Special Issue

Nanotechnology in Metal-Ion Batteries and Related Energy Storage Application

Message from the Guest Editor

Renewable energy storage technologies are essential in addressing growing energy and environmental challenges. Rechargeable metal–sulfur batteries, using a cathode based on sulfur—a much cheaper, more abundant, and more sustainable material—are currently attracting increased interest for electrical energy storage. Among them, lithium–sulfur (Li-S), room-temperature sodium–sulfur (RT Na-S), magnesium–sulfur (Mg-S), and aluminum–sulfur (Al-S) batteries are the most prominent candidates. Currently, the development of metal–sulfur batteries is facing a number of challenges, such as anode dendritic problems, polysulfide shuttle, low cathode conductivity, and a lack of appropriate electrolytes. This Special Issue will focus on theoretical modeling in innovative cathode materials and electrolyte design and in-depth mechanism analysis in metal–sulfur batteries. We encourage the submission of research exploring novel material designs, multi-scale simulations, and in-depth performance evaluations. For this Special Issue, original research articles and reviews are welcome.

Guest Editor

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Message from the Editor-in-Chief

Nanoscience and nanotechnology are exciting fields of research and development, with wide applications to electronic, optical, and magnetic devices, biology, medicine, energy, and defense. At the heart of these fields are the synthesis, characterization, modeling, and applications of new materials with lower nanometer-scale dimensions, which we call “nanomaterials”. These materials can exhibit unusual mesoscopic properties and include nanoparticles, coatings and thin films, metal–organic frameworks, membranes, nano-alloys, quantum dots, self-assemblies, 2D materials such as graphene, and nanotubes. Our journal, *Nanomaterials*, has the goal of publishing the highest quality papers on all aspects of nanomaterial science to an interdisciplinary scientific audience. All of our articles are published with rigorous refereeing and open access.

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