

Special Issue on
**Nanotechnology for Energy Conversion and Storage
Materials**

CALL FOR PAPERS

Over the past few years, dramatic advances in nanotechnology (e.g., nanomaterial, nanoprocesses, and nanoscopic analysis) have enabled the fabrication of new energy conversion and storage materials with high efficiency and high energy density. The cross-links between renewable energy conversion systems and rechargeable energy storage systems have attracted high attentions. However, energy conversion and storage systems in large scale and high energy density applications are still difficult and a critical challenge in the upcoming future. Engineering, chemistry, and materials science are continually developing solar cells and fuel cells with better conversion efficiency and stability that improve upon previous iterations. Next generation battery systems with promising new cathode and anode materials would offer better charge-storage capacities and energy densities. In the development and understanding of energy conversion and storage materials, nanomaterials and nanotechnologies play central roles.

Nanostructures and nanomaterials enabling novel, enhanced properties and functions have a great potential in boosting the photovoltaic technologies and fuel-to-electricity conversion efficiency. Nanoenergy storage materials used in both cathode and anode as active materials and electrode substrates are able to optimize lithium-ion battery performances and to further develop new electrode active materials. Besides developing new materials, nanotechnology and nanoscopic analysis establish comprehensive understandings on the electrochemistry, mechanisms, and kinetics.

The purpose of this special issue is to publish high-quality research papers and review articles focused on various aspects of energy conversion and storage materials/devices employing nanomaterials, applying nanoprocesses technologies, and using nanoscopic analysis.

Potential topics include but are not limited to the following:

- ▶ Progress on nanomaterials science for efficiency-leading fuel and solar cells
- ▶ Development of cathode and anode active nanomaterials enabling new insights into their battery chemistry and improved properties
- ▶ Characterization on battery and catalysts chemistries and electrochemical characteristics through nanotechnology
- ▶ Engineering of cell components involving nanostructures and nanoprocesses technologies

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