeois, Lin Yuan, Robert Sinclair, Jennifer Dionne

10:45 AM **659** *Seeing More, Better and Different: Ultrathin (UT) Membrane Chips for In-Situ/Operando Electron Microscopy;* **Vinayak Dravid (Invited)**

11:15 AM **660** *A Novel Approach for Identical Location Transmission Electron Microscopy Characterization in Harsh Electrochemical Environments;* **Haimei Zheng** (Invited), Yi Chen, Kai-Yuan Hsiao

11:45 AM **661** *Liquid-Phase Transmission Electron Microscopy of Ruthenium Oxide Electrocatalysts;* **Ivan Moreno-Hernandez**, S. Avery Vigil, Ziqing Lin

Scientific Program

P Physical Sciences Symposia – Wednesday Late Morning cont.

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

Wednesday 10:30 AM

10:30 AM **662** *Exploring Experimental Evidence for Diffusional Creep Mechanisms in Alloys;* **Boopathy Kombaiah** (Invited), Sriswaroop Dasari, Chaitanya Bhave, Shehab Shousha, Aaron Penders, Jana Howard, Advika Chesetti, Ninad Mohale, Benjamin Beeler, Sourabh Kadambi

11:00 AM **663** *Utilizing 4D-STEM to Elucidate the Impact of DIGM Zones on Corrosion Resistance in Ni-Cr Alloys Exposed to Extreme Environments;* **Eitan Hershkovitz**, Karen Kruska, Daniel Schreiber, Chongmin Wang

11:15 AM **664** *Nanoprecipitation in Ni-Cr alloys Formed Under Heavy-Ion Irradiation and its Impact on Molten Salt Corrosion;* **Sean Mills**, Ho Lun Chan, Matthew Chancey, Benjamin Derby, Elena Romanovskaia, Mark Asta, Yongqiang Wang, Peter Hosemann, John Scully, Andrew M Minor

11:30 AM **665** *Using in situ Heating in the Transmission Electron Microscope to Probe the Retention of Implanted Solar Wind Gases in Lunar Samples;* **Alexander Kling**, Kaitlyn Sycko, Beau Prince, Michelle Thompson, Zia Rahman, Yao-Jen Chang, Thomas Zega

11:45 AM **666** *Kink Band Structure in BCC HEAs and In-situ Observation of Its Evolution During Plastic Deformation;* **Xiaoyu Chen**, David Cook, Madelyn Payne, Wenqing Wang, Mark Asta, Robert Ritchie, Andrew M Minor

P08.4 Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials

Wednesday 10:30 AM

10:30 AM **667** *What is the role of structure for glasses?;* **Amelia Liu** *(Invited)*

11:00 AM **668** *Deep Learning Model for Obtaining Spatially Resolved Pair Distribution Functions from 4DSTEM Data;* **Arthur R. C. McCray**, Haili Jia, Stephanie Ribet, Iris You, Karen Bustillo, Maria KY Chan, Colin Ophus

11:15 AM **669** *Two-Step Crystal Nucleation in a Metallic Glass Super Cooled Liquid Using In Situ 4D STEM;* **Carter Francis**, Paul Voyles

11:30 AM **670** *Mapping Disorder and Electronic Structure in Amorphous Bi2O3 using 4D-STEM and Spectroscopy;* **Ellis Kennedy**, James Valdez, Yongqiang Wang, Stephanie Ribet, Kurt Sickafus, Cortney Kreller, Blas Uberuaga, Benjamin Derby

11:45 AM **671** *Distributed Scanning Strategies to Reduce Electron Beam Damage;* **Nicholas Hagopian**, Carter Francis, Benjamin Bammes, Emily Joseph, Paul Voyles

P10.6 Innovative in-situ Imaging Techniques for Material Characterization, Synthesis, and Processing

Wednesday 10:30 AM

10:30 AM **672** *In Situ Electron Microscopy at Liquid Helium Temperatures;* **Myung-Geun Han** (Invited), Junsik Mun, Fernando Camino, Yimei Zhu

11:00 AM **673** *Measuring Magnetic Actuation in Monolayer Vanadium-doped WS Using In-situ Lorentz TEM;* **Ariana Ray**, Mingzu Liu, Da Zhou, Boyang Zheng, Vincent Crespi, Mauricio Terrones, David Muller

11:15 AM **674** *Increase of Mean Inner Potential At Liquid Nitrogen Temperature of YBCO using Electron Holography;* **Arturo Ponce**, Chris Rightsell, Arturo Galindo, Luis Cuevas

11:30 AM **675** *Electric Field and Electron Beam Control of Atomic Motion in Rutile TiO_2 In-situ TEM;* **Silu Guo**, Supriya Ghosh, Rohit Duvvuri, Sreejith Nair, Bharat Jalan, Prashant Kumar, K. Andre Mkhoyan

11:45 AM **676** *In situ STEM-EELS Study of Nitride Film Based Resistive Switching Device;* **Di Zhang**, Rohan Dhall, Chengyu Song, Stephen House, Matthew Schneider, Natanii Yazzie, John Watt, Haiyan Wang, Rodney McCabe, Aiping Chen

T Technologists' Forum – Wednesday Late Morning

X31 Working with Image Data (Basic to Advanced)

Wednesday 10:30 AM

10:30 AM **677** *Managing microscopy data: Strategies and Challenges from a Core Perspective;* **Jian Wei Tay** *(Invited)*

11:00 PM **678** *Data Management and Analysis at the National Center for Electron Microscopy;* **Karen Bustillo** (Invited), Morgan Wall, Alexander Pattison, Stephanie Ribet, Edward Barnard, Peter Ercius

11:30 AM **679** *Microscopy Digital Image Manipulation: The Good, The Bad, and The Unethical;* **Jay Jerome** *(Invited)*

Scientific Program

A Analytical/Instrumentation Sciences Symposia – Wednesday Afternoon

A03.3 When 4D-STEM Meets More Dimensions: Deepening Materials Insights with Efficient Experimental Design and Smart Computational Microscopy

Wednesday 1:30 PM

1:30 PM **680** *Probing Strain, Stacking, and Switching of van der Walls Materials using 4D-STEM;* **Yimo Han** (Invited), Chuqiao Shi, Xinyan Li, Nannan Mao, Yi Jiang, Jing Kong

2:00 PM **681** *Measuring Strain in Moirés from Overlapping Dark Field Reflections in 4D-STEM;* **Isaac Craig**, Madeline Van Winkle, Colin Ophus, D. Kwabena Bediako

2:15 PM **682** *Characterization of Mirror Twin Boundaries in Monolayer MoS2 via Atomic Resolution STEM and 4D-STEM;* **Qingxiao Wang**, Jie Shen, Yu Han

2:30 PM **683** *Retrieving 3D Atomic Coordinates of 2D Materials using Multislice Electron Ptychography;* **Jeffrey Huang** (Invited), Yichao Zhang, Sang Hyun Bae, Ballal Ahammed, Elif Ertekin, Pinshane Huang

A04.5 Contributions of Analytical Electron Microscopy to Understanding Microstructural Evolution in Materials: James Bentley Memorial Symposium

Wednesday 1:30 PM

1:30 PM **684** *Some Aspects of a Metallurgist's Electron Microscopy Toolbox in Memory of Jim Bentley;* **Hamish Fraser** *(Invited)*

2:00 PM **685** *Analytical Electron Microscopy with Cathodoluminescence to Classify Structural Defects Impeding Charge Transport in Power Electronics;* **Wei-Chang (David) Yang**, Min-Yeong Kim, Andrew Winchester, Alline Myers, Sang-Mo Koo, Qiliang Li, Sujitra Pookpanratana

2:15 PM **686** *Live STEM Imaging of Electronic Device Performance Degradation under Beta Radiation;* **William Hubbard**, B. C. Regan

2:30 PM **687** *Triskaidekaphilia (Revisited): On the Contributions of James Bentley;* **Neal Evans**, Edward Kenik

A07.3 Advances in SEM Instrumentation, Application and Techniques

Wednesday 1:30 PM

1:30 PM **688** *Development and Applications of Fast, Multiscale Electron Tomography in Liquid-Phase Electron Microscopy;* **Karine Masenelli-Varlot** (Invited), Louis-Marie Lebas, Victor Trillaud, Annie Malchère Lucian Roiban

2:00 PM **689** *In-situ workflow for electrical characterization of semiconducting structures using AFM-in-SEM Technology;* **Veronika Hegrova**, Ondrej Novotny Radek Dao, Umberto Celano, Jan Neuman

2:15 PM **690** *In Situ Scanning Electron Microscopy Observation of Metal Nanoparticles during Heating;* **Maryam Golozar**, Dian Yu, Mia San Gabriel, Starla Richardson, Jacob Speers, Stas Dogel, Hooman Hosseinkhannazer, Vladimir Kitaev, Jane Howe

2:30 PM **691** *Monitoring Phase Transformation in Single Layer 1T'-WS2 Utilizing In-Situ Time-Resolved 4D STEM in SEM;* **Petr Zakopal**, Vojtech Kundrat, Libor Novak, Branislav Straka

2:45 PM **692** *Using High Resolution Secondary Electron Imaging to Build a Complete Picture of High Temperature Processes;* **Eric Formo**, Casey Rowe, Tina Salguero

A09.6 Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI

Wednesday 1:30 PM

1:30 PM **693** *Automated Phase and Orientation Mapping of Complex Multiphase Samples using 4DSTEM and Precession Electron Diffraction; Colin Ophus (Invited),* **Steven Zeltmann**, Stephanie Ribet, Ian MacLaren

2:00 PM **694** *Non-local denoising for 4D STEM Orientation Mapping;* **David Rowenhorst**, Patrick Callahan, Yichen Yang, Justin Nakamura, William Lenthe, Josh Kacher

2:15 PM **695** *Strain Mapping using HR-EBSD versus 4D STEM on a Direct Electron Detector;* **Kalani Moore**, McLean Echlin, Carter Francis, Nicolo Maria Della Ventura, Damian Dingley, Daniel Gianola, Benjamin Bammes

2:30 PM **696** *4D-STEM-in-SEM: User-Friendly Powder Electron Diffractometer;* **Vladislav Krzyzanek**, Pavlina Sikorova, Miroslav Slouf, Radim Skoupy, Ewa Pavlova

2:45 PM **697** *Using 4D-STEM and TKD as Complementary Techniques for Nanocrystals Orientation Mapping;* **Ka Man Yip**, Markus Ohl, Cigdem Ozsoy-Keskinbora, Sorin Lazar

A10.2 Advances in Cryogenic Transmission Electron Microscopy and Spectroscopy for Energy and Quantum Materials and Technologies

Wednesday 1:30 PM

1:30 PM **698** *The Unique Role of Electron Microscopy in Unraveling and Mitigating Materials Sources of Decoherence in Superconducting Quantum Devices;* **Peter Lim** (Invited), Gabriel dos santos, Roberto dos Reis, Thang Pham, Dominic Goronzy, Mark Hersam, Vinayak Dravid

2:00 PM **699** *Atomic-Scale Analysis of Heterogeneous Interfaces: Developing Metrics for Quantum Device Engineering;* **Rosa Diaz**, Roy Peña, Michael J Manfra

2:15 PM **700** *Sub-10 K Monochromated Electron Energy-loss Spectroscopy for Two-dimensional Semiconductor van der Waals Heterostructures;* **Steffi Woo**, Elizaveta Tiukalova, Eric Hoglund, Essance Ray, Cameron Johnson, Michael Hotz, Steven Quillin, Benjamin Plotkin-Swing, Niklas Dellby, Ondrej Krivanek

2:30 PM **701** *Optimizing Superconducting Qubits: Insights into Oxides Microstructures;* **Lin Zhou** (Invited), Jin-Su Oh, Haotian Wu

Scientific Program

B Biological Sciences Symposia – Wednesday Afternoon

B02.3 Biological Soft X-ray Tomography

Wednesday 1:30 PM

1:30 PM **702** *Cryo Soft X-ray Tomography of Biological Samples in the Laboratory;* **Kenneth Fahy**, Paul Sheridan, William Fyans, Fergal O'Reilly, Tony McEnroe, Sergey Kapishnikov

1:45 PM **703** *Development of a Correlative Imaging Pipeline Bringing Together Cryogenic Soft X-ray and Electron Tomography;* **Michele Darrow** (Invited), Jinguo Zhang, Angharad Smith, Thomas Fish, Thomas Glen, Casper Berger, Martin Walsh, Daniel Clare, Maud Dumoux

2:15 PM **704** *Microscopic Algae as New Emerging Models for Studies of Organic Biocrystallization and Vision;* **Jana Pilatova**, Eva Durinova, Bikash Shrestha, Alexander Pattison, Ambarneil Saha, Valentina Laconte, Peter Mojzes, Peter Ercius, Carolyn Larabell, Crysten Blaby-Haas

B04.3 Emerging Advances in Light Microscopy of Fixed and Live Samples Below the Diffraction Limit

Wednesday 1:30 PM

1:30 PM **705** *To label or not to label is no longer the answer! Multimodal imaging - Complementary all the way;* **Peter O'Toole** (Invited), Laura Wiggins, William Brackenbury

2:00 PM **706** *Correlation nanoscopy using AFM and nano-optical imaging and spectroscopy techniques;* **Artem Danilov**, Andreas Huber, Frank S. Weston, Tobias Gokus

2:15 PM **707** *Beyond Super-resolution: Unlocking the Potential of Fluorescence Microscopy at Its Resolution Limits and Quantitative Capability;* **Aussie Suzuki (Invited)**

B08.2 Advances in Cryo-EM Technology

Wednesday 1:30 PM

1:30 PM **708** *Lessons Learned from CZII's Kaggle CryoET Object Identification Challenge;* **Ariana Peck** (Invited), Yue Yu, Joshua Hutchings, Jonathan Schwartz, Dari Kimanius, Shawn Zheng, Clinton Potter, Bridget Carragher, Kyle Harrington, Reza Paraan

2:00 PM **709** *Accelerating Large Volume Electron Microscopy with Sparse Sampling;* **Daniel Nicholls**, Zoë Broad, Alex Robinson, Jack Wells, Maryna Kobylynska, Roland Fleck, Nigel Browning

2:15 PM **710** *A high-throughput toolkit for cryo-EM analysis of lipid nanoparticles using machine learning;* **Inga Kuschnerus**, Mariusz Matyszewski

2:30 PM **711** *AI Assisted Interactive Segmentation of Cryo-Electron Tomography Data;* **Sanket Rajan Gupte (Invited)**

C Cross-Cut/Interdisciplinary Sciences Symposia – Wednesday Afternoon

C05.3 The Relevance and Advancement of Microscopy across the Americas (CIASEM)

Wednesday 1:30 PM

1:30 PM **712** *Democratizing Microscopy Analysis through an Online Collaborative Visualization Platform;* **Arash Tavoosi**, Hongbin Choi, Adrian Phoulady, Matthew Maniscalco, Mohammad Taghi Mohammadi Anaei, Marcus Emanuel, Parisa Mahyari, Nicholas May, Sina Shahbazmohamadi, Pouya Tavousi

1:45 PM **713** *Latest Advances in 3D Characterization of Ore Particles for Mineral Processing by High Resolution X-ray Computed Tomography;* **Jiaqi Jin**

2:00 PM **714** *TEM Analysis of Fe-Doped ZnAl Hydrotalcite (ZnAl-LDH/Fe3O4) for Enhanced Photocatalytic Reduction of Cr VI in Water;* **Hector Calderon**

2:15 PM **715** *How to Improve Soil Anti-adhesion by Studying the Micro Relief of the Cuticle Surface of Digging Beetles: Using Rotated Image with Maximum Average Power Spectrum Technique to find the Predominant Directions of the Topographic Pattern;* **Lorena Setten**, Noelia Guillen, Eduardo Favret

C06.4 Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy

Wednesday 1:30 PM

1:30 PM **716** *Illuminating the Material World: Autonomous Microscopy to Understand Order, Disorder, and Everything In Between;* **Steven Spurgeon** *(Invited)*

2:00 PM **717** *Unsupervised Machine Learning for Atomic-Resolution S(TEM) Image Analysis and Management;* **Raja Abdul Wahab Ayyubi**, Seyfal Sultanov, James Buban, Robert Klie

2:15 PM **718** *Real-Time Image Analysis in Microscopy: A Reward-Based Workflow Approach;* **Kamyar Barakati**, Yu Liu, Utkarsh Pratiush, Austin Houston, Gerd Duscher, Sergei Kalinin

2:30 PM **719** *Using CycleGANs to Generate Realistic STEM Images for Machine Learning and Atom-By-Atom Analysis on the Million-Atom Scale;* **Pinshane Huang** (Invited), Chia-Hao Lee, Abid Khan, Bryan Clark

C08.3 Vendor Symposia

Wednesday 1:30 PM

1:30 PM **720** *Ultrafast Infrared Imaging of Brain Tissue for Disease Detection;* **Thomas Tague**, Peng Wang Domenic Dreisbach

1:45 PM **721** *Hydrophilization and Activation of Carbon Coated TEM Grids Using a Light Spectrum Device;* **Daniela Vieira**, Mojtaba Safari, Hooman Hosseinkhannazer, Emad Shahnam, Eric West, Jared Lapkovsky

2:00 PM **722** *Large-Area Sample Preparation: Advancing Solutions for Engineering and Industrial Materials Analysis;* **Pawel Nowakowski**, Paul Fischione, Mary Ray

2:30 PM **723** *The Next Step in AFM-based Vibrational Optical Nanospectroscopy;* **Artem Danilov**, Andreas Huber, Frank S. Weston, Tobias Gokus

724 *Optimizing the Inert Gas Transfer of Lithium Ion Battery Materials for Examination in the Electron Microprobe/FESEM;* **Bryan Tracy**, Mike Fahey, Colin MacRae, Nicholas Wilson, Vince Carlino, Sean Morales, Larry Tracy

2:45 PM **725** *New Technological Advances Enable Portable Powder X-ray Diffractometer (XRD) to Collect Data in Seconds;* **Feng Shen**

Scientific Program

P Physical Sciences Symposia – Wednesday Afternoon

P02.3 Electron Microscopy for Ferroic Materials: From Atomic-scale Imaging to in-situ Control

Wednesday 1:30 PM

1:30 PM **726** *Investigating the Polar Structure of Functional Complex Oxides in 2.5D with Multislice Electron Ptychography;* **James LeBeau** *(Invited)*

2:00 PM **727** *Atomic-Scale Three-Dimensional Phase Inhomogeneity and Interfacial Relaxation of Ferroelectric Hf0.5Zr0.5O2;* **Chuqiao Shi**, Xinyan Li, Jesse Schimpf, Yao Yang, Yi Jiang, Lane W. Martin, Yimo Han

2:15 PM **728** *Characterization of an Ultrathin RuO2 Film/TiO2 Interface by Multislice Electron Ptychography;* **Bonnie Lin**, Seung Gyo Jeong, Bharat Jalan, James LeBeau

2:30 PM **729** *A Better Understanding of Flexoelectric and Ferroelectric Displacements from Electron Ptychography of both the Anion and Cation Sublattices;* **David Muller** (Invited), Harikrishnan K. P.

P04.7 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance

Wednesday 1:30 PM

1:30 PM **730** *Elucidating Processes at Hard-Soft Interfaces in Next-Generation Electrochemical Devices by Cryogenic Electron Microscopy;* **Michael Zachman** (Invited), Juhyun Oh, David Cullen, Ritu Sahore, Xi Chelsea Chen, Xiaoping Wang, Deborah Myers, Daniela Ushizima, Obeen Kwon, Iryna Zenyuk

2:00 PM **731** *Cryo-EM and Coupled Spectroscopies Shed Light on Degradation Modes in Iridium-Catalyst-Powered Water Electrolysis Membranes For Hydrogen Generation;* **Steven Hayden**, Ai-Lin Chan, Michelle Smeaton, Steven Harvey, Sona Ulicna, Katherine Jungjohann, Shaun Alia

2:15 PM **732** *Investigating the Degradation Mechanism of Proton Exchange Membrane Water Electrolyzers Using Analytical Electron Microscopy;* **Haoran Yu**, Elliot Padgett, Kui Li, David Cullen, Shaun Alia, Siddharth Komini Babu, Rangachary Mukundan

2:30 PM **733** *Revealing Phase Heterogeneity in Vertically Aligned Nanocomposites via Plan-View Electron Energy Loss Spectroscopy;* **Elizabeth Griffin**, Gabriel dos santos, Yong-Yun Hsiau, Roberto dos Reis, Nicola Perry, Vinayak Dravid

2:45 PM **734** *Improved Electron Imaging of Cu Nanocatalyst Evolution at Realistic CO2 Electroreduction Conditions;* **Saltanat Toleukhanova**, Vasiliki Tileli

P05.7 Advances in Imaging and Spectroscopy Beyond Ambient Conditions

Wednesday 1:30 PM

1:30 PM **735** *Solving Hard Problems for Soft Materials with 4D-STEM;* **Stephanie Ribet** (Invited), Rohan Dhall, Georgios Varnavides, Mary Scott, Karen Bustillo, Colin Ophus

2:00 PM **736** *Three-Dimensional Deconvolution for Large-Angle Illumination ADF-STEM Depth Sectioning;* **Taichi Kusumi**, Hajime Ueda, Toshihiro Futazuka, Masatoshi Hanai, Shun Katakami, Kazuaki Kawahara, Ryo Ishikawa, Naoya Shibata, Masato Okada

2:15 PM **737** *High-Resolution Imaging and Spectroscopy in STEM Below 10 Kelvin;* **Cameron Johnson**, Michael Hotz, Jordan Hachtel, Steffi Woo, Elizaveta Tiukalova, Eric Hoglund, Essance Ray, Ondrej Krivanek, Niklas Dellby, Tracy Lovejoy

2:30 PM **738** *AC-STEM, Photoluminescence, and Raman Characterization of Novel MoxWx-1S2 Alloys;* **Rachael Keneipp**, Ana Senkić, Nataša Vujičić, Marko Kralj, Marija Drndic

P06.3 Multimodal Data Acquisition and Analysis of Materials Under Real-World Conditions Using Advanced Electron Microscopy

Wednesday 1:30 PM

1:30 PM **739** *Oxygen Partial Pressure Effect on Atomic Nickel Migration in NixCeO2-x Aerogel;* **Kyle Sendgikoski**, Wei-Chang, Austin Herzog, Travis Novak, Todd Brintlinger, Debra Rolison

1:45 PM **740** *Increasing the Potential of Liquid Cell TEM Through the Accumulation of Small Improvements;* **Yuki Kimura** *(Invited)*

2:15 PM **741** *Direct Observation of Light-Driven Structural Transformations in Catalytic Nanomaterials via In Situ Gas-Cell TEM;* **Khakimjon Saidov**, Olivia Bennett, Kunmo Koo, Jamie North, Xiaobing Hu, Vinayak Dravid, Dayne Swearer

2:30 PM **742** *Atomic-Scale Insights into Cu Oxidation: Bridging the Pressure Gap;* **Meng Li** (Invited), Brian Lee, Matthew Curnan, Stephen House, Dmitri Zakharov, Xiaohui Qu, Wissam Saidi, Judith Yang

P07.2 High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments

Wednesday 1:30 PM

1:30 PM **743** *Hidden Interfaces: From Tribology to Triboelectricity;* **Laurence Marks** *(Invited)*

2:00 PM **744** *Phase Stability and Microstructural Evolution of CaO (5%)-Stabilized Zirconia Top Coatings on 304 Stainless Steel by Atmospheric Plasma Spraying and Laser Cladding;* **Mohamed Hafez, Ali Khalil**

2:15 PM **745** *Grain Boundary Failure and Strengthening in Entropy Stabilized (MoNbTaVW)C4 Ceramic;* **Bradley De Gregorio**, Zoey Warecki, James Wollmershauser, Heonjune Ryou, Kevin Anderson, Keith Knipling, Evgeniya Lock, Lavina Backman

2:30 PM **746** *Measuring Electric Field at Interfaces of Fe2O3 and Cr2O3 via High Resolution S/TEM Methods;* **Dongye Liu**, Sean Mills, Elizabeth Peterson, Matthew Chancey, Franziska Schmidt, Yongqiang Wang, Blas Uberuaga, Tiffany Kaspar, Andrew M Minor

2:45 PM **747** *Electron Beam-Induced Phase Transformations in Different Crystal Orientations of a 2D van der Waals Magnet;* **Eugene Park**, Zdenek Sofer, Julian Klein, Frances Ross

P08.5 Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials

Wednesday 1:30 PM

1:30 PM **748** *Atomic-scale Exciton Binding Energy Determination of Defected Transition Metal Dichalcogenides;* **Kory Burns** (Invited), Chris Smyth, Alex Boehm, Eric Lang, Assel Aitkaliyeva, Taisuke Ohta, Khalid Hattar, Jordan Hachtel

2:00 PM **749** *Discovery of 2D Superatomic Mixed Crystal via Encapsulated Growth Inside a Scanning Transmission Electron Microscope;* **Austin Houston**, Sumner Harris, Wolfgang Windl, Hao Wang, David Geohegan, Kai Xiao, Gerd Duscher

2:15 PM **750** *Structural Analysis of Growth-Controlled Tellurium using Scanning Electron Nanodiffraction;* **Moniruzzaman Jamal**, I K M Reaz Rahman, Ali Javey, Mary Scott

2:30 PM **751** *Observation of Fluctuations in Tetrahedral Clusters of Tsai-type Icosahedral Quasicrystals and Approximants by High-resolution Scanning Transmission Electron Microscopy;* **Haruki Ishii**, Kyoma Yoko, Tatsuya Kanai, Kazuhiko Deguchi, Farid Labib, Ryuji Tamura, Koh Saitoh

2:45 PM **752** *In-Situ High-Temperature X-Ray Diffraction Study of Phase Transformation in MOCVD-Grown GeO2 Thin Films: Amorphous to Quartz and Rutile;* **Bobby Duersch**, Imteaz Rahaman, Kai Fu

P10.7 Innovative in-situ Imaging Techniques for Material Characterization, Synthesis, and Processing

Wednesday 1:30 PM

1:30 PM **753** *Real-time Studies of Nucleation and Growth of GaN Nanostructures on SiNx;* **Xiaobo Chen**, Abby Liu, Dmitri Zakharov, Zhucong Xi Meng Li, Fernando Camino, Judith Yang, Liang Qi, Rachel Goldman

1:45 PM **754** *Nucleation and Growth Mechanisms of Tellurium Nanoribbons via van der Waals Epitaxy;* **Kate Reidy**, Noya Ruth Ithzak, Chen Wei, Lothar Houben, Katya Rechav, Paul Miller, Pip Knight, Federico Panciera, Ernesto Joselevich, Frances Ross

2:00 PM **755** *In-Situ Electric-Field-Assisted Growth in GaAs Nanowires;* **Qiang Yu**, Khalil Hassebi, Hakim Saidov, Ivan Erofeev, Charles Renard, Laetitia Vincent, Frank Glas, Utkur Mirsaidov, Federico Panciera

2:15 PM **756** *In situ Grain Growth Experiments: TEM Imaging & Automated Segmentation with Correlative 4D-STEM Orientation Mapping;* **Matthew Patrick**, Sarah Asher, Sylvia Whang, Alan Ma, Jeffrey Rickman, Katayun Barmak

2:30 PM **757** *Quantification of Operando EC-STEM for Li-ion and Beyond Li-ion Battery Systems at Variable Temperatures;* **B. Layla Mehdi** (Invited), Xiaodong Liu, Ioannis Siachos, Shiying Qin, Mounib Bahri

Scientific Program

T Technologists' Forum – Wednesday Afternoon

X32 Mental Health in Microscopy

Wednesday 1:30 PM

1:30 PM **758** *Recognising and Supporting Mental Health in the Workplace;* **Peter O'Toole** *(Invited)*

2:00 PM **759** *Through the Looking Glass: The Context Of Mental Health;* **Mariana De Niz** *(Invited)*

2:30 PM **760** *Health Challenges in Core Facilities;* **Austin Worden** *(Invited)*

A Analytical/Instrumentation Sciences Posters – Wednesday

3:00 PM – 5:00 PM **Exhibit Hall**

A07.P1 Advances in SEM Instrumentation, Application and Techniques

POSTER # 219

761 *A Novel Method for Reducing Charging in SEM by Simultaneous Irradiation with an Electron Beam and VUV Light;* **Noriyuki Inoue**, Yasuyuki Okano, Shinobu Uno, Jennifer Misuraca, Hidetaka Sawada

POSTER # 220

762 *Advancing Nanoscale Material Dynamics: Bridging In-Situ Liquid Phase SEM and TEM;* **Hongkui Zheng**, Arixin Bo, Hongyu Sun, Christian Deen-van Rossum, Merijn Pen, Yevheniy Pivak

POSTER # 221

763 *Morphological Analysis of Graphene Oxide by Scanning Electron Microscopy and Correlative Field-flow Fractionation Coupled with Multi-angle Light Scattering;* **Paul Mrkwitschka**, Michaela Mühlbauer, Florian Meier, Jörg Radnik, Vasile-Dan Hodoroaba, Amaia Zurutuza, Francesco Pellegrino, Elena Corrao

POSTER # 222

764 *SEM Imaging of Battery Materials by Secondary Electron Energy Filtering;* **Yoichiro Hashimoto**, Yu Yamazawa, Toru Aiso, Yutaka Nagaoka

POSTER # 223

765 *Utilizing Carbon from Microwave Plasma Gasification for Carbide Reinforcement in CoCrFeNiMn High-Entropy Alloy;* **Petr Kratochvíl**, Jan Riedl, Jafar Fathi, Hana Thürlová, Frantisek Ruzicka, Filip Průša

POSTER # 224

766 *4DSTEM in SEM measurements at low electron energy using a pixelated direct detector operated at room temperature;* **Björn Eckert**, Martin Huth, Andrew Fram, Petra Majewski, Stefan Aschauer, Lothar Strueder

POSTER # 225

767 *A Versatile MEMS-Based In Situ SEM Holder for Heating, Biasing, andCorrelative Microstructural Characterization;* **Hector Hugo Perez Garza**, Yevheniy Pivak, Christian Deen-van Rossum, Mia Andersen, Merijn Pen, Shibabrata Basak, Rüdiger-A. Eichel

POSTER # 226

768 *Advanced Hybrid Positioning System of SEM and AFM for 2D MaterialSurface Metrology;* **Chaeho Shin**

POSTER # 227

769 *Characterization of Carbon Products Produced by Catalytic Pyrolysis of Methane;* **James Poston**, Jarrett Riley, Hayat Adawi, Chris Atallah, Ranjani Siriwardane

POSTER # 229

771 *Detecting Lithium Through Correlative Microscopy in a Scanning Electron Microscope: From Rocks to Batteries;* **Ute Schmidt**, George Stonadge, Stefan Kreissl, Joshua Lea, Jan Englert

POSTER # 230

772 *Development of High Pass Electron Detector for Low-energy Backscattered electron Detector in SEM;* **Yuto Yanagihara**, Yuanzhao Yao, Hayata Yamamoto, Takashi Sekiguchi

POSTER # 231

773 *Development of Chopped Scan Mode with Lock-In Amplification for Electrical Analysis of Devices;* **Grigore Moldovan**, René Hammer, Wolfgang Joachimi

POSTER # 232

774 *High Quality Graphene for Electron Microscopy Application;* **Eliška Materna Mikmeková**, Lukáš Průcha, Ivo Konvalina, Veronika Pizurova, Jakub Piños, Ilona Müllerová

POSTER # 233

775 *Particle Analysis Method Using Multi-Segmented BED Signals for SEM;* **Kei Nagatomo**, Takeshi Otsuka

POSTER # 234

776 *Quantitative X-ray Mapping of Ni Superalloys;* **Owen Neill**

POSTER # 235

777 *Scanning Electron Microscopy Noise Classification Using Machine Learning;* **Kevin Nyaburi**, Surya Kamal, Richard Hailstone

POSTER # 236

778 *Synthesis of Carbides from Nanostructured Carbon Waste By-product: A Contribution to Circular Economy;* **František Růžička**, Jan Riedl, Petr Kratochvíl, Miroslav Karlík, Jafar Fathi, Filip Průša

POSTER # 237

779 *The Effects of Plasma Cleaning on Carbon and Hydrocarbon-contaminated Samples and Quantification of Decontamination in the Scanning Electron Microscope;* **Barbara Armbruster**, Paul Anzalone, Ewa Kosmowska, Ernesto Lopez, Anze Novak

POSTER # 238

780 *Vibration Isolation Solutions for S/TEM;* **Brian Keith**

Scientific Program

B Biological Sciences Posters – Wednesday

3:00 PM – 5:00 PM **Exhibit Hall**

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

POSTER # 240

781 *3D Printer Waste Nanoparticles and Their Internalization in Human Colorectal Cells (HCT15), as in Vitro Cell Model of Nanoplastics Absorption; Mauricio Castilla Pulido, Rafael Vazquez-Duhalt, Ana G. Rodriguez-Hernandez*

POSTER # 241

782 Structural Insights into the Mechanisms Behind Avian Structural Coloration; Jong–Souk Yeo, Sangyeop Kim, Jihun Kang

POSTER # 242

783 The Mtr4 Arch Domain is Required for RNA Movement Between Active Sites in the Saccharomyces cerevisiae TRAMP Complex; Kamryn Morgan, Joshua Denson, Isaac Niu, Sean Johnson

POSTER # 243

784 Three-Dimensional mapping of decimation of breast cancer cells by therapeutic nanoparticles; Anindito Sen, Sreejith Raveendran, Toru Maekawa, Shakti Kumar

POSTER # 244

785 3D Model Generation of Penicillium Spores Using Slice-and-View; Solinus Farrer, Bradley Geary, Michael Standing

POSTER # 245

786 Characterization of a Fundamental, Conserved Structure: The Synaptonemal Complex; Kaylee Patterson, Lisa Kursel, Spencer Gordon, Ofer Rog, Julia Brasch

POSTER # 246

787 Cryo-EM Reconstruction of the phiK601 Jumbo Phage Head; Olga Sokolova, Mikhail Egorochkin, Grigory R. Mitrov, Andrey Moiseenko, Ishika Gupta, Ruqaiyah Khan, Virajith Boddapati, Sayani Das, Sandip Kaledhonkar, Kiran Kondabagil

POSTER # 247

788 Dynamics of sheath subunit of a contractile injection system studied at atomic level during host infection; Anindito Sen, Tsukasa Nakamura, Genki Terashi, Veer Bhatt, Kyungho Kim, Shankararaman Chellam, Le Tran, Daisuke Kihara

POSTER # 248

789 Prototypes of Actin Arrangement in the Focal Adhesion (FA) of Cultured Respiratory Tract Epithelial Cells; Carol Heckman

POSTER # 249

790 Speeding Up OneDep Depositions of Multiple Related 3DEM Entries with pdb_extract; Justin Flatt, Chenghua Shao, Brian Hudson, Irina Persikova, Yuhe Liang, Zukang Feng, Ezra Peisach, Jasmine Young, Stephen Burley

POSTER # 250

791 Strategies to Prepare Frozen-Hydrated Duckweed for Cryogenic Electron Tomography of Thylakoid Membranes; Lynnicia Massenburg, Shawn Reeves, Chanda Harris, Gergely Nagy, Hugh Oneill, Michael Zachman

POSTER # 251

792 Structural Characterization of the ASPSCR1-TFE3 Fusion Oncoprotein; Koshala Olupothage, Kevin Jones, Peter Shen

POSTER # 252

793 Structure of Stx Bacteriophage Phi24B capsid obtained by cryo-EM and local reconstructions; Olga Sokolova, Matvey Bubenchikov, Andrey Moiseenko, Alexander Kuznetsov, Andrey Letarov

POSTER # 253

794 Time-Snapshot Volume Electron Microscopy Analysis of RNA Virus Replication Complex Assembly; Hong Zhan, Adam Jochem, Mark Horswill, Johan den Boon, Paul Ahlquist

POSTER # 254

795 Understanding the structural and functional role of Poxvirus F17 phosphoprotein; Sohom Banerjee, Nathan Meade, Derek Walsh, Peter Shen

POSTER # 255

796 Visualizing the Structure of Plant Plasmodesmata with Cryo-ET; Trevor Moser, Michael Knoblauch, James Evans

B02.P1 Biological Soft X-ray Tomography

POSTER # 256

797 *Compact Cell Imaging Device (CoCID) Provides Insights Into the Cellular Origins of Viral Infections;* **Venera Weinhardt**, Maija Vihinen-Ranta, Nicola Fletcher, Pablo Gastaminza, Ralf Bartenschlager, Dimitri Scholz, Eva Pereiro, Sergey Kapishnikov, Tony McEnroe, Kenneth Fahy

POSTER # 257

798 *Cryo Soft X-ray Tomography and Correlative Imaging of Biological Samples in the Laboratory;* **Sergey Kapishnikov**, Paul Sheridan, William Fyans, Fergal O'Reilly, Tony McEnroe, Kenneth Fahy

POSTER # 258

799 *Cryo Soft X-ray Tomography -Based Quantification of Phytoplankton Subcellular Structures;* **Kenneth Fahy**, David Mankus, Abigail Lytton-Jean, Sergey Kapishnikov, Tony McEnroe, Teemu P. Miettinen

POSTER # 259

800 *MicroCT Evaluation of Contrast Agent Infiltration and Diffusion in Synthetic Capillary Models;* **Jose Smokowski**, Sarah Mikula

B07.P1 Cryo-Electron Tomography: Progress and Potential

POSTER # 260

801 *Characterization of Respiratory Syncytial Virus Matrix Mutants with Cryo-Electron Tomography and Sub-Tomogram Averaging;* **Hayley Hirsch**, Bryan Sibert, Jae Yang, Ava Berdelman, Elizabeth Wright

POSTER # 261

802 *Simplified Montage Cryo-Electron Tomography;* **Ryan Hylton**, *Micaela Boiero Sanders, Adriana Prajica, Gavin Rice, Stefan Raunser,*

POSTER # 262

803 *Visualization of Full-length Insulin Receptor by Cryo-electron Tomography;* **Monica Gonzalez-Magaldi**, *Anurandha Gullapali, Zunlong Ke, Daniel J. Leahy*

POSTER # 263

804 *Advancing Integrated Cryo-Fluorescence Imaging for Fast, Reliable and High Throughput Cryo-ET Lamella Production;* **Marit Smeets**, *Deniz Daviran, Jochem Lutgerink, Karishma Kumar, Patrick Cleeve*

POSTER # 264

805 *Are We Overestimating Cryo-ET? Evaluating the Role of 2D Cryo-EM for In Situ Studies;* **Joshua Dickerson**, *Bronwyn Lucas*

POSTER # 265

806 *Cryo-electron Microscopy of Vitreous Sections (CEMOVIS) Application for Model Organism;* **Kunihiro Uryu**, Xiaowei Zhao, Zhiheng Yu

POSTER # 266

807 *Cryo-ET visualization of Kirrel3 and IgSF8 junctions in synapse initiation;* **Yuxuan Guo**, Adam Weinbrom, Megan Williams, Julia Brasch

POSTER # 267

808 *Cryogenic Electron Tomography of Synthetic Layered Magnetic Organics;* **Jason Manassa**, Nishkarsh Agarwal, Bum Chul Park, Nicholas Kotov, Robert Hovden

POSTER # 269

810 *The Essential Role of ER-Localized TRIM5α in Defending Against Tick-Borne Orthoflaviviruses;* **Stephanie Spada**, Fadila Bouamr, Sonja Best, Michael Grigg, Peijun Zhang, Zhen Hou, Beth Gregg, Margery Smelkinson, Abhilash Chiramel, Kevin Rose

POSTER # 270

811 *Thermo Fisher Scientific Tomo Software: Integrated Multigrid Data Acquisition and Live Reconstruction;* **Fanis Grollios**, Edward Pryor, Julio Ortiz, Reint Boer Iwema

POSTER # 271

812 *Understanding Host-Phage Interactions with Integrative Cryo-Electron Microscopy and Tomography, Mass Spectrometry and Whole Cell Kinetic Modeling;* **James Evans**

Scientific Program

C Cross-Cut/Interdisciplinary Sciences Posters – Wednesday

3:00 PM – 5:00 PM **Exhibit Hall**

C05.P1 The Relevance and Advancement of Microscopy across the Americas (CIASEM)

POSTER # 272

813 *Effect of power on the characteristics of clads and coating of 316L steel deposited by Laser Cladding on vertical walls of D2 steel;* **L.F. Esparza-Hernández**, John Edison-Garcia, Carlos Poblano, R. Pérez-Bustamante, J.A. Betancourt-Cantera

POSTER # 273

814 *Effect of Synthesis Parameters for Synthesizing Mesoporous ZnO Microparticles;* **Salomón Borjas**, Erick Alexis García Sánchez, Pablo Martínez Torres, Javier Villegas-Moreno, Ariosto Medina Flores

POSTER # 274

815 *Elemental Analysis of Particles inhalables by SEM-EDS;* **Roberto Ramirez-Leal**, J. Andres Alvarado-Castro, Hammed Estuardo -Moreno, M. Cruz-Campas

POSTER # 275

816 *Enhancing Al-Cu Alloys Produced by High-Energy Milling and Sintered by High Frequency Induction Heating for Microstructure Control;* **Jose Mendoza-Duarte**, Claudia A García, A. Martínez-García, Xochitl Atanacio Sanchez, P. A. Guerrero-Seañez, Leonardo Baylón García, C.G. Garay-Reyes, I. Estrada-Guel, R. Martínez-Sánchez

POSTER # 276

817 *Microscopy and Microanalysis in Modern Engineering Materials and Additive Manufacturing Education;* **Richard Wuhrer**, Benjamin Kelley, Laurel George, Richard Yang

POSTER # 277

818 *Study of Two Ternary Al-Mg-Zn Systems Used as Electrical Conductors;* **X. Atanacio-Sánchez**, C.G. Garay-Reyes, I. Estrada-Guel, Jose Mendoza-Duarte, R. Martínez-Sánchez, P. A. Guerrero-Seañez

POSTER # 278

819 *Synthesis of Nanoparticles of Fe50Zn by Reactive Milling and Ultrasound Washing;* **Hector Calderon**, Berenice Castañeda

POSTER # 279

820 *Comparative Study of Tungsten Carbide Bonded with Equiatomic Cantor Alloy CoCrFeMnNi Sintered Conventionally and Spark Plasma;* **M.A. Ruiz-Esparza-Rodriguez**, C.G. Garay-Reyes, I. Estrada-Guel, X. Atanacio-Sánchez, P. A. Guerrero-Seañez, Leonardo Baylón García, J.M. Mendoza Duarte, S. Diaz-de la Torre, A. Martínez-García, R. Martínez-Sánchez

POSTER # 280

821 *Dispersion and Sintering Behavior of Hybrid Al7075 Composites Reinforced with TiC and TaC Processed by Mechanical Alloying and High-Frequency Induction Sintering;* **R. Pérez-Bustamante**, José Antonio Betancourt-Cantera, John Edison-Garcia, Luis-Alberto Cáceres-Díaz, C.G. Garay-Reyes, M.L. Camacho-Rios, A.M. Ramírez-Carrillo, Y.F. Castillo-Padilla, Fernando Pérez-Bustamante

POSTER # 281

822 *Effect of Laser Power Welding on the Characteristics of P20 Stainless Steel Clads for Mold Tools Repair;* **S. Blas-Alonso**, John Edison-Garcia, Victor Hugo Mercado-Lemus, Luis-Alberto Cáceres-Díaz, Hugo Arcos-Gutierrez, J.A. Betancourt-Cantera

POSTER # 282

823 *Effect of Li Addition on Hardness and Microstructure in an A356 Al alloy;* **P. A. Guerrero-Seañez**, C.G. Garay-Reyes, A. Martínez-García, X. Atanacio-Sánchez, M.A. Ruiz-Esparza-Rodriguez, I. Estrada-Guel, J.M. Mendoza Duarte, R. Martínez-Sánchez

POSTER # 283

824 *Effect of Process Control Agent on the Mechanosynthesis Of The Non-Equiatomic High Entropy Alloy Al12Mo10Fe35Mn23Ni20;* **T. Garcia-Mendoza**, Fernando Chiñas Castillo, A. Martínez-García, C.G. Garay-Reyes, E. A. Juarez-Arellano

POSTER # 284

825 *Effect of Shaker and Planetary Ball Milling on Graphite Structure: A Comparative Study;* **I. Estrada-Guel**, Claudia A García, Jose Mendoza-Duarte, P. Pizá-Ruíz, A. Santos-Beltrán, Erique Rocha-Rangel, C.D. Gómez-EsparzaR. Martínez-Sánchez

POSTER # 285

826 *Effect of Sintering Parameters on the Microstructural Properties of Nanostructured Inconel 718;* **Hansel Medrano**, A. Santos-Beltrán, V. Gallegos-Orozco, Miriam Santos-Beltran, C.G. Garay-Reyes, G. Rodríguez-Cabriales, I. Estrada-Guel, J.S. Castro-Carmona, H. Camacho-Montes, R. Martínez-Sánchez

POSTER # 286

827 *Impact of Precipitation Hardening and Dispersion of Tungsten Carbide Particles on the Mechanical Properties of Al-Cu-Mg/WC Composite Subjected to T6 Treatment;* **G. Rodríguez-Cabriales**, JP. Flores-De los Ríos, H. M. Medrano-Prieto, C.G. Garay-Reyes, R. Martínez-Sánchez

POSTER # 287

828 *Study Microstructural of CoCrFeMnNi High-Entropy Alloys Modified with V and Mo;* **C.G. Garay-Reyes**, P. A. Guerrero-Seañez, I. Estrada-Guel, Jose Mendoza-Duarte, A. Martínez-García, E. A. Juarez-Arellano, X. Atanacio-Sánchez, R. Martínez-Sánchez

POSTER # 288

829 *Sustainable Improvement of 7075 Aluminum Alloy with Modified Graphene Oxide;* **C. Carreño-Gallardo**, Claudia López, José Ernesto Ledezma, Katia Rivera, José Herrera-Ramirez,

POSTER # 289

830 *Thermo-X-rays diffraction analysis of carbides crystallization in CrMnFeCoNi, CrMnFeCoNiV0.5 and CrMnFeCoNiMo0.5 High Entropy alloys;* **A. Martínez-García**, C.G. Garay-Reyes, E. A. Juarez-Arellano, P. A. Guerrero-Seañez, I. Estrada-Guel, Jose Mendoza-Duarte, E.J. Gutiérrez-Castañeda, R. Martínez-Sánchez

C06.P1 Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy

POSTER # 290

831 *A Flexible System for Fully Autonomous STEM Imaging;* ***Christopher Addiego***, Ying Huang, Xiuhong Han, Jiangtao Zhu

POSTER # 291

832 *Advancements in TEM Acquisition and Analysis Automation for Large Area Cell and Tissue Imaging and Nanoparticle Characterization;* **Tim Booth**, Maya Mathis

POSTER # 292

833 *AI Auto Tilt: Central beam and zone axis detection, a step towards autonomous atomic resolution STEM;* **Daen Jannis**, Pavel Potocek, Ece Arslan Irmak, Ricardo Egoavil, Abdelhadi Chaddou, Bas Groen

POSTER # 293

834 *An Autonomous, Large Language Model Driven X-ray Microscope with Contextual Understanding of Domain Specific Experimental Workflows;* **Nathan Johnson**

POSTER # 294

835 *An autonomous, Large Language Model Driven X-ray Microscope with Contextual Understanding Of Domain Specific Experimental Workflows;* **Nathan Johnson**

POSTER # 295

836 *Artificial Intelligence Powered Morphology Characterization for Advanced Material Design and Failure Analysis;* **Roland Brunner**, Raphael Wilhelmer, Charlotte Cui, Fereshteh Falah Chamasemani

POSTER # 296

837 *Automation of Laser Plasma Focused Ion Beam Microscopy for Next-Generation Energy Materials;* **Madeline Hoffmann**, Addison Salvador, Grace Guinan, Renae Gannon, Steven Spurgeon

POSTER # 297

838 *Deep Learning for Noise Reduction in High-Resolution In-Situ TEM;* **Agus Poerwoprajitno**, Yash Gandhi, C. Barry Carter, John Watt, Dale L. Huber, Rajiv Kalia

POSTER # 298

839 *Describing Point Defect Topology in 2D Energy Materials through Computer Vision;* **Grace Guinan**, Michelle Smeaton, Addison Salvador, Hilary Egan, Andrew Glaws, Brian C. Wyatt, Babak Anasori, Steven Spurgeon

POSTER # 299

840 *Enhancing Automated Defect Detection in High-Throughput SEM: Balancing Throughput, Resolution, and Accuracy in Large-Area Analysis;* **Joerg Jinschek**, Christina Koenig

POSTER # 300

841 *Identifying Potential Carbon Sources for Direct Carbon Material Production by AI Assisted High Resolution-AFM;* **Percy Zahl**, Yunlong Zhang, Steven Arias

POSTER # 301

842 *Integrating Expert Knowledge in Autonomous Microscopy to Accelerate Discovery;* **Yongtao Liu**, Arpan Biswas, Rama Vasudevan

POSTER # 302

843 *The Art and Science of Microscopy: Translating Operator Workflows into Automated Processes for Accelerated Discovery;* **Addison Salvador**, Madeline Hoffmann, Grace Guinan, Michelle Smeaton, Renae Gannon, Steven Spurgeon

Scientific Program

P Physical Sciences Posters – Wednesday

3:00 PM – 5:00 PM **Exhibit Hall**

P02.P1 Electron Microscopy for Ferroic Materials: From Atomic-scale Imaging to in-situ Control

POSTER # 303

844 *Annealing Optimization for HZO Thin Films with In-Situ STEM EBIC Characterization;* **Yueyun Chen**, Ho Leung Chan, Tristan O'Neill, Megan Lenox, William Hubbard, Jon Ihlefeld

POSTER # 304

845 *Polarization-Controlled Structural Modulation in the Single Atomic Layer at the PbZr0.2Ti0.8O3 LaNiO3 Interface;* **Soo-Yoon Hwang**, Sangjae Lee, Frederick Walker, Si-Young Choi, Charles Ahn, Yimei Zhu

POSTER # 305

846 *STEM Characterization of Substrate/Graphene Epitaxial Influences on GdAuGe Orientations and Interfaces;* **Nicholas Hagopian**, Taehwan Jung, Zachary LaDuca, Tamalika Samanta, Anshu Sirohi, Katherine Su, Chengye Dong, Quinn Campbell, Jason Kawasaki, Paul Voyles

POSTER # 306

847 *Electrode Interface Effects in Hafnium Zirconium Oxide Ferroelectrics;* **Ece Günay**, Sebastian Calderon, Benjamin Aronson, Jon Ihlefeld, Elizabeth Dickey

POSTER # 307

848 *Electron Microscopy and Structural Studies of Iron Oxides Nanoparticles produced by using Sonochemical Synthesis;* **Amira Fragoso**, Tommy Merino, Dwight Acosta, Amira Fragoso

POSTER # 308

849 *Exploring the Structure and Defects in MnCuSiTe, a Multiferroic system using Electron Microscopy;* **Sai Venkata Gayathri Ayyagari**, Chandan De, Yu Liu, Boyang Zheng, Sreekant Anil, Vincent Crespi, Zhiqiang Mao, Nasim Alem

POSTER # 309

850 *Ferroelectric STO? Tilt and Astigmatism May Lead to Misleading Displacements at Atomic Resolution;* **Sarah Stock**, Milan Haddad, Seonkyu Shin, Niyor Sharma, Kristina Holsgrove, Amit Kumar, Sergey Lisenkov, Inna Ponomareva, Nazanin Bassiri-Gharb, Lewys Jones

POSTER # 310

851 *In-situ Atomic-Resolution Observations of Formation of Amorphous Iron during Reduction of Iron Oxides in Hydrogen;* **Yupeng Wu**, Zhikang Zhou, Wenhui Zhu, Linna Qiao, Shuonan Ye, Xiaobo Chen, Renu Sharma, Judith Yang, Mengen Wang, Guangwen Zhou

POSTER # 311

852 *Live User-Guided Low Dose Scanning Transmission Electron Microscopy Imaging;* **Alexandre Pofelski**, Lewys Jones, Jonathan Peters, Byeongjun Gil, Myung-Geun Han, Sang-Wook Cheong

POSTER # 312

853 *Nanoscale investigation of magnetic and optical properties of strain-engineered 2D antiferromagnetic (VNi) PS3;* **Patricia Meza**, Alp Kulaksizoglu, Andrew Kindseth, Mercouri Kanatzidis, Vinayak Dravid

POSTER # 313

854 *Plasma Treatment Strategies for Tailoring the Thickness and Surface Chemistry of VSe_2 and V_2O_5 for Magnetic Material Design;* **Abdulla Alrasheed**, Bryan Tracy

POSTER # 314

855 *Probing the Structure of a Novel Chalcogenide Multiferroic;* **Sreekant Anil**, Sai Venkata Gayathri Ayyagari, Yuxi Zhang, Yu Liu, Boyang Zheng, Vincent Crespi, Zhiqiang Mao, Nasim Alem

POSTER # 315

856 *Stop Sweeping it Under the Rug! – Revealing the Hidden Phases and Elements of 2D Material Interfaces with Atom Probe Tomography;* **Rahil Haria**, James Douglas, Geri Topore, Sophia Linssen-Pitsaros, Ray Duffy, Gerard O'Connor, Nazar Farid, Ageeth A. Bol, Baptiste Gault, Shelly Michele Conroy

POSTER # 316

857 *Structural Studies of Single-Atom Yb3 Defects in CrI3 2D Ferromagnets Using Scanning Transmission Electron Microscopy;* **Orlando Daniel Salguero Pesantez**, Guodong Ren, Thom Snoeren, Kimo Pressler, Daniel Gamelin, Juan Idrobo

POSTER # 317

858 *Study of Ferroelectric Phases in HfZrOx Thin Films with varying La Content using Precession Electron Diffraction & In-Situ Heating- Biasing Techniques;* **Pradyumna Kumar Parida,** Paola Favia, Olivier Richard, Gourab De, Mihaela Popovici, Eva Grieten

POSTER # 318

859 *Where is my Ion? Correlative STEM and APT Analysis of Low-Dose Magnetic Ion Implantation in Ferroelectric Materials;* **Geri Topore**, James Douglas, Maddison Coke, Richard Curry, Sinead Griffin, Lynette Keeney, Baptiste Gault, Shelly Michele Conroy

P06.P1 Multimodal Data Acquisition and Analysis of Materials Under Real-World Conditions Using Advanced Electron Microscopy

POSTER # 319

860 *In-Situ Atomic-Scale Visualization of Dual Oxidation Mechanisms in NiCr Alloys;* **Shuonan Ye**, Linna Qiao, Yupeng Wu, Judith Yang, Stephen House, Guangwen Zhou

POSTER # 320

861 *Investigation of Creep Deformation in Copper-Chromium-Zirconium Alloy, a Candidate Heat Sink Material in Fusion Devices using Multiscale Experimental Methods;* **Parth Kulkarni**, Muhammad Zeeshan Mughal, Ellies Muyapa, Benjamin Poole, Salih Gungor, Alex Forsey

POSTER # 321

862 *Natural Liquid Cells: Nanoscale Fluid Inclusions in Asteroid Samples;* **Beau Prince**, Zack Gainsforth, Maizey Benner, Zega Thomas

POSTER # 322

863 *TemCompanion: An Open-Source Multi-Platform GUI Program for TEM Image Processing and Analysis;* **Tao Ma**

P06.P2 Multimodal Data Acquisition and Analysis of Materials Under Real-World Conditions Using Advanced Electron Microscopy

POSTER # 323

864 *Crystallographic Analysis of Trapiche Ruby using Low-Vacuum Field Emission Scanning Electron Microscopy, Electron Backscatter Diffraction Pattern, Raman Spectroscopy, and Field Emission Electron Probe Microscopy;* **Junji Yamanaka**, Yasushi Takahashi, Toshiya Atsumi, Ryunosuke Kawamura, Satoki Shinozuka, Chiaya Yamamoto

POSTER # 324

865 *Dual-Modal Depth Sensitive Real Space Magnetic Imaging of 3D Skyrmions in Multilayer Thin Films;* **Jacques Reddinger**, William Parker, Sergio Montoya, Eric Fullerton, Benjamin McMorran, Rich Moraski

POSTER # 325

866 *ParticleGENOME: Real-time High-Throughput Particle Characterization in STEM;* **Utkarsh Pratiush**, Austin Houston, Paolo Longo, Remco Geurts, Gerd Duscher, Sergei Kalinin

P07.P1 High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments

POSTER # 326

867 *Angled Plan View Sample Preparation of Diamond Thin Films for Multiscale Analysis;* Jonathan Anderson, Dipa Devkota, Florence Nugera, Mark Holtz, Edwin Piner

POSTER # 327

868 *In-situ Observation of Secondary Grain Boundary Dislocation and Grain Boundary Disconnection Interaction; Yutong Bi, Yuan Tian, Xiaoguo Gong, Leonardo Estrada, Horst Hahn, David Srolovitz, Jian Han, Xiaoqing Pan*

POSTER # 328

869 *Wire Arc Additive Manufacturing of Copper Nickel and Nickel Aluminum Bronze: A Microscopy Driven Microstructure-Property Study; Andres Marquez, Soumya Nag, Brian Post, Lisa Smith, Whitney Watters, Craig Blue*

POSTER # 329

870 *Analytical and Experimental Study of the Degradation Factor by Accelerated Aging in AISI 4140 Steels in the Food Industry; Misael Flores Baez, Israel Flores Baez, Israel Fernando Barajas, Arturo Sanchez Cervantes*

POSTER # 330

871 *Atomic-Scale Investigation of Defect Formation and Phase Transformation in Ir-Deposited Ga_2O_3 Schottky Diodes; Md Mehidi Hassan, Christopher Chae, Jinwoo Hwang*

POSTER # 331

872 *Fever State Simulation to Study the Behavior of Novel Ti-Mn Alloys for Medical Devices; Sofia Sakr-Nassef, Cristina Jimenez-Marcos, Julia Mirza-Rosca, Ionelia Voiculescu*

POSTER # 332

873 *How Silane Surface Modification Affects the Structure of PLA/Wax/ZnO Composites During Hydrolytic Degradation;* **M.E. Mendoza-Duarte**, Jacqueline Bocarando Chacón, Karla Campos Venegas, Jose Mendoza-Duarte, A. Vega Rios

POSTER # 333

874 *In Situ TEM Observation of Crack Deflection and Arrest in Graphene-Based Nanocomposite;* **Kangsik Kim**, Jongchan Yoon, Younggeun Jang, Jonghoon Choi, Seojin Kim, Zonghoon Lee

POSTER # 334

875 *Long-Term Thermal Stability and Evolution of Ni-rich laths in Cr-alloys;* **Bryan Lim**, Chris Fancher, Matthew Boebinger, Jonathan Poplawsky, Peeyush Nandwana

POSTER # 335

876 *Microanalysis of Natural Materials Subjected to the Space Environment;* **Katherine Burgess**

POSTER # 336

877 *Role of Heat Treatment on Microstructural and Mechanical Properties of Copper–Nickel Alloys Processed by Wire Arc Additive Manufacturing;* **Selda Nayir**, Jonathan Poplawsky, Matthew DeJong, Charles Shane Hawkins, Jennifer Gaies, Lisa Smith, Brian Post, Whitney Watters, Soumya Nag, Craig Blue

POSTER # 337

878 *X-Ray Absorption-Corrected STEM-EDS Tomography for Absolute Quantification Across Interfaces in a Mg-Al-Ca Alloy;* **Jessica Snelson**, Sean Collins, Yu Yuan, Katherine MacArthur

P08.P3 Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials

POSTER # 338

879 *Electronic Structure of Ruddlesden-Popper Faults in Perovskite Oxide Thin Films;* **Jay Shah**, Supriya Ghosh, Rishi Raj, Fengdeng Liu, Bharat Jalan, Turan Birol

POSTER # 339

880 *Hafnium modified SiO2: properties;* **Ricardo Ortega Díaz**, Heriberto Esteban Benito, Mayela Garcia de Alva Magos, Juan Antonio Carmona García, Mariano Norzagaray Campos, Omar Llanes Cárdenas, Hector A. Calderon, Levi Quiroz Aguilera, Luz A. Garcia Serrano

POSTER # 340

881 *Influence of Mechanical Loading at Low-Temperature on the Functional Fatigue of Shape Memory Alloys;* **Seyed Aref Golsorkhi**, Dinc Erdeniz

POSTER # 341

882 *In-Situ Dynamics of Moiré Superlattice Epitaxy as a Platform for Site-Selective Adhesion and Growth;* **Kang'an Wang**, Kate Reidy, Andrew Minor, Thomas Darlington, Archana Raja, Michael Crommie

Scientific Program

P Physical Sciences Posters – Wednesday cont.

3:00 PM – 5:00 PM **Exhibit Hall**

POSTER # 342

883 *Machine-Learning Molecular Dynamics for Insights into Vibrational Electron Energy Loss Spectroscopy;* **Harrison Walker**, Eric Hoglund, De-Liang Bao, Thomas Pfeifer, Patrick Hopkins, Jordan Hachtel

POSTER # 343

884 *Melting of 2D Charge Crystals Quantified with In Situ TEM;* **Jeremy Shen**, Alex Stangel, Suk Hyun Sung, Nishkarsh Agarwal, Kai Sun, Robert Hovden

POSTER # 344

885 *Mineralogical Comparison Between Crocidolite and Amosite Asbestos Using Atomic Resolution Scanning Transmission Electron Microscopy;* **Ichiro Ohnishi**, Hayato Miura

POSTER # 345

886 *Optimal 3D Chemical Recovery with Multimodal Electron Tomography;* **William Millsaps**, Jason Manassa, Jonathan Schwartz, Robert Hovden

POSTER # 346

887 *Use of the HFCVD-CSVT Technique to Obtain Nanostructured Tungsten Oxide with Bundles-, Flowers-, Nanospheres- and Nanowires-like Morphologies;* **Carlos Felipe**, Fernanda Hernandez-Rodrigez, Oscar Goiz, Ramon Peña-Sierra, Karla Quiroz-Estrada, Diana Guerrero-Araque, Miriam Cruz-Leal

P10.P2 Innovative in-situ Imaging Techniques for Material Characterization, Synthesis, and Processing

POSTER # 347

888 *Direct Imaging of Field-Induced Modulation of Two-Dimensional Electron Gas at LaAlO3/SrTiO3 Interface by Polar Distortion of LaAlO3;* **Jinsol Seo**, Hyungwoo Lee, Kitae Eom, Jinho Byun, Taewon Min, Jaekwang Lee, Kyoungjun Lee, Chang-Beom Eom, Sang Ho Oh

POSTER # 348

889 *Magnesium-Assisted Combustion Synthesis of TiC Nanoparticles;* **M.L. Camacho-Rios**, Guillermo Herrera-Perez, M.A. Ruiz-Esparza-Rodriguez, R. Pérez-Bustamante, Jose Betancourt-Cantera, C. Carreño-Gallardo, M.L. Luján-Aguilar, L.C. Rodríguez-Pacheco, D. Lardizabal-Gutiérrez

POSTER # 349

890 *Trapping Nanoparticles in Nanofluidic Traps Using a Monolithic Liquid Phase-TEM Chip;* **Niccolò Bottauscio**, Mervan Ramadan, Oliver Lin, Zhiheng Lyu, Chansong Kim, Sofie Tidemand-Lichtenberg, Joakim Lajer, Qian Chen, Emil Jensen, Kristian Speranza Mølhave

POSTER # 350

891 *Atomic Diffusion Promoted in the MoO3-Au Heterostructure by the Electron Beam in the Transmission Electron Microscope;* **Yazmin Hernandez**, Esperanza Baños-López, Claudia Haydee González de la Rosa

POSTER # 351

892 *Complexities in Electron Beam Induced Current (EBIC) Image Formation in Low-Impedance Specimens;* **Byeongjun Gil**, Fernando Camino, Armando Rua, Kim Kisslinger, Myung-Geun Han, Daniel Hayes, Juan Alban, Rakesh Agrawal, Miyoung Kim, Yimei Zhu

POSTER # 352

893 *Moving with the Times: Predictive Drift Correction of Multi-frame STEM;* **Matthew Mosse**, Jonathan Peters, Shelly Michele Conroy, Lewys Jones

POSTER # 353

894 *Uncovering the Formation Mechanism of Hexagonal Porous MXene;* **Yongfa Cheng**, Kunmo Koo, Zizhen Cai, Xiaobing Hu, Vinayak Dravid

Thursday, July 31

Scientific Program

A Analytical/Instrumentation Sciences Symposia – Thursday Morning

A03.4 When 4D-STEM Meets More Dimensions: Deepening Materials Insights with Efficient Experimental Design and Smart Computational Microscopy

Thursday 8:30 AM

8:30 AM **895** *Local Orbital Ptychography and Its Derivatives for Ultrahigh Resolution and Robustness;* **Rong Yu** (Invited), Wenfeng Yang, Yuhao Liu

9:00 AM **896** *Automated Tomographic 4D-STEM Data Acquisition Workflow Connected with Ptychographic High-Resolution 3D Reconstruction;* **Shengbo You**, Baixu Zhu, Xingchen Ye, Philipp Pelz

9:15 AM **897** *Post Sample Aberrations in STEM;* **Andrew Lupini**, Miaofang Chi, Eric Hoglund

9:30 AM **898** *Probing Structural Origins of Ambient Pressure Superconductivity and Charge Modulation in Nickelate Thin Films with Multislice Electron Ptychography;* **Lopa Bhatt** (Invited), Abigail Jiang, Eun Kyo Ko, Noah Schnitzer, Grace Pan, Yidi Liu, Harold Hwang, Julia Mundy, David Muller, Berit Goodge

A07.4 Advances in SEM Instrumentation, Application and Techniques

Thursday 8:30 AM

8:30 AM **899** *Secondary Electron Plume Imaging and Applications for Mapping Electric Fields;* **Francis Alcorn**, Christopher Perez, Eric Smoll, Debjit Ghoshal, Elena Salagre, Elliot Fuller, Jeffrey Blackburn, Albert Talin, David Chandler, Suhas Kumar

8:45 AM **900** *Physical limits of the detection of X-rays and electrons in SEM and TEM applications;* **Björn Eckert**, Lothar Strueder, Martin Huth, Petra Majewski, Andrew Fram, Adrian Niculae, Heike Soltau

9:00 AM **901** *Wavelength Dispersive Spectrometry (WDS) - Is There Something Better Than Gas Flow X-Ray Detectors?;* **Patrick Camus**, Ken Moran, Michael Matthews, Richard Wuhrer

9:15 AM **902** *E-Beam Probing: A Revolutionary Solution for Backside Power Delivery Network (PDN) and Backside Power Vias in Advanced Integrated Circuits;* **Nitin Varshney**, M Shafkat M Khan, Navid Asadizanjani

9:30 AM **903** *From EBIC to Scanning Transmission EBIC: Probing Functional Oxide-Based Two Terminal Lamella Devices;* **Daniel Vasquez**, Robert Winkler, Alexander Fakiner, A. Wahab Shakib, Leopoldo Molina-Luna

9:45 AM **904** *Experimental Analysis of Detector Noise in Scanning Electron Microscopy;* **Surya Kamal**, Kevin Nyaburi, Richard Hailstone

A09.7 Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI

Thursday 8:30 AM

8:30 AM **909** *Dislocation network tomography via focused ion beam-electron channeling contrast imaging;* **Julia Deitz** (Invited), Tim Ruggles, Andrew Polonsky, Luis Jauregui, Alexandre Bordas

9:00 AM **910** *Combining in situ ECCI with HR-EBSD Analysis to Understand Dislocation Grain Boundary Interactions under Monotonic and Cyclic Loading Conditions;* **Yang Su**, Josh Kacher

9:15 AM **911** *Characterization of 9-12% Cr Tempered Martensite Ferritic Steels using Correlative Multi-Modal Scanning Electron Microscopy;* **Johan Westraadt**, William Goosen

9:30 AM **912** *Dynamic Band Contrast Imaging: Novel methodology for crystalline defect metrology in SEM based on EBSD;* **Martin Čalkovský**, Jakub Holzer, Branislav Straka, Chris Stephens, Tomáš Vystavěl

9:45 AM **913** *Correlative Microscopy to Reveal Origins of Dislocation Luminescence in Diamond;* **Eveline Postelnicu**, Tri Nguyen, Haoxue Yan, Santiago Corujeira Gallo, Alastair Stacey, David Hardeman, Gruffudd Williams, Bruce Bolliger, Kunal Mukherjee

A10.3 Advances in Cryogenic Transmission Electron Microscopy and Spectroscopy for Energy and Quantum Materials and Technologies

Thursday 8:30 AM

9:00 AM **914** *Microscopic Origins of the Long-Range Charge-Density Wave in Kagome FeGe;* **Saif Siddique**, Mason Klemm, Qi Tang, Mehrdad Kiani, Mostafa Hassani, Pengcheng Dai, Judy Cha

9:15 AM **915** *Cold to Go: Cryogenic Atom Probe Tomography to Investigate the Nanoscale Solid–Liquid Interfaces of SnSe Anodes for Next-Generation Batteries;* **Lukas Worch**, Neil Mulcahy, Ramin Jannat, James Douglas, Kavin Arunasalam, Baptiste Gault, Valeria Nicolosi, Shelly Michele Conroy

9:30 AM **916** *A Custom GIS System and Workflow Enabling the Targeted Liftout of Cryogenically Frozen Samples for APT and TEM analysis;* **Daniel Perea** (Invited), Trevor Moser, Mark Wirth, James Evans

B Biological Sciences Symposia – Thursday Morning

B03.1 Application of Microscopy Techniques for Research and Diagnosis of Diseases in Humans, Plants and Animals

Thursday 8:30 AM

8:30 AM **917** *Multimodal Histologic and Imaging-based Readouts of Complex in vitro Models for Research and Drug Discovery;* **Eliah Shamir** (Invited), Charles Havnar, Mike Reichelt, Miriam Baca, Lenitza Nieves Lopez, Loryn Holokai, Allison Zajac, Becca Hsia, Linda Rangell, Meredith Sagolla

9:00 AM **918** *Assessing the Morphological Changes of Residual Gadolinium-based Contrast Agents Found in Tissue via Scanning Transmission Electron Microscopy;* **Angelica Saenz-Trevizo**, G. Patricia Escobar, Adrian Brearley, Karol Dokladny, Tamara Howard, Brent Wagner

9:15 AM **919** *Multiscale Chemistry and Structure of Stony Coral Tissue Loss Disease Lesions;* **Alejandra Coronel-Zegarra**, Edward De La Uz, Diannelle Lacambra Rivera, Paul Smeets, Joshua Voss, Youli Li, Phillip Kohl, Vivian Merk

9:30 AM **920** *Advancing Musculoskeletal Regeneration with Multimodal Imaging and Semi-Automatic Image Analysis;* **Krista Habing** (Invited), Yong How Tan, Cynthia Alcazar, Cory Brown, Karina Nakayama

B08.3 Advances in Cryo-EM Technology

Thursday 8:30 AM

8:30 AM **921** *Nanocrates: Inside-Out Scaffolds for Sample Protection from the Air-Water Interface During Cryo-EM Sample Preparation;* **Misha Kopylov** (Invited), Matthew Jenkins, Daija Bobe, Alex de Marco, M.G. Finn

9:00 AM **922** *Development of 3D Printed Flow Cells for Correlative Imaging Pipelines: From Live Cell Imaging Under Flow to Frozen-Hydrated Cryo-EM;* **Nicholas Rienstra**, Steve Garvis, Juan Sanchez, Elizabeth Wright

9:15 AM **923** *Silicon-Based CryoEM Grids: Revolutionizing Sample Stability and Data Quality with Microfabrication and Graphene;* **Hector Hugo Perez Garza**, Vasilis Papadimitriou, Evgeniya Pechnikova, Merijn Pen

9:30 AM **924** *Integrating Cryo Soft X-Ray Tomography into CLEM and Volume EM Correlative Workflows;* **Sergey Kapishnikov**, Paul Sheridan, William Fyans, Fergal O'Reilly, Tony McEnroe, Kenneth Fahy

9:45 AM **925** *Revealing Imperfections and Beam-Induced Damage in Protein Crystals with 4D-STEM Under Cryogenic Conditions;* **Jung Cho**, Shervin Nia, Ambarneil Saha, Peter Ercius, Matthew Mecklenburg

Scientific Program

C Cross-Cut/Interdisciplinary Sciences Symposia – Thursday Morning

C02.1 Lens On Diversity: Empowering Engagement in the Microscopy Sciences

Thursday 8:30 AM

8:30 AM **926** *The Art of Science: A Colorful Exploration of Microscopy and Semiconductors for K-12 Engagement;* **Rosa Diaz**

8:45 AM **927** *Microscopy Lab Student Workforce Development: The University of Utah, Electron Microscopy Lab's Approach on Transforming Undergraduate Student Aides from Lab Technicians to Professional Analysts;* **Paulo Perez**

9:00 AM **928** *Owning Mentorship and Collaboration in 3DEM and Mitochondrial Research For Career Advancement;* **Antentor Hinton** (Invited), Andrea Marshall

C06.5 Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy

Thursday 8:30 AM

8:30 AM **929** *The Continuing Evolution of Automation for Electron Microscopy;* **Peter Crozier** *(Invited)*

9:00 AM **930** *Automating 4D Scanning Transmission Electron Microscopy for High-Throughput Data Acquisition;* **Alexander Pattison**, Samuel Welborn, Ambarneil Saha, David Moreau, Jian Zhang, Wolfgang Theis, Aaron Brewster, Chris Harris, Bjorn Enders, Peter Ercius

9:15 AM **931** *Accelerated Identification of Polar Domains From 4D-STEM Using Group Convolutional Neural Networks;* **Fintan Hardy**, Aron Walsh, Michele Shelly Conroy

9:30 AM **932** *Building Automated Microscopes: Rewards Are All We Need (Now);* **Sergei Kalinin** (Invited), Kamyar Barakati, Yu Liu, Utkarsh Pratiush, Austin Houston, Gerd Duscher

Scientific Program

P02.3 Electron Microscopy for Ferroic Materials: From Atomic-scale Imaging to in-situ Control

Thursday 8:30 AM

8:30 AM **933** *In situ Atomic-Scale Imaging Unveils Clamping-Enhanced Strain and Phase Transition Pathways in Antiferroelectric Thin Films;* **Menglin Zhu**, Michael Xu, Colin Gilgenbach, Hao Pan, Lane W. Martin, James LeBeau

8:45 AM **934** *Ex Situ and In Situ STEM Investigations of Memristive Switching Mechanisms in Off-stoichiometric SrTiO3;* **Dan Zhou**, Changming Liu, Alexander Meledin, Wahib Aggoune, Yongwen Sun, Thilo Remmele, Andreas Fiedler, Mohamed Abdeldayem, Tobias Schulz, Yang Yang

9:00 AM **935** *Nanoscale Stripe Domain Structures in Ferroaxial RbFe(MoO4)2;* **Byeongjun Gil** (Invited), Fei-Ting Huang, Sang-Wook Cheong, Miyoung Kim, Yimei Zhu, Myung-Geun Han

9:30 AM **936** *Probing of Dislocation-Controlled Domain Nucleation and Domain Wall Pinning in Single-Crystal BaTiO3 by MEMS-Based Multi-Stimuli In Situ (S)TEM;* **Tianshu Jiang**, Robert Eilhardt, Alexander Zintler, Yevheniy Pivak, Fangping Zhuo, Leopoldo Molina-Luna

9:45 AM **937** *Control of Structure and Epitaxy of High-k Metal Oxides Through In Situ Electron Microscopy;* **Rishabh Kothari**, Pip Knight, Zhenjing Liu, Paul Miller, Hanglong Wu, Rafael Jaramillo, Frances Ross

P04.8 Energy Materials: Transport Pathways, Interfaces, & Durability for Performance

Thursday 8:30 AM

8:30 AM **938** *In Situ TEM Probing of Structural and Electronic Dynamics of Nanoparticles for Energy Materials Using;* **Piyush Haluai** (Invited), Peter Crozier

9:00 AM **939** *Unveiling Temperature-Driven Phase Separation of Completely Miscible Au-Pd Alloys: An In-Situ TEM Insights;* **Abhijit Roy**, Raul Arenal, Simon Hettler

9:15 AM **940** *Automated 2D and 3D Electron Microscopy for Assessing Nanoparticle Degradation on Porous Carbon Supports at The Nanoscale;* **Lynda Amichi**, Obaidullah Rahman, Amir Ziabari, David Cullen

9:30 AM **941** *Atomistic Visualization of Metal-support Interaction Assisted Sintering Dynamics;* **Xiaobo Chen**, Sabrina Gericke, Seunghwa Hong, Zhihengyu Chen, Meng Li, Dmitri Zakharov, Christopher Tassone, Phillip Christopher, Ashley Head, Judith Yang

9:45 AM **942** *Studying Different Modes of Fluxionality on Pt Nanoparticle Surfaces using In Situ Transmission Electron Microscopy;* **Blake Dorame**, Peter Crozier

P05.8 Advances in Imaging and Spectroscopy Beyond Ambient Conditions

Thursday 8:30 AM

8:30 AM **943** *Cryogenic STEM-EELS: Connecting Atomic Structure and Excitonic Properties in Twisted 2D MoTe2;* **Elizaveta Tiukalova** (Invited), Olugbenga Olunloyo, Kai Xiao, Essance Ray, Juan Idrobo, Xiaodong Xu, Andrew Lupini, Miaofang Chi

9:00 AM **944** *Atomic Insights into Ferroelectric Properties in Moiré Superlattices;* **Guodong Ren**, Orlando Daniel Salguero Pesantez, Juan Idrobo

9:15 AM **945** *R- vs H-Stacking order Determination of MoTe2/WSe2 Heterobilayers using STEM Atomic Resolution Imaging;* **Essance Ray**, Guodong Ren, Heonjoon Park, Jack Barlow, Xiaodong Xu, Juan Idrobo

9:30 AM **946** *Exploring Chemistry and Confinement in Engineered 2D hBN using Aberration-Corrected STEM and Monochromated EELS;* **Frances Allen** (Invited), Dana Byrne, Luiz Tizei, Alex Smolyanitsky, Juan Idrobo, Demie Kepaptsoglou, Quentin Ramasse

P06.4 Multimodal Data Acquisition and Analysis of Materials Under Real-World Conditions Using Advanced Electron Microscopy

Thursday 8:30 AM

8:30 AM **947** *Monitoring the Early Stages of Plaster Setting using Multiscale Operando Environmental Electron Microscopies;* **Karine Masenelli-Varlot**, Alexandre Fantou, Anna Wozniak, Annie Malchère Lucian Roiban, Sylvain Meille, Solène Tadier

8:45 AM **948** *Fabrication Processes of Next-Gen Integrated Circuits through the Lens of In Situ Transmission Electron Microscopy;* **Utkur Mirsaidov** (Invited)

9:15 AM **949** *Stress-Driven Disproportionation in Oxygen Containing Silicon Nitride Membrane;* **Kunmo Koo**, Byeongseok Seo, Roberto dos Reis, Xinqi Chen, Xiaobing Hu, Vinayak Dravid

9:30 AM **950** *Designing and Investigating 3D-Engineered RRAM Devices for Realistic In Situ Electron Microscopy Studies;* **Robert Eilhardt** (Invited), Daniel Vasquez, Alexander Fakiner, A. Wahab Shakib, Leopoldo Molina-Luna

Scientific Program

P Physical Sciences Symposia – Thursday Morning cont.

P07.3 High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments

Thursday 8:30 AM

8:30 AM **951** *Irradiation Effects in Zirconium Nuclear Fuel Cladding Tubes Investigated by Atom Probe Tomography;* **Mattias Thuvander** (Invited), David Mayweg, Johan Eriksson, Hans-Olof Andrén

9:00 AM **952** *Investigating the nano-scale distribution of alloying elements in Zircaloy-4 using high resolution characterization techniques;* **Sohail Shah**, Mukesh Bachhav, Peng Wang

9:15 AM **953** *Post Irradiation Examination of In-service Corrosion and IASCC in Harvested PWR Baffle Former Bolts;* **Timothy Lach**, Maxim N. Gussev, Xiang (Frank) Chen

9:30 AM **954** *Post Neutron Irradiation Characterization of the Effects of Grain Size on Microstructural Evolution and Mechanical Properties in an FeCrAl Alloy;* **Joshua Rittenhouse**, Mukesh Bachhav, Sohail Shah, Laura Hawkins, Cameron Howard, David Frazer, Nedim Cinbiz, Tiankai Yao, Haiming Wen

9:45 AM **954.5** *Visualization of Moiré superlattice induced by heterostrain in MoS2; Yu-Mi Wu (Invited),* **Stephen Funni**, Saif Siddique, Sihun Lee, Natalie L. Williams, Judy Cha

P08.6 Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials

Thursday 8:30 AM

8:30 AM **955** *Revealing the Microscopic Pattern of GB's Effect on Macroscopic Thermal Conductivity;* **Xiaowang Wang**, Chaitanya Gadre, Xingxu Yan, Runqing Yang, Bolin Liao, Xiaoqing Pan,

8:45 AM **956** *Imaging Oxygen Dopants in Sr2CuO3+δ Superconducting Film by Multislice Electron Ptychography;* **Hongbin Yang**, Jinkwon Kim, Darrell Schlom, David Muller

9:00 AM **957** *Planar Defects and Structural Heterogeneity in Ultrawide Bandgap Semiconductors;* **Ramandeep Mandia**, Mohamadali Malakoutian, Kelly Woo, Arpit Nandi, Srabanti Chowdhury, Martin Kuball, David Smith

9:15 AM **958** *Understanding the Structural Origins of Checkerboard Contrast in Low-Leakage $SrHfO_3$ via 4D-STEM;* **Jeewon Choi**, Jonghwa Kim, Jongkyung Ko, Kookrin Char, Celesta Chang

9:30 AM **959** *Revisiting the EELS Fine Structure Analysis in Zircon as a Tool for Interpreting its Structural Evolution into a Disordered System;* **Matthieu Bugnet**, Pierre-Marie Zanetta, Gianluigi Botton, Anne-Magali Seydoux-Guilllaume, Guillaume Radtke

P10.8 Innovative in-situ Imaging Techniques for Material Characterization, Synthesis, and Processing

Thursday 8:30 AM

8:30 AM **960** *In situ gas cell TEM investigation of nanoporous and zeolite-based nanocatalysts;* **Alexandre Foucher** (Invited), Kinga Unocic, Stephen Purdy, Eric Stach, Andrew Sutton, David Cullen

9:00 AM **961** *In-situ Monitoring of Automated Defect Formation in STEM;* **Matthew Boebinger**, Zijie Wu, Kevin Roccapriore, Ayana Ghosh, Maxim Ziatdinov, Sergei Kalinin, Raymond Unocic

9:15 AM **962** *Atomic-Scale In Situ ADF-STEM Observation of MoS2 Lithiation;* **Kei Nakayama**, Shunsuke Kobayashi

9:30 AM **963** *High-Speed Recordable Direct Electron Detection Cameras Using SOI-CMOS Technology for Dynamical Observation in Transmission Electron Microscopy;* **Takafumi Ishida**, Yuichi Ishida, Makoto Kuwahara, Yasuo Arai, Koh Saitoh

9:45 AM **964** *Towards Cinematic STEM and Beyond: Fast Frame Rates Using Overdriven Scan Shaping;* **Lewys Jones**, Jonathan Peters, Grigore Moldovan

A Analytical/Instrumentation Sciences Posters – Thursday

10:00 AM – 12:00 PM **Exhibit Hall**

A03.P1 When 4D-STEM Meets More Dimensions: Deepening Materials Insights with Efficient Experimental Design and Smart Computational Microscopy

POSTER # 354

1064 *Classification of Silicate-Filled Vesicles in Pyrrhotite grains from Asteroid Ryugu via 4DSTEM;* **Maizey Benner**, Beau Prince, Devin Schrader, Zega Thomas

POSTER # 355

1065 *Fast 'Frame Based' Precession Mapping Technique for Multimodal STEM Applications;* **Ricardo Egoavil**, Yu Chu-Ping, Pavel Potocek, Chen Li, Maria Meledina, Maarten Wirix, Cigdem Ozsoy-Keskinbora, Dominique Delille, Bert Freitag

POSTER # 356

1066 *In-Situ 4D STEM: Capturing 5D Insights into Material Dynamics in Liquid;* **Benjamin Miller**, Liam Spillane, Emil Jensen, Cory Czarnik

POSTER # 357

1067 *Scanning Convergent Angle Rocking Electron Diffraction (SCARED) for Expanding Real and Reciprocal Space Information;* **Benjamin Fein-Ashley**, Ting-Ran Liu, Koushik Jagadish, Murat Pamuk, Yu-Tsun Shao

POSTER # 358

1068 *4D-STEM Analysis of Fe-Sulfides from the Early Solar System;* **Nicole Kerrison**, Zack Gainsforth, Devin Schrader, Zega Thomas

POSTER # 359

1069 *4D-STEM Investigation of Point Defects in Off-Stoichiometric $SrTiO_3$ for Memristive Switching Applications;* **Ka Man Yip**, Changming Liu, Cigdem Ozsoy-Keskinbora, Sorin Lazar, Martin Albrecht, Dan Zhou

POSTER # 360

1070 *Advancing 4D STEM using Computational Techniques;* **Alex Robinson**, Jack Wells, Daniel Nicholls, Nigel Browning

POSTER # 361

1071 *Autonomous Acquisition of 4D-STEM Data to Dynamically-Sample Hidden Material Heterogeneities using Live Quantitative Analysis;* **Jacob Smith**, Zijie Wu, Rama Vasudevan, Guannan Zhang, Miaofang Chi

POSTER # 362

1072 *Chromatic Aberration Considering for Optimum Bright Field Imaging using 4D STEM Data;* **Nanami Yamamoto**, Mitsuru Nogami, Takehito Seki, Yuichi Ikuhara, Naoya Shibata

POSTER # 363

1073 *Deciphering Growth Kinetics of a Topological Insulator using in-situ 4D-STEM;* **Matthew Boebinger**, Debangshu Mukherjee, Zijie Wu, Jane Chen, Soumendu Bagchi, Matthew Brahlek

POSTER # 364

1074 *Deep Learning-embedded 4D-STEM CBED Approach for Mapping Polymorphic Phase Distribution of Doped Hafnia Thin Films;* **Sang-Hyeok Yang**, Young-Hoon Kim, Min-Hyoung Jung, Hyangsook Lee, Eunha Lee, Young-Min Kim

POSTER # 365

1075 *Hamiltonian-Preserving Symplectic Neural Networks for Robust Phase Retrieval in 4D STEM Ptychography;* **Roberto dos Reis**, Gabriel dos santos, Vinayak Dravid

POSTER # 366

1076 *Multimodal STEM Analysis of Aluminum Alloy with Multiscale Precipitates;* **Anna Mian**, Nithin Balaji V.I., Roberto Pivato, Jiří Honč

POSTER # 367

1077 *Optimizing 4D STEM Data Collection and Processing for Crystal Orientation Mapping Analysis in DigitalMicrograph;* **Fernando Castro**, Anahita Pakzad

POSTER # 368

1078 *Unraveling Nanodiffraction Patterns of Metal Halide Perovskite Nanowires Inside Carbon Nanotubes;* **Hannah DeVyldere**, Yuxin Jiang, Mary Scott

A07.P2 Advances in SEM Instrumentation, Application and Techniques

POSTER # 369

1079 *Advanced Interactive 3D Visualization Tool for Customizable Analyses of Tomography Datasets in Materials Science;* **Stacey Whitmore**, Rajiv Khadka, Xingyue Yang, Fei Xu, Tiankai Yao

POSTER # 370

1080 *Advances in Individual Detector Characterization and Key Parameters that Affect Modern EDS Performance;* **Lucia Spasevski**, Simon Burgess, Philippe Pinard, John Zhang, Katherine MacArthur

POSTER # 371

1081 *EMplified Scan: Integrated Solution for 4D STEM Experiments;* **Marco Oster**, Hans Tietz

POSTER # 372

1082 *Evaluating the Effectiveness of BEX-EDS SEM for Rapid Forensic Sand Analysis;* **Nicholas Gogola**, Krysten Villalon, Tirzah Abbott

POSTER # 373

1083 *Facilitating Nanomechanical Evaluation of Heterogeneous Microstructures;* **Eric Hintsala**, Kevin Schmalbach, Douglas Stauffer, Sanjit Bhowmick

POSTER # 374

1084 *H5OINA: The Latest Updates to Oxford Instruments' Open-Source File Format;* **Katherine MacArthur**, Philippe Pinard, Lidia Gorokhova, Klaus Mehnert

POSTER # 375

1085 *Impact of low Vacuum on EDS Analysis- Case Studies with Copper and Molybdenum;* **Chung-Ying Tsai**

POSTER # 376

1086 *Large-Area SEM Image Analysis of Semiconductors Using Deep Learning and Statistical Analysis;* **Hyunjin Jung**, Jiwon Yoon, Su-Bong Shon, Kyuman Hwang, SungHo Lee

Scientific Program

A Analytical/Instrumentation Sciences Posters – Thursday

POSTER # 377

1087 *New Integrated Software for Soft X-ray Emission Spectrometer in EPMA System;* **Naoki Nakamura**, Shingo Kinoshita, Shogo Koshiya, Masaru Takakura, Takanori Murano, Kenichi Tsutsumi, Vernon Robertson, Peter McSwiggen

POSTER # 378

1088 *NiTi Composites Reinforced with TiC: Influence of the Chosen Incorporation Strategy;* **Filip Průša**, Frantisek Ruzicka, Petr Kratochvíl, Jafar Fathi

POSTER # 379

1089 *Proposed Automated Sample Preparation and SEM Imaging Workflow for Semiconductor Wafers;* **Nitin Varshney**, Shajib Ghosh, Patrick Craig, Antika Roy, Navid Asadizanjan

POSTER # 380

1090 *Towards Extracting Space Group Information From Experimental EBSD Patterns Using Unsupervised Domain Adaptation;* **Alfred Yan**, Muhammed Nur Talha Kilic, Gert Nolze, Ankit Agrawal, Roberto dos Reis, Vinayak Dravid

POSTER # 381

1091 *Towards the Implementation of Magnetic Hysteresis into Electron Optical Calculations;* **Jan Hajduček**, Jakub Zlámal, Jan Jisa

POSTER # 382

1092 *ZEAL – A Framework for Zero-Shot Enhanced Analysis and Learning for SEM Image Defect Correction in ICs;* **Shajib Ghosh**, Nitin Varshney, Antika Roy, Patrick Craig, Navid Asadizanjani

A08.P1 Next Generation Microanalysis Standards For EPMA and SEM-EDS Calibration

POSTER # 383

1093 *Systematic Uncertainties in X-ray Microanalytical Measurements;* **Nicholas Ritchie**

POSTER # 384

1094 *De-MA.ch: a Web-based Database for X-ray and Electron Microanalysts;* **Julien Allaz**

POSTER # 385

1095 *FIGMAS and MAS Standards Initiatives;* **Abigail Lindstrom**, Emma Bullock, Andrew Mott, William Nachlas, Julien Allaz

POSTER # 386

1096 *Measurements of Secondary Electron Yield for Validation of Scanning Electron Microscopy Models;* **Olga Ridzel**, Glenn Holland, John Villarrubia

POSTER # 387

1097 *Secondary Boundary Fluorescence Corrections in Electron Probe Microanalysis;* **John Donovan**, Aurélien Moy

POSTER # 388

1098 *Standardized Chemical Composition Analysis of Graphene Oxide Flakes with SEM/EDS and XPS Works Reliably;* **Paul Mrkwitschka**, Mario Sahre, Amaia Zurutuza, Jörg Radnik, Vasile-Dan Hodoroaba

POSTER # 389

1099 *Thirty Years After Gene Jarosewich: Exploring the Smithsonian Mineral Collection for New Microanalytical Reference Materials;* **Anette von der Handt**, Timothy Rose, John Fournelle, Rob Wardell, Emma Bullock

POSTER # 390

1100 *Trace Element Analyses of Micron-Size Particles and Statistical Determination of Minimum Detection Limits;* **Peter McSwiggen**, Alexis Riche, Kayleigh Harvey, Shelby Bowden, Rachel Bergin, Spencer Scott, Bryan Foley, Kyle Samperton

A10.P1 Advances in Cryogenic Transmission Electron Microscopy and Spectroscopy for Energy and Quantum Materials and Technologie

POSTER # 391

1101 *Atomic-Scale Structural Insights to Optical Anisotropy in Quasi-One-Dimensional Hexagonal Chalcogenides via Electron Ptychography;* **Ting-Ran Liu**, Boyang Zhao, Shantanu Singh, Jayakanth Ravichandran, Yu-Tsun Shao

POSTER # 392

1102 *Cross-Platform Ultra-Cold Liquid Helium TEM Sample Holder with High Stability;* **Maya Gates**, Nishkarsh Agarwal, Suk Hyun Sung, Emily Rennich, Benjamin Savitzky, Robert Hovden

POSTER # 393

1103 *Cryo-ADF-STEM Imaging of Crown Ether-Based Polyamide Membrane;* **Alex Hall**, Luis Francisco Villalobos, Menachem Elimelech, John Cumings

POSTER # 394

1104 *Electric Field and Mean Inner Potential in BSCCO Below Tc using a liquid Helium holder, Lorentz 4D-STEM and Electron Holography;* **Avi Auslender**, Jules Gardener, Austin Akey, Barnaby Levin, David Bell

POSTER # 395

1105 *Guidelines for Imaging and Analysis of Reactive Anode Materials Using Electron Microscope;* **Shuang Bai**, Shirley Meng

POSTER # 396

1106 *Low-Dose Atomic Resolution EELS Mapping at Cryogenic Temperature;* **Liam Spillane**, Zachary Milne, Bernhard Schaffer, Berit Goodge

POSTER # 397

1107 *Quantifying the Protective Effect of Cryocooling on Electron Beam-Induced Radiolytic Damage via Impact Crater Expansion;* **Ambarneil Saha**, Shervin Nia, Benjamin Savitzky, Nishkarsh Agarwal, Maya Gates, Robert Hovden, Ismail El Baggari, Matthew Mecklenburg, Peter Ercius

B Biological Sciences Posters – Thursday

10:00 AM – 12:00 PM **Exhibit Hall**

B03.P1 Application of Microscopy Techniques for Research and Diagnosis of Diseases in Humans, Plants and Animals

POSTER # 398

1108 *Ultrastructural Localization of Antigens in Tissues with Immunogold Labeling or Enzymatic Metallography and Elemental Analysis Using the BEX SEM Technique;* **Mike Reichelt**, Eric Zhang, Dave Durham, Haithem Mansour, Miriam Baca, Meredith Sagolla

POSTER # 399

1109 *Understanding the Polymerization Mechanism of TELSAM;* **Maria Pedroza**

POSTER # 400

1110 *A High Content Imaging and Machine Learning Approach to Identify the Anti-Cancer Effect of Novel Small Molecules on Cancer Patient-Derived Organoids;* **Rizwan Ali**, Yassinali BASHASAHEB Tamboli, Saba M. Alsubaie, Sikander Hayat, Mohamed Boudjelal

POSTER # 401

1111 *Adrenal Zona Fasciculata Nuclei of Gerbils Fed a High-Carbohydrate Diet: A Morphological and Textural Analysis;* **Zineb Bellahreche**, Nesrine Semiane, Ouahiba Sihali-Beloui, Aicha Mallek, Yasmina Dahmani

POSTER # 402

1112 *An Assessment of the Polymorphism of Small Extracellular Vesicles Isolated from Gastric Juice by Cryo-Electron Microscopy;* **Olga Sokolova**, Gleb Skryabin, Dmitry Bagrov, Andrey Moiseenko, Tatiana Trifonova, Elena Tchevkina, Oiatiddin Imaraliev

POSTER # 403

1113 *Application of Cryo-Electron Microscopy for Visualization of the Membrane-Associated Vesicles;* **Olga Sokolova**, Andrey Moiseenko, Dmitry Bagrov, Tatiana Trifonova, N.A. Basalova, M.A. Vigovsky, U.D. Dyachkova, O.A. Grigorieva, Ekaterina Novoseletskaya, Anastasia Efimenko

POSTER # 404

1114 *Bacteriophage Infectivity against Pseudomonas aeruginosa Biofilm under Different pH Conditions;* **Olga Sokolova**, Yueqi Wang, Maria Bourkaltseva, Alexander Burykin, Viktor Krylov

POSTER # 405

1115 *Cellular Fragility and Neural Sickness of OSRNs within the Olfactory Neuroepithelium of Fish;* **Subrata De**, Gour Maity, SK Samim Hossin, Swasti Barman, Rajkumar Mandi, Swaraj Sakar

POSTER # 406

1116 *Copepod Swimming Biomechanics of Labidocera aestiva;* **Cas Cummins**, Stan Kunigelis

POSTER # 407

1117 *Development and Microscopic Characterization of Polysaccharide-Lipid Based DNA Delivery Nanoparticles;* **Iyinoluwa Sofowora**, Paul Ashtiani, Pumtiwitt McCarthy, James Wachira

POSTER # 408

1118 *DMP-10 as Accelerators in Epoxy Resin Embedding for TEM Sample Preparation;* **Han Chen**

POSTER # 409

1119 *Effect of the Met23Leu Mutation in the KCNE2 Auxiliary Subunit on the KCNH2 channel protein surface expression;* **Olga Sokolova**, Maria Karlova, Andrey Selin, Egor Pivovarov, Bowen Li, Han Zhang, Grigoriy Gluhov, Grigory R. Mitrov

POSTER # 410

1120 *Enhanced Endosome Formation Of Lipid-Modified Dna Via Cell Membranes;* **Yang Hoon Huh**, Haejoo Klm, Jinmin Lee, Eunryul Jeon, Sang Hak Lee, Minseok Kwak

POSTER # 411

1121 *Faster Automated Pipelines To Utilize Volume Electron Microscopy In Biomedical Testing;* **Grahame Kidd**, Emily Benson, Steven Goodman

POSTER # 412

1122 *Multimodal Microscopy to Study Poplar Stem Structures and Cell Walls;* **Guichuan Hou**, Yunjun Zhao, Nidhi Dwivedi, Chang-Jun Liu

POSTER # 413

1123 *Post-embedding Immunogold in Serial Sections: Volumetric Reconstruction, Segmentation and Quantification of Synapses;* **Sofia Garcia-Hernandez**, Cheryl Clarkson-Paredes, Anastas Popratiloff

POSTER # 414

1124 *Simple Method for Pinpointing Specific Osmium-Fixed Cells in Culture for SEM;* **Jessica Riesterer**, Laura Wilsey

POSTER # 415

1125 *Using Convolutional Neural Networks to Identify COVID-19 Infection from Lymphocyte Morphology in Digital Optical Micrographs;* **Nicholas Caldwell**, Daniel Walker, Richard Ling, Robert Banthorpe, Mahesh Prahladan

POSTER # 416

1126 *Using Cryo-Electron Tomography to Study the Molecular Mechanisms of Neurotropic Viral Infections Using Rabies as a Model System;* **Nathan Hardenbrook**, William Wan

POSTER # 444

1154 *Scanning Transmission Electron Microscopy-Based Grain Mapping Via Non-Negative Matrix Factorization Processing;* **Linze Li**, Andrew Li, Ning Lu, John Jin

Scientific Program

C Cross-Cut/Interdisciplinary Sciences Posters – Thursday

10:00 AM – 12:00 PM **Exhibit Hall**

C05.P2 The Relevance and Advancement of Microscopy across the Americas (CIASEM)

POSTER # 418

1128 *Air-Fried Totopos: A Novel Snack Evaluated by Microscopy Techniques for Optimal Food Qualitie;* **Nayely Valeriano-García**, Josué Hernández-Varela, Lizbeth Gonzalez Victoriano, Felipe Cervantes Sodi, Juan Méndez-Méndez, Adrian Alvarez Garrido

POSTER # 419

1129 *Bismuth Nanowires Prepared by Pulsed Laser Deposition and Possible Nucleation and Growth Mechanism;* **Yutao Xing**, Y.S. Pereira, Liying Liu, Ângela Caroliny Agra Pinto, Cauê de Souza Coutinho Nogueira

POSTER # 420

1130 *Carbon Nanotubes with Springs Morphologies Produced from Iron Catalyst;* **Geronimo Perez**, Alexander Caytuero, Hugo Oliveira, Fabio Passos

POSTER # 421

1131 *Confocal Evaluation of Carbon Quantum Dots Obtained by Microwave Synthesis from Coffee And Garlic Residues;* **Nayely Valeriano-García**, Josué Hernández-Varela, Tomas Alejandro Cabrera Pozo, Juan Antonio Morales Sanchez, Magin Gonzalez Moscoso, Edith Ponce Recinos, Lizbeth Gonzalez Victoriano, José J. Chanona-Pérez, Susana Gallegos-Cerda, Benjamín Arredondo-Tamayo

POSTER # 422

1132 *Electron Microscopy of the g-C3N4Ni Heterojunction for Photoreduction of Heavy Metals and Hydrogen Production;* **Hector Calderon**

POSTER # 423

1133 *Elemental Analysis of Fine Particles by SEM-EDS;* **Roberto Ramirez-Leal**, J. Andres Alvarado-Castro, Hammed Estuardo-Moreno, M. Cruz-Campas

POSTER # 424

1134 *Exploring Momentum Transfer in Electron Microscopy: Size and Material Effects on Nanoparticle Resonances;* **Jorge Briseño-Gómez**, Alejandro Reyes-Coronado

POSTER # 425

1135 *Mechanosynthesis of High Entropy Ceramics of MgAlTiCrNi system;* **A. Martínez-García**, C.G. Garay-Reyes, T. Garcia-Mendoza, E. A. Juarez-Arellano, X. Atanacio-Sánchez, P. A. Guerrero-Seañez, J.M. Mendoza Duarte, R. Martínez-Sánchez

POSTER # 426

1136 *Metastable MnGe2 Thin Films Grown on MnO(001) Substrates by Magnetron-Sputtering Technique;* **Adriana Alvídrez-Lechuga**, José Holguín-Momaca, Idris O. Olayiwola, Sion Olive-Méndez

POSTER # 427

1137 *Morphological Study of ZnO Particles Crystalline Faces for Photocatalytic Degradation of Rhodamine B;* **Juan Pantoja-Espinoza**, Gema A. DelaCruz-Alderete, M.A. Ruiz-Esparza-Rodriguez, Raúl A. Ochoa-Gamboa, Francisco Paraguay-Delgado

POSTER # 428

1138 *Morphology and Distribution of Agglomerates in Enzyme-Stabilized Soil: A Scanning Electron Microscopy Analysis;* **Nayely Valeriano-García**, Hoziel Lugo-Martínez, Benjamín Arredondo-Tamayo, Roger Hernández-Zamora, Miguel Cruz-Carrillo, José Jorge Chanona-Pérez, Lizbeth Gonzalez Victoriano

POSTER # 429

1139 *Porosity Induction in a Nanoparticle Assisted by the Time Exposition to Energy of Electron Beam in TEM;* **Yazmin Hernandez**, Oscar Cigarroa-Mayorga, Indira Torres-Sandoval, Ma. del Rosario Munguía-Fuentes

POSTER # 430

1140 *Rapid Detection Of Chemical Constituents of Capsicum Chinense< (Chile Habanero) and Capsicum Pubescens (Chile Manzano) Extracts Obtained From Maceration and Ultrasonic Bath Extraction Methods;* **Dhirendra Kumar Tiwari**, Ana Velia Coria Tellez

POSTER # 431

1141 *Synthesis and Characterization of Copper Nanoparticles through Chemical and Electrochemical Methods;* **Itzel Gutiérrez-Rivera**, Carlos Arzate-Quintana, César Leyva-Porras, Alva Rocío Castillo-González, Corina Chávez-Manini, Dalia Ortiz-Herrera

POSTER # 432

1142 *Synthesis of Mesoporous Samarium Oxide by Using CTAB;* **Salomón Borjas**, Roberto Beltrán Aburto, Pablo Martínez Torres, Salomón Eduardo Borjas García, Ariosto Medina Flores, Javier Villegas-Moreno

POSTER # 433

1143 *Synthesis of Nanoparticles of FeZn by Reactive Milling and Washing by means of Evaporated Alcohol;* **Berenice Castañeda**, Hector Calderon

POSTER # 434

1144 *The Nanofabbed Atlas of Fourier Transforms: Interactive Diffraction Education;* **William Millsaps**, Miti Shah, Robert Hovden

POSTER # 435

1145 *Tuning Wettability of Manganese Oxide Nanostructures by Controlled Morphology Modification;* **Yutao Xing**, A.C.P. Ferreira, Y.S. Pereira, Shuai Zhang, M.E.H.M. da Costa

C06.P2 Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy

POSTER # 436

1146 *A Next-Generation Defect Taxonomy for AI-Enhanced SEM-Based Semiconductor Inspection;* **Shajib Ghosh**, Nitin Varshney, Antika Roy, Patrick Craig, Navid Asadizanjani

POSTER # 437

1147 *AI-Automated Morphological Feature Analysis of Bacterial Ultrastructures for CryoEM;* **Sita Madugula**, Lynnicia Massenburg, Spenser Brown, Amber Bible, Lance Zhang, Kiara Parker, Scott Retterer, Jennifer Morrell-Falvey, Rama Vasudevan, Alexis Williams

POSTER # 438

1148 *An Asynchronous Object Detection Framework for TEM Data Analytics;* **Arda Genc**, William Streit Cunningham, Daniel Belzberg, Ravit Silverstein, Libor Kovarik, Daniel Gianola

POSTER # 439

1149 *CryoFAST™: AI-Automated Sample Screening and Data Collection in SerialEM and Smart EPU;* **Leo Crowder**, Tuan Phamdo

POSTER # 440

1150 *Developing a Deep Learning Model for the Detection of Fibres in the Scanning Electron Microscope;* **Katherine MacArthur**, Alexandra Stavropoulou, David Barker, Matt Hiscock, Philippe Pinard

POSTER # 441

1151 *LLM-Assisted Causal Discovery: Mapping Hidden Patterns in Crystalline Solids;* **Kamyar Barakati**, Alexander Molak, Christopher Nelson, Xiaohang Zhang, Ichiro Takeuchi, Sergei Kalinin

POSTER # 442

1152 *Machine Learning Model for Atomic-Level Dynamic Analysis of in situ Environmental Transmission Electron Microscopy Data on Cu2O embedded in Cu;* **Judith Yang**, Brian Lee, Meng Li, Matthew Huffman, Jimmie McEver, Xidong Chen, Wissam Saidi

POSTER # 443

1153 *Nodeology: Creating Graph-based Agentic Workflows for AI-Assisted Electron Microscopy;* **Xiangyu Yin**, Chuqiao Shi, Benjamin Fein-Ashley, Yu-Tsun Shao, Yimo Han, Yi Jiang

POSTER # 445

1155 *Stable Generalization Under Small Shifts to Imaging Conditions for Neural Network Analysis of High-Resolution Transmission Electron Microscopy;* **Luis Rangel DaCosta**, Mary Scott

POSTER # 446

1156 *The Challenges of Strain Analysis for Electron Tomography;* **William Millsaps**, Miti Shah, Mary Scott, Colin Ophus, Robert Hovden

POSTER # 447

1157 *Towards Implementing Cloud-based Workflows for Near Real-Time Processing of Large 4D STEM Experimental Datasets;* **Daniel Stroppa**, Christian Dwyer, Ludmila Leroy, Camilla Larsen, Xiaobing Hu, Roberto dos Reis

POSTER # 448

1158 *Towards Transparent and Knowledge-Distilled Deep Learning Networks for Protein Secondary Structure Detection from Cryo-EM Maps;* **Bryan Hawickhorst**, Jiangwen Sun, Willy Wriggers, Jing He

Scientific Program

P Physical Sciences Posters – Thursday

10:00 AM – 12:00 PM **Exhibit Hall**

P10.P2 Innovative in-situ Imaging Techniques for Material Characterization, Synthesis, and Processing

POSTER # 449

1159 *Cathodoluminescence from Mn4-Doped Fluorides;* **Zhiping Luo**, Menuka Adhikari, Caressia Edwards, Candyce Collins, Thomas Murray, Sangeetha Balabhadra

POSTER # 450

1160 *Determination of Structure-Property Relationships for Polysaccharide Hydrogels via Correlated Electron Microscopy and Ultra-Small-Angle Neutron Scattering;* **Nathan Rosenmann**, Lauren Irie, Eric Roth, Reiner Bleher, Michael Hore, Yu Chen, Jitendra P. Mata, Kathleen Wood, Brent Sumerlin, Nathan Gianneschi

POSTER # 451

1161 *In-Situ Cryo 4D-STEM of 1T-TaS2 for Chiral CDW Domain Characterization;* **Jason Schibler**, James Hart, Saif Siddique, Stephen Funni, Judy Cha

POSTER # 452

1162 *In-Situ Investigation of Electron Beam-Induced Gas-Phase Polymerization Using Closed-Cell Transmission Electron Microscopy;* **Zizhen Cai**, Kunmo Koo, Xiaobing Hu, Vinayak Dravid

POSTER # 453

1163 *Optical Holder for in situ Pulsed Laser Deposition and Dewetting of Metal Films;* **Sophia Arvin**, Kate Reidy, Brian Blankenship, Rohan Dhall, Katherine Sytwu, Costas Grigoropoulos

POSTER # 454

1164 *Rare Earth Ion-Doped Light-Emitting Nanoparticles as Negative Thermal Expansion Materials;* **Zhiping Luo**, Amaiya Sullivan, Nadia Phelan, Sangeetha Balabhadra

POSTER # 455

1165 *Visibility of Nanoparticles in Liquid-Phase SEM via Monte Carlo Simulations;* **Dian Yu**, Mia San Gabriel, Stas Dogel, Jane Howe

A Analytical/Instrumentation Sciences Symposia – Thursday Afternoon

A03.5 When 4D-STEM Meets More Dimensions: Deepening Materials Insights with Efficient Experimental Design and Smart Computational Microscopy

Thursday 1:30 PM

1:30 PM **965** *5D-STEM for Soft Matter: Mapping Polymer Morphology and Crystallinity in 3D;* **Colin Ophus** (Invited), Stephanie Ribet, Karen Bustillo

2:00 PM **966** *Atomic Resolution Imaging of 2D Polymers with tilt-corrected Bright Field (tcBF) imaging;* **Zixiao Shi**, Desheng Ma, Madison Bardot, William Dichtel, David Muller

2:15 PM **967** *Optimizing Electron Ptychography for Radiation-Sensitive Materials including Metal-Organic Frameworks;* **Guanxing Li**, Shoucong Ning, Hui Zhang, Chia-Hao Lee, David Muller, Yu Han

2:30 PM **968** *Towards Mitigating Electron Beam-Induced Damage in MOFs Using Low Dose Electron Microscopy for In-Situ Room-Temperature Measurements;* **Gabriel dos santos**, Vinayak Dravid, Roberto dos Reis

2:45 PM **969** *Multi-Convergence-Angle Ptychography for Biological Imaging with Simultaneous Strong Contrast and High Resolution;* **Yu Lei**, Wei Mao, Chen Huang, Liqi Zhou, Judy Kim, Si Gao, Yuefeng Nie, Angus Kirkland, Peng Wang, Xiaopeng Wu

A07.5 Advances in SEM Instrumentation, Application and Techniques

Thursday 1:30 PM

1:30 PM **970** *Quantifying the Surface Sensitivity of Atomic Resolution Secondary Electron Imaging;* **Joel Martis**, Benjamin Plotkin-Swing, Michael Hotz, Niklas Dellby, Cong Su, Ondrej Krivanek, Tracy Lovejoy

1:45 PM **971** *4D-STEM in SEM With 1 Million Frames Per Second: Enabling Ptychography and Advanced 4D-STEM Processing;* **Thorbjoern Schoenbeck**, Erik Hogenbirk Dmitry Byelov

2:00 PM **972** *Enhancing Diffraction in SEM: Using Hybrid-Pixel Detectors with Low Energy Sensitivity;* **Pavel Stejskal**

2:15 PM **973** *Using the Capabilities of an Advanced Silicon Production Line to Minimize the Spatial Footprint of BSE Detection Without Compromising Performance;* **Maximilian Schmid**, Simon Noever, Mozhdeh Abbasi, Alessia Mafodda, Stefan Aschauer

2:30 PM **974** *Electron-beam Readiness Check On In-line Defect Inspection SEM Tool In Semiconductor High-Volume Manufacturing Industry Using Advanced Edge Derivative Algorithm;* **Wendi Zhang**, Roger Alvis, Zhe Yu, Lester Wang

2:45 PM **975** *Wire-Print as a Sample Preparation Procedure Suitable for Accurate Morphological Characterization of Constituent Particles for Graphene-Related 2D-Materials;* **Paul Mrkwitschka**, Mario Sahre, Elena Corrao, Francesco Pellegrino, Vasile-Dan Hodoroaba

A09.8 Quantitative Electron Diffraction for Materials Analysis, From Transmission Electron Diffraction to EBSD and ECCI

Thursday 1:30 PM

1:30 PM **976** *Combining in situ SEM and TEM Deformation with HREBSD Analysis to Understand Dislocation/Grain Boundary Interactions – From Unit Processes to Resolved Stress Fields;* **Josh Kacher** (Invited), Yang Su

2:00 PM **977** *Pattern Centre Accuracy and HREBSD: Towards Absolute Strain;* **Graham Meaden**, Austin Day, David Dingley, Damian Dingley, Seiichi Suzuki

2:15 PM **978** *EBSD Pattern Center Fitting with Particle Swarm Optimization;* **David Rowenhorst**, William Lenthe

2:30 PM **979** *Concurrent In-Situ High-Resolution Electron Backscatter Diffraction and Digital Image Correlation for Full-Field Stress-Strain;* **Will Gilliland**, Tim Ruggles Kaitlynn Fitzgerald, Jay Carroll, Geoffrey Bomarito, Jacob Hochhalter

2:45 PM **980** *Using Emerging EBSD and TKD Tools for Phase Detection in Martensitic Steels;* **Patrick Callahan**, David Rowenhorst

A10.4 Advances in Cryogenic Transmission Electron Microscopy and Spectroscopy for Energy and Quantum Materials and Technologies

Thursday 1:30 PM

1:30 PM **981** *Cryogenic 4D-STEM Study of Structural Evolution in Charged Polymers;* **Yael Tsarfati** (Invited), Karen Bustillo, Karina Masalkovaitė, Stephanie Ribet, Junyan Li, Adam Marks, Colin Ophus, Andrew M Minor, Alberto Salleo

2:00 PM **982** *Multi-scale Low-dose Cryogenic TEM for Probing Beam-sensitive Thin-film Ionomer Variability Across Electrodes in Hydrogen Devices;* **Juhyun Oh**, Shawn Reeves, Tim Van Cleve, David Cullen, Michael Zachman

2:15 PM **983** *EDS and EELS of Lithium in a 0.5 to 30 keV Electron Microscope;* **Richard Wuhrer**, Raynald Gauvin, Nicolas Brodusch, Stéphanie Bessette, Laurel George, Daniel Fanna

2:30 PM **984** *The Radiolysis of Water Ice Interfaces and of Aromatic Compounds Studied by Electron Energy Loss Spectroscopy;* ***Patricia Abellan*** (Invited), Eric Gautron, Antonia Kotronia, Jay LaVerne

Scientific Program

B Biological Sciences Symposia – Thursday Afternoon

B03.2 Application of Microscopy Techniques for Research and Diagnosis of Diseases in Humans, Plants and Animals

Thursday 1:30 PM

1:30 PM **985** *Electron Tomography Methods for Studying Synaptic Defects in Neurodegenerative Disease;* **Michael Stowell** *(Invited)*

2:00 PM **986** *Structural Characterization of Brain-Derived Tau Fibrils From Alzheimer's Disease Patient Tissue;* **Joshua Pierson**, Juan Sanchez, Elizabeth Wright, Brian Kraemer, Caitlin Latimer

2:15 PM **987** *Exploring the Role of Myostatin Mutation on Microstructure and Crystallography of Quail Eggs Using SEM and EBSD Techniques;* **Motahareh Helli**, Joonbum Lee, Chris Chae, Sadikul Alam, Kichoon Lee, Jinwoo Hwang

2:30 PM **988** *Phase-Based Classification of Malaria-Infected Parasite Red Blood Cells using Digital Holographic Imaging;* **Charlotte Kyeremah**, Aditya Paul, Daniel Haehn, Manoj Duraisingh, Chandra Yelleswarapu

B08.4 Advances in Cryo-EM Technology

Thursday 1:30 PM

1:30 PM **989** *Self-Tuning Workflow for Automated Cryo-EM Data Collection in SmartScope;* **Jonathan Bouvette** (Invited), Laura He, Karunakar Pothula, Mario Borgnia, Alberto Bartesaghi

2:00 PM **990** *Improvements to Grid Screening in Leginon Software;* **William Rice**, Bing Wang, Huihui Kuang

2:15 PM **991** *Data-Driven Evaluation of Cryo-EM Micrographs Using Self-Supervised Learning;* **Laura He**, Alberto Bartesaghi

2:30 PM **992** *Using Design of Experiments to Optimize CryoEM Grids for Membrane Proteins;* **Rose Marie Haynes**

2:45 PM **993** *Phase Plate Contrast Enhancement in Cryo-Electron Tomography;* **Yue Yu**, Ariana Peck, Shawn Zheng, Pavel Olshin, Anchi Cheng, Joshua Hutchings, Reza Paraan, Bridget Carragher, David Agard

C Cross-Cut/Interdisciplinary Sciences Symposia – Thursday Afternoon

C06.6 Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy

Thursday 1:30 PM

1:30 PM **994** *Rapid and Reproducible Electron Tomography of Chemistry and Structure*; **Robert Hovden** (Invited), William Millsaps, Jason Manassa, Jonathan Schwartz

2:00 PM **995** *End-to-End Atomic Electron Tomography Reconstruction and Alignment Using Deep Learning Techniques;* **Cedric Lim**, Arthur R. C. McCray, Colin Ophus

2:15 PM **996** *Deep Leaning Based Sinogram Inpainting for Fast and High-Quality Artifact Correction in Electron Tomography;* **Obaidullah Rahman**, Singanallur Venkatakrishnan, David Cullen, Amir Ziabari

2:30 PM **997** *Extracting Quantitative 3D Nano-scale Structure and Strain from Diffraction-contrast TEM Images Using Machine Learning;* **Stephen House**, Daniel Vizoso, Andrew Baker, Douglas Medlin, Remi Dingreville

2:45 PM **998** *DMcloud: Macromolecular Structure Modeling with Local Structure Fitting for Medium to Low Resolution Cryo-EM Maps;* **Genki Terashi**, Xiao Wang, Yuanyuan Zhang, Han Zhu, Daisuke Kihara

Scientific Program

P Physical Sciences Symposia – Thursday Afternoon

P02.4 Electron Microscopy for Ferroic Materials: From Atomic-scale Imaging to in-situ Control

Thursday 1:30 PM

1:30 PM **999** *Segmented Ferroelectricity by Phonon-Decoupled Oxygen Tetrahedra in Brownmillerite Oxides;* **Si-Young Choi** *(Invited)*

2:00 PM **1000** *Characterization of ferroelectric oxide-based devices with large Pockels effect using advanced STEM;* **Yiwei Ju**, Yifeng Huang, Moaz Waqar, Chaojie Du, Francisco Guzman, Xingxu Yan, Marc Reynaud, Alexander A Demkov, Xiaoqing Pan

2:15 PM **1001** *The Effect of Electrode Structure on Ferroelectric Domains in Hf0.5Zr0.5O2;* **Tristan O'Neill**, Yueyun Chen, Ho Leung Chan, Megan Lenox, William Hubbard, Jon Ihlefeld, B. C. Regan

2:30 PM **1002** *Bridging Structure and Function: An Integrative Characterization of Lead Zirconate Titanate (PZT) for High-Performance Ferroelectric Memory;* **Jayhoon Chung** (Invited), Xiangyu Zhu, Guoda Lian, Laurent Dumas, Melanie Bowler, Zhengxin Li, Aaron Clubb, Rufus Dugat, George Major, Thanas Budri

P06.5 Multimodal Data Acquisition and Analysis of Materials Under Real-World Conditions Using Advanced Electron Microscopy

Thursday 1:30 PM

1:30 PM **1003** *Oops, I Contaminated It Again: Investigating Cross-Contamination in Liquid Cell TEM via Correlative Operando Electrochemistry and Cryogenic Atom Probe Tomography;* **Neil Mulcahy**, Mary Ryan, Shelly Michele Conroy

1:45 PM **1004** *Revealing the Structure and Chemistry of Electrocatalysts during Reaction with Correlated Electrochemical Liquid Cell Electron and X-ray Microscopy;* **See Wee Chee** (Invited), Beatriz Roldan Cuenya

2:15 PM **1005** *In Situ Nanofriction Experiments under Gas in ETEM on Ceramic-Graphene Composites for Tribological Applications;* **Karine Masenelli-Varlot**, Lucile Joly-Pottuz, Annie Malchère, Thierry Douillard, Bérangère Le Saint

2:30 PM **1006** *Unraveling the Phase Evolution of Conductive Filaments in Transition Metal Sulphides by In Situ Biasing TEM;* **Shaobo Cheng** (Invited), Xing Li, Chongxin Shan, Yimei Zhu

P07.4 High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments

Thursday 1:30 PM

1:30 PM **1007** *The Effects Of Stress In the Formation Of Grain Boundary Oxides On Ni-5Cr Alloys In a Rhines Pack Environment;* **Chris McRobie**, Elizabeth Kautz, Karen Kruska, Ziqing Zhai, Daniel Schreiber, Matthew Olszta, Josephine Hartmann

1:45 PM **1008** *Simultaneous Exposure of Tungsten and Tungsten - Rhenium Alloy to Neutron Irradiation and Hydrogen Environment;* **Weicheng Zhong** (Invited), Hanns Gietl, Yuji Hatano, Takaaki Koyanagi, Yutai Katoh

2:15 PM **1009** *Utilizing Scanning Transmission Electron Microscopy to Understand the Resistance of β-Ga2O3 Under High Electron Radiation From the STEM Probe;* **Christopher Chae**, DongSu Yu, Lingyu Meng, Vijay Gopal Thirupakuzi Vangipuram, Hongping Zhao, Jinwoo Hwang

2:30 PM **1010** *Characteristics of CdTe Solar Cells Irradiated Under Neutron Beam;* **Ashraful Mamun**, Etee Kawna Roy, Heayoung Yoon

P08.7 Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials

Thursday 1:30 PM

1:30 PM **1012** *Application of HAADF and DPC to Study in Transition Aluminas;* **Libor Kovarik**, Konstantin Khivantsev, Mark Bowden, Janos Szanyi

1:45 PM **1013** *Probing Magnetically Active Intercalant Disorder with Atomic Resolution Imaging and Spectroscopy;* **Noah Schnitzer**, Lopa Bhatt, Shannon Fender, D. Kwabena Bediako, David Muller, Berit Goodge

2:00 PM **1014** *Identification of Novel Stacking Faults in Chiral InSel Nanowires;* **Patrick Hays**, Melike Erdi, Sefaattin Tongay, Sandhya Susarla

2:15 PM **1015** *Quantitative Analysis of Defective Graphene Induced by Electron Irradiation via Persistent Homology;* **Ryuto Eguchi**, Ayako Hashimoto

2:30 PM **1016** *Deciphering Moiré Periodicity Modification in van der Waals Heterostructure;* **Ingyu Yoo**, Jinwoo Kim, Jaewoong Joo, Gwan-Hyoung Lee, Miyoung Kim

2:45 PM **1017** *Atomistic Structure Determination of Nanoscale Defects and Disorder Using Theory and Multimodal Measurements;* **Venkata Surya Chaitanya Kolluru**, Muchuan Hua, Hanyu Hou, Jianguo Wen, Maria KY Chan

P10.9 Innovative in-situ Imaging Techniques for Material Characterization, Synthesis, and Processing

Thursday 1:30 PM

1:30 PM **1059** *Understanding the Structure and Dynamics of Peptide-Based Coacervates with In-Situ Liquid and Cryo-TEM;* **Lilian Zeinalvand**, Dipankar Barpuzary, Zhibin Guan, Joe Patterson

1:45 PM **1060** *Towards Controlled Chemical and Electrochemical Reactivity during In Situ Scanning Transmission Electron Microscopy;* **Antonia Kotronia**, Eric Gautron, Ivan Lucas, Patricia Abellan

2:00 PM **1061** *Liquid Cell Transmission Electron Microscopy and Molecular Dynamics Assisted Microanalysis for Biomolecular Assemblies;* **Zhaoxu Li**, Yuanming Song, Justin Mulvey, Dipankar Barpuzary, Alfredo Freites, Douglas Tobias, Zhibin Guan, Joe Patterson

2:15 PM **1062** *Investigating the Thermal Degradation Mechanism of 2D Nb4C3Tx MXene through in-situ (S)TEM;* **Xiaodong Liu**, Bing Wu, Zdenek Sofer, B. Layla Mehdi

2:30 PM **1063** *Time-Resolved, Atomic-Resolution 3D Brownian Tomography of Nanocrystals in Liquid;* **Sungsu Kang** (Invited), Joodeok Kim, Sungin Kim, Won Chul Lee, Peter Ercius, Hans Elmlund, Jungwon Park

Scientific Program

A Analytical/Instrumentation Sciences Symposia – Thursday Late Afternoon

A03.6 When 4D-STEM Meets More Dimensions: Deepening Materials Insights with Efficient Experimental Design and Smart Computational Microscopy

Thursday 3:30 PM

3:30 PM **1018** *4D-STEM in situ analysis of nanomaterials at JM;* **Manfred Schuster** *(Invited)*

4:00 PM **1019** *5DSTEM: Merging 4DSTEM and Core - Loss EELS: A Path to Detect Parameter - Free Electron Energy - Loss Magnetic Chiral Dichroism with Prospects of Atomic Resolution;* **Hasan Ali**, Daniel E. Bürgler, Joseph V. Vas, Roman Adam, Claus M. Schneider, Rafal Dunin-Borkowski

4:15 PM **1020** *A New Framework for Acquisition And Processing of Event-Driven 4D STEM;* **Arno Annys**, Hoelen Lalandec Robert, Saleh Gholam, Joke Hadermann, Johan Verbeeck

4:30 PM **1021** *Statistical Analysis of Structural and Compositional Distributions in Bulk Materials with Nanodomains via Combined 4D-STEM and STEM-EELS;* **Yu Chen**, Stephanie Ribet, Chengyu Song, Karen Bustillo, Mary Scott

4:45 PM **1022** *Three-Dimensional Structural Analysis of Templated Gold Nanoplates by Integrating Electron Tomography and 4D-STEM;* **Adan Mireles**, Theodor Gerrard-Anderson, Chuqiao Shi, Qian Ye, Jonathan Schwartz, Robert Hovden, Alessandro Alabastri, Matthew Jones, Yimo Han

A10.5 Advances in Cryogenic Transmission Electron Microscopy and Spectroscopy for Energy and Quantum Materials and Technologies

Thursday 3:30 PM

3:30 PM **1023** *New Cryo-EM Tools for Studying Dynamic Interfaces in Battery Materials;* **Yuzhang Li** *(Invited)*

4:00 PM **1024** *3D Imaging of Lithium-ion Battery Cathodes with Multislice Electron Ptychography under Cryogenic Conditions;* **Dasol Yoon** (Invited), Michael Colletta, Mihail Krumov, Harikrishnan K. P., Zixiao Shi, Steven Zeltmann, Yao Yang, Yu-Tsun Shao, Héctor Abruña, David Muller

4:30 PM **1025** *Multiscale Cryo Electron Microscopy Reveals Interfacial Degradation and Stabilization in Lithium Metal Battery Electrodes;* **Katherine Jungjohann** (Invited), Nikita Dutta, Madison King, Tylan Watkins, John Mangum, Bingning Wang, Renae Gannon, John Watt, Katharine Harrison, Chen Liao

B Biological Sciences Symposia – Thursday Late Afternoon

B03.3 Application of Microscopy Techniques for Research and Diagnosis of Diseases in Humans, Plants and Animals

Thursday 3:30 PM

3:30 PM **1026** *Tips and Tricks of Building a Sustainable Biological EM facility;* **Ru-ching Hsia** *(Invited)*

4:00 PM **1027** *Unlocking New Potential in Bio-TEM: The Impact of Low Voltage Electron Microscopy and Alternative Staining Methods*; **Daniela Vieira**, Emad Shahnam, Steven Felkoski, Christina Burks, Ru-ching Hsia, Jared Lapkovsky

4:15 PM **1028** *Three Years Experience with Automated Specimen Processing for Clinical Diagnostic TEM Pathology;* **Noah Flint**, Gina Anderson, Emma Wood, Chloe Young, Brian Macarthur

4:30 PM **1029** *AI-Driven Adaptive Scanning provides Accelerated, Efficient and Contextual Data Acquisition for Volume Electron Microscopy of Plant Cells using Plasma FIB-SEM;* **Lolita Rotkina**, Radek Jančík, Bronislav Pribyl, Andrea Zanini, Janithri Wickramanayake, Tessa Burch-Smith, Kirk Czymmek

B08.5 Advances in Cryo-EM Technology

Thursday 3:30 PM

3:30 PM **1030** *New Tools for Determining Challenging Structures by Cryo-EM;* **Scott Stagg** (Invited), Ruizhi Peng, Kristy Rochon, Anelise Hutson, Behrouz Esfahani, Jason Mears

4:00 PM **1031** *Development of a Dual Laser Phase Plate at CZII;* **Pavel Olshin**, Jessie Zhang, Dylan Roof, Noeli Paz Soldán, Petar Petrov, Yue Yu, Jonathan Remis, Anchi Cheng, Hang Cheng, Elizabeth Montabana

4:15 PM **1032** *Temperature quantification at the specimen for side-entry cryo-TEM holders;* **Miti Shah**, Nishkarsh Agarwal, Maya Gates, Benjamin Savitzky, Suk Hyun Sung, Ismail El Baggari, Robert Hovden

4:30 PM **1033** *Optical Interference for the Guidance of Cryogenic Focused Ion Beam Milling Beyond the Axial Diffraction Limit;* **Anthony Sica**, Magda Zaoralová, Cali Antolini, Daan Boltje, Judit Penzes, Lilyana Malmqvist, Grant Jensen, Jason Kaelber, Peter Dahlberg

4:45 PM **1034** *A Physical Theory for Cryo-Em at Liquid-Helium Temperatures;* **Joshua Dickerson**, Christopher Russo

Scientific Program

C Cross-Cut/Interdisciplinary Sciences Symposia – Thursday Late Afternoon

C06.7 Advancements in Generative Artificial Intelligence and Automation for Electron Microscopy

Thursday 3:30 PM

1:30 PM **1035** *Automated and Autonomous Scanning Transmission Electron Microscopy: Transformers and Generative Machine Learning for Image Optimization and Segmentation;* **Rama Vasudevan** (Invited), Zijie Wu, Matthew Boebinger, Stephen Jesse, Addis Fuhr, Panchapakesan Ganesh, Gerd Duscher

4:00 PM **1036** *Context Informed Deep Convolutional Neural Networks for Image Denoising in STEM;* **Alex Williams**, Alex Robinson, Jack Wells, Konstantinos Tsakalidis, Yao-Chun Shen, Nigel Browning

4:15 PM **1037** *High-Throughput AI-Driven Microscope Data Analysis Planform;* **Xiangyu Zhu**

4:30 PM **1038** *Automated High-Throughput Correlated Electron and Light Microscopy of Semiconductor Nanowires;* **Zeinab Tirandaz**, Greg Chu, Ralf Mouthaan, Hoe Tan, Chennupati Jagadish, Hannah Joyce, Jack Alexander-Webber

4:45 PM **1039** *LLM-Driven Automation in FIB-SEM: Enhancing Microscope Control with AutoScript and Vision-Based AI;* **Remco Geurts**

P Physical Sciences Symposia – Thursday Late Afternoon

P02.5 Electron Microscopy for Ferroic Materials: From Atomic-scale Imaging to in-situ Control

Thursday 3:30 PM

3:30 PM **1040** *Pushing the Limits of Off Axis Electron Holography for the Quantitative Mapping of Electromagnetic Fields;* **David Cooper** (Invited), Victor Boureau

4:00 PM **1041** *Atomic-Scale Control and Detection of Ferromagnetic Phase Transformation by Using Atomic-Scale Electron Probe;* **Kun Xu**, Xiaoxi Huang, Hongrui Zhang, Ramamoorthy Ramesh, Arun Majumdar

4:15 PM **1042** *Imaging Topotactic Phase Transitions in Freestanding SrCoO3-x Membranes;* **Hudson Shih**, Izoah Snowden, Rohan Dhall, Yayoi Takamura, Seung Sae Hong

4:30 PM **1043** *Atomic-Scale Insights into Interfaces in Hafnium Oxide Ferroic Thin Films;* **Shiqing Deng**, Kefan Wang, Lijun Wu, Yimei Zhu, Jun Chen

4:45 PM **1044** *Investigation of structural and magnetic properties of Mn_3Ge thin film by advanced microscopy;* **Ping-Luen Ho**, Servet Ozdemir, Emma G. Bryan, Gavin Burnell, Bryan J. Hickey, Sandrine Heutz, Shelly Michele Conroy

P06.6 Multimodal Data Acquisition and Analysis of Materials Under Real-World Conditions Using Advanced Electron Microscopy

Thursday 3:30 PM

3:30 PM **1045** *Investigation of Mesoscopic Clathrate Hydrate Structures within Graphene Liquid Cells Using Transmission Electron Microscopy;* **Ing-Shouh Hwang**, Wei-Hao Hsu, Ching-Hsiu Chen, Ryoko Oishi-Tomiyasu, Chi-Cheng Lee, Ming-Wen Chu

3:45 PM **1046** *Investigating Interfacial Behaviors in Lithium Metal Batteries Using Multi-Modal and Multi-Dimensional Cryogenic Electron Tomography;* **Ruoqian Lin** (Invited), Yuzheng Xie

4:15 PM **1047** *Early-Stage Li Plating Dynamics Investigated by In Situ Liquid Phase Transmission Electron Microscopy;* **Hayoung Park** (Invited), Yonggoon Jeon, Yuzhang Li, Jungwon Park

4:45 PM **1048** *High Cycle Fatigue Testing in Advanced Nanocrystalline Alloys;* **Stephen House**, Andrew Baker, Brad Boyce

P07.5 High-Resolution Microscopy and Microanalysis of Materials Subjected to Extreme Environments

Thursday 3:30 PM

3:30 PM **1049** *Advanced Ex-situ and In-situ Electron Microscopy Characterization of Fusion Plasma-Facing Tungsten Oxidation;* **Yuanyuan Zhu (Invited)**

4:00 PM **1050** *Advancing Transmission Electron Microscopy with an Open Gas Cell and Sub-0.5Å Resolution;* **Idan Biran**, Frederik Dam, Sophie Kargo Kaptain, Ruben Bueno Villoro, Christian Kisielowski, Maarten Wirix, Narasimha Shastri, Christian Damsgaard, Joerg Jinschek, Stig Helveg

4:15 PM **1051** *Investigating Oxidation Mechanisms of Polycrystalline Co/Ni-Base Superalloys using Correlative 4D-STEM and APT;* **Cameron Crabb**, Geri Topore, James Douglas, Mark Hardy, Michele Shelly Conroy, David Dye

4:30 PM **1052** *An Atomically Thin Protective Layer for High-Temperature Oxidation Shielding of Metals;* **Young-Hoon Kim**, Su Jae Kim, Bipin Lamichhane, Seong-Gon Kim, Young-Min Kim, Se-Young Jeong, Miaofang Chi

4:45 PM **1053** *In-situ TEM Combined with Laser Induced Heating to Initiate Controlled Silicon Nitride Crystallization to Study Reaction Kinetics for Microelectronics Applications;* **Elijah Davis**, Paul Kotula, Carlos Chacon, Edwin Chiu, Aashique Rezwan, Tesia Janicki, J. Matthew Lane, Hojun Lim, Christopher Bishop, Khalid Hattar

P08.8 Advanced Imaging, Diffraction, and Spectroscopy of Structurally or Chemically Disordered Materials

Thursday 3:30 PM

3:30 PM **1054** *Chemical Shifts Observed using Energy Dispersive Spectroscopy;* **Matthew Mecklenburg** (Invited), Rebekah Jin, Yarin Heffes, Brian Zutter, Tristan O'Neill, Jared Lodico, B. C. Regan, Yueyun Chen

4:00 PM **1055** *Low-dose Imaging Using Single-electron Detection with an Integration-type SOI Pixel Detector in Transmission Electron Microscopy;* **Yuichi Ishida**, Takafumi Ishida, Makoto Kuwahara, Yasuo Arai, Koh Saitoh

4:15 PM **1056** *Understanding Effects of Crystalline Structure on Electrical Properties of W/Ge0.15Te0.85/W Ovonic Threshold Switch with Local Biasing System by Conductive Atomic Force Microscope;* **Young-Min Kim**, Siwon Park

4:30 PM **1057** *Feature Enhancement during Dictionary Learning Reconstructions of Scanning Transmission Electron Microscope Images;* **Richard Jinschek**, Jack Wells, Alex Robinson, Daniel Nicholls, Mario Gianni, Yao-Chun Shen, Nigel Browning

4:45 PM **1058** *Multidisciplinary Investigations of Dielectric Materials in a Real Device: Short-Range Ordering, Composition And Dielectric Response;* **Jiangtao Zhu**, Christopher Addiego, Ying Huang, Bengisu Sari, Yan Xu, Xiuhong Han

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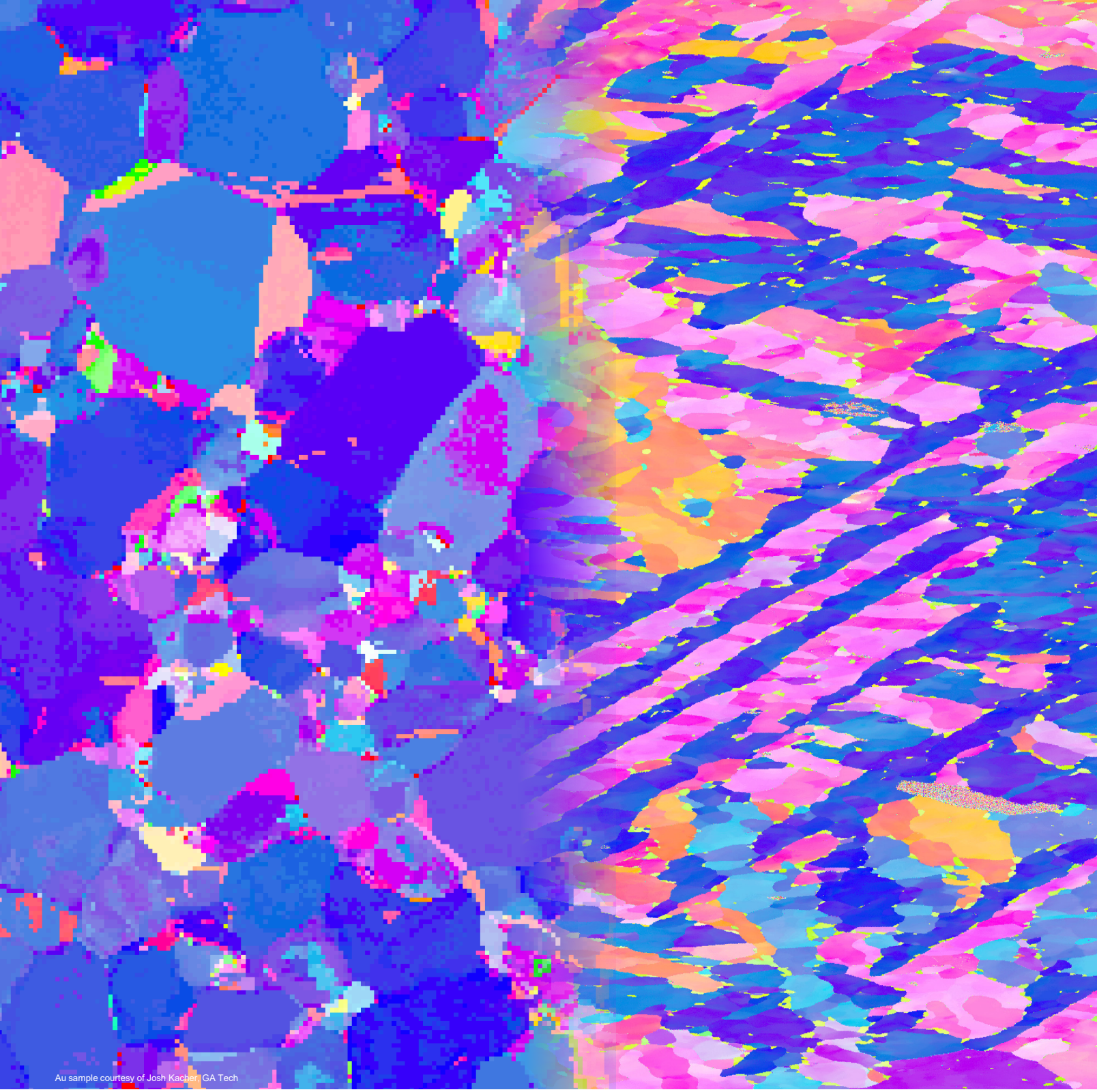

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NanoSoft develops, manufactures and sells tools and instruments for the preparation of samples for Cryogenic Electron Microscopy (cryoTEM). They offer a variety of accessories that improve sample quality, efficiency and ease of use of the Thermo Fisher Scientific sample vitrification workflow (Vitrobot, grid clipping, cassette loading). NanoSoft is also developing a blotless sample preparation technology for cryoEM to improve sample quality and repeatabilty. The technology will reduce the large amount of wasted sample, researcher time and expensive cryoEM microscope time currently experienced in the use of cryoEM, particular by Structural Biologists using Single Particle Analsysis. The need for the optimization of cryogenic sample preparation parameters will be eliminated, along with the need for maintenance of screening microscopes. Overall the blotless technology will lead to quicker 3D protein structure models and therapeutic developments for less money.

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The RMS is an international society, at the forefront of new developments in microscopy, cytometry and imaging. The Society is dedicated to advancing science and developing careers by organising meetings and courses, publishing the Journal of Microscopy and infocus, as well as organising IMC21 (21st International Microscopy Congress) in Liverpool, UK, in 2026.

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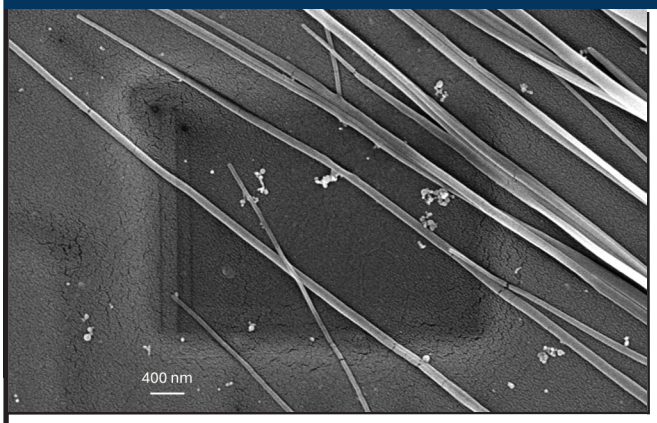

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Ferrovac	1211
Linkam Scientific Instruments	1439
Melbuild Management Consultancy	1404
NanoSoft	1721
SiriusXT Ltd	1239
SmarAct Inc	1235
SubAngstrom	2104
United Mineral and Chemical Corp.	1209

Crystallographic Mapping

Advanced Microscopy Techniques Corp.	1417
NanoMEGAS USA	1409

Detectors

Advanced Microscopy Techniques Corp.	1417
Angstrom Scientific Inc	1539
Deben UK Limited	1509
DECTRIS Ltd	1934
Gatan, Inc. / Edax	1818
Nanoscience Instruments	1925
PNDetector GmbH	1210
Point Electronic GmbH	2134
Quantum Detectors	1642

Diamond Knives

Electron Microscopy Sciences powered by Biolyst	1704

Digital Archiving / Data Storage

Theia Scientific	1334

Dual Beam FIB/SEM

Carl Zeiss Microscopy, LLC	1518
Clark-MXR Inc	1440
Comet Technologies Canada	1434
Hitachi High-Tech America, Inc.	1504
JEOL USA, Inc.	1804
Raith America, Inc.	1433
TESCAN	1324
Thermo Fisher Scientific	1734
TESCAN	521
Thermo Fisher Scientific	1120

E Beam Lithography

JEOL USA, Inc.	1804
Quantum Design, Inc	1109
Raith America, Inc.	1433

EDS Detectors & Systems

Angstrom Scientific Inc	1539
Bruker Corporation	1424
Coxem Co., Ltd	1403
Gatan, Inc. / Edax	1818
JEOL USA, Inc.	1804
Nanoscience Instruments	1925
Oxford Instruments	1534
Physical Electronics	2208
PNDetector GmbH	1210
Thermo Fisher Scientific	1734

Electrical Characterization

Angstrom Scientific Inc	1539
Barnett Technical Services	2012
Kammrath and Weiss	2121
Kleindiek Nanotechnik	2127
Point Electronic GmbH	2134
Quantum Design, Inc	1109

Electron Backscattered Diffraction (EBSD)

Bruker Corporation	1424
Direct Electron, LP	2004
Gatan, Inc. / Edax	1818
Oxford Instruments	1534
Physical Electronics	2208
TESCAN	1324
Thermo Fisher Scientific	1734

Electron Microprobes / EPMA

JEOL USA, Inc.	1804

Failure Analysis

3D- Micromac AG	2118
Angstrom Scientific Inc	1539
Attolight	2010
Barnett Technical Services	2012
Comet Technologies Canada	1434
Fischione Instruments	1711
Gatan, Inc. / Edax	1818
Hirox-USA, Inc.	2211
Kammrath and Weiss	2121
Kleindiek Nanotechnik	2127
Leica Microsystems	1726
NenoVision	2136
Pace Technologies	1323
Physical Electronics	2208
Quantum Design, Inc	1109
Raith America, Inc.	1433
Seiwa Optical America, Inc	1204
TESCAN	1324

FIB Accessories

3D- Micromac AG	2118
Angstrom Scientific Inc	1539
Bruker Corporation	1424
DENSsolutions	2034
Ferrovac	1211
Herzan LLC	1336
Kammrath and Weiss	2121
Kleindiek Nanotechnik	2127
MELBUILD MANAGEMENT CONSULTANCY	1404
Oxford Instruments	1534
Protochips, Inc.	1234
Quantum Design, Inc	1109
Scientific Bridge	1542
SubAngstrom	2104
Ted Pella Inc.	2018
XEI Scientific, Inc.	1511

Filaments and Filament Rebuilding–Field Emission Sources, Lab6 Sources

Applied Physics Technologies	1207
Clark-MXR Inc	1440
HREM Research Inc.	2112

Fixatives

Electron Microscopy Sciences powered by Biolyst	1704
Tousimis	1233

Fluorescence Microscopy

Carl Zeiss Microscopy, LLC	1518
Electron Microscopy Sciences powered by Biolyst	1704
Leica Microsystems	1726
Linkam Scientific Instruments	1439
SiriusXT Ltd	1239

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Focused Ion Beam Systems / Workstations

Clark-MXR Inc	1440
Hitachi High-Tech America, Inc.	1504
Leica Microsystems	1726
Raith America, Inc.	1433
TESCAN	1324

FT-IR Microscopy

Attocube Systems Inc.	1110
Linkam Scientific Instruments	1439

Glow Discharge Cleaning

Electron Microscopy Sciences powered by Biolyst	1704
SPI Supplies	2128
Ted Pella Inc.	2018

Image Analysis and Processing

Attolight	2010
Bruker Corporation	1424
Carl Zeiss Microscopy, LLC	1518
Comet Technologies Canada	1434
Direct Electron, LP	2004
Gatan, Inc. / Edax	1818
Hirox-USA, Inc.	2211
Hitachi High-Tech America, Inc.	1504
HREM Research Inc.	2112
Oxford Instruments	1534
Pace Technologies	1323

Immuno-Labeling

Electron Microscopy Sciences powered by Biolyst	1704
Microscopy Innovations, LLC	1133

Ion Pumps New and Rebuilding

Duniway Stockroom Corp.	2209

Journals

Royal Microscopical Society	1329

Knife Resharpening / Resharpening Services

Electron Microscopy Sciences powered by Biolyst	1704

Knives

Ted Pella Inc.	2018

Light Microscopes

Carl Zeiss Microscopy, LLC	1518
Hirox-USA, Inc.	2211
Leica Microsystems	1726
Linkam Scientific Instruments	1439
Seiwa Optical America, Inc	1204
SiriusXT Ltd	1239

Metallography Equipment

Pace Technologies	1323
Ted Pella Inc.	2018

Micro-CT Scanning

Comet Technologies Canada	1434
Deben UK Limited	1509
Kammrath and Weiss	2121
Sigray, Inc.	1240
SiriusXT Ltd	1239
TESCAN	1324

Micromanipulators

Angstrom Scientific Inc	1539
Attolight	2010
Barnett Technical Services	2012
condenZero	1107
Kleindiek Nanotechnik	2127
SmarAct Inc	1235

Microprobes

Angstrom Scientific Inc	1539

Microtomes and Ultramicrotomes

Angstrom Scientific Inc	1539
Electron Microscopy Sciences powered by Biolyst	1704
Leica Microsystems	1726

Microwave Tissue Processing

Ted Pella Inc.	2018

Nano Indentation

Angstrom Scientific Inc	1539
Bruker Corporation	1424
Melbuild Management Consultancy	1404
NenoVision	2136
Pace Technologies	1323

Nanopositioners & Stages

Angstrom Scientific Inc	1539
Attocube Systems Inc.	1110
Kammrath and Weiss	2121
Kleindiek Nanotechnik	2127
SmarAct Inc	1235

Nanoprobes / Mechanical Microprobes

3D- Micromac AG	2118
Angstrom Scientific Inc	1539
Barnett Technical Services	2012
Hitachi High-Tech America, Inc.	1504
Physical Electronics	2208
Sigray, Inc.	1240
SmarAct Inc	1235

New and Used Equipment

Advanced Microscopy Techniques Corp.	1417
Duniway Stockroom Corp.	2209
NanoSoft	1721
SPT Labtech	1641
SubAngstrom	2104

Optical Filters, Fluorescence Filters

Hirox-USA, Inc.	2211
Seiwa Optical America, Inc	1204

Other

Microscopy Innovations, LLC	1133
MSA Mega Booth	1018
Spellman High Voltage Electronics Corp.	2125
Theia Scientific	1334

Phase Identification

NanoMEGAS USA	1409
Sigray, Inc.	1240

Plasma Cleaners

Fischione Instruments	1711
ibss Group, Inc.	1310
PIE Scientific LLC	1418
SPI Supplies	2128
XEI Scientific, Inc.	1511

Publishers

Royal Microscopical Society	1329

Raman Spectroscopy / Microscopy

Attocube Systems Inc.	1110
Attolight	2010
Barnett Technical Services	2012
Clark-MXR Inc	1440
Linkam Scientific Instruments	1439
Oxford Instruments	1534
Quantum Design, Inc	1109
Renishaw Inc	1206

Scanning Electron Microscopes (SEM)

Angstrom Scientific Inc	1539
Attolight	2010
Carl Zeiss Microscopy, LLC	1518
CIQTEK Co., Ltd.	1303
Coxem Co., Ltd	1403
Euclid TechLabs, LLC	1339
Hitachi High-Tech America, Inc.	1504
Integrated Dynamics Engineering	1112
JEOL USA, Inc.	1804
Nanoscience Instruments	1925
Norcada, Inc.	1108
Point Electronic GmbH	2134
Raith America, Inc.	1433
Scientific Bridge	1542
SiriusXT Ltd	1239
TESCAN	1324
Thermo Fisher Scientific	1734

For an up-to-date schedule and meeting room locations, please check **www.microscopy.org/mandm/2025** or the mobile app.

Scanning Probe Microscope Accessories

3D- Micromac AG	2118
Attocube Systems Inc.	1110
Herzan LLC	1336
NenoVision	2136
SmarAct Inc	1235

Scanning Transmission Electron Microscopes (STEM)

Clark-MXR Inc	1440
Coxem Co., Ltd	1403
DECTRIS Ltd	1934
Hitachi High-Tech America, Inc.	1504
Hummingbird Scientific	1318
JEOL USA, Inc.	1804
Nanoscience Instruments	1925
Norcada, Inc.	1108
Point Electronic GmbH	2134
Quantum Detectors	1642
TESCAN	1324
Thermo Fisher Scientific	1734

Secondary Ion Mass Spectrometer (SIMS)

Physical Electronics	2118

SEM / STEM Digital Imaging Systems

Comet Technologies Canada	1434
PNDetector GmbH	1210
Point Electronic GmbH	2134
Quantum Detectors	1642
Raith America, Inc.	1433
Thermo Fisher Scientific	1734

SEM Accessories

3D- Micromac AG	2118
Advanced Microscopy Techniques Corp.	1417
Angstrom Scientific Inc	1539
Bruker Corporation	1424
Coxem Co., Ltd	1403
Deben UK Limited	1509
DENSsolutions	2034
Ferrovac	1211
Gatan, Inc. / Edax	1818
Herzan LLC	1336
ibss Group, Inc.	1310
Integrated Dynamics Engineering	1112
Kammrath and Weiss	2121
Kleindiek Nanotechnik	2127
Melbuild Management Consultancy	1404
Nanoscience Instruments	1925
NenoVision	2136
Norcada, Inc.	1108
Oxford Instruments	1534
PIE Scientific LLC	1418
PNDetector GmbH	1210
Point Electronic GmbH	2134
Quantum Design, Inc	1109
SPI Supplies	2128
Theia Scientific	1334
XEI Scientific, Inc.	1511

SEM Stages, Mounts and Holders

Angstrom Scientific Inc	1539
DENSsolutions	2034
Hitachi High-Tech America, Inc.	1504
Hummingbird Scientific	1318
Kammrath and Weiss	2121
Kleindiek Nanotechnik	2127
Melbuild Management Consultancy	1404
Norcada, Inc.	1108
Protochips, Inc.	1234
Quantum Design, Inc	1109
SmarAct Inc	1235
Ted Pella Inc.	2018
Tousimis	1233

Service & Repair

Carl Zeiss Microscopy, LLC	1518
Duniway Stockroom Corp.	2209
NanoSoft	1721
SubAngstrom	2104

Service Laboratories

Attolight	2010
Nanoscience Instruments	1925
NanoSoft	1721

Society & Event Organizer

Royal Microscopical Society	1329

Software

Comet Technologies Canada	1434
DENSsolutions	2034
HREM Research Inc.	2112
NanoMEGAS USA	1409
Theia Scientific	1334

Specimen Preparation & Handling

3D- Micromac AG	2118
Angstrom Scientific Inc	1539
Barnett Technical Services	2012
condenZero	1107
Coxem Co., Ltd	1403
Fischione Instruments	1711
Melbuild Management Consultancy	1404
Microscopy Innovations, LLC	1133
Nanoscience Instruments	1925
NanoSoft	1721
Pace Technologies	1323
Ted Pella Inc.	2018
United Mineral and Chemical Corp.	1209
XEI Scientific, Inc.	1511

Specimen Storage

Melbuild Management Consultancy	1404
Microscopy Innovations, LLC	1133
NanoSoft	1721
PIE Scientific LLC	1418
United Mineral and Chemical Corp.	1209

Spectrometers

CIQTEK Co., Ltd.	1303
Clark-MXR Inc	1440
Gatan, Inc. / Edax	1818
Nanoscience Instruments	1925
Physical Electronics	2208
PNDetector GmbH	1210
Sigray, Inc.	1240

SQUID / Superconduction Quantum Interference Devices

Quantum Design, Inc.	1109

Stage Automation

Deben UK Limited	1509
Point Electronic GmbH	2134
SmarAct Inc	1235

Supplies

Duniway Stockroom Corp.	2209
Microscopy Innovations, LLC	1133
Pace Technologies	1323

Surface Analysis

Angstrom Scientific Inc	1539
Barnett Technical Services	2012
CIQTEK Co., Ltd.	1303
Clark-MXR Inc	1440
Comet Technologies Canada	1434
Hirox-USA, Inc.	2211
NenoVision	2136
Physical Electronics	2208
Seiwa Optical America, Inc	1204
Sigray, Inc.	1240
TESCAN	1324

Surface Profiling

Angstrom Scientific Inc	1539
Clark-MXR Inc	1440
Hirox-USA, Inc.	2211
NenoVision	2136
Seiwa Optical America, Inc	1204

Tabletop SEM/TEM

Angstrom Scientific Inc	1539
Clark-MXR Inc	1440
Coxem Co., Ltd	1403
Delong Instruments	1625
Hitachi High-Tech America, Inc.	1504
JEOL USA, Inc.	1804
Nanoscience Instruments	1925

TEM Accessories

3D- Micromac AG	2118
Advanced Microscopy Techniques Corp.	1417
Angstrom Scientific Inc	1539
Attolight	2010
Barnett Technical Services	2012
Bruker Corporation	1424
condenZero	1107
Deben UK Limited	1509
DECTRIS Ltd	1934
DENSsolutions	2034
Direct Electron, LP	2004
Electron Microscopy Sciences powered by Biolyst	1704
Euclid TechLabs, LLC	1339
Gatan, Inc. / Edax	1818
Herzan LLC	1336
Hummingbird Scientific	1318
ibss Group, Inc.	1310
Integrated Dynamics Engineering	1112
Melbuild Management Consultancy	1404
NanoMEGAS USA	1409
NanoSoft	1721
Norcada, Inc.	1108
PNDetector GmbH	1210
Quantum Detectors	1642
SPI Supplies	2128
SPT Labtech	1641
Ted Pella Inc.	2018
Theia Scientific	1334
Tousimis	1233
XEI Scientific, Inc.	1511

TEM Specimen Holders

condenZero	1107
DENSsolutions	2034
Euclid TechLabs, LLC	1339
Fischione Instruments	1711
Hummingbird Scientific	1318
Melbuild Management Consultancy	1404
NanoSoft	1721
Norcada, Inc.	1108
Protochips, Inc.	1234
Tousimis	1233

Testing Equipment

Barnett Technical Services	2012
Herzan LLC	1336
Hirox-USA, Inc.	2211
Kammrath and Weiss	2121
Pace Technologies	1323
SmarAct Inc	1235

Transmission Electron Microscopes (TEM)

Advanced Microscopy Techniques Corp.	1417
CIQTEK Co., Ltd.	1303
Clark-MXR Inc	1440
DECTRIS Ltd	1934
Delong Instruments	1625
Euclid TechLabs, LLC	1339
Hitachi High-Tech America, Inc.	1504
Hummingbird Scientific	1318
Integrated Dynamics Engineering	1112
JEOL USA, Inc.	1804
Midwest Center for Cryo-Electron Tomography	1135
NanoMEGAS USA	1409
NanoSoft	1721
Norcada, Inc.	1108
Point Electronic GmbH	2134
Quantum Detectors	1642
Scientific Bridge	1542
SiriusXT Ltd	1239
Thermo Fisher Scientific	1734

Vacuum Equipment

Angstrom Scientific Inc	1539
Duniway Stockroom Corp.	2209
Electron Microscopy Sciences powered by Biolyst	1704
Ferrovac	1211
Linkam Scientific Instruments	1439
Melbuild Management Consultancy	1404
Norcada, Inc.	1108
Pace Technologies	1323
Physical Electronics	2208
United Mineral and Chemical Corp.	1209

Vacuum Evaporators

JEOL USA, Inc.	1804
SPI Supplies	2128

Vibration Isolation Systems

Herzan LLC	1336
Integrated Dynamics Engineering	1112

WDS Detectors & Systems

Bruker Corporation	1424
Gatan, Inc. / Edax	1818
Oxford Instruments	1534
PNDetector GmbH	1210
Thermo Fisher Scientific	1734

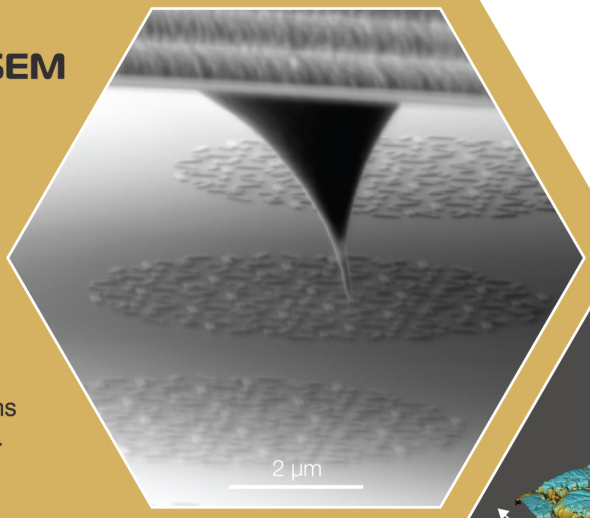
X-ray Analysis Equipment

3D- Micromac AG	2118
Angstrom Scientific Inc	1539
Bruker Corporation	1424
Carl Zeiss Microscopy, LLC	1518
Comet Technologies Canada	1434
DECTRIS Ltd	1934
Linkam Scientific Instruments	1439
Oxford Instruments	1534
Physical Electronics	2208
PNDetector GmbH	1210
Scientific Bridge	1542
Sigray, Inc.	1240
SiriusXT Ltd	1239
SmarAct Inc	1235
Spellman High Voltage Electronics Corp.	2125
TESCAN	1324

FusionScope® - New Capabilities for AFM Measurements

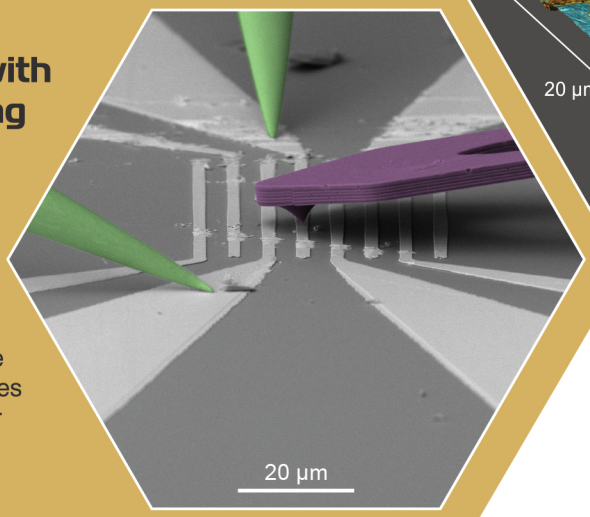
AFM with SEM

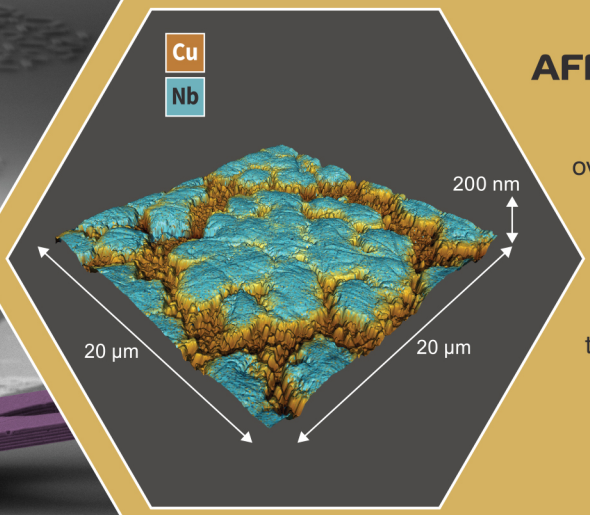
Using Profile View, the AFM tip can be accurately positioned onto specific microstructures and nanoparticles in heterogenous regions, such as on Penrose patterns made of nanorods.



AFM with Nanoprobing

Through precise navigation of nanoprobers and the AFM tip in Profile View, localized electrical information can be obtained of samples and devices under operation.





AFM with EDS

Elemental data overlayed onto AFM topographical information results in the identification of features difficult to observe visually, such as those in superconducting filaments.

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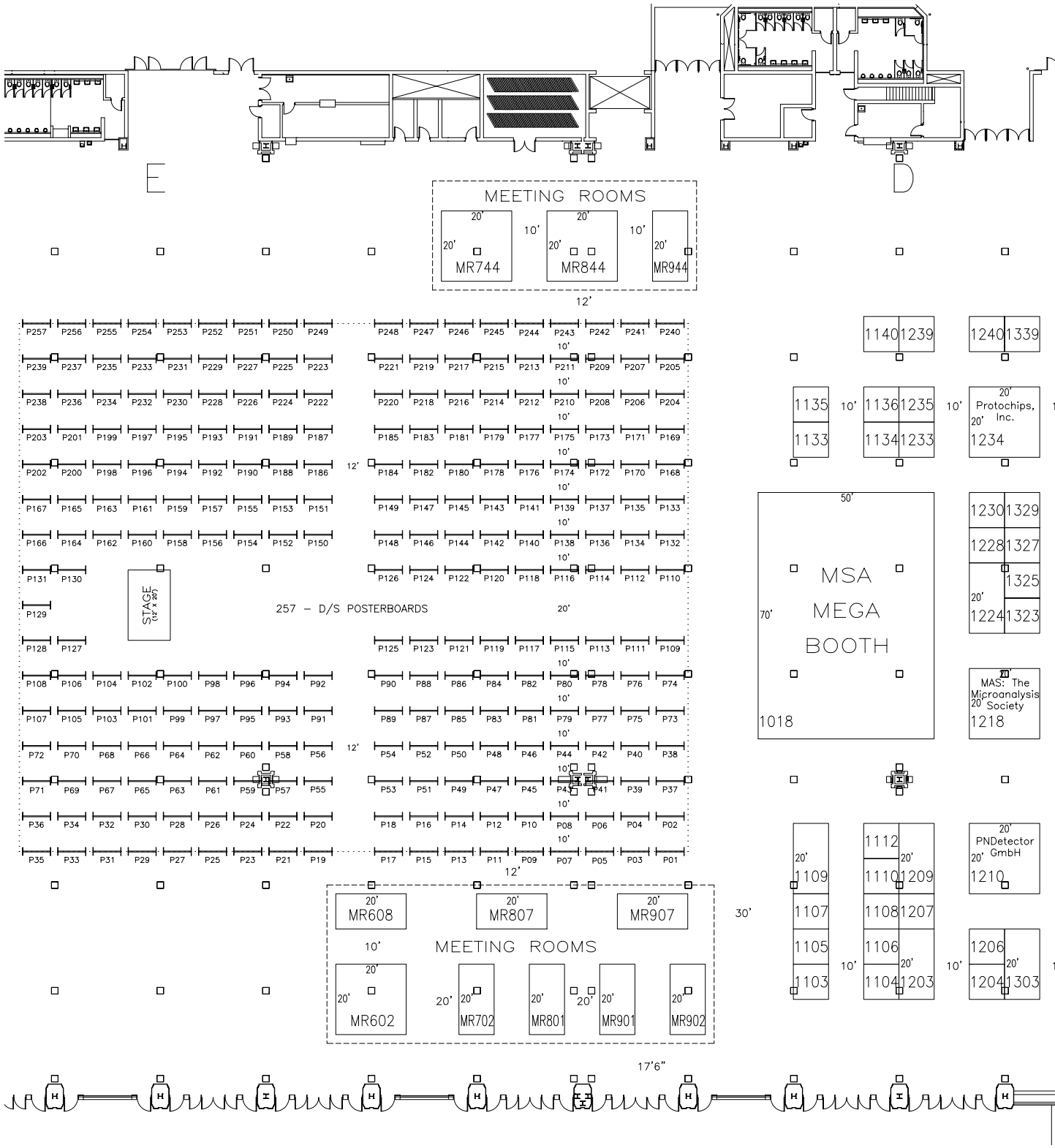
2025 Exhibit Hall



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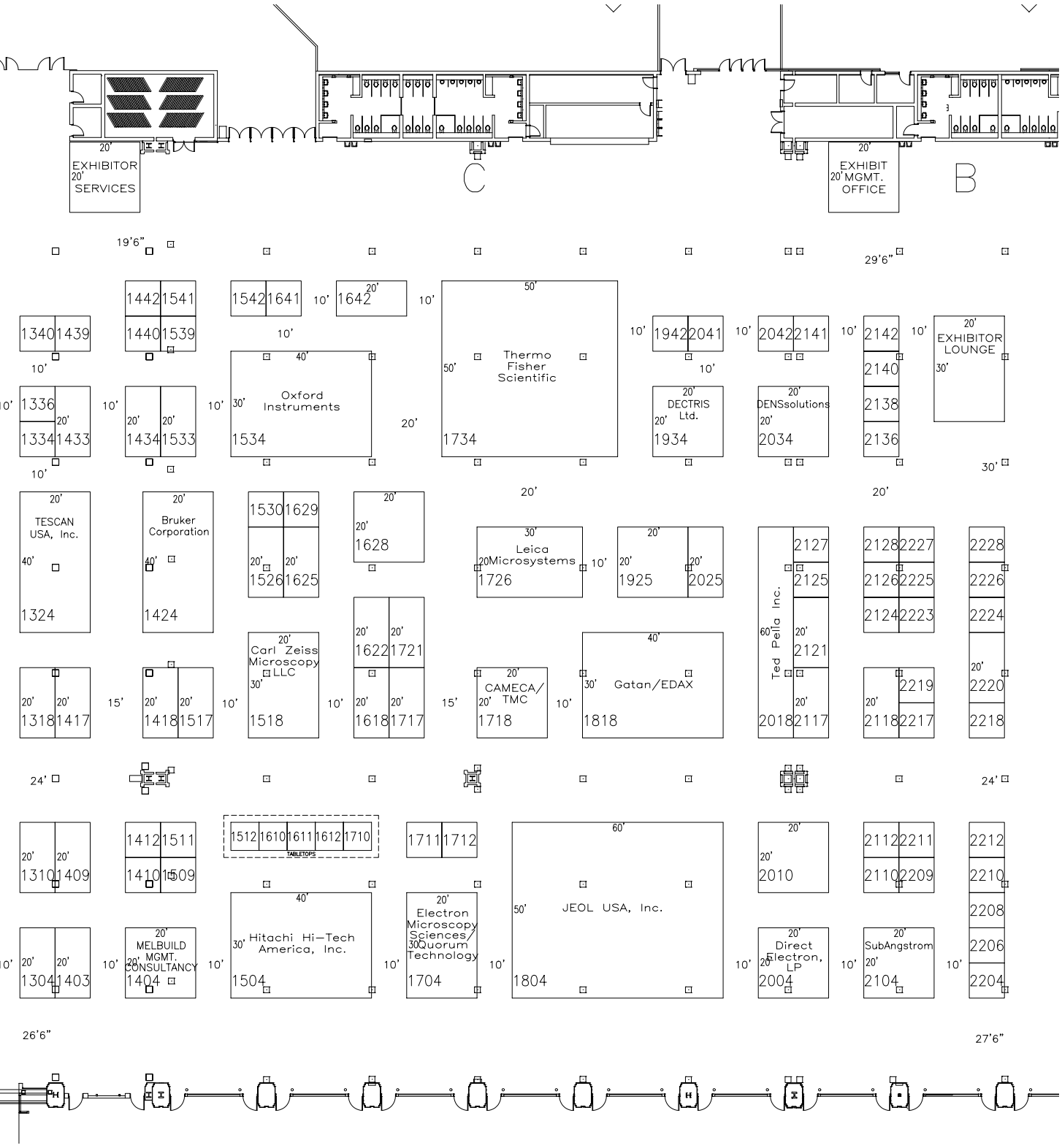
EXHIBITOR SERVICES
C
EXHIBIT MGMT. OFFICE
B
Thermo Fisher Scientific
1734
Oxford Instruments
1534
DECTRIS Ltd.
1934
DENSsolutions
2034
EXHIBITOR LOUNGE
TESCAN USA, Inc.
1324
Bruker Corporation
1424
Carl Zeiss Microscopy LLC
1518
Leica Microsystems
1726
CAMECA/ TMC
1718
Gatan/EDAX
1818
Ted Pella Inc.
2018
Hitachi Hi-Tech America, Inc.
1504
Electron Microscopy Sciences/ Quorum Technology
1704
JEOL USA, Inc.
1804
Direct Electron, LP
2004
SubAngstrom
2104
MELBUILD MGMT. CONSULTANCY
1404
TABLETOPS

2025 List of Exhibitors by Name *As of June 17, 2024*

COMPANY NAME	BOOTH
3D-Micromac AG	2118
Advanced Microscopy Techniques Corp.	1417
Advascope s.r.o.	1618
Angstrom Scientific Inc.	1622
Applied Physics Technologies	1207
Aptco Technologies NV	1629
attocube systems	1110
Attolight	2010
Barnett Technical Services	2012
BLG Vantage	2204
Bruker Corporation	1424
Bruker Corporation	MR 801
Bruker Corporation	MR 702
CAMECA/ TMC	1718
Carl Zeiss Microscopy, LLC	1518
Chip NanoImaging AS	2110
CIQTEK Co., Ltd.	1303
Clark-MXR Inc	1440
condenZero	1107
Coxem Co., Ltd	1403
Crytur USA	1136
Deben UK Limited	1509
DECTRIS Ltd.	1934
Delong Instruments	1625
DENSsolutions	2034
Diatome US	1517
Direct Electron, LP	2004
Dragonfly	1434
Duniway Stockroom Corp.	2209
E. Fjeld Co. Inc.	1533
EBSD Analytical	2206
Electron Microscopy Sciences / Quorum Technology	MR 902
Electron Microscopy Sciences / Quorum Technology	1704
ELLCIE Industries GmbH	1224
Euclid TechLabs, LLC	1339
Ferrovac	1211
Fischione Instruments	1711
Gatan/EDAX	1818
Gatan/EDAX	MR 608
Herzan LLC	1336
Hirox-USA, Inc.	2211
Hitachi High-Tech America, Inc.	1504
HREM Research Inc.	2112
Hummingbird Scientific	1318
ibss Group, Inc.	1310
Insight Chips	1710
Integrated Dynamics Engineering	1112
JASCO	2212
JEOL USA, Inc.	1804
JH Technologies	1304
Kammrath and Weiss	2121
Kitware	2142
Kleindiek Nanotechnik	2127
Kratos Analytical, a Shimadzu Company	2124
Ladd Research	1712
Leica Microsystems	1726
Linkam Scientific Instruments	1439
MAS: The Microanalysis Society	1218
Melbuild Management Consultancy	1404
Microscopy Innovations, LLC	1133
Midwest Center for Cryo-Electron Tomography	1135
MIPAR Image Analysis	1539
MSA Mega Booth	1018

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2025 List of Exhibitors by Name *As of June 17, 2024*

COMPANY NAME	BOOTH
NanoMEGAS USA	1409
Nanomotion Inc	1717
Nanoscience Instruments	1925
NanoSoft	1721
NenoVision	2136
NewTec Scientific	1541
Norcada, Inc.	1108
Oxford Instruments	1534
Oxford Instruments	MR 807
Pace Technologies	1323
Physical Electronics	2208
PIE Scientific LLC	1418
PNDetector GmbH	1210
point electronic GmbH	2134
Precisioneers Group	2040
Protochips, Inc.	1234
Quantum Design, Inc	1109
Quantum Detectors	1642
RAITH America, Inc.	1433
Rave Scientific	1224
Renishaw, Inc.	1206
Royal Microscopical Society	1329
Scientific Bridge	1542
Seiwa Optical America, Inc	1204
Semplor	1325
SenseAI	1530
Serma Microtech	1612
Sigray, Inc.	1240
Simple Origin Inc.	1410
SiriusXT Ltd	1239
SmarAct Inc	1235
Spellman High Voltage Electronics Corp.	2125
SPI Supplies	2128
SPT Labtech | Quantifoil	1641
SubAngstrom	2104
TAGARNO USA, Inc.	1134
Technoorg Linda	2025
Ted Pella Inc.	2018
TESCAN	MR 907
TESCAN	1324
Theia Scientific	1334
Thermo Fisher Scientific	MR 944
Thermo Fisher Scientific	MR 744
Thermo Fisher Scientific	MR 844
Thermo Fisher Scientific	1734
Tousimis	1233
TVIPS GmbH	1412
United Mineral and Chemical Corp.	1209
Vibration Engineering Consultants	1628
VitroTEM	2140
XEI Scientific, Inc.	1511
Zaber Technologies	1203
ZoNexus LLC	2117

2025 List of Exhibitors by Booth *As of June 17, 2024*

BOOTH	COMPANY NAME
1018	Msa Mega Booth
2012	Barnett Technical Services
1211	Ferrovac
2010	Attolight
1209	United Mineral And Chemical Corp.
1107	Condenzero
1108	Norcada, Inc.
1109	Quantum Design, Inc
1110	Attocube Systems
1112	Integrated Dynamics Engineering
1133	Microscopy Innovations, LLC
1134	Tagarno Usa, Inc.
1135	Midwest Center For Cryo-Electron Tomography
1136	Crytur Usa
1203	Zaber Technologies
1204	Seiwa Optical America, Inc
1206	Renishaw, Inc.
1207	Applied Physics Technologies
1210	Pndetector Gmbh
1218	MAS: The Microanalysis Society
1224	Rave Scientific
1224	ELLCie Industries Gmbh
1233	Tousimis
1234	Protochips, Inc.
1235	Smaract Inc
1239	Siriusxt Ltd
1240	Sigray, Inc.
1303	Ciqtek Co., Ltd.
1304	Jh Technologies
1310	Ibss Group, Inc.
1318	Hummingbird Scientific

BOOTH	COMPANY NAME
1323	Pace Technologies
1324	Tescan
1325	Semplor
1329	Royal Microscopical Society
1334	Theia Scientific
1336	Herzan LLC
1339	Euclid Techlabs, LLC
1403	Coxem Co., Ltd
1404	Melbuild Management Consultancy
1409	Nanomegas Usa
1410	Simple Origin Inc.
1412	Tvips Gmbh
1417	Advanced Microscopy Techniques Corp.
1418	Pie Scientific LLC
1424	Bruker Corporation
1433	Raith America, Inc.
1434	Dragonfly
1439	Linkam Scientific Instruments
1440	Clark-Mxr Inc
1504	Hitachi High-Tech America, Inc.
1509	Deben Uk Limited
1511	Xei Scientific, Inc.
1517	Diatome Us
1518	Carl Zeiss Microscopy, LLC
1530	Senseai
1533	E. Fjeld Co. Inc.
1534	Oxford Instruments
1539	Mipar Image Analysis
1541	Newtec Scientific
1542	Scientific Bridge
1612	Serma Microtech

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2025 List of Exhibitors by Booth *As of June 17, 2024*

BOOTH	COMPANY NAME
1618	Advascope S.r.o.
1622	Angstrom Scientific Inc.
1625	Delong Instruments
1628	Vibration Engineering Consultants
1629	Aptco Technologies NV
1641	Spt Labtech | Quantifoil
1642	Quantum Detectors
1704	Electron Microscopy Sciences / Quorum Technology
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MICROGRAPH

Butterfly wing
Dariusz Pawlik, photography enthusiast, Bytom Odrzański, Poland

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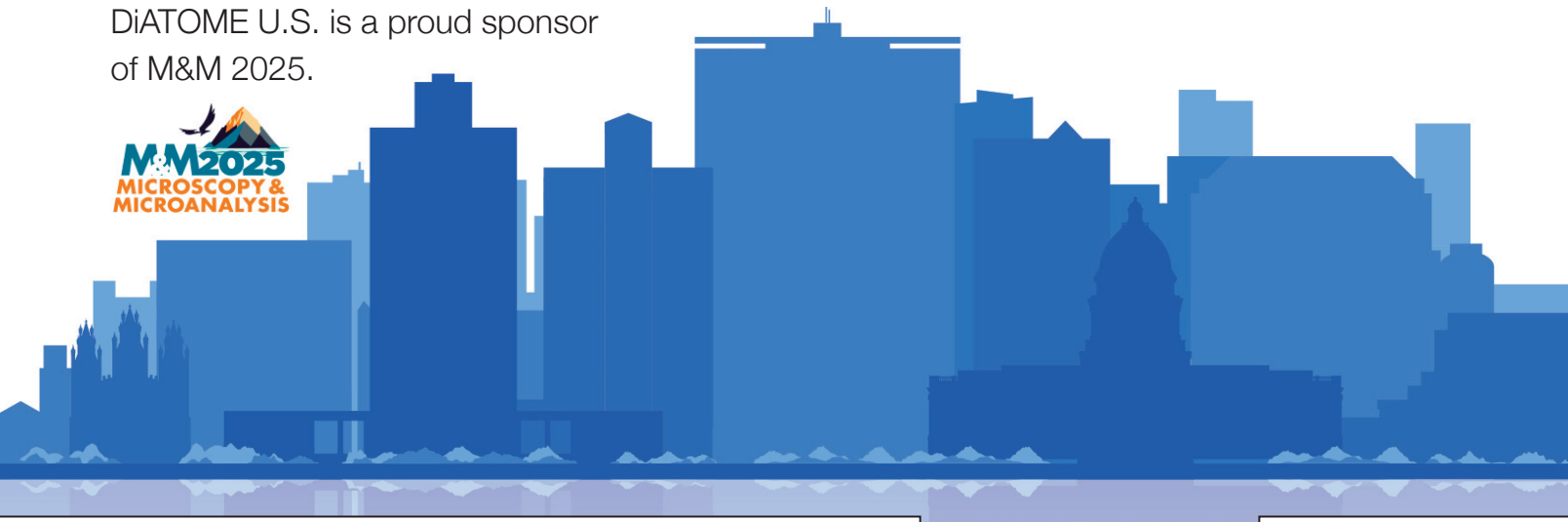

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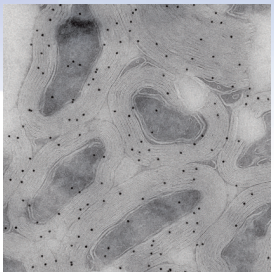
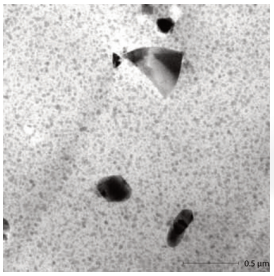


Biology

Mouse optic nerve, immunolabeling of the major myelin protein proteolipid protein (PLP), 10 nm gold. Wiebke Möbius, Dept. of Neurogenetics, EM Core Facility, MPI of Experimental Medicine, Göttingen



Materials

SiC, SiO_2, TiO_2 and AlO_3 nanoparticles in polymer matrix. Claudia Mayrhofer, TU Graz.

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