FEMS EUROMAT23

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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 E: Energy and Transportation

E04: Redox Flow Batteries

Redox flow batteries have been recognized as an important perspective technology for stationary energy storage, including grid-scale energy storage thanks to their high power performance, flexible design, and ease of scaling up. The present state of the art is mostly represented by the all-vanadium redox flow batteries, even though many inorganic and organic electroactive systems have recently been proposed as alternatives. In all-liquid systems, the active species are dissolved in solvents. On the other hand, hybrid systems, in which the active species exist in distinct phases (e.g., liquid, solid, or gas), can operate in three subcategories: solid/liquid, semi-solid, and liquid/gas. Mechanisms of operation and approaches to the optimization of their performance obviously differ. The symposium will highlight a need to develop or identify robust organic, inorganic, or hybrid compounds that could function as reversible redox species in a rechargeable battery under flow conditions. Special attention will be paid to synthesis, modification, characterization, and deep understanding of the operation of novel redox-active compounds of potential utility to redox flow rechargeable batteries. The symposium will include invited presentations, reviews, tutorial papers, and contributed papers; the following is a list of possible topics addressing all types of redox flow batteries, including aqueous and non-aqueous systems:

- Design of cathode and anode materials
- New anolytes and catholytes
- New preparative and processing approaches
- Fabrication of advanced materials and electrode characterization, including in-situ and ex-situ methods
- Electrochemical properties and performance
- Electrode-electrolyte interfacial chemistry
- Computational modeling and redox processes
- Ionic transport and reaction mechanisms
- Performance and durability studies

Further session topics may emerge from the submissions received. This symposium aims to bring together researchers working in different areas of fundamental physical and analytical electrochemistry as well as electrochemical science and technology. Both experimental and theoretical papers are welcomed in an effort to forge a stronger link between the experiential parameters and resulting properties of systems of interest to the area.

Symposium Organizer


Prof. Dr. Vito Di Noto
University of Padova


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