Special Issue

High-Performance Metal-Chalcogen Batteries

Message from the Guest Editors

Lithium-sulfur batteries (LSBs) have become attractive candidates for the next generation of energy storage in the past few decades, owing to their ultrahigh theoretical energy density as well as the low cost and eco-friendliness of sulfur. Inspired by the achievements of LSBs, more metal-chalcogen batteries (MCBs) that are also based on multi-electron redox reactions have sprung up. We know that the challenges encountered in the development of LSBs are mainly the shuttle effects of reaction intermediates (lithium polysulfides), the sluggish kinetics of multistep and multiphase reaction behaviors, and the dendrite formation and interfacial corrosion of Li metal anodes. These issues also exist in MCBs. Solving these problems in better ways is the key to promoting the commercial application of MCBs. This Special Issue will present the current status of MCBs, propose strategies to solve the above problems, explore the internal mechanism of improving the performance of MCBs, and ultimately provide a direction to guide the further application and development of MCBs.

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