Special Issue

The Design and Synthesis of Nanomaterials for Electrochemical Energy Storage and Conversion

Message from the Guest Editors

As fossil fuel reserves become increasingly scarce and environmental concerns grow, electrochemical energy storage and conversion (EESC) technologies have emerged as key solutions for sustainable energy. The performance of electrochemical energy storage systems—including metal-ion batteries, lithium–sulfur batteries, and supercapacitors—depends on developing innovative electrode materials that provide high capacity and long cycle life. Simultaneously, efficient electrocatalysts for reactions, such as hydrogen evolution reaction, oxygen evolution reaction, and oxygen reduction reaction, are crucial to enhancing water splitting, fuel cells, and metal–air batteries. By advancing nanomaterials and the application of nanomaterials for EESC, these technologies promise to meet future energy demands responsibly.

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