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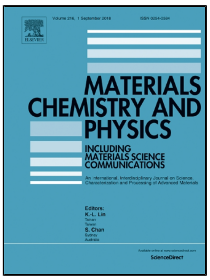

Sn_3O_4 microballs as highly efficient photocatalyst for hydrogen generation and degradation of phenol under solar light irradiation

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Sn_3O_4 microballs as highly efficient photocatalyst for hydrogen generation and degradation of phenol under solar light irradiation

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Abstract:

Succinate driven facile hydrothermal method for fabrication of Sn_3O_4 microballs have been reported. The crystal structure of triclinic Sn_3O_4 was confirmed by XRD and Raman spectroscopy. The FESEM analysis reveals microball-like morphology made up of irregular contour-like nanostructures with thickness of about 40-80 nm. The optical band gap calculated from optical absorption spectroscopy was found to be 2.62 eV for synthesized Sn_3O_4. Considering morphology and narrowing of band gap, the photocatalytic activities for hydrogen generation and phenol degradation was investigated under solar light irradiation. Sn_3O_4 nanostructure exhibited enhanced photocatalytic activities for hydrogen generation and phenol degradation. A maximum H_2 generation (88.4 μmol h^{-1}/0.1 g) was obtained using the microball-like Sn_3O_4, which is higher than earlier reported data. Sn_3O_4 also exhibits good phenol degradation activity. The high photocatalytic activity of Sn_3O_4 was considered to be due to narrow band gap and hierarchal microball-like morphology.

Key words: Sn_3O_4 nanostructure, microballs, Hydrothermal, Photocatalysts

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