FEMS EUROMAT 23

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FEMS EUROMAT is the most important international congress in materials science and technology in Europe. It continues a successful congress series promoting the transfer of knowledge and the exchange of experience between academia and industry. **Extended submission deadline: 15 March 2023**

D: Characterization and Modeling

The area focuses on the latest research trends in the field of characterization and modeling of materials. Recent advances are accelerating the development and design of new materials. The transition from lab-scale research to design and manufacturing for in-service applications is also driven by characterization and modeling and thereby, they are directly contributing to scientific progress and technology development while addressing societal challenges.

Modern innovations in electron, X-ray, and neutron microscopy, as well as scattering techniques, now enable the probing of material structures at the sub-nanometre scale with three-dimensional imaging at unprecedented resolution and precision. Along with the development of advanced spectroscopy techniques and the growth of correlative microscopy in recent years, new opportunities are emerging for a more comprehensive characterization of material structures through the length scales. Furthermore, advances in equipment development for in-situ and operando studies are providing new insights into micro- and nano-structure evolution, dynamic processes taking place on the local atomic scale and the direct correlation between atomic structure, and properties.

Modeling and simulation techniques are also constantly evolving, with new developments made to address the challenges of linking the various scales from sub-nano- to macro-scales for enhanced predictability of materials performance. In recent years, new approaches based on the application of artificial intelligence to materials science and engineering have emerged, with knowledge, physically-based, and data-driven models fused together to further expand models' capability and applicability in an industrial environment.

Our symposia cover the full span of recent developments in the characterization and modeling of materials. The area welcomes contributions in a wide perspective, including both material, techniques, and method development. The area includes all materials, and, in addition, this year, it has symposia dedicated to 2D and energy materials as well, as one symposium focusing on mechanical properties.

Area Coordinator


Prof. Dr. Eva Olsson
Chalmers University of Technology


Dr. Christophe Pinna
The University of Sheffield

D01: Materials Characterization Using Electron, Ion, Neutron and X-ray Microscopy and Scattering Techniques

Dr. Yasmine Sassa (Chalmers University of Technology), Prof. Dr. Thomas Walther (The University of Sheffield)

D02: In Situ and Operando Studies of Materials Including Time-Resolved, Liquid, Gas, Biasing, Straining

Dr. Rosa Arrigo (University of Salford), Prof. Dr. Thomas Willum Hansen (Technical University of Denmark), Prof. Dr. Marc Willinger (ETH Zurich)

D03: Correlative Microscopy

Dr. Regina Ciancio (Area Science Park & CNR-IOM Trieste), Dr. Andrew Stewart (University College London), Dr. Berit Zeller-Plumhoff (Helmholtz-Zentrum Hereon GmbH)

D04: Micro- and Nano-Mechanics- Characterization and Modeling

Dr. André Clausner (Fraunhofer Institute IKTS), Prof. Dr. Johan Hoefnagels (Eindhoven University of Technology), Dr. Verena Maier-Kiener (Montanuniversität Leoben)

D05: Energy Materials - Characterization and Modeling

Prof. Dr. Daniel Brandell (Uppsala University), Prof. Dr. Leeor Kronik (Weizmann Institute of Science), Prof. Dr. Ellen Moons (Karlstad University), Prof. Dr. Eva Unger (Helmholtz-Zentrum Berlin für Materialien und Energie)

D06: 2D Materials- Characterization and Modeling

Prof. Dr. Sarah Haigh (The University of Manchester)

DGM

D07: Atomic Scale Modeling of Advanced Materials- Ab Initio, Molecular Dynamics and Monte-Carlo Simulations

Dr. Rebecca Janisch (Ruhr-Universität Bochum), Prof. Dr. Lorenz Romaner (Montanuniversität Leoben), Dr. Daniel Scheiber (Materials Center Leoben Forschung GmbH)

D08-extra: Dummy Symposium für Symposium Organizers, die nicht aufgeführt werden wollen

Prof. Dr. Pedro Dolabella Portella (Fraunhofer Institute for Mechanics of Materials IWM)

D08: Digital Materials: Experiments, Simulation Workflows, Ontologies and Interoperability

Prof. Dr. Laura M. Bartolo (Northwestern University), Dr. Tilmann Hickel (MPI für Eisenforschung GmbH), Prof. Dr. François Willaime (CEA)

D09: Development of Advanced Microscopy and Spectroscopy Techniques for Materials Characterization

Prof. Dr. Rafal Dunin-Borkowski (Research Centre Juelich), Prof. Dr. Aleksandar Matic (Chalmers University of Technology)

D10: Multiscale and Multiphysics Modeling of Materials

Dr. Poulumi Dey (Delft University of Technology), Prof. Dr. Dierk Raabe (MPI für Eisenforschung GmbH)

D11: Characterization of Functional Materials

Dr. Noelia Barrabés Rabanal (TU Wien), Prof. Dr. Timothy Pennycook (University of Antwerp), Dr. Gonzalo Prieto (CSIC - UPV), Dr. Maria Varela del Arco (Universidad Complutense de Madrid)

D12: Theory-Guided Development of Structural Materials

Prof. Dr. Raymundo Arroyave (Texas A&M University), Prof. Dr. Pedro Rivera Diaz Del Castillo (University of Southampton)