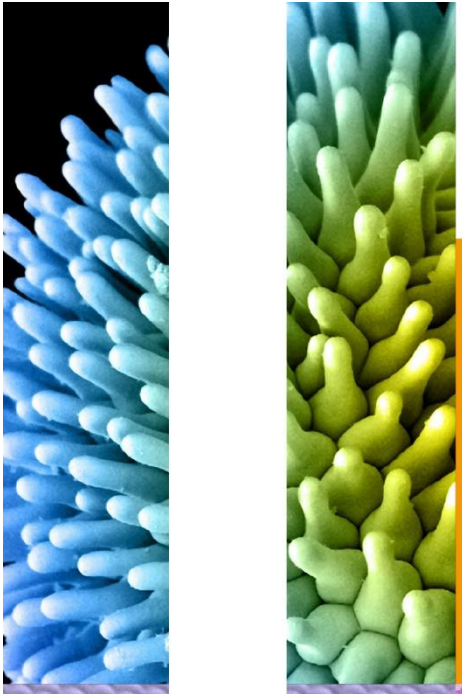
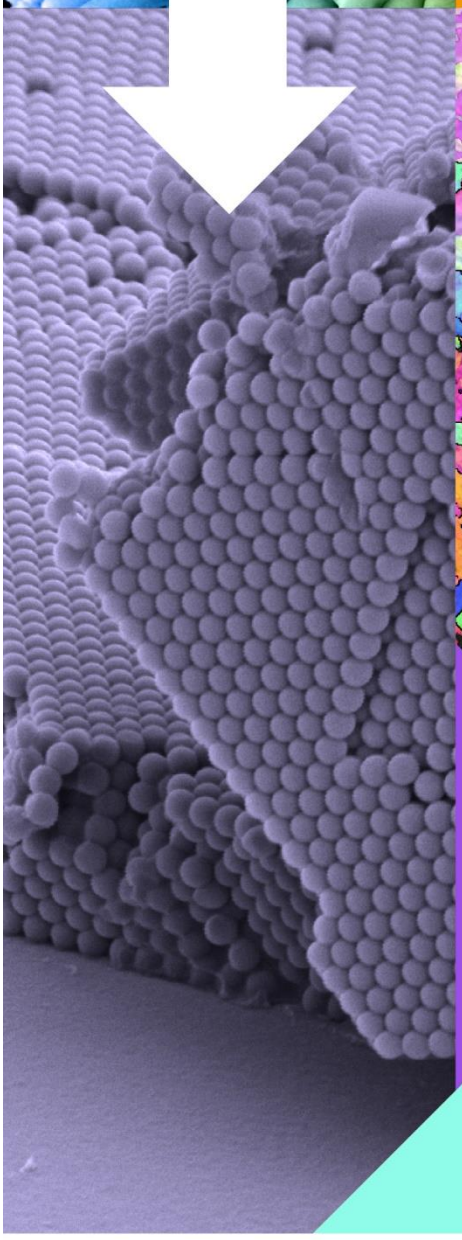
Delegate Handbook

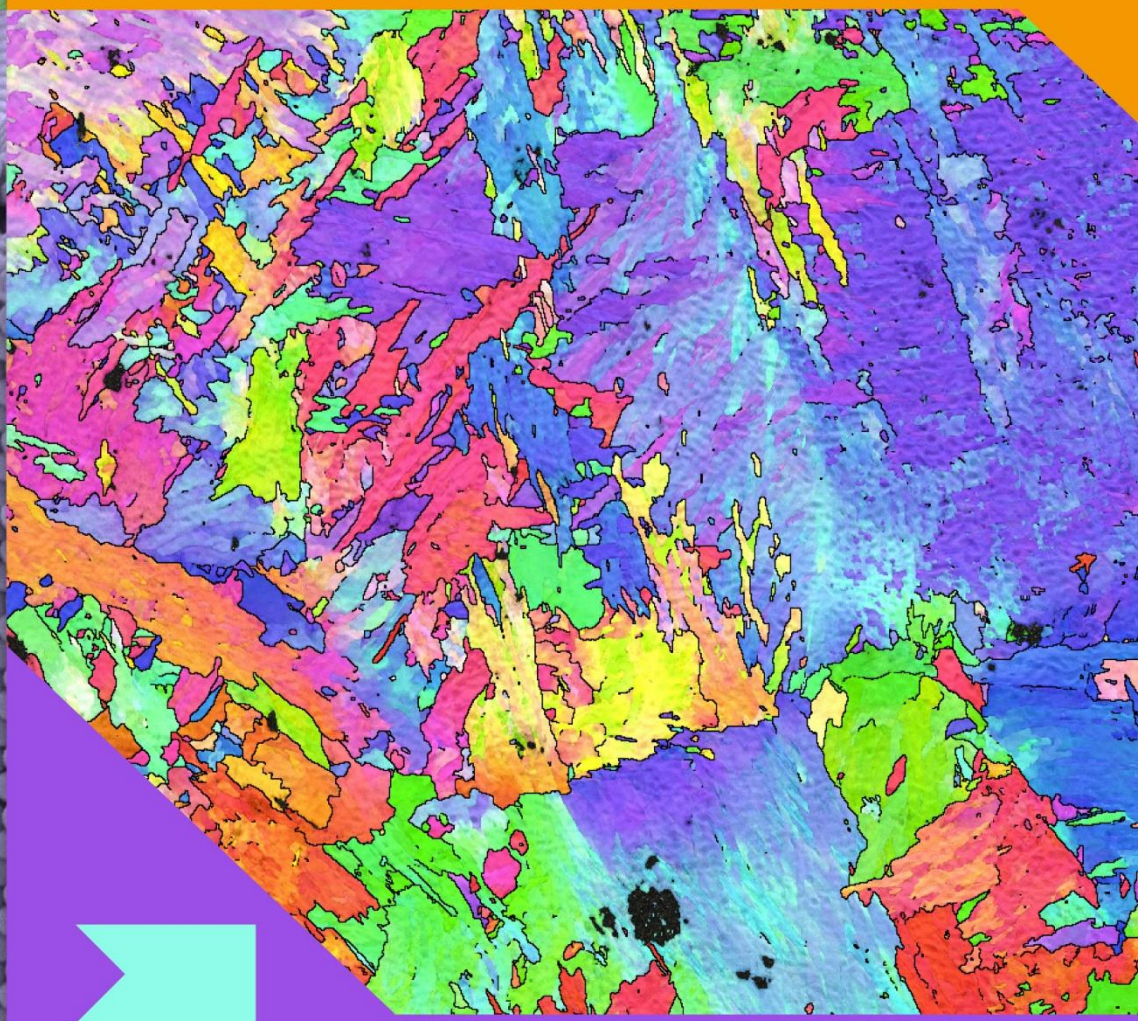
AMAS XVI 2024

THE SIXTEENTH BIENNIAL SYMPOSIUM

5-9 FEB 2024 | QUT + UQ, BRISBANE QLD







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AMMS Australian Microscopy and Microanalysis Society

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ASN Events
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Onsite Contact:
Mia Tobing | M: 0412 175 950 | email: mia.t@asnevents.net.au

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Medium throughput	Dataset in 24 hours
Sample type	Proteins
Applications	SPA

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High throughput	Dataset in 30 minutes
Sample type	Proteins, crystals, cells
Applications	SPA, MicroED, tomography

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- Our highest level of automation from sample vitrification to data analysis
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Ultra-high-resolution SPA	300 kV, <2 Å*
Highest throughput	Dataset in minutes
Sample type	Proteins, crystals, cells
Applications	SPA, MicroED, tomography

* Based on best published performance, actual results will depend on non-microscope factors such as sample and user experience. Not a promise of biological resolution performance.

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WELCOME FROM THE CONVENORS

On behalf of the Organising Committee, we are excited and honoured to recommence the biennial meeting of the Australian Microbeam Analysis Society (AMAS) with its 16th edition, after a 5-year hiatus necessitated by the COVID-19 pandemic. As a special interest group of the Australian Microscopy and Microanalysis Society (AMMS), this year AMAS welcomes the participation of the Focused Ion Beam special interest group, and its contribution to the workshop offerings. We look forward especially to welcoming those who are attending an AMAS meeting for the first time, and to providing the national and international microanalysis communities with this opportunity to reconnect.

In keeping with the successful format of the society's previous meetings, AMAS XVI kicks off with a series of twelve workshops that together represent the broadening spectrum of microanalytical techniques, offered over the course of two days and held on the campus of the University of Queensland (UQ). More than 30 scientists – well-recognized experts in microbeam techniques that use electron, ion and X-ray sources – are contributing to the workshop offerings, which promise to expand expertise in the development and applications of microanalysis. We deeply appreciate their efforts and essential role in the success of this conference. We are also grateful to our colleagues on the organising committee, Jeff Chen and Ron Rasch, for facilitating and organising the workshop activities at UQ, and thank Prabhakaran Vanaraja Ambeth, Georgii Khartcyzov, Aloka Sahu and Nilam Shah for their assistance during the workshops.

Following the workshops, we make the transition to the symposium, hosted over the course of three days by the Queensland University of Technology (QUT). We are truly delighted for the privilege of welcoming our keynote and invited speakers, and the diversity of microanalysis themes they bring to the program. In partnership with the Microanalysis Society of the USA (MAS) and the European Microbeam Analysis Society (EMAS), AMAS is keen to promote the participation by early career researchers and students via an awardee exchange program, and this year we look forward to presentations from two of the EMAS society's award recipients, Amelia Zięba and Håkon Wiik Ånes. We warmly welcome back Pat Camus, current President of MAS.

The AMAS XVI meeting could not take place without the generous support of our sponsors, to whom we extend our deepest gratitude. Many of our sponsors have sustained their participation over many years, and their involvement in the scientific program remains a valued and important aspect of these gatherings.

We thank QUT for allowing access to the outstanding venues and facilities used in the symposium, as well as the School of Chemical Engineering at UQ for use of the Liveris Building to run the workshops. We gratefully acknowledge the generous support of the Central Analytical Research Facility (CARF) at QUT, and the Centre for Microscopy and Microanalysis (CMM) at UQ, for supporting staff and student participation in the workshops and symposium. Assistance from CARF staff members Peter Hines (photography), and Ruairi O'Kane and Chris Powell (AV support), is also much appreciated.

Finally, we extend our thanks to the AMAS President, Will Rickard, the other members of the Organising Committee, Karen Privat (AMAS Executive Secretary), and our very dedicated team at *ASN Events* for their tireless efforts in helping us put together this conference.

We look forward to seeing you all in Brisbane and hope your participation at AMAS XVI is both profitable and enjoyable.

Henrietta Cathey and Rob Jones
Co-chairs, AMAS XVI Organising Committee

Acknowledgement of Country

The AMAS XVI organising committee acknowledges the Turrbal and Yugara as the first nations owners of the lands on which the conference will take place. We pay respect to their elders, lores, customs, and creation spirits. We recognise that these lands have always been places of teaching, research, and learning.

Moran Scientific Award for Outstanding Student Presentation

The AMAS XVI Organising Committee is very grateful to Moran Scientific Pty Ltd for sponsoring the Moran Scientific Award for Outstanding Student Presentation. This award ($250) is presented to the best student presentation at AMAS XVI. The award is judged by a panel of leading researchers and awarded on the last day of the symposium.

AMAS XVI 2024 ORGANISING COMMITTEE

CO-CONVENORS

Henrietta Cathey & Rob Jones
Central Analytical Research Facility
Queensland University of Technology

COMMITTEE MEMBERS

Charlotte Allen
Central Analytical Research Facility
Queensland University of Technology

Jeff Chen
School of Chemical Engineering
The University of Queensland

Konstantin Faershteyn
Central Analytical Research Facility
Queensland University of Technology

Alan Salek
RMIT Microscopy and Microanalysis Facility
RMIT University

Laurel George
AMCF
Western Sydney University

Peter Miller
Monash Centre for Electron Microscopy
Monash University

Tim Murphy
NewSpec Pty Ltd

Aaron Torpy
Microbeam Laboratory
CSIRO Mineral Resources

Angus Netting
Adelaide Microscopy
University of Adelaide

Ron Rasch
Centre for Microscopy and Microanalysis
The University of Queensland

William Rickard
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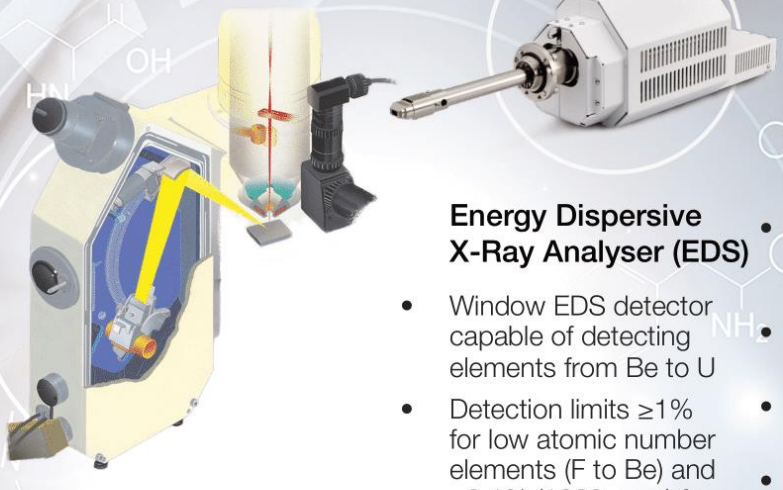
Please attend our presentation of the new JEOL JIB-PS500i FIB-SEM system at the FIB session on Tuesday, 6th February 2024



The Soft X-Ray Emission Spectrometer (SXES)

- Ultra-high resolution spectrometer
- Parallel detection
- Higher energy resolution (0.3 eV) that WDS

Wavelength Dispersive X-Ray Spectroscope (WDS)

- Detect trace elements of 100 ppm or less
- 100 nm to several µm analysis region
- Easily trace light elements
- High energy resolution (8 eV FWHM@Fe-K)

Energy Dispersive X-Ray Analyser (EDS)

- Window EDS detector capable of detecting elements from Be to U
- Detection limits ≥1% for low atomic number elements (F to Be) and ≥0.1% (1000 ppm) for higher atomic number elements
- High sensitivity X-ray analysis with Windowless (Gather-X) Detector
- Low energy characteristic X-rays such as Li-K (54 eV)

X-ray fluorescence Spectrometer (XRF)

- Maintain liquid state of samples with The Low Vacuum Capsule
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- Trace element detection (10 ppm or less)
- Screening for RoHS elements

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Feature	SXES	EPMA (WDS)	EDS	XRF
Resolution	0.3 eV (Fermi edge Al-L)	8 eV (FWHM@Fe-K)	120 -130 eV (FWHM@Mn-K)	160 - 600 eV
Chemical bond state analysis	Yes	Yes (mainly light elements)	No	No
Parallel detection	Yes	No (But multiple spectrometers possible)	Yes	No
Detection limit (reference value)	20 ppm or less	100 ppm or less	5000 ppm or less	10 - 100 ppm

Scan QR code for more information on current products. New Products coming soon!

DELEGATE INFORMATION - WORKSHOPS

WORKSHOP VENUE
The University of Queensland (UQ)
Andrew N. Liveris Building (Building 46)
Staff House Rd, St Lucia QLD 4067
You can find directions to the building here.
Information on getting to the campus is given here
Please ensure that you arrive at the venue with enough time to visit the registration desk prior to the start of your workshop. It takes approximately 15 minutes to walk from the CityCat terminal to the Liveris building.

If you choose to take CityCat ferry, instructions from the ferry terminal to Andrew Liveris Building are –

- Turn left upon exiting the ferry terminal
- Walk a short distance under the Eleanor Schonell Bridge
- Turn right along the River Loop bike path and follow until the intersection with College Road
- Follow College Road along the edge of the lake
- Turn right on Cooper Road, which leads to the Andrew Liveris Building (Staff House Road is a short cut but there is no footpath)
- Make sure you allow at least 15 minutes

The below path also passes through the bus terminal. If you are arriving by bus, please use the above instructions and below map.

****There is a large amount of construction taking place on campus which is blocking some access routes. Please use the above instructions.**

THE REGISTRATION DESK

The registration desk is located in the foyer area on Level 9, of the Andrew Liveris Building. Any enquiries can be directed to ASN staff located at the registration desk except those regarding accommodation which should be dealt directly with your hotel.

The registration desk office hours are:

Monday 5 February	8:00am – 5:00pm
Tuesday 6 February	8:00am – 5:00pm

REGISTRATION

Workshop delegates receive the following services as part of their registration:

- Access to the session/s prebooked
- Digital Delegate Booklet
- Use of the web-based delegate app
- Morning and/or afternoon tea for the days of nominated attendance
- Lunches on the days of nominated attendance

NAME TAGS

Delegates are required to wear their name tag during workshops and while attending breaks with catering.

WORKSHOP ROOMS
Workshops will be held in rooms across levels 4 and 9 in the Andrew Liveris Building. Please refer to the program for your workshop room allocation.

DIETARY REQUIREMENTS
All dietary requirements specified in your registration have been accounted for and will be available from the special dietaries food station for you.

SMOKING AND VAPING
Smoking and vaping is not permitted anywhere on campus.

MOBILE PHONES
Please ensure your mobile phone is turned off or on silent during any session you attend.

INSURANCE
The hosts and organisers are not responsible for personal accidents, any travel costs, or the loss of private property and will not be liable for any claims. Delegates requiring insurance should make their own arrangements.

DISCLAIMER
The hosts, organisers and participating societies are not responsible for, or represented by, the opinions expressed by participants in the sessions.

WI-FI INTERNET
UQ Guest is a free public wireless internet service for guests supporting UQ activities and events.
Guests can connect to the network by signing in with their Gmail, Facebook or LinkedIn accounts (similar to other free wifi services). The use of a social login method enables UQ to meet legislative and security obligations.

TRAVELLING FROM UQ TO QUT
It is recommended to take the CityCat ferry from UQ to QUT as this is the fastest option for travel.
To travel on the CityCat, you must carry a goCard (Brisbane's equivalent of a Myki or Opal card) If you don't have one, they can be purchased at train stations and convenience outlets (eg 7 Eleven, Night Owls, newsagencies etc)
Network map can be found here. Live timetable is available here.
Relevant stops are UQ St Lucia and QUT Gardens Point and fares are currently $3.55 each way.

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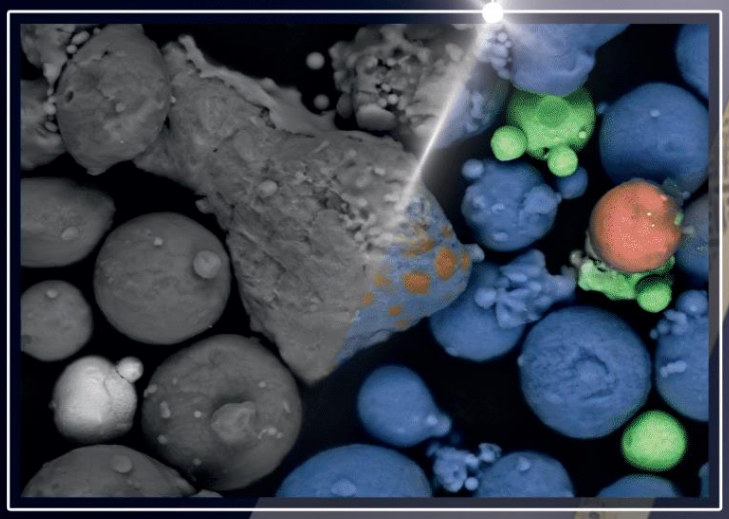

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SYMPOSIUM VENUE

Queensland University of Technology (QUT)
P Block (below in orange), Gardens Point Rd, Brisbane City QLD 4000
You can find directions to the building here.
Information on getting to the campus is given here

THE REGISTRATION DESK

The registration desk is located on Level 5 of the Science and Engineering Centre (P Block). Any enquiries can be directed to ASN staff located at the registration desk except those regarding accommodation which should be dealt directly with your hotel.
The registration desk office hours are:

Tuesday 6 February	5:30pm – 7:30pm
Wednesday 7 February	8:00am – 5:00pm
Thursday 8 February	8:30am – 5:30pm
Friday 9 February	8:30am – 3:30pm

LOADING YOUR ORAL PRESENTATION AT THE SYMPOSIUM

Please bring your talk on your laptop, saved and ready as a PowerPoint presentation. Audio Visual equipment in the room will allow you plug in via HDMI cord and present directly to the large screen.
Presentation dimensions are required to be 16:9 however 4:3 will also display sufficiently.
Should your presentation have videos embedded into a slide, please ensure that the video is also saved separately onto your laptop, as there have been occasions where the video has not worked.
If you are a MAC user, please ensure you have the correct adaptor for MAC to HDMI.

REGISTRATION

Symposium delegates receive the following services as part of their registration:

- Access to the sessions of your choice (unless specified as invite and/or members only)
- Digital Delegate Booklet
- Use of the web-based delegate app
- Morning and/or afternoon tea for the days of nominated attendance
- Lunches on the days of nominated attendance
- Welcome Function (Tuesday 6 February)

NAME TAGS

Delegates are required to wear their name tag during the symposium and while attending breaks with catering. Delegates should note that within their name tag pouch will be the specific function tickets they have purchased.

LECTURE ROOM

All sessions for the symposium will run in the Kindler Theatre located on Level 4 in P Block at QUT, unless stated otherwise in the program.

SOCIAL FUNCTIONS

Welcome Function
Date: Tuesday 6 February 2024
Time: 6:00pm – 8:00pm
Price: Complimentary with Full Conference Registration
Location: The Cube, Science and Engineering Centre (P Block Foyer)
Additional ticket: $70.00
**Additional tickets for partners can be purchased in advance or at the registration desk.*

Informal Social Function
Date: Wednesday 7 February 2024
Time: 5:30pm – 7:30pm
Price: Complimentary with Full Conference Registration
Location: The Lawn, Old Government House, Gardens Point, QUT

AMAS Symposium Dinner
Date: Thursday 8 February 2024
Time: 6:00pm – 9:30pm
Price: Complimentary with Full Conference Registration
Location: Room Three Sixty, Y Block, Gardens Point, QUT
Additional ticket: $130.00
**Ticket included in registration, prebooking is required for catering purposes.*

DIETARY REQUIREMENTS

All dietary requirements specified in your registration have been accounted for and will be available from the special dietaries food station for you during the Symposium.
If you requested a special meal for the dinner, please make yourself known to the venue staff and advise your name and special request.

SMOKING AND VAPING

Smoking and vaping is not permitted anywhere on campus.

MOBILE PHONES

Please ensure your mobile phone is turned off or on silent during any session you attend.

INSURANCE

The hosts and organisers are not responsible for personal accidents, any travel costs, or the loss of private property and will not be liable for any claims. Delegates requiring insurance should make their own arrangements.

DISCLAIMER
The hosts, organisers and participating societies are not responsible for, or represented by, the opinions expressed by participants in either the sessions or their written abstracts.

WI-FI INTERNET
Guests and visitors can access free public Wi-Fi on campus but must register.

Register for access
Create an account and verify it using your personal email address. You can create an account while on campus or before you arrive.
To create an account, you need to:
1. Go to the login page
2. Read and agree to the Terms of Service and Privacy Policy.
3. Select 'Register for WiFi access'.
4. Fill out your details and create a password.
5. Select 'Register'.
6. You'll be sent a verification email to the address provided. Select the link in the email to verify.
If you don't receive a verification email, you may need to check your junk or spam folders.

Connect to public Wi-Fi
You can access the Wi-Fi once you're on campus and have registered for an account.
To access the Wi-Fi, you need to:
1. On your device, select the 'QUT Public Wi-Fi' network.
2. In the pop-up login page, read and agree to the Terms of Service and Privacy Policy.
3. Log in with your email and password.
Once you're connected, you'll be redirected to the QUT Public website and will have Internet access.

SYMPOSIUM APP
The web-based app is displayed in a simple and easy to read format on your phone, iPad, or even your computer. To get the 'App', please open the following link in your internet browser on your phone, iPad or laptop: https://amas-xvi.m.asnevents.com.au/

Alternatively, scan the QR code below.

The Smartphone/Mobile Device 'App' will allow you to:
- View the full conference program
- View all abstracts for the conference
- View the author listing
- Save your favourite sessions and plan your day
- Take notes which will then be saved and downloaded from your registration profile.
- To use most of these functions, you will be prompted to 'log in' each day.

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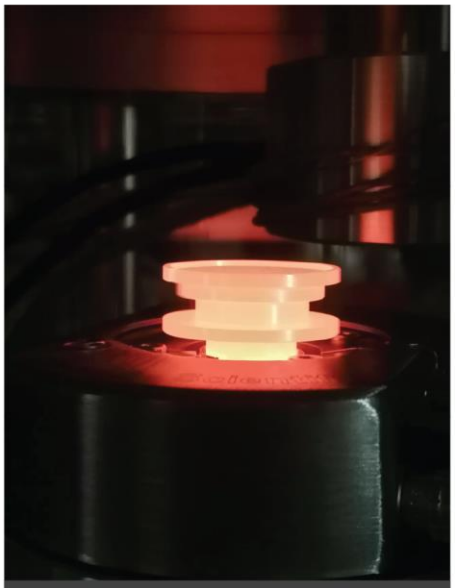

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- **CELDI**: *In-situ* cell for liquid/gas reaction monitoring
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Application Specialist
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Dr Rowena Duckworth
AMI
Mineralogy Manager

Dr Jing Li
AMI Principal
Geometallurgist

Zofia Swierczek
AMI Principal
Mineralogist

Alejandro Fayad
AMI Geologist /
Mineralogist

Victor Nogueira
AMI Geometallurgist /
Process Mineralogist

Aaron Ka
Application Specialist
CT

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WORKSHOP ORGANISERS

Paul Carpenter (Organiser & Presenter)
Department of Earth & Plenary Sciences, Washington University St Louis

Paul Carpenter is a Senior Research Scientist and Electron Microprobe Specialist in the Department of Earth & Planetary Sciences at Washington University in Saint Louis, Missouri, USA.

His research interests include the application of EPMA, micro-XRF, and powder XRD techniques to the analysis of terrestrial, lunar, and meteoritic materials, compositional mapping, and improvements in microprobe analysis ranging from measurement procedures to correction algorithms. His recent research activities include correlative EPMA tools including the Quantitative Microanalysis Explorer web-based tool to study the ANGSA Apollo 17 lunar core samples.

Paul has a long history of MAS society involvement, having served as MAS director, President (2004), MAS Topical Conference committee chair, MAS International Liaison, and IUMAS Secretary-Treasurer (2017-2023). Paul is a recipient of the MAS Cosslett award (1995) and the MAS Service Award (2007).

A/Prof Peta Clode (Organiser & Presenter)
University of Western Australia

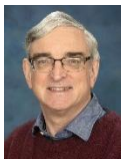
Peta completed her PhD on microscopy and X-ray microanalysis of calcification processes in reef corals under the supervision of Alan Marshall at La Trobe University, in 2002. From this she developed interests in all things microscopy with a focus on structure-function relationships (particularly in symbiotic / parasitic systems) and ion and nutrient transport strategies. Since 2003 Peta has been an academic in the Centre for Microscopy, Characterisation and Analysis at The University of Western Australia. She is responsible for leading applications and research in the imaging and characterisation of biological systems. Her recent interdisciplinary research extends from C and N dynamics in soil and marine systems, to understanding Ca and P toxicity mechanisms in plants, to investigating Australian wildlife pathogens. With this her microscopy expertise extends across optical, ion, electron, and X-ray based systems and ancillary analytical and sample preparation methods.

Dr Michael Jones (Organiser & Presenter)
Queensland University of Technology, Research Infrastructure Specialist in Synchrotron Science, Central Analytical Research Facility

Michael Jones completed his PhD (2010) in nonlinear optics at QUT under the supervision of A/Prof Esa Jaatinen. He took an ARC Super Science Fellowship at La Trobe University with Professors Andrew Peele and Leann Tilley in the ARC Centre of Excellence for Coherent X-ray Science. In this position he earned his stripes in Synchrotron Science, designing and undertaking dozens of experiments at synchrotron facilities around the world with a focus on developing novel imaging techniques for biological sciences. In 2014 Dr Jones was appointed to the Australian Synchrotron, working as an Australian Synchrotron Fellow on the X-ray Fluorescence Microscopy beamline, where he worked collaboratively with many researchers on a diverse range of problems from biology to electrochemistry. In 2018, he was appointed to the position of Research Infrastructure Specialist in Synchrotron Science and continues to answer a diverse range of research questions using synchrotron science.

Colin MacRae (Organiser & Presenter)
CSIRO Mineral Resources

Colin MacRae is a principal research scientist in the Characterisation program within Mineral Resources CSIRO, Australia. His research includes the application and development of hyperspectral mapping and analysis through the parallel collection of emitted x-rays, light and electrons from minerals and materials. He is a developer of the luminescence database of emission lines and spectra for minerals and materials analysed by cathodoluminescence, photoluminescence or ionoluminescence. His research extends to the microanalysis of over 40 new minerals, one being named after him, macraeite. Many of the new minerals are hydrated which has necessitated the development of cryogenic microanalysis by EPMA. In 2022 his contribution to microscopy and microanalysis has been awarded by him receiving the Peter Duncumb Award for Excellence in Microanalysis from the Microanalysis Society (US). He has a H-index of 29.



Dr Peter Miller (Organiser & Presenter)
Monash University, Monash Centre for Electron Microscopy (MCEM)

Peter has worked as an electron microscopist for more the four decades and he has a strong interest in the application of TEM and SEM techniques to the solution of materials problems. He has particular interests in analytical techniques and Monte Carlo simulation, and in ensuring that a microscope's performance is not limited by its environment.
Peter worked on the development of new SEM-based equipment such as QEM*SEM (Dr Alan Reid CSIRO 1978-1983), the X-ray ultramicroscope (Dr Steven Wilkins CSIRO 2000-2006) and on the

A/Prof Nick Timms (Organiser & Presenter)
School of Earth and Planetary Sciences, Curtin University

A/Prof Nick Timms is a geoscientist by training and has over 27 years of experience with EBSD. He has published extensively on the application of EBSD in a wide range of in Earth and planetary sciences. Nick has developed expertise in microstructural characterisation and deformation mechanisms of rocks and minerals, including ore minerals, fracture mechanics, quantification of fracture patterns, visualization of mineral elastic anisotropy, brittle fault zones, and ductile shear zones. His pioneering work on deformation of datable accessory phases led to new insights into shock metamorphism associated with impacts

development and application of electron channelling techniques (Dr Chris Rossouw CSIRO 1990s).
In 2006, Peter started working for Prof. Joanne Etheridge (Director) as Manager of the then newly-created Monash Centre for Electron Microscopy (MCEM).
An electron microscope's operating environment is critical to its performance. The building must be considered part of the microscope (often the most expensive part!). Peter was heavily involved in the final design stages, construction and on-going development of the purpose-built MCEM building.
Peter retired as MCEM Manager in 2022 but has continued working part-time at MCEM as a Senior Advisor, Electron Microscopy and as an Affiliate at CSIRO Mineral Resources.

Dr Nestor Zaluzec (Organiser & Presenter)
Electron Microscopy Center, Argonne National Laboratory

A senior scientist and principle investigator in the Electron Microscopy Center at Argonne National Laboratory as well as a Fellow of both Oak Ridge National Laboratory, and the Computational Institute of the University of Chicago, Nestor's research includes the development of state-of-the-art instrumentation, software and techniques for x-ray and electron spectroscopy, analytical, and scanning confocal electron microscopy.
In addition to creating tools for science, he also uses these leading-edge technologies to study issues in technologically important materials. His work over the last 30 years has included studies in the areas of structural phase transformation in metals, radiation damage in alloys, ceramic oxides for geologic immobilization of nuclear waste materials, elemental segregation in a wide range of materials ranging from metals and catalyst to semiconductors and superconductors, magnetic dichroism, genetically engineered bio-materials and most recently studies of optical photovoltaics and plasmonics in coupled and hybrid nanostructures. He currently is investigating how aberration corrected instruments can be reengineered to improve the sensitivity of spectroscopy in analytical modes. He was one of the earliest to realize the potential impact of the Internet on science and established the first TelePresence Microscopy Collaboratory, which has served as a model for outreach to both the scientific and education communities, providing unencumbered access to scientific resources.
Nestor has received numerous awards for his research and educational outreach. They include: Fellow of the Microscopy Society of America, Distinguished Alumni Award from the College of Engineering at the University of Illinois, the August Kohler Award from the State Microscopical Society of Illinois, Distinguished Service Award Australian Microscopy and Microanalysis Society, the Maser Distinguished Service Award from MSA, the AMMS Presidential International Collaboration Award, Honorary Lifetime Member of the Illinois Junior Academy of Science, Science Digest 100 Brightest Scientists Award, and the E.F. Burton Award for Contributions to Microscopy by a Young Scientist. Nestor also founded and was the first Director of the Electron Microscopy Center at Argonne National Laboratory, where he developed the first parallel EELS system to employ CCD array detectors, plasma cleaning technology for EM, and has received two R&D 100 Awards one for the invention of the Scanning Confocal Electron Microscope and the second for the π sR X-ray Detector. He has and continues to hold numerous positions on local, national and international committees and engages the next generation of scientists through his adjunct work over the years with local universities (NIU , UofC, and new ways to date terrestrial and lunar impact events. He has championed 'phase heritage' approach of using EBSD to understand phase transformations and discovered new twin laws and high-pressure polymorphs of accessory phases. Nick's current focus is on lunar and solar system evolution via analysis of meteorites and samples returned from the Moon and asteroids by space missions.

Dr Richard Wuhrer (Organiser & Presenter)
Western Sydney University, Advanced Materials Characterisation Facility (AMCF)

Richard Wuhrer is the Facility Research Manager of the Advanced Materials Characterisation Facility (AMCF) at Western Sydney University (WSU) and holds a PhD in Applied Science from UTS.

Richard has extensive experience on various scanning electron microscopes, variable pressure and environmental scanning electron microscopes, microanalysis systems, X-ray mapping and X-ray diffraction. He has been involved in major research activities in the field of characterisation techniques, SEM, ESEM, EDS, WDS, XRM, EM maintenance, GSR, forensic characterisation techniques, thermal analysis, vibrational spectroscopy, EM Probe and X-Ray Diffraction (XRD). He has also taught many courses and workshops on these techniques, as well as in the field of Materials Science and Engineering (Metallurgy, Organic and Inorganic Materials, Corrosion Science, Composites and Surface Engineering). He has extensive experience and successful collaborations with industry and instrument manufacturers in these areas.

Richard is the Past President of the Australian Microbeam Analysis Society (AMAS). He has over 300 reviewed publications on a variety of topics from art works to gunshot residue analysis, surface engineering, biomimicry, development of new alloys and new materials. His main-focus however, remains on characterisation techniques and further development of these techniques through combining systems and aiding in the analysis of materials and biological materials.

UIUC, UIC, IIT) as well as with middle and high school students through the Illinois Junior Academy of Science.
Nestor received his B.S. degree in Physics at Illinois Institute of Technology in Chicago, and his PhD in 1978 from the Department of Metallurgy at the University of Illinois Urbana-Champaign.

Dr John Caulfield (Organiser & Presenter)
Postdoctoral Research Fellow
Queensland University of Technology

Heather Lowers (Organiser & Presenter)
US Geological Survey

A/Prof Will Rickard (Organiser & Presenter)
Curtin University

Dr Konstantin Faershteyn
Queensland University of Technology

Angus Netting
Director, Adelaide Microscopy
University of Adelaide

WORKSHOP PRESENTERS

Dr Lachlan Casey
Centre for Microscopy and Microanalysis, the University of Queensland, St Lucia, QLD, Australia

Dr. Lachlan Casey is an Analytical X-ray Specialist within the Centre for Microscopy and Microanalysis at University of Queensland, with an extensive background in X-ray science across imaging spectroscopy, scattering and diffraction beginning with his PhD in structural biology completed at UQ in 2016. He is responsible for management of the centre's mapping X-ray fluorescence facility, and specialises in data analytics and spectral deconvolution for both fluorescence and surface science. He has also been a long-time user of synchrotron and neutron facilities in addition to his laboratory experience, and has served on advisory panels for the ANSTO BioSAXS beamline as well as the Australian Characterisation Commons at Scale program. His X-ray characterisation work has led to publications in Science, Proc. Natl. Acad. Sci and Plant Methods.

Dr Kathy Ehrig
Superintendent Geometallurgy at BHP Olympic Dam / Adj. Prof., Institute for Mineral and Energy Resources

Kathy completed her PhD in Geology at the University of California-Berkeley in 1991. Prior to completing her PhD, she was employed by the US Navy to evaluate the geothermal energy potential of US military lands in the western US via geological mapping and conducting geophysical surveys. She left San Francisco in 1992 to commence working on the genesis of the Olympic Dam deposit in Australia, and to provide mineralogical support for the Olympic Dam processing plant. In 2006, she moved Adelaide to lead the development of the Olympic Dam geometallurgy program. However, she has remained focussed on using mineralogy to solve processing issues, unravelling the complex geological history of the Olympic Dam deposit, and using deposit scale geological/mineralogical insights as inputs into discovering new IOCG deposits. This has all been underpinned by being an avid user of advanced microanalytical instrumentation. She has co-supervised 15 PhD students and 10 postgraduate researchers working on Olympic Dam based projects. She has shared the geological/geometallurgical knowledge gained from Olympic Dam and surrounding prospects by authoring/co-authoring >125 published papers and delivering >70 presentations within and outside of Australia.
She received the 2017 Professional Excellence Award from the AusIMM and a degree of Doctor of Science honoris causa from Flinders University in recognition of her contribution to the geological and geometallurgical understanding of the Olympic Dam deposit. Other awards include the Geological Society of Australia – Bruce Webb Medal (2018), the Society of Economic Geologists Silver Medal (2020), the Australian Geoscience Council – Roy Woodall Medal (2020), and the Australian Academy of Sciences – Haddon Forrester King Medal (2022), Society of Economic Geologists – 2023 International Exchange Lecturer. She is a Chartered Professional of the AusIMM, and was elected to the US National Academy of Engineering in 2023.

Dr Nathan Fox
WH Bryan Mining Geology Research Centre (BRC), Sustainable Minerals Institute, The University of Queensland

Angus Gale
Quantum Materials and Nanophotonics Group, University of Technology Sydney

Nathan has more than 15 years of experience working in applied geology and mineralogy across exploration, geometallurgy and geoenvironmental projects for the minerals industry. He is currently Acting Group Lead for Total Deposit Knowledge at the BRC which focussing on mineralogical and geochemical characterisation across the mining value chain.

Angus Gale is a research associate in the Quantum Materials and Nanophotonics Group at the University of Technology Sydney, led by Professors Milos Toth and Igor Aharonovich. His research is aimed at engineering and modifying quantum emitters in 2D materials, using focused ion beam (FIB) and scanning electron microscopy (SEM) systems. He is also working on the development of correlated cathodoluminescence (CL) and photoluminescence (PL) analysis techniques. Recent research has concentrated on quantum emitters in hexagonal boron nitride, including B-centres, activated via electron irradiations and generation of boron vacancies via FIB methods.

Dr Sarah Gilbert
Adelaide Microscopy, University of Adelaide

Dr Sarah Gilbert manages the ICP-MS laboratory at Adelaide Microscopy, University of Adelaide. She has a degree in geology and received a PhD in 2015 specialising in LA-ICP-MS analysis of sulphide minerals. Her analytical career began over 20 years ago at the University of Tasmania with solution ICP-MS, and she soon developed a keen interest in laser ablation. Since moving to the University of Adelaide in 2016 she is now one of the leading researchers developing novel in-situ mineral dating applications with an Agilent 8900 QQQ-ICP-MS, including β-decay isotope systems such as 87Rb/87Sr, 176Lu/176Hf and 187Re/187Os. When not in the lab Sarah has a passion for caving and her ideal holiday includes getting covered in dirt while exploring and mapping new caves passages.

Dr Michael Jones
Queensland University of Technology, Research Infrastructure Specialist in Synchrotron Science, Central Analytical Research Facility

Michael Jones completed his PhD (2010) in nonlinear optics at QUT under the supervision of A/Prof Esa Jaatinen. He took an ARC Super Science Fellowship at La Trobe University with Professors Andrew Peele and Leann Tilley in the ARC Centre of Excellence for Coherent X-ray Science. In this position he earned his stripes in Synchrotron Science, designing and undertaking dozens of experiments at synchrotron facilities around the world with a focus on developing novel imaging techniques for biological sciences. In 2014 Dr Jones was appointed to the Australian Synchrotron, working as an Australian Synchrotron Fellow on the X-ray Fluorescence Microscopy beamline, where he worked collaboratively with many researchers on a diverse range of problems from biology to electrochemistry. In 2018, he was appointed to the position of Research Infrastructure Specialist in Synchrotron Science and continues to answer a diverse range of research questions using synchrotron science.

Dr Aurélien Moy
University of Wisconsin-Madison

Aurélien Moy, is currently a postdoc at Concord University responsible for modernizing an old ARL electron microprobe. He is also a consultant for Probe Software, Inc. focusing on maintaining and developing the Probe Image software. Previously, he was a researcher at UW-Madison, Geoscience Department, specializing in developing new EPMA methods for quantification at low accelerating voltages. Aurélien holds a degree in Nuclear Engineering from ENSICAEN, France (2011), and a Ph.D. in Geoscience/Physics from the University of Montpellier and CEA Marcoule (2014). His thesis on actinides quantification by EPMA earned him the European Microbeam Analysis Society Thesis Award (2015). Additionally, he has received several awards, including the Young Scientist Award (2013) from EMAS, the Early Career Scholar Award (2014, 2017) from IUMAS, and the Microanalysis Society Macres Award for best instrumentation/software in 2020.

Dr Bence Paul
Elemental Scientific Lasers, Bozeman, MN, USA, and
School of Geography, Earth and Atmosphere Sciences, The University of Melbourne, Parkville, VIC

Dr. Bence Paul is a leading expert in the laser ablation-ICPMS field with a passion for developing innovative analytical techniques that bridge the gap between diverse scientific disciplines. After completing his PhD in geochemistry in 2007, he has led the iolite project since 2009, leading its growth into a powerful platform used across fields like neuroscience, disease and cancer research, geochemistry, nuclear science and palaeoclimate studies. This groundbreaking work earned Bence a prestigious shortlisting in the New Innovators category of the Prime Minister's Prize for Science in 2016. Through close collaboration with diverse researchers from academia and industry, Bence is expanding the range of LA-ICPMS applications and fostering cross-disciplinary innovation.

Prof Raynald Gauvin
McGill University/Department of Mining and Materials Engineering

Torsten Richter
Product Manager, Raith

Professor Raynald Gauvin received his Ph.D. in 1990 at École Polytechnique de Montréal in Metallurgical Engineering. He was then appointed as an assistant professor in Mechanical Engineering at Université de Sherbrooke where he became associate Professor in 1995 and full Professor in 1998. In 2001, he joined the department of Mining and Materials Engineering of McGill University, Montréal, Canada, as a full Professor. Professor Gauvin's research interests are related in developing new methods to characterize the microstructure of materials using high resolution scanning electron microscopy with X-ray microanalysis and Monte Carlo simulations. He is the creator of the CASINO program that is used by more than 10,000 users in the world. He has more than 300 papers in scientific journals and conference proceedings. He was Invited Speaker in more than 100 international scientific conferences. He has several scanning electron microscopes in his lab, the SU-3500, the SU-8000 and the SU-8230 all with EDS and EBSD. He also has the Triple Beam FIB NX-5000 with EDS and EBSD also but he has the famous SU-9000, a dedicated STEM working at 30 keV and less with the Extreme EDS detector from Oxford Scientific that allows detection of Li. The SU-9000 has EELS that allows unique detection of Li at low beam energy, also at cryo temperatures. He won several scientific prizes, most notably the 31st Canadian Materials Physics Medal in 2007 from the Metallurgical Society of the Canadian Institute of Mining, the Heinrich Award in 1997 from the Microbeam Analysis Society of America and the Prix d'excellence du président de l'École for the best Doctorate Thesis defended in 1990 at École Polytechnique de Montréal. He is an Honorary Member of the European Microbeam Analysis Society since 2017 and a Fellow of the Microanalysis Society of America since 2019.

Torsten Richter joined Raith as the Product Manager for focused ion beam products in January 2019 and has taken responsibility at Raith for the market activities for all ion beam related products in the academia market.
He obtained a diploma in Physics from the University Dortmund. Prior to joining Raith he held similar positions at other nanotechnology companies mainly in the field of surface nano analytics.

Dr David Saxey
Curtin University

David has more than 14 years' experience in research and technique development in atom probe tomography (APT) and has applied APT methods to a wide range of materials, within both academic and industrial research. His current research interests are in the application of atom probe techniques to geological materials, and the development of atom probe data analysis methods. He is the facility leader for the Geoscience Atom Probe in the John de Laeter Centre at Curtin University, Australia, and has previously managed atom probe facilities at the University of Sydney and the University of Oxford.

A/Prof. Christoph Schrank (Chris)
Queensland University of Technology,
School of Earth and Atmospheric Sciences

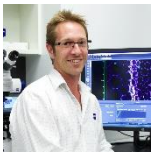
Christoph Schrank is an expert in the development and application of cutting-edge synchrotron-based analytical techniques for the geosciences. With over 15 experiments at multiple beamlines, Chris is a strong proponent of simultaneous fluorescence and diffraction-based mapping techniques, including in-situ experiments at high pressures and temperatures. Chris received his PhD at the Tectonophysics laboratory at the University of Toronto as Connaught scholar in 2009 before joining the Western Australian Geothermal Centre of Excellence at the University of Western Australia as research fellow of the German Research Foundation. Since 2012, he is an academic staff member at QUT in the School of Earth and Atmospheric Sciences.

Braam Smit
Newmont Australia

Braam Smit graduated from the University of Pretoria and worked as an exploration geologist, mining geologist and mineralogist on multiple commodities and on deposits across the globe.

Analytical experience includes techniques such as XRF, XRD, EMPA, ICP-MS and SEM (Automated mineralogy systems).

Braam also has extensive exposure to quality management and is a qualified ISO9000 systems lead auditor.



Dr Mark Stafford
ZEISS

Mark Stafford has a background in Molecular Biology and Neuroscience and completed his PhD at the University of Queensland in 2007. With a research focus investigating the role of ion channel signaling in neural progenitor cell differentiation, his work involved a combination of pharmacology, cell culture and Calcium imaging techniques. Mark has been with ZEISS ANZ for the past 16 years and supports our high-end light microscopy portfolio.

Having worked for Gold Fields South Africa, the DeBeers Group, Anglo American, China Molybdenium Company and now Newmont Australia, he has wide exposure to the approach and challenges mining companies face in ore processing. Braam has worked in both centralized and minesite mineralogy laboratories to assist operations in meeting these challenges.
Braam is a member of AusIMM and a fellow of the GSSA.

Xiao Sun, PhD
John de Laeter Centre, Curtin University

Xiao Sun is an experienced platform specialist based on focused ion beam (FIB) and Time-of-Flight Secondary Ion Mass Spectrometry (ToF-SIMS). His research has been focused on micro/nano-fabrication and materials/devices characterization. Xiao Sun has been concentrating on prototyping of grating magneto-optical traps (gMOTs) for portable atomic clock, 2D semiconductor nanomaterials characterization, porous silicon platform based device fabrication and sensing applications, with the support of a range of grants. He has over 10 years' experience researching in microelectromechanical system (MEMS) and microfabrication fields, and expertise on FIB and ToF-SIMS based applications. He is also serving as a reviewer for a range of research journals.

Associate Professor Teresa Ubide
The University of Queensland, School of the Environment

Teresa is an Associate Professor in Igneous Petrology/Volcanology at The University of Queensland. She is an ARC Future Fellow and won the 2023 Anton Hales Medal (Australian Academy of Science). She combines novel LA-ICP-MS approaches with detailed microscope observations to interrogate magmatic crystals and their carrier melts at elemental and isotope levels. Her research constrains magma transport and storage through the Earth's upper mantle and crust, with a particular focus on the drivers of volcanic eruptions and the processes that lead to the accumulation of metals that are critical for the energy transition.

Dr Alex Walker
Curtin University

Alex graduated from Curtin University with a PhD in Applied Geology in 2019 and is presently a research fellow in Curtin University's John de Laeter Centre, where he recently worked on the joint Geoscience Australia-Curtin University Heavy Mineral Map of Australia project. Prior to his PhD, he worked in the UK as a geotechnical engineer after completing undergraduate studies in geology at the University of Leicester. With research interests focused around applied, economic, and exploration geology, much of his present research involves heavy minerals, upstream mineral exploration, and mineral deposit characterisation with government and industry partners.

Dr Elaine Wightman
University of Queensland

Dr Elaine Wightman has worked extensively with automated image analysis techniques, such as MLA and QEMScan, to characterise material throughout the mineral processing chain, from exploration drill cores, comminution, flotation, tailings, and smelter products. She managed the Mineralogical Services group at the Julius Kruttschnitt Mineral Research Centre (JKMRC) for more than 15 years which provides support to both researchers and industry partners through the provision of mineral characterisation tools including the Mineral Liberation Analyser (MLA). Prior to joining the JKMRC in 2005, Elaine spent several years working for the Technology and Innovation group at Rio Tinto, based in Melbourne. It was during this time that Elaine developed her interest in process mineralogy through working on a wide range of projects that incorporated mineralogical characterisation including copper leaching, diamond indicators, fly-ash utilisation, flotation circuit diagnostics, ore characterisation, smelter products, iron ore, uranium, gold, and minerals sands.

Nick Wilson
CSIRO

Nick has been doing microanalysis for over twenty years. His interests include cathodoluminescence analysis, soft x-ray analysis and QM modelling of materials. He is the Team Leader, Electron Microscopy and XRF in Clayton for Mineral Resources.

Lena Wolff (PhD)
AXT Pty Ltd

Prof Charlotte Allen
Queensland University of Technology

Janaina Avila
University of Queensland

Dr John Fournelle
University of Wisconsin-Madison

Trevor Ireland
University of Queensland

Andi Kaeppel
Bruker

Kamran Khajehpour
Microscopy Product Manager
AXT

Dr Denis Korneev
Research Fellow
Monash University

Ken Moran
Moran Scientific

Aaron Torpy
CSIRO Mineral Resources

Darren Attard
Newspec

Patrick Cleeve
Delmic

Dr Sergey Gorelick
Senior Research Officer
Monash University, Ramaciotti Centre for Cryo-Electron Microscopy

Kate Jenkins
PhD Student
Queensland University of Technology

Nobuyuki Kawashima
Microanalyst
University of Adelaide

Jonathan Knapp
Hitachi Canada

Andrew Kostryzhev
Project Manager and Scientist
University of Queensland

Leonardo Salazar
Geologist
Thermo Fisher Scientific

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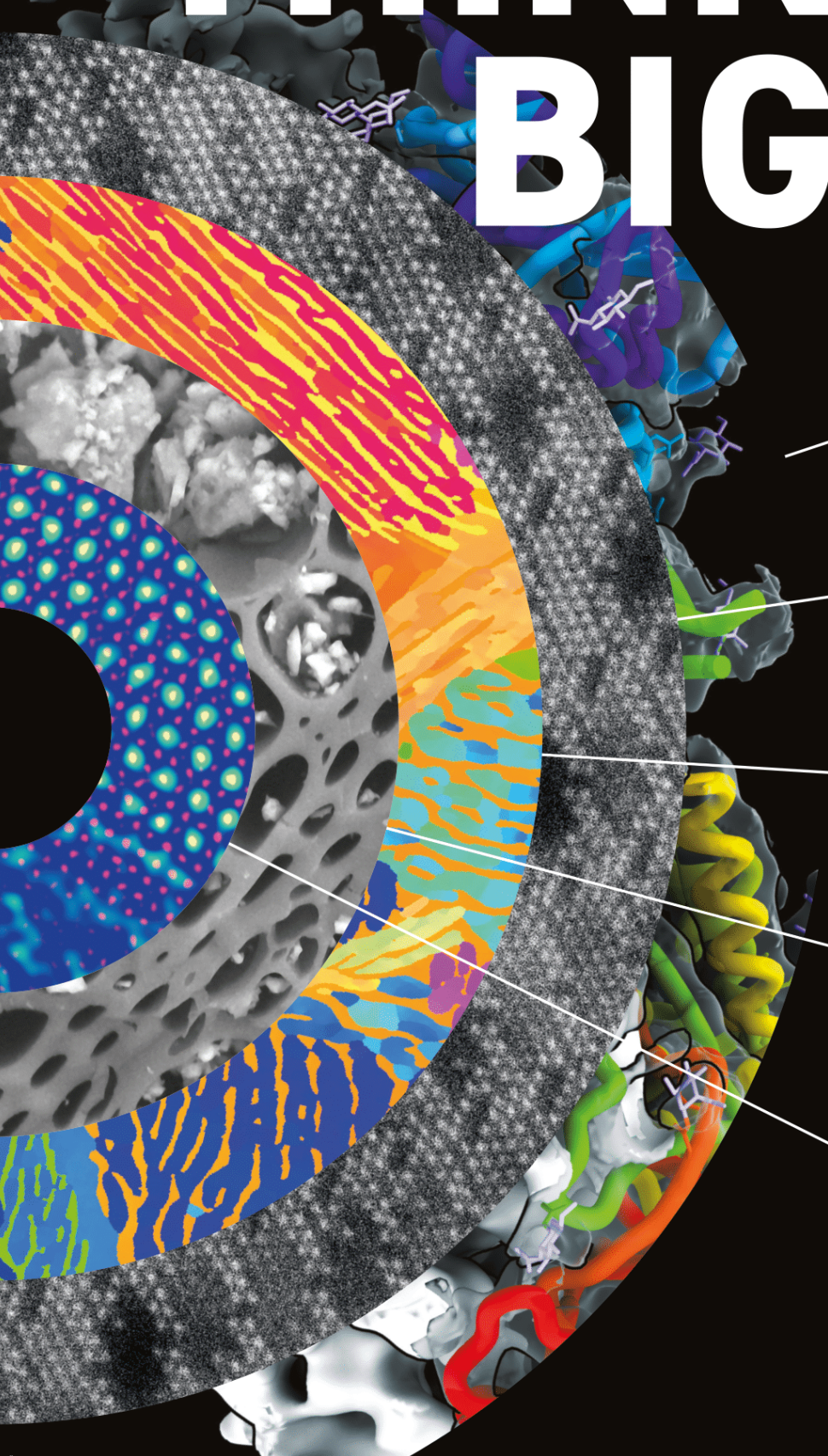

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INVITED KEYNOTE SPEAKERS

Assistant Professor Jessica Barnes
Lunar and Planetary Laboratory, University of Arizona
USA

Dr Kathy Ehrig
Superintendent Geometallurgy, BHP Olympic Dam /
Adjunct Professor, Institute for Mineral and Energy Resources,
University of Adelaide
Australia

Dr Rebecca Johnson AM
Associate Director for Science and Chief Scientist
Smithsonian National Museum of Natural History
USA

INVITED SYMPOSIUM SPEAKERS

Dr Patrick Camus
President
Microanalysis Society (MAS)
USA

Professor Raynald Gauvin
Department of Mining and Materials Engineering
McGill University
Canada

Dr Nestor Zaluzec
Senior Scientist and Principle Investigator
Electron Microscopy Center, Argonne National Laboratory
USA

Paul Carpenter
Department of Earth, Environmental & Planetary Sciences,
Washington University in St. Louis, USA

Dr Yang Lui
Planetary Scientist and Supervisor of the Planetary Geosciences Group, Jet Propulsion Laboratory
California Institute of Technology
USA

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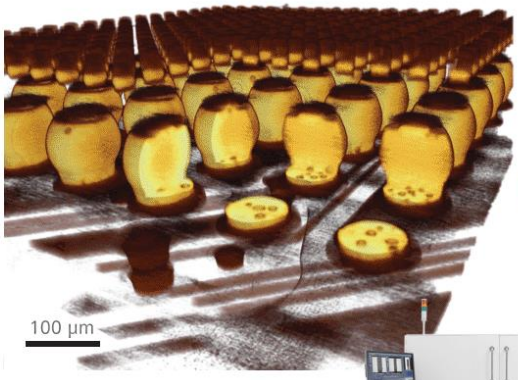

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2024 PROGRAM

Monday 5th February 2024

FULL DAY WORKSHOPS

Monte Carlo Modelling in e-beam Techniques

8:30AM - 5:00PM Room 46-968, Andrew Liveris Building (46)

Morning tea, lunch and afternoon tea provided.

Fundamentals of Analytical and Transmission Electron Microscopy (TEM/STEM/AEM)

8:30AM - 5:00PM Room 46-402, Andrew Liveris Building (46)

Morning tea, lunch and afternoon tea provided.

Masterclass in Automated Mineralogy

8:30AM - 5:00PM Room 46-914, Andrew Liveris Building (46)

Morning tea, lunch and afternoon tea provided.

HALF DAY WORKSHOPS

Cathodoluminescence – Turning Colours into Science

8:30AM - 12:30PM Room 46-442, Andrew Liveris Building (46)

Morning tea and lunch provided

An Introduction and Practical Guide to Electron Backscatter Diffraction

1:00PM - 5:00PM Room 46-913, Andrew Liveris Building (46)

Lunch and afternoon tea provided.

Introduction to Imaging Mass-Spectrometry (SIMS)

1:00PM - 5:00PM Room 46-442, Andrew Liveris Building (46)

Lunch and afternoon tea provided

Tuesday 6th February 2024

FULL DAY WORKSHOPS

Advances in Electron Probe Microanalysis for Beginners to Experts

8:30AM - 5:00PM Room 46-402, Andrew Liveris Building (46)

Morning tea, lunch and afternoon tea provided.

Laser Ablation Inductively Coupled Plasma Mass Spectrometry (LA-ICPMS)

8:30AM - 5:00PM Room 46-914, Andrew Liveris Building (46)

Morning tea, lunch and afternoon tea provided.

Tuesday workshops sponsored by:

kenelec scientific

RAYMAX APPLICATIONS www.raymax.com.au

EM Maintenance

8:30AM - 5:00PM Room 46-968, Andrew Liveris Building (46)

Morning tea, lunch and afternoon tea provided.

Focused Ion Beam: Techniques and Applications (FIB)

8:30AM - 5:00PM Room 46-441, Andrew Liveris Building (46)

Morning tea, lunch and afternoon tea provided.

HALF DAY WORKSHOPS

Microanalysis of Biomaterials

8:30AM - 12:30PM Room 46-913, Andrew Liveris Building (46)

Morning tea and lunch provided

What to do at the Australian Synchrotron and how to get beamtime

1:00PM - 5:00PM Room 46-913, Andrew Liveris Building (46)

Lunch and afternoon tea provided

Welcome Reception

6:00PM - 8:00PM The Cube, Science and Engineering Centre (P Block Foyer), Gardens Point

Wednesday 7th February 2024

Conference Opening & Welcome to Country

8:45AM - 9:15AM Kindler Theatre (GP P 421), Science and Engineering Centre, Gardens Point

Session 1: Applications of microanalysis in mineral exploration

9:15AM - 10:30AM Kindler Theatre (GP P 421), Science and Engineering Centre, Gardens Point

Chair: Angus Netting

9:15 AM **Keynote presentation: Kathy Ehrig**
Microanalysis and a sustainable mining industry: The Olympic Dam journey *id# 102005*

10:00 AM **Alexander T Walker**
Mapping heavy minerals in Australian regolith *id# 101998*

10:15 AM **Xin Wang**
Multifaceted quantitative microanalysis of garnets from the Mount Garnet deposit, Australia *id# 101948*

Morning Tea

10:30AM - 11:00AM

Session 2: Emerging technologies and techniques in microanalysis (I)

11:00AM - 12:30PM Kindler Theatre (GP P 421), Science and Engineering Centre, Gardens Point

Chair: John Fournelle

11:00 AM **Presidential exchange: Patrick Camus**
Shortcomings using proportional counters in WDS quantification *id# 101325*

11:30 AM **Richard Wuhrer**
Improving the Wavelength Dispersive Spectrometer (WDS) with a Silicon Drift Detector (SDD) – Opening up New Possibilities *id# 100773*

11:45 AM **Aurélien Moy**
Advancing precision in microanalysis: novel dead time expressions for WDS intensity correction in EPMA *id# 101753*

12:00 PM **Håkon W. Ånes**
kikuchipy: an open-source software for analysis of EBSD patterns *id# 101359*

12:15 PM **Colin MacRae**
Microanalysis of hydrated and vacuum sensitive minerals *id# 101968*

Lunch

12:30PM - 1:30PM

Lunchtime Workshop Sponsored by Thermo Fisher Scientific

Room P512, Level 5, P Block

1:00PM - 1:20PM **Zhao Liu**
Inert Gas Sample Transfer solutions, enabling microanalysis on highly sensitive samples *id# 102399*

Session 3: Emerging technologies and techniques in microanalysis (II)

1:30PM - 3:00PM Kindler Theatre (GP P 421), Science and Engineering Centre, Gardens Point

Chair: Nestor Zaluzec

1:30 PM **Invited presentation: Raynald Gauvin**
Quantitative Analysis of Lithium in Batteries and Minerals Using X-rays and EELS in the Electron Microscope *id# 101735*

2:00 PM **Nick C Wilson**
Quantifying Li using and EPMA and LIBS *id# 101983*

2:15 PM **Daniel J Fanna**
Investigation of ordinary portland cement hydration mechanisms utilising X-ray mapping and *in-situ* X-ray diffraction *id# 101969*

2:30 PM **Jamie Riches**
Low Dose S/TEM applications of an electrostatic beam blanker *id# 102225*

2:45 PM **Richard F Webster**
Automated Aberration Correction for Scanning Transmission Electron Microscopy *id# 101334*

Afternoon Tea

3:00PM - 3:30PM

Session 4: Emerging technologies and techniques in microanalysis (III)

3:30PM - 5:00PM

Chair: Colin MacRae

3:30 PM **Zsanett Pinter**
Unravelling multi-stage formation and deformation events of REE-rich and REE-poor anhydrite via hyperspectral cathodoluminescence mapping and analysis *id# 101914*

3:45 PM **Ken van't Schip**
Imaging & elemental analysis of rough samples with a new SEM-based technique: BEX *id# 102001*

4:00 PM **Karen Privat**
Applications of spectral cathodoluminescence to correlative research at the nano-scale: case studies from the UNSW Electron Microscope Unit *id# 101358*

4:15 PM **Stephen Seddio**
Improved algorithms for processing spectra in modern EDS systems *id# 100848*

4:30 PM **Matthew Glenn**
Laboratory simulation of the formation of sediment hosted Zn-Pb deposits, and EBSD/EPMA analysis of the resulting sulphide. *id# 101994*

4:45 PM **Jay Thompson**
Use of synthetic sphalerite to better understand cathodoluminescence response related to the presence of critical elements in natural samples *id# 101549*

Informal Social Function and Drinks Sponsored by AXT

5:30PM - 7:30PM The Lawn, Old Government House, QUT Gardens Point

Thursday 8th February 2024

Session 5: Mineralogy, geochemistry, and petrology — extraterrestrial materials (I)

9:00AM - 10:30AM Kindler Theatre (GP P 421), Science and Engineering Centre, Gardens Point

Chair: William Rickard

9:00 AM **Keynote presentation: Jessica Barnes**
Initial Analysis of Returned Samples from Asteroid Bennu *id# 101933*

9:45 AM **David W Saxey**
Geochemical quantification of olivine minerals by atom probe tomography *id# 101999*

10:00 AM **Alan Salek**
Carbon structures and defective crystals in ureilite meteorites using electron microscopy techniques *id# 101977*

10:15AM **Graeme Jones**, **Hitachi / Newspec**

InSpire STEM SEM Outreach and Engagement Review

Morning Tea

10:30AM - 11:00AM

Session 6: Mineralogy, geochemistry, and petrology — extraterrestrial materials (II)

11:00AM - 12:30PM Kindler Theatre (GP P 421), Science and Engineering Centre, Gardens Point

Chair: Heather Lowers

11:00 AM **Invited presentation: Yang Liu**
Study of lunar volcanic gas at nano to micrometer scale *id# 100053*

11:30 AM **Di Zhang**
High-precision measurement of trace level Na, K, P, S, Cr, and Ni in lunar glass using electron probe microanalysis *id# 101930*

11:45 AM **Invited presentation: Paul Carpenter**
Advances in Electron-probe Microanalysis of Meteorites and Development of the Quantitative Microanalysis Explorer Tool for Study of Apollo 17 Cores 73001 and 73002. *id# 101372*

Lunch

12:30PM - 1:30PM

AMAS Annual General Meeting (AMAS Members Only)

12:30PM - 1:30PM Atrium, Level 6, P Block

Session 7: Mineralogy, geochemistry, and petrology — terrestrial materials (I)

1:30PM - 3:00PM Kindler Theatre (GP P 421), Science and Engineering Centre, Gardens Point

Chair: Paul Carpenter

1:30 PM **Renjie Zhou**
Textural and compositional complexities of calcite: Impact on results of U-Pb geochronology by laser ablation ICP-MS *id# 102000*

1:45 PM **John T Caulfield**
Microchemical heterogeneity in zircon. Insights into sector zoning and mineralisation vectors from CL imaging and split-stream LA-ICP-MS analysis *id# 101335*

2:00 PM **John H Fournelle**
EPMA of Hf in zircon: Not a trivial exercise *id# 101974*

2:15 PM **Luís Portela**
Distinct LA-ICPMS U-Pb ages for zircons from a syn-kinematic Variscan granite from central-northern Portugal *id# 101340*

2:30 PM **Heather Lowers**
Conodonts: zircon of the sea *id# 100597*

2:45PM **William Rickard**
Search for, and characterisation of, uranium particles from environmental sampling of nuclear facilities *id# 102254*

Afternoon Tea

3:00PM - 3:30PM

Session 8: Applications of Automated Mineralogy

3:30PM - 4:45PM Kindler Theatre (GP P 421), Science and Engineering Centre, Gardens Point

Chair: Ben Wade

Sponsored by Thermo Fisher Scientific:

3:30 PM **Marco A. Acevedo Zamora**
Petrographic microscopy of geologic textural patterns and element-mineral associations with novel image analysis methods *id# 101975*

3:45 PM **Justin S Freeman**
Maps Mineralogy for analysis of fine-grained indium-rich minerals in Baal Gammon waste rock *id# 99598*

4:00 PM **Lisa I Kearney**
Characterising microtextural and mineralogical features of reef rocks using automated mineral analysis *id# 101422*

4:15 PM **Elena Belousova**
GSQ microanalytical techniques for mineral deposit characterisation *id# 101950*

4:30 PM **Andrew Kostryzhev**
Application of Advanced Mineral Analysis and Characterisation System (AMICS) in material research *id# 99469*

Conference Dinner Sponsored by Thermo Fisher Scientific

6:00PM - 9:30PM Room Three Sixty, Gardens Point

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Friday 9th February 2024

Session 9: Special interests

9:00AM - 10:30AM Kindler Theatre (GP P 421), Science and Engineering Centre, Gardens Point

Chair: Charlotte Allen

9:00 AM **Keynote presentation: Rebecca Johnson**
Using the Past to See the Future – stories of analytical science at the Smithsonian Institution *id# 102255*

9:45 AM **Aaron Torpy**
Hyperspectral microcharacterisation of a 'self portrait' of Rembrandt *id# 101970*

10:00 AM **Brent McInnes**
The AuScope EarthBank project: Enabling the analysis, preservation and discoverability of nationally significant Earth & environmental collections using AusGeochem *id# 101938*

10:15 AM **Peter Miller**
Simulating the impact of magnetic fields on a scanned electron image *id# 101916*

Morning Tea

10:30AM - 11:00AM

Session 10: Techniques in advanced manufacturing

11:00AM - 12:30PM Kindler Theatre (GP P 421), Science and Engineering Centre, Gardens Point

Chair: Peter Miller

11:00 AM **Xiao Sun**
Characterisation of semiconductor-based multilayer structures using FIB and ToF-SIMS analysis *id# 101287*

11:15 AM **Yokasundery Muniandy**
Compositional heterogeneities in CrMnFeCoNi high-entropy alloys *id# 101016*

11:30 AM **Anwar Ul-Hamid**
High resolution transmission electron imaging, elemental spectroscopy and x-ray mapping study of multi-layered Zr-based hard coatings. *id# 101262*

11:45 AM **Amelia Zięba**
Microstructural characterization of aluminium-based intermetallic alloys applied in catalysis *id# 101313*

12:00 PM **Invited presentation: Nestor J Zaluzec**
Challenges and Strategies for Microscopy and Microanalysis of Energy and Quantum Materials in modern Analytical TEM/STEM Instruments *id# 100754*

Lunch

12:30PM - 1:30PM

AMAS Annual Executive Meeting (By Invitation Only)

12:30PM - 1:30PM Level 6, P638, P Block

Session 11: Biomaterials

1:30PM - 3:00PM Kindler Theatre (GP P 421), Science and Engineering Centre, Gardens Point

Chair: Peta Clode

1:30 PM **Viola Bauernfeind**
Disorder in photonic networks in longhorn beetles uncovered by focused ion beam tomography *id# 101323*

1:45 PM **Laurel George**
Correlative micro-CT and X-ray mapping of eucalyptus leaves. *id# 101971*

2:00 PM **Jayanti Mendhi**
Application of Tescan Integrated Mineral Analyser (TIMA) in the analyses of bone quality in osseointegration of dental implants *id# 101949*

2:15 PM **Yaqi Zhang**
Single cell metabolic profiling with ToF-SIMS reveals heterogeneity of human kidney tubular cells in response to polymyxin treatment *id# 100556*

2:30 PM **Darryl N Johnson**
In situ multi-element analysis of splenocytes using laser ablation imaging mass spectrometry *id# 101449*

2:45 PM **Denis Korneev**
Labeling-free precise localization of the region of interest in FIB-SEM *id# 102217*

Closing Remarks & Moran Scientific Award for Outstanding Student Presentation

3:00PM - 3:30PM **William Rickard, AMAS President**

Kindler Theatre (GP P 421), Science and Engineering Centre, Gardens Point

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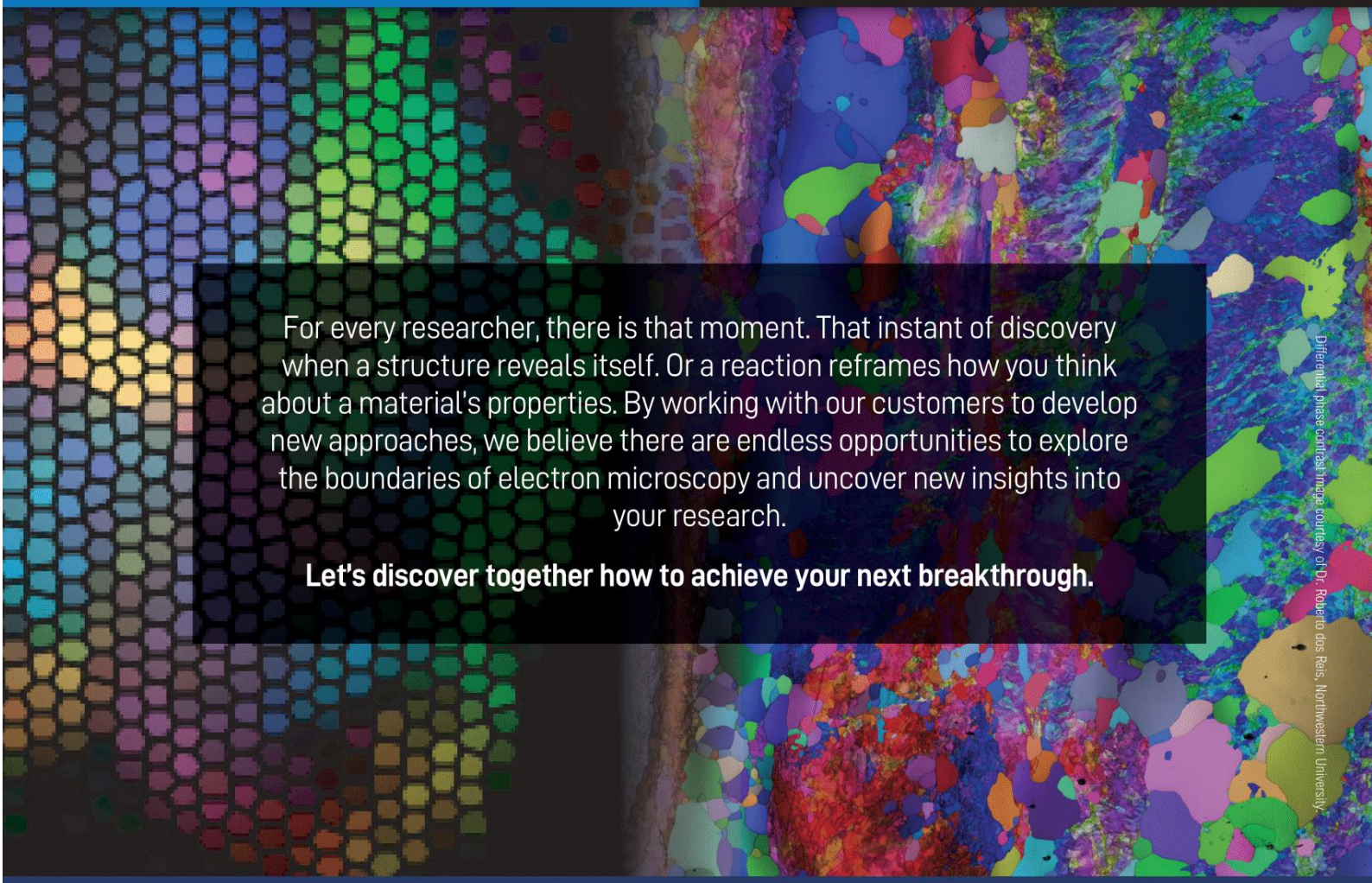

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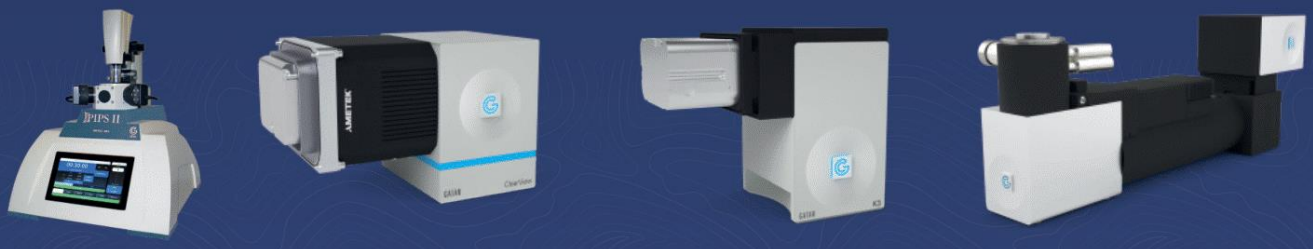

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