

Abstract Submitted
for the TSF10 Meeting of
The American Physical Society

Photocatalytic Decomposition of Water: Next Generation Fuel

Source KEEGAN HANKS, UTSA — Photocatalysis of hydrogen from water has been vastly concerned with using a Pt/Ru co-catalyst for the generation of hydrogen from water and molecular co-catalysts with hydrocarbon precursors. This process contains separate nucleation sites and proves to have a limited efficiency. Molecular and nanoparticle co-catalysts have also been considered showing an improvement in the applicability of this water-splitting process to produce a clean and renewable fuel from a simple and green reaction process. Recent research has vastly improved the feasibility of the nanoparticle co-catalyst based process as a clean and reliable resource for fuel. I present herein a theoretical application of composite nanoparticles using transition metal semiconductors. I propose the composite nanostructures as the catalyst and the co-catalyst in one nanoparticle rather than an expensive Pt co-catalyst and molecular catalyst combo. With this approach, our goal is to develop a single beaker synthesis of these nanoparticles and place them in water under artificial sunlight in our newly developed laboratories here on campus to characterize the nanoparticles and analyze the efficiency of hydrogen generation.

Keegan Hanks
University of Texas at San Antonio

Date submitted: 24 Sep 2010

Electronic form version 1.4