Nanocomposite Photocatalysts for Solar Hydrogen Production

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ABSTRACT

Hydrogen is expected to become the major energy carrier of the future because it has a high energy capacity and is environmentally clean. Hydrogen will be produced from fossil fuels by established technologies in the near future, but eventually it should be manufactured from renewable energy sources such as solar energy. Photocatalytic water splitting (PWS) is the most promising technology for the purpose, since H_2 could be obtained directly from abundant and renewable water and solar light from the process. Among a number of approaches to fabricate visible light photocatalysts for solar energy conversion to hydrogen, we found that composite photocatalysts combining multiple functions of component catalysts were very promising. In particular, the fabrication of the composite materials by using modern nanostructured-materials processing techniques was found fruitful