Special Issue

Economically Efficient New Energy Materials for Hydrogen Production

Message from the Guest Editor

Hydrogen, with its high energy density, environmental friendliness, and renewability, has long been advocated as an excellent alternative to fossil fuels. Electrocatalysis and photocatalysis to split water are both considered promising techniques to be used for hydrogen production. However, the electrocatalytic technique is limited due to high overpotential induced by the sluggish kinetics of hydrogen/oxygen evolution reactions (HER/OERs). Upon it, Pt-based materials and the oxides of Ru or Ir are, respectively, utilized as HER and OER electrocatalysts, but scarcity and high cost hinder their widespread deployment. As for the photocatalytic technique, it works by transforming low-density solar energy into high-density chemical energy. However, it is limited by the low solar energy conversion efficiency of semiconductor materials due to numerous kinetic and thermodynamic factors.
We look forward to receiving your contributions to this Special Issue.

Guest Editor

Prof. Dr. Yongfu Zhu

Key Laboratory of Automobile Materials, Ministry of Education, School of Materials Science and Engineering, Jilin University, Changchun, China

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Materials
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
materials@mdpi.com

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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.

Editor-in-Chief

Prof. Dr. Maryam Tabrizian
1. Department of Biomedical Engineering, Faculty of Medicine and Health Sciences, McGill University, Montreal, QC H3A 2B6, Canada
2. Faculty of Dentistry and Oral Health Sciences, McGill University, 3640 Rue University, Montreal, QC H3A 0C7, Canada

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