Special Issue

Solid-State Batteries: Theory, Methods and Applications

Message from the Guest Editor

The use of solid electrolytes (SEs) with high-voltage cathodes and lithium-metal anodes can potentially provide a high energy density for SSBs. In addition, SSBs are expected to achieve improved safety due to the removal of flammable liquid electrolytes. However, many challenges still hinder the practical application of SSBs, such as the poor air stability of sulfide and halide SEs, interface degradation between sulfide SEs and cathode materials, poor wettability between garnet-type SEs and lithium anodes, and lithium dendrite growth in all types of SEs. In this Special Issue, we are looking for contributions that are devoted to every part of SSBs, from material synthesis to mechanism understanding. New SEs with high ionic conductivity, a wide electrochemical window, and good air/lithium stability are required. Effective strategies are expected to suppress lithium dendrite growth. Characterizations regarding interface degradation and chemo-mechanics are beneficial for revealing the failure mechanism of SSBs. In addition, new cathode/anode materials and novel battery concepts and designs are also welcome.

Guest Editor

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Deadline for manuscript submissions

closed (20 February 2024)

Batteries

an Open Access Journal by MDPI

Impact Factor 4.8
CiteScore 6.6

mdpi.com/si/138032

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