FEMS EUROMAT 23

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. **Extended submission deadline: 15 March 2023**

Area E: Energy and Transportation

E08: Proton Exchange Membrane Fuel Cells and Electrolyzers

The hydrogen economy will help the revolution towards the complete decarbonization of the existing society and the ecological transition. The two major pillars of the hydrogen economy are the production of “green hydrogen” through water electrolysis and the utilization of hydrogen within fuel cells for its direct use to produce electricity. To push forward the technology towards a widespread rollout, important efforts must be dedicated towards a drastic reduction of costs and an improvement in the stability and durability of the devices. One of the most promising routes to achieve these goals is the substitution of platinum group metals (PGMs) with more abundant elements that are not “critical raw materials”. The symposium is devoted to recent advances in understanding, analyzing, and designing fuel cells and electrolyzers from functional materials to stacks. The focus of this symposium will be placed on systems exploiting acidic electrolytes (e.g., proton exchange membrane fuel cells, PEMFCs; direct alcohol fuel cells, DAFCs; high-temperature proton exchange membrane fuel cells, HT-PEMFCs). This highly inclusive symposium will accept contributions from theoreticians, material scientists, surface and operando analysis scientists, modelers, and engineers with the aim to achieve a multiscale view on the processes taking place in electrodes, membranes, and cells concerning structure-performance relationships to foster future developments. Specific topics are as follows:

- novel electrocatalysts and materials development
- novel membranes
- advanced in-situ, ex-situ and operando and model-based analysis on all levels
- novel synthesis routes and reactor concepts and design
- effective transport and operational influences
- structure/design-performance relationships
- insights into degradation via experiment and modeling

Further session topics may emerge from the submissions received. The intention is to provide a thematically wide forum allowing design, materials, and process engineers active in various subsectors of the hydrogen value chain to exchange research ideas and trends in their respective fields for their mutual benefit. Contributors will be offered the possibility of submitting their work to a dedicated special issue of a high-ranking scientific journal (still to be selected).

Symposium Organizer


Prof. Dr. Piercarlo Mustarelli
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Prof. Dr. Enrico Negro
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