

ECMetAC Euroschool 2024

Advanced Synthesis and Characterization

Ernst Ruska-Centre, Forschungszentrum Jülich

**European
C-MetAC**

Sponsored by:



| | Sunday 3.11.24 | Monday 4.11.24 | Tuesday 5.11.24 | Wednesday 6.11.24 | Thursday 7.11.24 | Friday 8.11.24 |
|-----------------|---|----------------------------|----------------------|-------------------------------|----------------------------|-------------------|
| 09:00 – 12:30 | Arrival Registration, Welcome, JUFA Hotel 17:00-18:00 | Marc Armbrüster | Michael Feuerbacher | Janez Dolinsek | Emilie Gaudry | Astrid Besmehn |
| | | Coffee break | Coffee break | Coffee break | Coffee break | Coffee break |
| Marc Armbrüster | | Marc Heggen Paul Paciok | Janez Dolinsek | Emilie Gaudry | Astrid Besmehn | |
| Lunch | | Lunch | Lunch | Lunch | Lunch | |
| 14:00 – 17:30 | | Joachim Mayer | Talks & Tutorials | Tutorials | Tutorials | Departure |
| | | Coffee break | | | | |
| | | Joachim Mayer | Tutorials & Lab Tour | Poster Session 15:45-18:00 | Campus Tour 15:30-17:30 | |

Location:

Ernst Ruska-Centre
Forschungszentrum Jülich
Wilhelm-Johnen-Straße
52428 Jülich
Germany

Date:

November 4th – 8th, 2024

Organizer:

Dr. Marc Heggen (Forschungszentrum Jülich)
Prof. Marc Armbrüster (TU Chemnitz)
Marie Göcking (Forschungszentrum Jülich)

Summary:

The ECMetAc Euroschool strives to provide a lecture-style background to young scientists, PhD students and graduate students in the field of materials, in particular the physics of new and complex metallic alloys and compounds. The Euroschool will focus on intermetallic compounds and advanced synthesis techniques including bulk and single crystal growth as well as nanoparticle synthesis. Furthermore, cutting-edge characterization techniques including for instance electron microscopy (TEM, HR-TEM, STEM, SEM, EDX, EELS), advanced in-situ techniques, XRD, XPS will be covered. The lectures will be complemented by step-by-step tutorials, lab exercise and lab tours. Poster session: Please feel free to present your research during our poster session. Poster size A0, upright format. A prize for best poster will be awarded

Bus Transfer:

The Bus will depart Monday to Friday from the JUFA Hotel at 8:30. Please have your Passport/ID-Card ready for entering the Forschungszentrum. Monday to Thursday, the bus will bring you back to the JUFA Hotel after the lectures (see programme).

Sunday, 3. Nov. 2024

JUFA Hotel, Rurauenstraße 13, 52428 Jülich

17:00 – 18:00 Registration, Welcome

Monday, 4. Nov. 2024

PGI lecture hall (Building 04.8, 2nd floor, Room 365)

| | | |
|------------------------|----------------------------|---|
| 09:00 – 10:30 | Marc Armbrüster | Synthesis Routes to Intermetallic Compounds as Advanced Functional Materials 1 |
| 10:30 – 11:00 | Coffee break | |
| 11:00 – 12:30 | Marc Armbrüster | Synthesis Routes to Intermetallic Compounds as Advanced Functional Materials 2 |
| 12:30 – 14:00 | Lunch break | Lunch in the Forschungszentrum Jülich canteen, lunch tickets will be provided |
| 14:00 – 15:30 | Joachim Mayer | Introduction to TEM: Optics, Imaging and Scattering Techniques |
| 15:30 – 16:00 | Coffee break | |
| 16:00 – 17:30 17:45 | Joachim Mayer Departure | HRTEM, STEM and analytical techniques Building 04.8w, Bus transfer to the JUFA Hotel |

Tuesday, 5. Nov. 2024

PGI lecture hall (Building 04.8, 2nd floor, Room 365)

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|---------------|-----------------------------|---|
| 09:00 – 10:00 | Michael Feuerbacher | Single crystal growth of metallic alloys from the melt |
| 10:00 – 10:30 | Coffee break | |
| 10:30 – 11:30 | Paul Paciok | Synthesis and electrochemical characterization of alloy nanoparticles |
| 11:30 – 12:30 | Marc Heggen | In-situ Transmission electron microscopy |
| 12:30 – 14:00 | Lunch break | Lunch in the Forschungszentrum Jülich canteen |
| 14:00 – 14:30 | Saleh Gorji (Ametek) | The latest developments in electron energy loss spectroscopy (EELS) and four-dimensional scanning transmission electron microscopy (4DSTEM) |
| 14:30 – 15:00 | DensSolutions | xx |
| 15:00 – 15:45 | Marc Armbrüster | Tutorial |
| 15:45 – 16:00 | Coffee break | |
| 16:00 – 18:00 | Tutorials and ER-C lab tour | Crystal Growth lab: Building 04.6, W Electron microscopy: Building 05.2w, Entrance E25 - Hitachi HF5000 (Ansgar Meise) - FEI Titan ChemiSTEM |
| 18:15 | Departure | Building 05.2w, E 25, Bus transfer to the JUFA Hotel |

Wednesday, 6. Nov. 2024

PGI lecture hall (Building 04.8, 2nd floor, Room 365)

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| 09:00 – 10:30 | Janez Dolinsek | Electrical, magnetic and thermal characterization of materials 1 |
| 10:30 – 11:00 | Coffee break | |
| 11:00 – 12:30 | Janez Dolinsek | Electrical, magnetic and thermal characterization of materials 2 |

| | | |
|---------------|----------------|--|
| 12:30 – 14:00 | Lunch break | Lunch in the Forschungszentrum Jülich canteen |
| 14:00 – 15:00 | Janez Dolinsek | Tutorial |
| 15:00 – 15:30 | Saleh Gorji | Tutorial: 4DSTEM data analysis with GMS software |
| 15:30 – 15:45 | Break | Walk over to Poster session in ER-C building |
| 15:45 – 18:00 | Poster Session | Building 05.2w, Entrance E25, Room 3089, with snacks and drinks |
| 18:15 | Departure | Building 05.2w, E 25, Bus transfer to the JUFA Hotel |

Thursday, 7.Nov. 2024

PGI lecture hall (Building 04.8, 2nd floor, Room 365)

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| 09:00 – 10:30 | Emilie Gaudry | (Nano)- structured and electronically modified surfaces for unique surface properties 1 |
| 10:30 – 11:00 | Coffee break | |
| 11:00 – 12:30 | Emilie Gaudry | (Nano)- structured and electronically modified surfaces for unique surface properties 2 |
| 12:30 – 14:00 | Lunch break | Lunch in the Forschungszentrum Jülich canteen |
| 14:00 – 15:00 | Emilie Gaudry | Tutorial |
| 15:00 – 15:30 | Coffee break | |
| 15:30 – 16:30 | Campus Tour | Introduction to the Forschungszentrum Jülich and Campus tour by bus Guide: Ansgar Meise |
| 16:30 – 17:30 | Campus Tour | Visit of the institutes in two groups: First Group: Helmholtz Nano Facility Institute Guide: Dr. Thomas Grap Meeting Point: Geb. 2.14 Second Group: Institute of Energy Materials and Devices: Werkstoffsynthese und Herstellungsverfahren (IMD-2) Institute Guide: Kevin Streckel Meeting Point: Geb. 01.3, Membranzentrum |
| 17:45 | Departure | Bus transfer to the JUFA Hotel |

Friday, 8.Nov. 2024

PGI lecture hall (Building 04.8, 2nd floor, Room 365)

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| 09:00 – 10:30 | Astrid Besmehn | Surface and Interface Analysis in Material Science using Photoelectronspectroscopy (XPS) and Secondary Ion Mass Spectrometry (SIMS) |
| 10:30 – 11:00 | Coffee break | |
| 11:00 – 12:30 | Astrid Besmehn & Joachim Pasel | In-Situ Analytics of catalytic reactions at the gas-solid interface |
| 12:30 – 14:00 | Lunch break | Lunch in the Forschungszentrum Jülich canteen |
| 14:00 | Departure | Building 04.8w, Bus transfer to Düren train station |

Forschungszentrum campus map

