MATERIALS SCIENCE AND TECHNOLOGY IN EUROPE

FEMS EUROMAT 23

03 - 07 September 2023
Frankfurt am Main (Germany) & Online

AREA D:
CHARACTERIZATION AND MODELING

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 COORDINATORS

Prof. Dr.
Eva Olsson
Chalmers University of Technology (SE)

Dr.
Christophe Pinna
The University of Sheffield (GB)

SYMPOSIA

- **D01:** Materials Characterization Using Electron, Ion, Neutron and X-ray Microscopy and Scattering Techniques
- **D02:** In Situ and Operando Studies of Materials Including Time-Resolved, Liquid, Gas, Biasing, Straining
- **D03:** Correlative Microscopy
- **D04:** Micro- and Nano-Mechanics- Characterization and Modeling
- **D05:** Energy Materials - Characterization and Modeling
- **D06:** 2D Materials- Characterization and Modeling
- **D07:** Atomic Scale Modeling of Advanced Materials- Ab Initio, Molecular Dynamics and Monte-Carlo Simulations
- **D08:** Digital Materials: Experiments, Simulation Workflows, Ontologies and Interoperability
- **D09:** Development of Advanced Microscopy and Spectroscopy Techniques for Materials Characterization
- **D10:** Multiscale and Multiphysics Modeling of Materials
- **D11:** Characterization of Functional Materials
- **D12:** Theory-Guided Development of Structural Materials

DEADLINE FOR ABSTRACT SUBMISSION
31 January 2023

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MATERIALS SCIENCE AND TECHNOLOGY IN EUROPE

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DEAR MATERIALS SCIENCE AND ENGINEERING COMMUNITY, DEAR COLLEAGUES,

We cordially invite you to join the 17th European Congress and Exhibition on Advanced Materials and Processes - FEMS EUROMAT 2023, which will be held in Frankfurt am Main, Germany, 03 - 07 September 2023. The congress venue will be the Frankfurt Goethe-University's new Westend Campus with its park-like ambiance and beautiful travertine-faced buildings, one of Germany's most attractive ones.

Our ambition is to organize a memorable and successful congress in the tradition of previous FEMS EUROMAT congress to offer delegates many opportunities to engage in discussions, build new and strengthen existing partnerships and collaborations within and outside Europe.

Germany has a long tradition in Material Science and Engineering. The German Materials Society - DGM - was founded in 1919 and is one of the founding members of FEMS.

DGM's proprietary congress platform will serve as a proven interface allowing delegates to participate on-site or connect from another location via internet. As the first hybrid FEMS EUROMAT, we will offer the best of both worlds – physical and virtual.

We hope that you'll participate in the congress to share with us your experience and views in the field of Materials Science and Engineering.

On behalf of the Scientific Committee

Prof. Dr. Ehrenfried Zschech
deepXscan GmbH, Dresden, Germany
Chair of FEMS EUROMAT 2023

ABOUT FRANKFURT AM MAIN

Frankfurt's skyline is truly unique. From the Main Tower's rooftop observation platform, situated some 200 meters above the city streets, one has a spectacular view of the surrounding region. Nearby, in the historical old town, Römer City Hall, the Frankfurt Cathedral and St Paul's Church are all must-sees.

Old town flair in the heart of the big city: A old part of Frankfurt has been brought back to life. Completed in 2018, the New Frankfurt Old Town consists of 15 faithfully reconstructed buildings and 20 brand-new dwellings connected by a series of winding laneways. Many of the buildings feature structural ornaments dating back to the Middle Ages – thankfully saved from the destruction of World War II and now returned to their places of origin. A series of museums, restaurants, bars and shops combine to breathe new life into the old quarter, nestled between Frankfurt Cathedral and the Römerberg, turning it into a lively new urban space.

CONGRESS VENUE

Goethe University was founded in 1914 as a unique "citizens' university," financed by wealthy citizens in Frankfurt, Germany. Named in 1932 after one of the city's most famous natives, Johann Wolfgang von Goethe, today the university has over 48,000 students. Goethe University is the third largest university in Germany.

Goethe University
Westend Campus
Seminar Building
Theodor-W.-Adorno-Platz 5
60323 Frankfurt, Germany

Campus Westend, Goethe University, Frankfurt, Germany

EUROMAT2023.com

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Deutsche Gesellschaft für Materialkunde e.V.
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Area D: Characterization and Modeling

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

This symposium solicitates studies that describe original experimental work on structural, magnetic, electronic, dielectric, or optical materials characterization by imaging, scattering, or spectroscopy techniques using electrons, ions, neutrons, or x-rays.

The focus should be on the materials aspects or structure-property relationships rather than pure technique development (which will be the subject of symposium D9) or pure materials modeling (which will be dealt with in symposia D7 and D10).

Materials are understood to include all kinds of lattice defects in single- or polycrystalline bulk matter, thin films, quantum domain structures, nanowires or nano-particles, as well as amorphous or organic materials.

A special focus will be on interfaces between any of those systems or structured surfaces where the high spatial resolution will be key to data interpretation.

Symposium Organizer


Dr. Yasmine Sassa
Chalmers University of Technology


Prof. Dr. Thomas Walther
The University of Sheffield

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Area D: Characterization and Modeling

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

Interrogating the working state of functional materials is a daunting yet fruitful discipline. Understanding structure-activity-property relations allow us to develop novel or better materials with tailored properties for specific applications. Fundamental insight into the working state of materials is also essential for the efficient development of next-generation devices for energy production, storage, and conversion. Consequently, state-of-the-art tools for in situ and operando characterization of materials are currently undergoing rapid development, and the output of experiments using these facilities is gaining considerable traction in both academia and industry.

Recent instrumental and technical developments in the field of electron microscopy have allowed us to investigate materials close to their operating state while maintaining atomic-scale resolution. Likewise, more sophisticated X-ray spectroscopic operando suites are under development for attaining the needed temporal and spatial resolutions, as well as interfacial sensitivity. Stepping up from the study of model systems under simplified conditions, scientists are now attempting to bridge the so-called materials and pressure gaps and stepping towards more realistic real-world materials and operation conditions. This symposium brings together the new developments in the field of operando characterization applied to energy to discuss future directions.

We welcome abstracts on the following:

- Development of novel in situ and operando characterization techniques
- Insights into atomic-scale phenomena
- Structural dynamics of surfaces and interfaces
- Developments of instrumentation for in situ and operando experimentation
- Combined theoretical and experimental studies on interfacial dynamics
- High throughput approaches in data analysis and machine learning

Symposium Organizer


Dr. Rosa Arrigo
University of Salford


Prof. Dr. Thomas Willum Hansen
Technical University of Denmark


Prof. Dr. Marc Willinger
ETH Zurich

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Area D: Characterization and Modeling

D03: Correlative Microscopy

Correlative microscopy has seen significant advances over the last decade, driven by advancements in instrumentation and algorithms for data collection and analysis, including the application of machine learning. The cumulative effect of the combined advances has led to the correlative microscopy approach being significantly more impactful; this applies equally to materials and life sciences, especially. Furthermore, the unique perspective of correlative methodologies to generate complementary morphological, structural and chemical information far exceeds what is possible with any single technique. The symposium aims to bring together scientists from materials science, chemistry, physics, and biology to discuss current trends and future directions of correlative microscopy research. Topics will include a variety of complementary approaches and innovative workflows such as a combination of electrons and X-rays, electrons and neutrons, multiple scattering techniques, scanning probe microscopy, near field, light microscopy, and theoretical approaches. The symposium is also open to in situ techniques applied to biological samples and functional materials under realistic or near realistic conditions, for example, in gaseous environments, at elevated temperatures, and in liquid, including the time domain. Moreover, advanced techniques in data processing for automated correlative measurements, as well as metadata considerations for correlative microscopy, are included in this symposium. Topics will include a broad range of applications spanning the fields of energy, engineering, health, 2D and 3D materials, and devices. Examples are metal alloys, ceramics, soft matter, semiconductors, ion conductors, wide band gap materials, catalysts, battery materials, quantum devices, and nuclear reactor components. The ultimate goal of the symposium is to stimulate fruitful discussions on multimodal and correlative methodologies.

Symposium Organizer


Dr. Regina Ciancio
Area Science Park & CNR-IOM Trieste (IT)


Dr. Andrew Stewart
University College London (GB)


Dr. Berit Zeller-Plumhoff
Helmholtz-Zentrum Hereon GmbH (DE)

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Area D: Characterization and Modeling

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

Small-scale mechanical testing has become a mature and well-established field of research. Nevertheless, the methodologies themselves and the materials under study continuously evolve due to exciting new possibilities in instrumentation and high-performance computing. Specifically, combinations of advanced small-scale mechanical testing, high-resolution 3D imaging, cutting edge in-situ and operando techniques, high-performance computing, data-driven mechanics, advanced multi-scale modeling, and artificial intelligence (AI) algorithms allow exciting new insights into the deformation behavior of materials. This symposium aims at bringing together these fast-growing research communities to support interdisciplinary approaches in micro- and nanomechanics with the objective of gaining insights into small-scale behavior across all material classes, including technical, biological, bio-mimetic, and hierarchical, as well as functional materials and structures.

The targeted topics of the symposium are:

- Mechanical testing at micro- and nano-scales in terms of nanoindentation, µ-bending, µ-pillar compression, and others
- Computational, data-driven, as well as AI-supported micro- and nanomechanics
- Modeling techniques for small-/multi-scale mechanics, including experimental techniques for validation of these models
- Mechanics of nanomaterials and nanostructures, thin films, multiphase materials, as well as hierarchical, bio-(mimetic), and functional materials across the length scales
- Strain rate, fatigue, as well as creep phenomena bridging length scales
- Micro- and nanomechanics of adhesive and cohesive failures
- High-resolution 3D characterization of small structures in relation to mechanical phenomena
- In-situ, operando, and in vitro micro- and nanomechanical testing
- Advanced instrumentation for mechanical testing at micro- and nano-scales

Symposium Organizer


Dr. André Clausner
Fraunhofer Institute IKTS


Prof. Dr. Johan Hoefnagels
Eindhoven University of Technology


Dr. Verena Maier-Kiener
Montanuniversität Leoben

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Area D: Characterization and Modeling

D05: Energy Materials - Characterization and Modeling

The urgent need to replace fossil fuels and the goal to provide electricity to an increasing population drive the global demand for renewable energy technologies that convert and store energy efficiently. Sustainable energy technologies require new and improved materials to make the conversion, storage, and transportation of energy more resource efficient and to improve their recyclability. Such energy materials include active materials used in solar cells, catalysts, batteries, supercapacitors, light sources, photonics, sensing applications, and many others.

The design of energy materials that meet this challenge relies on an understanding of structure-property-performance relationships, with progress underpinned by advances in characterization and modeling techniques. The symposium will highlight research progress in materials characterization and modeling for emerging renewable energy applications. This includes state-of-the-art spectroscopic, microscopic, and diffractive characterization approaches for revealing the composition, structure, and properties of energy materials, as well as computational methods to unfold and predict materials properties that ultimately determine their performance in energy applications. Of growing interest are the in-situ and in-operando characterization techniques to understand the processes governing the performance of materials in devices and how external conditions influence their functionality. Advanced modeling techniques will include methods to determine structures and properties, as well as methods to study dynamics. Of particular interest will be approaches that combine complementary characterization techniques and joint experimental-computational approaches.

We welcome abstracts on the following:

- Characterization and modeling of materials for photovoltaic energy conversion.
- Characterization and modeling of materials for batteries and energy storage devices.
- Processes at surfaces and interfaces of energy materials.
- New developments in instrumentation, analysis tools, and computational methods.
- Joint experimental-theoretical approaches in energy materials.
- Multi-modal characterization, including spectro-microscopy approaches.
- Novel X-ray and neutron-based methods for characterization of energy materials at synchrotron, free electron laser, and neutron facilities.
- Novel in-situ or operando approaches for studying energy materials.
- High-throughput and machine learning-assisted discovery of energy materials

This is a joint symposium with symposium E09 in area E "Energy and Transportation"

Symposium Organizer


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 u...

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Area D: Characterization and Modeling

D06: 2D Materials- Characterization and Modeling

This symposium aims to provide insights into the latest developments for modeling and characterization of 2D materials and their heterostructures. It will also showcase results that apply conventional approaches to yield new understanding. It encompasses all 2D material systems, including graphene family materials, transition metal dichalcogenides (TMDs), 2D monochalcogenides, black phosphorus and related compounds, silicene and related compounds, transitional metal carbides and carbonitrides (MXenes), misfit layer compounds and planar oxides. It is interested in situations where 2D materials are combined, such as twisted heterostructures and homostructures to tune properties, heterostructures employing encapsulation for passivation or protection, and in-plane lateral heterostructures resulting from variable doping or deliberate synthesis. We also welcome submissions considering situations where a 2D material is combined with a different material to tune the behavior. Submitted papers may focus on induced or natural defects, understanding of edges and surfaces, or intrinsic bulk behavior. We welcome characterization results showcasing all types of advanced imaging and spectroscopy techniques applied to 2D systems, for example, Raman Scattering, optical microscopy, X-ray absorption spectroscopy (XAS), angular resolved photoemission spectroscopy (ARPES), transmission electron microscopy (TEM), scanning electron microscopy (SEM) low energy electron diffraction (LEED) and scanning probe microscopy (SPM). We welcome modeling and theory results concerning multiscale theoretical and computational approaches, including atomic, molecular, and continuum models. Furthermore, submissions demonstrating the combination of experiment and theory to solve a particular 2D materials problem are particularly welcome.

Symposium Organizer

Prof. Dr. Sarah Haigh
The University of Manchester

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Area D: Characterization and Modeling

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

The aim of the symposium is to assess the state of the art in applications of theoretical tools that allow for simulations of materials properties at the atomic scale for the knowledge-based design of advanced materials. We will discuss advances and challenges in applications of ab initio calculations, molecular dynamics, and Monte-Carlo techniques focusing on the need to carry out simulations at the most realistic conditions in which materials operate in tools and devices.

The dominant approach in searching for new materials is an experiment. However, it is recognized that the traditional way is too slow, and the goal is to reduce development time and to deploy advanced materials in a more expeditious and economical way. Atomistic simulations allow one to gain far greater insight into physical mechanisms, synthesis, and the properties of materials. Moreover, significant improvement in the predictive power of theoretical modeling has led to an expectation of a shift from a fully empirical paradigm in materials design to the knowledge-based materials design concept, in which atomistic simulations play an important role. During the symposium, we will discuss theoretical methodologies, starting from the basic concepts of quantum simulations and proceeding along the entire atomistic simulations chain, covering molecular dynamics and Monte-Carlo techniques. Furthermore, the use of new computational data-driven techniques to parametrize interatomic potentials or to extend the time and length scales of atomistic simulations shall be discussed.

Targeted Topics include:

- Novel theoretical approaches allowing for improvement of reliability of theoretical simulations, e.g. improved description of many-electron effects in ab initio simulations
- Ab initio simulations at finite temperature
- Treatment of magnetic effects in atomistic simulations
- Improved coarse-graining techniques for multiscale modeling
- Increasing time and length scales of atomistic simulation
- Data-driven approaches in atomistic simulations, including ML/AI

Symposium Organizer


Dr. Rebecca Janisch
Ruhr-Universität Bochum


Prof. Dr. Lorenz Romaner
Montanuniversität Leoben


Dr. Daniel Scheiber
Materials Center Leoben Forschung GmbH

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Area D: Characterization and Modeling

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

Materials Science and Engineering is undergoing a major paradigm shift towards more efficient digitalization. Integration and reuse of data and knowledge from synthesis, production, characterization as well as of modeling activities open new perspectives for innovation. Emerging fields of Materials Informatics employing tools such as machine learning, big-data applications, statistical inference, and Integrated Computational Materials Engineering (ICME) allow accelerating the discovery of new compositions and processes tailored to the production of materials with specific properties and microstructures. Efficient modeling and simulation of materials engineering processes are based on large amounts of heterogeneous experimental and simulation data. This data captures multiple scales, from atomistic to continuum, and a diversity of relevant physical, chemical, and mechanical concepts such as thermodynamics, kinetics, functional and mechanical properties, as well as metadata on materials history, data origin, and provenance.

A key to the enable the digitalization of materials and to leverage the advantages and opportunities of the digital age is an interoperable digital representation of materials and processes. An appropriate management of materials data requires the use of FAIR principles (findable, accessible, interoperable, and reusable). Digital workflows ensure the unity of materials data and used simulation protocols. They connect individual software tools, automatize the storage and curation of final simulation results as well as relevant intermediate steps, and can, therewith, ensure the reproducibility of computational procedures. Ontologies are essential for formally representing universal materials science concepts, their interrelationships, and their workflows. Application ontologies enhance identification, data integration, and fully fledged complex simulation workflows. This will improve explainability and validation of real-life and simulated process designs. A unique identification and elucidation of entities and relations is required to meet the FAIR principles.

In this symposium, we call for an open discussion and exchange about the recent technical and scientific challenges involved in developing an interoperable representation of materials and processes. These include recent developments of ontologies, materials data schemas, and software solutions that allow the representation and integration of workflows, processes, and materials in a digitalized manner.

Symposium Organizer


Prof. Dr. Laura M. Bartolo
Northwestern University


Dr. Tilmann Hickel
MPI für Eisenforschung GmbH


Prof. Dr. François Willaime
CEA

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Area D: Characterization and Modeling

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

This symposium focuses on new and innovative developments in advanced microscopy and spectroscopy techniques for the characterization of microstructural, chemical, and functional properties of inorganic, soft, and biological materials. Contributions are particularly encouraged in areas of methodology and instrumentation development that include:

- Enhancement of contrast from weakly scattering materials.
- Time-resolved characterization of dynamic processes in materials.
- Improved tomographic methods for three-dimensional materials characterization.
- Advances in minimally-invasive characterization using low-dose techniques to reduce beam damage.
- Static and programmable phase plates and adaptive optics.
- New approaches for combining data acquisition with data management, analysis, and processing.
- Hardware, software, and electronics for the automation of experimental workflows, instrument alignment, instrument control and remote access.
- Instrumentation for enabling correlative, multiscale and multi-modal experiments.
- Instrumentation aimed at improving sample preparation and sample transfer.
- Innovative, exploratory, and curiosity-driven methodological techniques and instrumentation for materials characterization.

Presentations in this symposium should ideally either contribute to or complement more conventional advances in spatial resolution, spectroscopic sensitivity, in situ capabilities, and studies of the local electrical and magnetic properties of materials.

Symposium Organizer


Prof. Dr. Rafal Dunin-Borkowski
Research Centre Juelich


Prof. Dr. Aleksandar Matic
Chalmers University of Technology

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Area D: Characterization and Modeling

D10: Multiscale and Multiphysics Modeling of Materials

Multiscale and multiphysics modeling of materials, processes, and products play an essential role in science and industry. Models at electronic and atomic scales provide insights into the physical and chemical foundations, thermodynamics, structures, defect energies, and mechanisms that stand behind the properties of many materials, thus serving as a starting point and basis for advanced materials design. Yet, materials are mostly not used in their thermodynamic equilibrium but used in 'frozen' transient states. This means that their complex microstructure cosmos plays a dominant role for structure-composition-property predictions. This advocates the use of a wide range of thermodynamically and atomistically informed discrete and mean-field microstructure models, including dislocation-, interface- and phase-transformation-models, usually in junction with finite element, finite difference, spectral, or artificial intelligence (AI) solvers. Typical examples are discrete dislocation dynamics, phase field, and crystal plasticity models. The successful implementation of scale- and mechanism-bridging models hinges on the formulation and dissemination of robust simulation frameworks that allow combining atomistic, meso-scale, and mean-field continuum approaches, as well as employing data-driven approaches. Latter methods from AI, as an emerging additional approach in this field, depend on the availability of data and their accessibility according to the FAIR standard (Findability, Accessibility, Interoperability, and Reuse of digital assets).

The main objective of this symposium is to explore and discuss the latest developments in these fields. Focus is placed on models and AI methods for the design of advanced materials, microstructures, and properties using the latest state-of-the-art multiscale and multiphysics modeling techniques, considering structural, mechanical, and functional material properties. A critical reflection of the predictive capability of these multiscale and multiphysics models is of particular relevance. Also of significance is hybrid modeling in the sense of a combination of physical-based and AI driven models covering multiscale or multiphysics problems.

Within this symposium, we invite contributions on the application of multiscale or multiphysics modeling, including at least two scale levels or physical phenomena. Symposium contributions on the implementation of AI-based methods to resolve multiscale or multiphysics problems related to material modeling are also welcome. Also, symposium contributions focused on synergy between multiscale or multiphysics modeling and experiments are invited.

The symposium is open to all material classes (e.g., structural, functional, energy materials, etc.) and diverse fields of application (sustainable and renewable energy, mechanical engineering, metallurgy, etc.).

The symposium is cooperating with symposium C10.

Symposium Organizer


Dr. Poulumi Dey
Delft University of Technology


Prof. Dr. Dierk Raabe
MPI für Eisenforschung GmbH

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Area D: Characterization and Modeling

D11: Characterization of Functional Materials

Joint symposium with symposium A03 in area "Functional Materials"

Symposium Organizer


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

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Area D: Characterization and Modeling

D12: Theory-Guided Development of Structural Materials

Joint symposium with symposium B09 in area "Structural Materials"

Symposium Organizer

Prof. Dr. Raymundo Arroyave
Texas A&M University

Prof. Dr. Pedro Rivera Diaz Del Castillo
University of Southampton

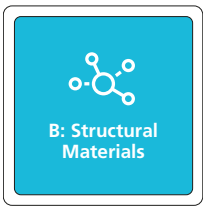
DGM

AREAS

A: Functional Materials

Bernhard Bayer-Skoff
TU Wien, Austria

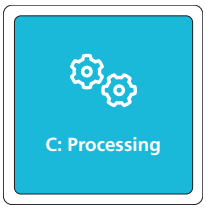
Luis Pereira
UNINOVA, Portugal



B: Structural Materials

Francisca Caballero
Spanish National Research Council, Spain

Pawel Zieba
Polish Academy of Sciences, Poland



C: Processing

Eduard Hryha
Chalmers University of Technology, Sweden

Ioanna Zergioti
National Technical University of Athens, Greece

D: Characterization and Modeling

Eva Olsson
Chalmers University of Technology, Sweden

Christophe Pinna
The University of Sheffield, UK

E: Energy and Transportation

Vito Di Noto
University of Padova, Italy

Dirk Lehmhus
Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM, Germany

F: Materials for Healthcare

Aldo R. Boccaccini
Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

Sandra Van Vlierberghe
Gent University, Belgium

G: Education, Strategy and Technology Transfer

Marco Falzetti
APRE - Agenzia per la Promozione della Ricerca Europea, Italy

Paloma Fernández Sánchez
Universidad Complutense de Madrid, Spain

H: Materials for Circularity and Sustainability

Gesa Beck
SRH Berlin University of Applied Sciences, Germany

Artur Braun
Swiss Federal Laboratories for Materials Science and Technology (EMPA) , Switzerland

*Deadline for abstract submission: **31 January 2023**.*
Contribution submissions from Young Scientists are welcome.

KEYDATES & DEADLINES

31 JANUARY 2023
DEADLINE FOR ABSTRACT SUBMISSION

31 JANUARY 2023
DEADLINE EARLY BIRD TICKETS

MAY 2023
AUTHORS CONFIRMATION

JUNE 2023
PRELIMINARY PROGRAM

03 SEPTEMBER 2023
START OF EUROMAT 2023

EARLY BIRD TICKETS

ON-SITE TICKETS*

These tickets cannot be booked separately without a catering package!

FEMS MEMBER - FULL CONGRESS	**805€**
FEMS MEMBER - HALF CONGRESS	**515€**
REGULAR - FULL CONGRESS	**950€**
REGULAR - HALF CONGRESS	**610€**
REGULAR - ONE DAY	**380€**

ON-SITE TICKETS - YOUNG SCIENTISTS*

Full Congress only. Bachelor, Master and PhD Students up to 30 years (proof required). These tickets cannot be booked separately without a catering package!

YOUNG SCIENTISTS - FEMS MEMBER	**433€**
YOUNG SCIENTISTS - REGULAR	**510€**

ONLINE TICKETS**

Full Congress only

FEMS MEMBER	**325€**
REGULAR	**380€**

On-site tickets include:
the possibility to watch all contributions on-demand for 14 days after the congress | catering package:

- *Coffee breaks (Monday, Tuesday, Wednesday, Thursday)*
- *Lunchtime snacks*
- *Welcome reception*

****Online tickets include:***
the online participation through a browserbased web congress plattform and the possibility to watch all contributions on-demand for 14 days after the congress

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