



European
Microbeam Analysis Society

**EMAS 2025 - 18TH EUROPEAN WORKSHOP
ON MODERN DEVELOPMENTS AND
APPLICATIONS IN MICROBEAM ANALYSIS**

11 - 15 May 2025

TecnoCampus, Mataró (Barcelona), Spain

Early Career Scientists' Session

- Characterisation and validation of a phase boundary in a Fe-Al-Nb alloy using inverse modelling of the P_N -method for EPMA.
Gaurav Achuda, T. Claus, J. Heese, G. Kiely, M. Torrilhon and S. Richter
- Empowering chemical characterisation of Li-ion batteries: Correlating EDS with Raman, LIBS, XPS and SIMS.
Judith Blau, K. Geiger, J. Rieger, C. Weisenberger, V. Knoblauch, G. Schneider, U. Golla-Schindler
- X-ray mapping of volcanic groundmass glass: New insights into lithium scavenging from volcanic rocks.
E. Alejandro Cortes-Calderon, B.S. Ellis, C. Broderick and Y. Buret
- Strain rate dependence of slip versus twinning in c-axis compression of α -titanium.
Kamila Hamulka, T. Vermeij, A. Sharma, R. Pero, P. Kroeker, J. Michler and X. Meader
- Microstructural control and characterisation of Mg-Gd-Zn-Zr long periods stacking ordered (LPSO) phase alloys.
Sian I. Odell, J.M. Donoghue, J. Fellowes, A.E. Davis, M. Murphy and J.D. Robson
- Unconventional applications of electron backscattering diffraction (EBSD) in metallic materials.
Karolina Wójciak, T. Tokarski, G. Cios, A. Winkelmann, R. Chulist and G. Nolze

Presentations by the AMAS and MAS-USA Student Award winners

AMAS – Australian Microbeam Analysis Society Student Award winner

- Ions meet beetles: Quantifying disorder in photonic crystals with volume imaging.
Viola Bauernfeind, K. Djeghdi, N. Schwarz, V. Saranathan, U. Steiner and B. D. Wilts

MAS – Microanalysis Society Student Award winner:

- Characterisation of epidote for SIMS oxygen isotope reference material development.
Claudia I. Roig González, C. Bonamici, T. Blum, W.O. Nachlas, M. J. Spicuzza, and K. Kitajima



List of submitted poster abstracts (incl. ECS and Bursary applications) version April 24, 2025

- WDS/EDS on SEM for microanalyses requiring high spectral and spatial resolution.
Michael Abratis, E. Robin and R. Terborg
- Characterisation and validation of a phase boundary in a Fe-Al-Nb alloy using inverse modelling of the P_N -method for EPMA.
Gaurav Achuda, T. Claus, J. Heese, G. Kiely, M. Torrilhon and S. Richter
- Microstructure evolution of a pure aluminium, in-situ SEM under mechanical and thermal stress.
Quentin Barrès, P. Stricot, Y. Renollet and L. Toualbi
- Development of reference materials for microanalysis: Chromite, orthopyroxene and clinopyroxene.
Valentina G. Batanova, A.V. Sobolev and D.A. Ionov
- Ions meet beetles: Quantifying disorder in photonic crystals with volume imaging.
Viola Bauernfeind, K. Djeghdi, N. Schwarz, V. Saranathan, U. Steiner and B. D. Wilts
- Challenges in detecting the LiZn_4 phase in Zn-Li-Mn biodegradable alloys: Insights from XRD, EBSD, and XPS analysis.
Wiktor Bednarczyk, G. Cios and P. Bała
- Correlating the microstructure and mechanical behaviour of reduced iron ore pellets by combining nanoindentation and EBSD.
M. Ben Haj Slama, Laurie Palasse, D. Goran, H. Bögershausen and U. Dirk Hangen
- Optimised standardless EDS quantification with WDS-supported peak deconvolution.
Dirk Berger, F. Eggert, J. Nissen and U. Gernert
- Advanced investigation of microstructural stability of hydrostatically extruded biodegradable zinc alloys during isothermal in-situ heating.
Magdalena Bieda-Niemiec, M. Gieleciak, J. Donoghue, A. Smith, S. Odell, N. Iyappan, A. Jarzębska, Ł. Maj and M. Kulczyk
- Empowering chemical characterisation of Li-ion batteries: Correlating EDS with Raman, LIBS, XPS and SIMS.
Judit Blau, K. Geiger, J. Rieger, C. Weisenberger, V. Knoblauch, G. Schneider, U. Golla-Schindler

- Investigating garnet inclusions via EBSD: New insights into their genesis and metamorphic evolution.
Federica Boero, S. Ghignone, M. Bruno
- EBSD and TKD using contrast inverted patterns.
Grzegorz Cios, A. Winkelmann, G. Nolze, B.R. Jany, T. Tokarski and P. Bała
- Efficient computation of k -ratio profiles in EPMA using adjoint electron transport.
Tamme Claus, G. Achuda, S. Richter, M. Torrilhon
- X-ray mapping of volcanic groundmass glass: New insights into lithium scavenging from volcanic rocks.
E. Alejandro Cortes-Calderon, B.S. Ellis, C. Broderick and Y. Buret
- Installation of a field emission electron probe microanalyser with soft X-ray emission spectrometry in university research support services: Advancing microanalysis capabilities in materials research.
Jose Luis Diez-Ferrer, M. Ciria, E. Martinez and B. Bauluz
- EBSD applications in a multi-client laboratory: Sample preparation, EBSD/EDS combination and perspectives.
Renaud Domenger, C. David and E. Brackx
- Determination of minor and trace key petrogenetic elements of Cr-spinel by EPMA.
D. Domínguez-Carretero, X. Llovet, Núria Pujol-Solà, C. Villanova-de-Benavent, L. Torró and J.A. Proenza
- Trace element EPMA of rare earth elements and yttrium in Al-oxyhydroxides from karst bauxites.
Diego Domínguez-Carretero, X. Llovet, N. Pujol-Solà, C. Villanova-de-Benavent and J.A. Proenza
- Crystallographic intergrowth and chemical fractionation between exsolution phases in Fe-Ti-V oxides of the Storgangen deposit, Rogaland, South-West Norway.
Bendik Standal Frantzen, B.E. Sørensen, S. Lode, J. Røstad and K. Aasly
- EDS and EELS of lithium in a 0.5 to 30 keV electron microscope
Raynald Gauvin, S. Bessette, N. Brodusch
- Investigation of the martensite tetragonality in steel using EBSD.
Karsten Glowka, G. Cios, A. Winkelmann and P. Bała
- Ultrafast and signal efficient EBSD detector using direct electron detection.
Daniel Goran

- Effects of N-diffusion on the microstructure in Al-containing plasma-nitrided air-hardening medium Mn-steels.
Nelli Gorin, C. Akkus, A. Gramlich and S. Richter
- Strain rate dependence of slip versus twinning in c-axis compression of α -titanium.
Kamila Hamulka, T. Vermeij, A. Sharma, R. Pero, P. Kroecker, J. Michler and X. Meader
- EXCITE²: A European network providing free-of-charge access to X-ray, electron, and ion imaging facilities.
Eric Hellebrand, C. Mulder, G.W. ter Maat, S. van der Poel, O. Pluemper, R.J.F. Wessels and the EXCITE team
- Soft X-ray emission spectroscopy on battery materials.
Svenja Kalthoff, L. Dold and L. Eisele
- The effect of texture and grain boundary character distribution on the deformation mechanisms in binary zinc alloys.
Jakub Kawałko, D. Orzeł and P. Bała
- Beyond the limits of current electro-conductive copper.
Jaromír Kopeček, T. Kmječ, D. Šimek, U. Ahmed, J. Duchoň, M. Benč, J. Walek, L. Kunčická and R. Kocich
- Optimising parameters for high-resolution near axis transmission Kikuchi diffraction.
Kim Larsen, M. Coleman, L. Hughes, A. Bewick, J. Maguire and R. Masters
- Combining EPMA and Raman μ -spectroscopy for the characterisation of MOX nuclear fuels.
Florent Lebreton, P. Martin, L. Medyk, M. Alibert and C. Aloin
- Experimental soft X-ray emission studies of nickel silicides and nickel aluminides.
Xavier Llovet and A. Moy
- Complementarity of standard WDS and ultra-soft X-ray spectrometers.
Jean-Louis Longuet
- Toward the ferric ion quantification in silicate minerals and glasses: Approach using the soft Fe $L\alpha$ - $L\beta$ X-ray lines by SXES.
Charline Lormand, E. Cacciatore, N.B. Gies, D.A. Neave, Z. Zajacz and L. Caricchi
- Is it time to stop using gas flow proportional counters?
Michael B. Matthews, K. Moran, P. Camus and R. Wuhrer

- Novel method for automated polishing and re-polishing of standard material mounts using the polishing wizard technology.
Radoslaw M. Michallik, A. Peltola and T. Peltola
- Graphene oxide candidate reference material assessed by quantification of the oxygen to carbon ratio with X-ray photon spectroscopy and energy-dispersive X-ray spectrometry.
Paul Mrkwitschka, M. Sahre, A. Zurutuza, J. Radnik and V.-D. Hodoroaba
- Wavelength-dispersive micro X-ray fluorescence (WD μ XRF) analysis with the microprobe.
Jörg Nissen and D. Berger
- SXES analysis of phosphorous in intermetallic precipitates of AISI 904L austenitic stainless steel.
Andrés Núñez Galindo, P. Acosta Sánchez, A. Ruiz Flores, J.F. Almagro Bello and X. Llovet
- Microstructural control and characterisation of Mg-Gd-Zn-Zr long periods stacking ordered (LPSO) phase alloys.
Sian I. Odell, J.M. Donoghue, J. Fellowes, A.E. Davis, M. Murphy and J.D. Robson
- Crystallography of adiabatic shear bands formed in pure titanium.
Henryk Paul and S. Puchlerska
- Iron valence state determined by L-emission spectra: Towards a multi mineral calibration?
Francesca Piccoli, B. Dubacq, N.B. Gies, M. Françoise, J.B. Walters and J. Hermann
- Light element analysis with the parallel wavelength-dispersive X-ray spectrometer “WDSX - 300”.
Jürgen Probst, C. Braig, C. Seifert and T. Krist
- Using EBSD analysis for exploring the recrystallisation behaviour of hot-rolled Mg-Gd binary alloy.
B. Rai, François Brisset, T. Baudin, S. Bencherifa and H. Azzeddine
- EBSD-based study of phase transformations in Ni₃Sn₂ – Effects on Kikuchi patterns.
Lukas Richter and A. Leineweber
- Characterisation of epidote for SIMS oxygen isotope reference material development.
Claudia I. Roig González, C. Bonamici, T. Blum, W.O. Nachlas, M. J. Spicuzza, and K. Kitajima
- Influence of thermal and thermomechanical process on the microstructure and hot ductility of alloy 825.
Andrés Ruiz Flores, M. Muratori Sosa, A. Nuñez Galindo and J.F. Almagro Bello
- Absorption correction for absolute quantification of elemental composition in single cells by SEM-EDS.
Mariona Segura-Noguera and X. Llovet

- Getting your EBSD data right, combining optical microscopy and EBSD orientation data in MTEX
Bjørn Eske Sørensen, R. Hielscher, D. Mainprice and T. Slagstad
- Comparing WDS and EDS analysis of low concentration of overlapping elements.
Lucia Spasevski, S. Burgess, P.T. Pinar and J.Q. Zhang
- Sensitive boron detection with a table-top wavelength-dispersive X-ray spectrometer.
Valentin Stoytschew, C. Braig, T. Krist, J. Probst and C. Seifert
- Anisotropic soft X-ray emission spectroscopy of the anisotropic charge distribution.
Masami Terauchi, Y. Hada, Y. Hatakeyama, Y.K. Sato, K. Kouzu and S. Okada
- Self-absorption effect in soft X-ray emission spectra utilised for bandgap energy evaluation.
Masami Terauchi and Y.K. Sato
- Quantitative electron probe microanalysis of beam-sensitive samples.
Ralf Terborg, S. Richter, G. Achuda, J. Dellith and A. Scheffel
- Surface sensitive elemental analysis using grazing exit configurations and confocal arrangement in electron probe X-ray microanalysis and micro X-ray fluorescence analysers.
Kouichi Tsuji, S. Koshiya, T. Murano and H. Takahashi
- Microbeam analysis of sintered strontium hexaferrite in different atmospheres.
Aleksander Učakar
- Experiments on reduction of sample damage with cooling system for electron probe microanalysis.
Rie Wakimoto, K. Kato, Y. Nawafune and T. Murano
- Microstructural and micromechanical investigation of processing effects in microscale additively manufactured and FIB-milled zinc micropillars.
Maria Wątroba, K. Pratama, M. Rejek, G. Cios, K. Mackosz and J. Michler
- Unconventional applications of electron backscattering diffraction (EBSD) in metallic materials.
Karolina Wójciak, T. Tokarski, G. Cios, A. Winkelmann, R. Chulist and G. Nolze
- A unique correlative microscopy platform for combined AFM, SEM and nanoprobeing.
Marion Wolff, H. Frerichs, D. Jangid, S. Seibert, L. Stühn and C.H. Schwalb
- Pu redistribution in irradiated U-Pu-Zr nuclear fuels as measured by electron probe microanalysis.
Karen Wright, L. Capriotti and A. Aitkaliyeva
- 3D EBSD with femtosecond-laser plasma FIB-SEM
Min Wu, B. Winiarski and R. Geurts

- Carbon higher-order line reduction in SXES analysis of silicon anode for lithium ion secondary batteries.

Yasuaki Yamamoto, T. Murano and S. Koshiya

- Investigating the day-night variability of airborne microplastics in PM10 aerosols on a single particle basis.

Hanjin Yoo, J. Park, C.-U. Ro and K.-J. Jeon

- A new approach for material classification based on quantitative analysis.

John Q. Zhang, P. Statham, A. Hyde and P.T. Pinard