Special Issue

Research Progress on Electrolytes and Electrode Materials for Solid-State Batteries

Message from the Guest Editor

Solid-state batteries (SSBs) represent a transformative advancement in energy storage, offering enhanced safety, higher energy density, and longer cycle life compared to conventional lithium-ion batteries (LIBs). This Special Issue highlights innovations in solid electrolytes (SEs)—including sulfide, oxide, and polymer-based systems—with emphasis on ionic conductivity, interfacial stability, and mechanical properties. Additionally, the issue explores breakthroughs in electrode design, such as composite architectures and novel active materials, which address challenges in compatibility and performance. We invite the submission of original research and review articles on a wide range of topics, including the synthesis and characterization of solid electrolytes, interface engineering, advanced electrode materials, modeling and simulation, and practical applications of solid-state battery systems. The insights presented here are expected to accelerate the development of next-generation solid-state battery technologies for applications ranging from portable electronics to electric vehicles and grid storage.

Guest Editor

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Deadline for manuscript submissions

20 August 2026

Materials

an Open Access Journal by MDPI

Impact Factor 3.2
CiteScore 6.4
Indexed in PubMed

mdpi.com/si/246390

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Message from the Editorial Board

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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