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Flower-like $\text{Cu}_2\text{ZnSnS}_4$ architectures synthesized and their Visible-light Catalytic Properties

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Abstract: $\text{Cu}_2\text{ZnSnS}_4$ (CZTS) as a typical p-type semiconductor, has attracted much more attention because of its many potential applications. Its nanoparticles were prepared successfully with a solvothermal method, Cu(II), Zn(II) and Sn(IV) inorganic salts and thiourea as precursors, and deionized water, ethylene alcohol and *N, N*-dimethylformamide as solvents. The degradation of Rhodamine B (RhB) aqueous solution was carried out to investigate the visible-light catalytic activity under metal halide lamp. The results indicated that different morphology of CZTS had photocatalytic activity to RhB under visible light, and flower-like CZTS with deionized water displayed higher photodegradation efficiency than other samples, with degradation rate of 99.8 % within 100 min.

Keywords: Solvothermal method; $\text{Cu}_2\text{ZnSnS}_4$ nanostructures; Photocatalysis

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