

Special Issue on
Nanomaterials for Efficient Energy Conversion and Storage

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The increasing global energy consumption and the depletion of fossil fuels require alternative energy supply sources in the future. Energy supply and recovery through renewable sources such as solar, wind, water, or biomass have become a core focus on solving energy and climate problems. Development of new nanomaterials and systems to convert, store, and utilize energies with high efficiency and economic competition are crucially important. Nanomaterials play essential roles in the generation of energy-rich products or electricity from water splitting and CO₂ reduction and in the development of reliable energy storage systems to store electricity from intermittent sources of solar and wind energies. Nanoscale materials with high surface-to-volume ratio, open surface, or framework possess intrinsically exceptional properties, which often exhibit enhanced ion and electron transport kinetics at surfaces or across the interfaces. Novel nanomaterials provide new frontiers not only for efficient processes, but also for studies on size-property relationship.

This Special Issue highlights the latest high-quality original research and topical reviews in nanomaterials in the applications for energy conversion and storage systems, with particular focus on the experimental synthesis and characterization of nanomaterials.

Potential topics include but are not limited to the following:

- ▶ Photochemical and electrochemical water splitting using nanomaterials
- ▶ Nanocatalysts for oxygen evolution and reduction reactions
- ▶ Carbon dioxide capture and conversion using nanomaterials
- ▶ Nanomaterials for batteries, redox flow batteries, and fuel cells
- ▶ Nanomaterials for efficient energy use

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