

Photoelectrochemical hydrogen evolution from TiO_2 -CuS films at various CuS contents

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In recent years, the splitting of water for producing hydrogen and oxygen via photoelectrochemical process is well received. In the TiO_2/CuS nanocomposite, type-II band alignment can be observed. In this study, a photoanode based on TiO_2/CuS heterostructure has been fabricated. At first, TiO_2/CuS photocatalyst was synthesized by precipitation method using TiO_2 particles with copper and sulfur precursors. Next, the TiO_2/CuS paste was deposited on FTO glass by a doctor blade method for making the working electrode. The photoanodes with different weight percent of CuS were manufactured by controlling the molar ratios of Cu^{2+} , S^{2-} . The photoelectrochemical performance of substrates was analyzed using potentiostat(Iviumstat, Netherland). SEM was used to observe the morphology of TiO_2/CuS photocatalyst. The evolution of hydrogen was measured by solar simulator and gas chromatography.