

Hydrogen production for ZnS(en)_{0.5}-CdS composite photocatalysts

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The ZnS(en)_{0.5}-CdS composites with different CdS contents have been synthesized by two different methods. One method is solvothermal method and the other is precipitation method. Solvothermal method is required longer time than precipitation method, but gives well crystallized materials. The samples were characterized by X-ray diffraction, Fourier transform infrared spectroscopy (FT-IR), UV-vis spectroscopy, scanning electron microscopy (SEM), and transmission electron microscopy (TEM). The photocatalytic hydrogen production was evaluated from an aqueous solution with a 150 W xenon lamp and the results indicated that ZCS80 exhibited highest hydrogen evolution rate of 559.0 $\mu\text{mol g}^{-1} \text{h}^{-1}$. The interaction between ZnS(en)_{0.5} and CdS enhanced the photocatalytic activity for hydrogen production.