Special Issue

Advances in Solid-State Batteries: Material, Design, and Mechanism

Message from the Guest Editors

Solid-state batteries (SSBs) are gaining significant attention in electrochemical energy storage technologies due to their potential for high energy density and superior safety. However, their widespread application is limited by the low-conductivity of solid electrolytes, dendrite growth, poor contact, and instable interfaces. Therefore, the development of advanced SSBs hinges on the discovery of new solid electrolytes and innovative battery designs. Additionally, computational models contribute to a better understanding of ion-transport mechanisms and fundamental properties of solid electrolytes. This Special Issue aims to gather the latest research advances and review papers in the field of solid-state batteries. Potential topics include, but are not limited to, the following: Solid-state Li/Na batteries and emerging batteries, including Li–sulfur, Li–oxygen, Li–halogen, etc.
Novel solid electrolytes, including polymers, oxides, sulfides, hydrides, and halides;
New battery designs and modification methods;
Advanced characterization tools;
Insightful computational results.

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Deadline for manuscript submissions

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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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