

Special Issue

Solid Polymer Electrolytes for Lithium Batteries and Beyond

Message from the Guest Editors

This Special Issue aims to disseminate the most recent advances in solid polymer electrolyte research, covering fundamental science, materials development, upscaling, and technological applications through both original research outputs and comprehensive reviews of the state of the art. Areas of interest may include, but are not limited to, the following topics:

- Novel polymer electrolyte design strategies;
- Polymer electrolytes with smart functionalities including self-healing;
- Ion transport mechanisms and conductivity enhancement;
- Polymer–ceramic composite electrolytes;
- Interface engineering and electrode compatibility;
- Mechanical properties and processability;
- Thermal stability and safety characteristics;
- Beyond lithium—sodium and multivalent systems;
- Advanced characterization techniques;
- Computational modelling and simulation;
- Manufacturing and scalability considerations;
- Post-mortem analysis and failure mechanisms in polymer electrolyte systems;
- Research on scalability and large-scale solid-state battery manufacturing.

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