Special Issue

Hydrogen Production and Evolution Based on Nanocatalysts

Message from the Guest Editors

This special issue aims to provide a platform for cutting-edge research on the design, synthesis, characterization, and application of nanocatalysts in hydrogen production and evolution reactions, including water splitting, thermochemical processes, and photoelectrocatalytic or electrocatalytic hydrogen generation. Topics of interest include, but are not limited to, advancements in the development of novel nanomaterials such as metal oxides, sulfides, carbides, and hybrid materials, as well as their functionalization and optimization for enhanced catalytic performance. in addition, contributions that address challenges related to the durability, efficiency, and scalability of nanocatalysts in real-world applications are highly encouraged. this special issue seeks to gather original research articles, reviews, and perspectives that push the boundaries of current knowledge on nanocatalyst-based hydrogen production and offer insights into future directions for achieving higher hydrogen yields, lower energy input, and cost-effective solutions. Keywords

- nanocatalysts
- nanomaterials
- hydrogen
- electrolysis
- water splitting

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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. We are proud of our increasing impact factor and ability to provide rapid decisions to authors.

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