Special Issue

Lithium-Metal-Anode-Based Solid-State Batteries

Message from the Guest Editor

Solid-state batteries are attracting significant interest due to their safety, use of Li metal anodes, high energy density, and innovative processing routes. These properties are critical for the widespread adoption of electric vehicles. The adoption of lithium metal anodes is one of the main solutions to achieve high energy density due to their ultrahigh theoretical specific capacity (3960 mAh/g), low density (0.59 g/cm3), and lowest negative electrochemical potential (–3.040 V vs. the standard hydrogen electrode). Expectations for solid-state batteries are high, but there are significant challenges to overcome, such as high interfacial resistance on the cathode side and low critical current density, as well as high cost to scale-up. In this Special Issue, we are looking for contributions helping to enhance the performance of solid-state batteries, understand failure mechanisms, and predict performance through modeling. Topics of interest include but are not limited to:

- Novel materials, structures, and concepts;
- Enhanced cell performance;
- Advanced solid electrolytes for Li metal anode batteries;
- Scale-up;
- Modeling;
- Advanced characterizations.

Guest Editor

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