Special Issue

Interphases in Solid-State Batteries: Mechanisms, Challenges, and Design Strategies

Message from the Guest Editor

Solid-state batteries (SSBs) hold immense promise for revolutionizing energy storage by offering potentially higher energy densities, improved safety, and wider operating temperature ranges compared to conventional liquid electrolyte-based systems. However, the performance, longevity, and reliability of SSBs are critically governed by the complex physicochemical and electrochemical phenomena occurring at their internal interfaces and the resulting interphases—regions formed between electrodes and solid electrolytes, or between solid electrolyte grains. Understanding the formation mechanisms, characterizing the properties, and addressing the inherent challenges for these interphases are paramount to unlocking the full potential of solid-state battery technology.

This Special Issue aims to bring together cutting-edge original research and comprehensive reviews that address these critical aspects.
Topics:
I. Formation Mechanisms and Evolution of Interphases
II. Advanced Characterization of Interphases
III. Interfacial Challenges and Their Impact on SSB Performance
IV. Design Strategies for Engineering Stable and Functional Interphases

Guest Editor

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Message from the Editor-in-Chief

Take the opportunity to publish your original scientific work or a review paper concerning battery materials, battery technology or battery application within this new open access journal. Along with material science, the journal also addresses engineering and multidisciplinary research topics, such as cell and system design or storage system integration. Publishing proffers visibility for the benefit of other experts and facilitates discussion of the research results within the field. You are invited to publish your work, read published papers and to participate in topical discussions.

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