



Economically Efficient New Energy Materials for Hydrogen Production

Guest Editor:

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Deadline for manuscript submissions:

20 June 2024

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.

Prof. Dr. Yongfu Zhu

Guest Editor





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