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Rapid Facile Microwave-assisted Solvothermal Synthesis of Rod-like CuO/TiO2 for High Efficiency photocatalytic Hydrogen Evolution YI-HSIEN YU, YING-PIN CHEN, ZHENGDONG CHENG, Texas A&M Univ — Rod-like CuO/TiO_2 was prepared by a rapid facile microwave-assisted solvothermal method for high efficiency photocatalytic hydrogen evolution. The structure of obtained CuO/TiO_2 samples were characterized by X-ray diffraction (XRD), field emission scanning electron microscopy (FE-SEM), high resolution transmission electron microscopy (HR-TEM), and the amount of produced hydrogen was analyzed by gas chromatography (GC). CuO decorated TiO_2 rods exhibited greatly improvement of photocatalytic hydrogen evolution. Utilizing 30 mg of CuO/TiO_2 rods sample showed highest hydrogen evolution rate over utilizing 50 mg and 100 mg. Comparing to hydrogen evolution rate of 45.4 μmol h^{-1} g^{1} by using bare Rod-like TiO_2, 1 wt% CuO loaded TiO_2 rods presented the highest hydrogen evolution rate of 3508.7 μmol h^{-1} g^{-1} while hydrogen evolution rate of 0.5 wt%, 5 wt%, and 10 wt% CuO loaded TiO_2 rods were 157.1, 2817, and 2595 μmol h^{-1} g^{-1}, respectively. Such enhancement of photocatalytic activity could be ascribed to that CuO improves not only light harvesting but also enhanced separation of electron-hole charge carriers

Yi-Hsien Yu
Texas A&M Univ

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