Special Issue

Advanced Electrochemical Materials: Innovations in Sensing and Energy Storage Applications

Message from the Guest Editors

The rapid evolution of battery technologies demands innovative approaches to discover and optimize materials for cathodes, anodes, and electrolytes. This Special Issue focuses on cutting-edge computational and experimental strategies to accelerate the development of high-performance batteries. We invite original research and review articles that explore the following:

- New materials for cathodes and anodes, enabled by high-throughput density functional theory (DFT).
- Machine learning-driven discovery of solid-state electrolytes via molecular dynamics (MD) simulations.
- Fundamental electrochemistry mechanisms at electrode–electrolyte interfaces, including degradation, SEI formation, and ion transport.

This Special Issue aims to bridge computational materials science, electrochemistry, and AI-driven discovery to overcome the current limitations in relation to energy density, stability, and safety. Contributions from theorists, experimentalists, and data scientists are welcome to foster a multidisciplinary exchange of ideas.

Guest Editors

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Message from the Editor-in-Chief

Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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