Special Issue

Advanced Materials and Technologies for Hydrogen Storage and Generation

Message from the Guest Editor

The global transition toward clean energy has made hydrogen a central pillar in relation to the future of sustainable energy systems. Hydrogen offers a high energy density, clean combustion, and versatile applications across sectors; however, its widespread adoption is still challenged by critical limitations in storage and generation technologies. The development of advanced materials and innovative technologies plays a pivotal role in overcoming these barriers. This Special Issue aims to highlight recent advances in the design, synthesis, characterization, and application of novel materials and technologies for efficient hydrogen storage and generation. Topics of interest include, but are not limited to, solid-state hydrogen storage materials (e.g., metal hydrides, complex hydrides, and MOFs), nanostructured catalysts for hydrogen production via water splitting, thermochemical and photocatalytic processes, and hybrid systems integrating storage and generation. Additionally, subsurface hydrogen production technologies are considered. Studies employing experimental approaches, modeling, or a combination of both are welcomed.

Guest Editor

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Deadline for manuscript submissions

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Message from the Editorial Board

Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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