

CALL FOR PAPERS

The worldwide high demand for energy has led to the development of various advanced technologies to harvest the energy from nature. With environmental concerns, the clean and sustainable energy is gaining tremendous momentum in the last decades. For instance, photovoltaic cells have achieved remarkable efficiencies, which can capture the unlimited energy of sunlight and convert it into electricity without any emissions such as carbon dioxides. Global warming indicators showing imminent need for reductions of greenhouse gases have stimulated the exploration of effective catalysts to degrade or transform these unwanted compounds. Since the discovery of photocatalytic splitting of water using TiO_2 , hydrogen generation by water splitting has attracted a great deal of attention and achieved great progress. On the other hand, the storage of the generated energy becomes increasingly crucial for continuous usage. For electricity, a large number of batteries have been exploited including primary and secondary batteries. In particular, the batteries that can be recharged such as lithium and sodium-ion batteries and lead-acid batteries have driven much effort. However, the capacity of these batteries still needs further improvement. In order to achieve the aforementioned purposes, various nanomaterials have played a great role in the past. The development of novel nanomaterials and engineering morphology, composition, and even phase of materials in their nanoscale counterparts, study of fabrication process for targeted devices and the understanding of the operation mechanism will be equally important to improve the performance of resultant devices.

The purpose of this special issue is to publish high-quality research papers as well as review articles addressing recent advances on photovoltaic, photochemical, and photocatalytic energy conversion as well as energy storage and optimization. A particular interest will be given to papers exploring or discussing nanomaterials for water splitting, solar cell, photocatalysis, secondary batteries, and their relevance.

Potential topics include but are not limited to the following:

- ▶ Synthesis of novel nanomaterials in the form of nanoparticles, nanowires, and nanorod
- ▶ Synthesis of novel two-dimensional nanomaterials
- ▶ Solar cells like dye sensitized, perovskite, quantum-dot, and other advanced solar cells
- ▶ Photocatalysts, specifically for water splitting and carbon dioxide conversion to fuels
- ▶ Deposition of nanostructured thin film with chemical and physical vapor deposition
- ▶ Development of photocatalytic reactor system and process
- ▶ Modeling and simulation of photocatalytic reaction process
- ▶ Intermediate identification during photocatalysis
- ▶ Development of heteronanoarchitectures and their energy level understanding
- ▶ High-performance Li-ion battery, sodium battery, and supercapacitors
- ▶ Li-ion battery, sodium battery, and supercapacitors
- ▶ Controllable synthesis of nanocrystals
- ▶ Solar cells
- ▶ Artificial photosynthesis

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