Review of: "Protruding Pt single-sites on hexagonal ZnIn2S4 to accelerate photocatalytic hydrogen evolution"

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The study by Liang Mao et al. provide experimental evidence that the h-ZIS ultrathin nanosheets with a thickness of 2.46 ~ 4.94 nm were synthesized *via* a hydrothermal method. Afterwards, the Pt sites were fixed on h-ZIS by introducing the H_2PtCl_6 aqueous solution into the h-ZIS dispersion under visible light irradiation and continuous magnetic stirring. Compared to the traditional routes for capturing single Pt sites, the hydrogen evolution (HER) yield of the prominent Pt site on the h-ZIS photocatalyst was increased by 2.2 times, reaching 17.5 mmol g^{-1} h^{-1}. Furthermore, a large number of observable hydrogen bubbles were generated after preparing a thin layer of Pt_{SS}-ZIS film *via* droplet pouring, which provided great potential for the actual solar-driven H_2 production. The result indicated that the prominent single Pt sites in PTSS ZIS could inhibit the recombination of electron-hole pairs by producing a tip effect. The adsorption / desorption behavior of H atom was optimized through effective proton mass transfer so as to promote the reaction thermodynamics and kinetics. In addition, the phenomenon of tip enhancement caused by high curvature nano-texture could be used as a general prescription to improve the performance of catalysts in other reactions, such as degradation of organic pollutants, oxygen reduction, CO_2 reduction and nitrogen reduction.