

Workshop Program

9th ASEM Workshop

Advanced Electron Microscopy

Graz, April 25th & April 26th 2019



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Advanced Electron Microscopy

April 25th & April 26th 2019, Graz University of Technology,
BMT Lecture Hall, Stremayrgasse 16, 8010 Graz

Thursday, April 25th 2019

12:00 Registration and refreshments

12:45 Opening ceremony

13:00 **SESSION 1** *Invited Speaker: Heiko Groß* (Johannes Kepler University Linz)
„Phase Decomposition in Metastable Ge_{1-x}Sn_x Epilayers“

13:30 **Judith Lammer** (FELMI-ZFE Graz)
„Atomic Structure Analysis of Ba_{1.1}La_{1.9}Fe₂O₇ Using High-Resolution STEM“

13:45 **Daniel Phifer** (ThermoFisher Scientific)
„Developments in Multiple Ion Species Plasma FIB Technology“

14:00 **Alice Moros** (TU Wien)
„Investigation of the Homogeneity in Elemental Distributions of Superconducting Prototype Internal Tin Nb₃Sn Wires“

14:15 Coffee break

14:45 **SESSION 2** *Fritz Grasenick Laureate: Martin Niedermeier* (University of Salzburg)
„Biom mineralization of Strontium and Barium Contributes to Detoxification in the Freshwater Alga *Micrasterias*“

15:15 **Shotaro Otsuka** (University of Vienna)
„Nuclear Envelope and Pore Assembly Revealed by Correlating Live Imaging With Three-Dimensional Electron Microscopy“

15:30 **Wolfgang Schwinger** (ZEISS)
„ZEN Intellesis - Machine Learning Approaches for Image Segmentation
APEER - The Open Digital Microscopy Platform“

15:45 **Silvia Groiss** (Medical University of Graz)
„When Every Breath Counts: Impaired Mucociliary Clearance Meets Herbal Medicine“

16:00 Coffee break

16:30 **SESSION 3** *Fritz Grasenick Laureate: Jinming Guo* (Erich Schmid Institute of Materials Science Leoben)
„Atomic-scale Characterization of Severely Deformed Cu-based Nanocrystalline Alloys via Transmission Electron Microscopy“

17:00 **Andrea Steitz** (Holzforschung Austria)
„Dust in Indoor Air – What is it Composed of?“

17:15 **Georg Raggl** (JEOL)
„The NeoARM – JEOL's Newest High-End Atomic Resolution Microscope“

17:30 **Richard Huber** (University of Graz)
„Graptor – An Efficient Reconstruction Tool for Electron Tomography“

17:45 Fritz Grasenick Award ceremony

18:00 Annual ASEM assembly meeting

Thursday, April 25th 2019 (continued)

18:45 Departure towards the conference dinner (Gösser Bräu, Neutorgasse 48, 8010 Graz)

19:00 Conference dinner

Friday, April 26th 2019

08:30 Early morning coffee

09:00 **SESSION 4** **Invited Speaker: Gerd Leitinger** (Medical University of Graz)

„Utilising Three-dimensional Electron Microscopy and Analytical Electron Microscopy for Biomedical Research“

09:30 **Philip Steiner** (University of Salzburg)

„3-D Electron Microscopy Reveals Fusion of Mitochondria During Cold and Freezing Stress in Different Plant Cells“

09:45 **Tom Jäpel** (TESCAN)

„High-End Dual-Beam Systems: Gallium- vs. Xenon-FIB (Focused Ion Beam System) - Pros and Cons of These Systems for Various Applications“

10:00 **Chris Schwalb** (GETec)

„Correlative In-Situ Analysis by Combination of AFM, SEM, and FIB“

10:15 **Ruth Schmidt** (FELMI-ZFE Graz)

„Correlative Microscopy – The New System RISE Combined With EDXS Applied on Complex Materials“

10:30 Coffee break

11:00 **Poster session**

12:00 Lunch (in-house cafeteria, Stremayrgasse 16, 8010 Graz, 5th floor)

13:00 **SESSION 5** **Stephan Pfeiffer** (TU Wien)

„Performance Enhancement of Nb₃Sn Superconductors for the Future Circular Collider“

13:15 **Franz Schmidt** (Fritz-Haber-Institut Berlin)

„Electron Beam Direction Dependent Light Emission“

13:30 **Jürgen Simon** (Hitachi)

„STEM at 30 kV – a New Approach to Organic and Inorganic Materials“

13:45 **Andreas Kastenmüller** (Gatan)

„Recent Technical Developments for Electron Microscopy by Gatan“

14:00 **Zhuo Chen** (Erich Schmid Institute of Materials Science Leoben)

„Anisotropy of Metastable AlN Stability in Gradient CrN/AlN Multilayers Revealed by HRTEM“

14:15 **Semir Tulić** (University of Vienna)

„Covalent Diamond – Graphite Bonding: Mechanism of Catalytic Transformation“

14:30 Coffee break

15:00 **SESSION 6** **Sigrid Holleis** (TU Wien)

„Current Flow Analysis of Thallium-based Superconductors by SEM and TEM Investigations“

15:15 **Thorben Kurz** (Leica Microsystems)

„Array Tomography for 3D Reconstruction“

15:30 **Wolfgang Gaderbauer** (Johannes Kepler University Linz)

„Composition and Structure of Surface Oxides on Press-Hardened Hot-Dip Galvanized Steel“

15:45 **Ulrich Haselmann** (Erich Schmid Institute of Materials Science Leoben)

„Ca Segregation Towards the Interface in Bismuth Ferrite Thin Films“

16:00 **Lawrence Whitmore** (University of Salzburg)

„Microstructure of Deformed Magnesium Alloy and Titanium Aluminide“

16:15 Closing ceremony and farewell drinks

Poster Presentations

Catarina Alcarva (IST Austria)

„Plasticity in the Cerebellum: Which Molecular Mechanisms are Behind Physiological Learning?“

Viola Bauernfeind (Johannes Kepler University Linz)

„Structural Investigations of Fe_yN-Nanocrystals Embedded in MOVPE-Grown Ga_δFeN/Al_xGa_{1-x}N Systems“

Evelin Fisslthaler (FELMI-ZFE Graz)

„Investigation of Interface Transition Chemistry in Semiconductor Structures via Monochromated EELS“

Jakob Wilhelm Hinum-Wagner (FELMI-ZFE Graz)

„The Influence of Substrate Temperature During Focused Electron Beam Induced Deposition (FEBID)“

Michal Horák (Ceitec Brno)

„Babinet’s Principle for Solid and Hollow Plasmonic Antennas“

Zuzana Hovádková (Vienna BioCenter Core Facilities)

„Focus Ion Beam as a Technique for the Sample Preparation for Cryo-Electron Microscopy“

Daniel Knez (Istituto Officina dei Materiali Triest)

„On the Impact of Swift Electrons on Mass Transport Phenomena at the Nanoscale“

Robert Krisper (FELMI-ZFE Graz)

„Measuring the Temperature Homogeneity Across FIB Lamellae for *In Situ* TEM Experiments via Raman Scattering in Crystalline Silicon“

Stefan Löffler (TU Wien)

„Unitary Two-State Quantum Operators Realized by Mode Conversion“

Liudmyla Masliuk (Fritz-Haber-Institut Berlin)

„M1-phase (Mo,V)O_x – Probing the Local Metal Distribution“

Jacqueline Montanaro-Punzengruber (IST Austria)

„Immunogold Detection of Synaptic Membrane Proteins on Grid-glued Replicas“

David Moser (FELMI-ZFE Graz)

„Electron Microscopy Characterization of the Aluminum Anode of a Novel Rechargeable Aluminum-Sulfur Battery“

Sabrina Obwegeser (University of Innsbruck)

„Freezing Stress in the Green Alga *Klebsormidium crenulatum*: Investigation of *In Situ* Frozen Samples by High Pressure Freezing/Freeze Substitution“

Leon Ploszczanski (University of Natural Resources and Life Sciences Vienna)

„A SEM Study on Fracture Surfaces of Nano-reinforced CFRPs“

Andreas Postl (University of Vienna)

„Single Atom Manipulation of Substitutional Heteroatoms in Two Dimensional Materials Using a Convergent Electron Beam“

Thomas Radlinger (FELMI-ZFE Graz)

„Growth and Structure of Molybdenum Oxide Layers on Pd(100)“

Siegfried Reipert (University of Vienna)

„Vienna Life-Science Instruments (VLSI) Interaction: Light- and Electron Microscopy Meet NanoSIMS“

Jürgen Sattelkow (FELMI-ZFE Graz)

„3D Nano-Printing of Thermal High-Resolution Nano-Probes“

Michael Stöger-Pollach (TU Wien)

„Coherent Cathodoluminescence of Semiconductors in STEM“

Cornelia Trummer (FELMI-ZFE Graz)

„Accessing the Internal Morphology of Nano-Granular FEBID Materials in 3D Space by Electron Tomography“

Anna Weitzer (FELMI-ZFE Graz)

„Expanding Capabilities of Focused Electron Beam Based 3D Nano-Printing: From Meshes Towards Closed 3D Nano-Architectures“

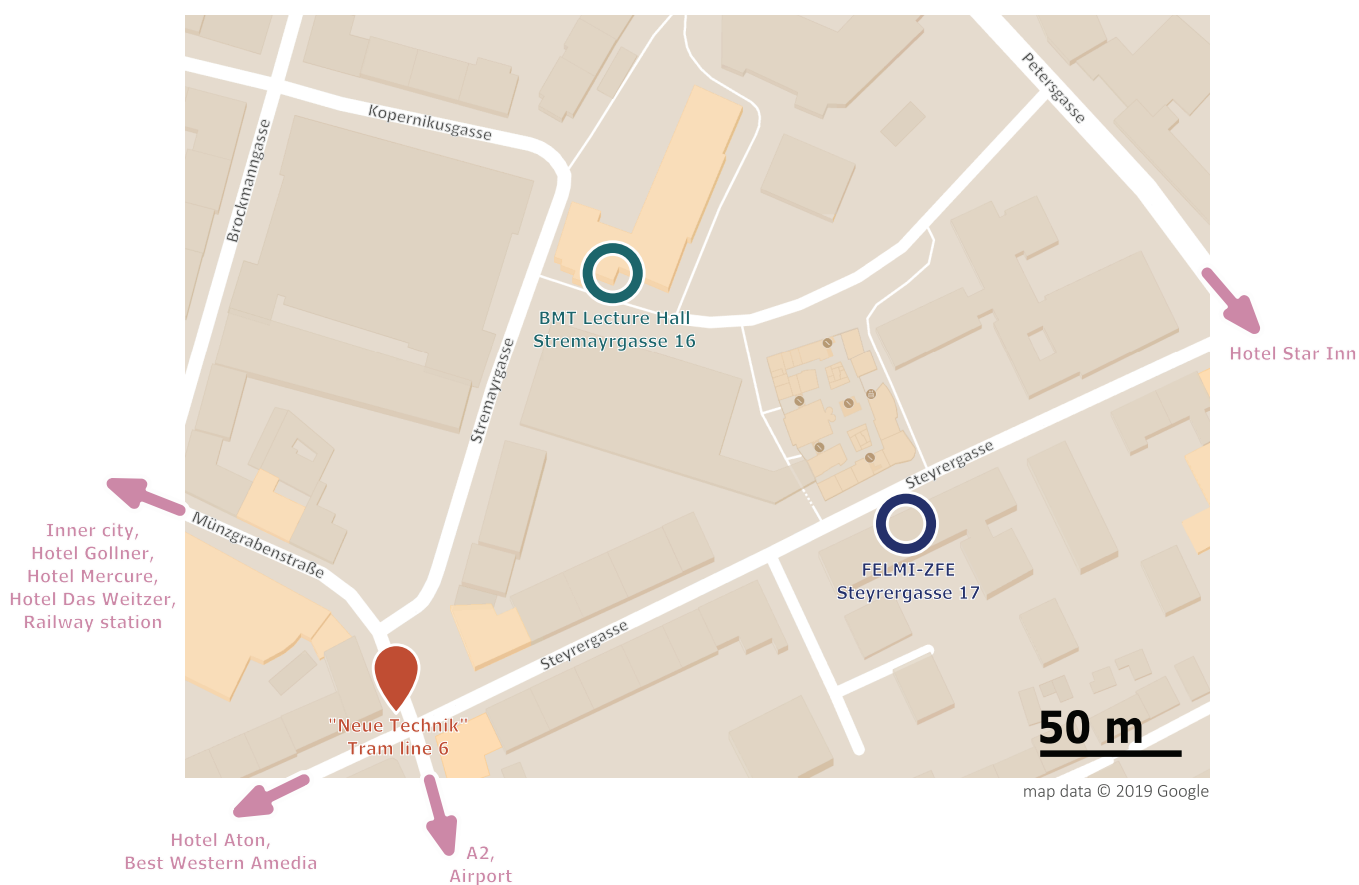
Presenters' Information

For all oral presentations, we provide a Microsoft Windows laptop to work with MS Office .ppt(x), OpenDocument .odp or Adobe .pdf files. We kindly ask users of Apple KeyNote or L^AT_EX Beamer to bring their own computer devices and, if considered necessary, signal adapters for video ports other than VGA, DVI, HDMI or DisplayPort as well. Laser pointers, presenters and microphones are available on-site. To upload your presentation to the lecture hall computer, please contact a member of the organizing committee during a break prior to your time slot. Poster formats can and should be up to A0, portrait orientation. We provide pins to attach them to our poster boards.

Conference Location

BMT Lecture Hall („HS BMT“) goes by the street address of Stremayrgasse 16, 8010 Graz. The closest public transport station is *Neue Technik*, tram line 6 will take you there from the main railway station in about 12 to 15 minutes, passing the city centre. All trams meet at station *Jakominiplatz* which is 2 stops from *Neue Technik*. Especially attendands who chose to stay at the *Star Inn* or *Gollner* hotel (see below) might consider talking a 5 to 7 minutes walk to the venue. Unfortunately, we cannot provide car parking slots and the spots next to any street in this area are inside the municipal short-term parking zone (3h max.).

The lecture hall building itself lies above street level, but is on a level with other campus parts. To gain barrier-free access, one must use one of the rear entrances which are equipped with ramps.



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