Special Issue

Recent Advances in Polymer Electrolytes for Batteries

Message from the Guest Editor

The lithium-ion battery has emerged as the state-of-the-art technology for applications, ranging from small handheld electronics to electric vehicles and stationary energy storage. However, lithium-ion battery has reached its practical limits in terms of energy density and has recently raised safety concerns due to the flammability of the traditional liquid-based electrolyte. Over the last decades, various alternative high-energy density battery technologies have been proposed, such as lithium metal, alkali metal-air, sulphur and silicon batteries. The use of liquid-based electrolytes in conjunction with high-energy density active materials is challenging due to various factors, such as degradation of the electrolyte in contact with active material, unstable solid electrolyte interphase, dendrite growth and active material dissolution issues. Polymer electrolytes have emerged as a promising alternative to liquid-based electrolytes due to their inherent proprieties, enabling the use of the aforementioned high-energy density active materials. This Special Issue aims to highlight the recent advances in polymer electrolytes for application in high-energy-density battery technologies.

Guest Editor

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