

FEMS EUROMAT23

03 - 07 Sep 2023 (Frankfurt am Main)

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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. **Submission deadline: 31 January 2023**

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



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