Supplementary Information

Ag_3PO_4/SnO_2 Semiconductor Nanocomposites with Enhanced Photocatalytic Activity and Stability

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Experimental

Catalyst Preparation

The Ag_3PO_4 were prepared by a simple stirring process at room temperature.0.25 g CH_3COOAg was well dissolved in aqueous solution. Na_2HPO_4 aqueous solution (0.075 M) was added drop by drop to the above solution. The resulting mixture was constant magnetic stirring at room temperature for 4 h in the dark. The resulting products were washed with deionized water for several times, and finally dried at 50 ℃ for 5 h in a vacuum.

The Ag_3PO_4/SnO_2 were prepared by a simple stirring process at room temperature. Typically, Na_2HPO_4 (0.021g,) and $Na_2SnO_3 \cdot 3H_2O$ (0.008g,) were dissolved in CH_3COOAg aqueous solution (0.03g, 35mL deionized water) then stirred for 24 h in the dark. The resulting products were washed with deionized water for several times, and finally dried at 50 ℃ for 5 h in a vacuum.

Catalyst Characterization

Characterization: Scanning electron microscopy (SEM) images and energy dispersive X-ray analysis (EDX) spectroscopy were taken on a FEI-quanta 200 scanning electron microscope with acceleration voltage of 20 kV. Transmission electron microscopy (TEM) and high-resolution TEM (HRTEM) images were obtained with a FEI/Philips Tecnai 12 BioTWIN transmission electron microscope and a CM200 FEG transmission electron microscope, respectively. The normal TEM samples were prepared by dropping the solution onto a copper grid with polyvinyl formal support film and dried in air, respectively. The crystal structure of the resultant products was characterized by X-ray powder diffraction (XRD) by using a X'Pert-ProMPD (Holand) D/max-γAX-ray diffractometer with Cu Kα radiation (λ = 0.154178 nm). Room temperature UV–Vis absorption was recorded on a Lambda 750 (PerkingElmer) spectrophotometer in the wavelength range of 200 – 800 nm.

Catalyst Activity

0.2 g photocatalyst (P25, Ag_3PO_4, Ag_3PO_4/SnO_2) was suspended in 100 mL aqueous solution of 60 ppm MO. The solution was stirred for 1h without light to ensure the establishment of an adsorption–desorption equilibrium. Visible light are obtained by using cutoff filters to remove light(150 W, Xenon lamp) of λ < 420 nm, and during the irradiated, 3mL aliquots were removed at certain time intervals and analyzed on a UV-Vis spectrophotometer (Lambda 750 PerkingElmer spectrophotometer) to record concentrations. Before the spectroscopy measurement, these photocatalysts were removed from the

photocatalytic reaction systems by centrifugation.

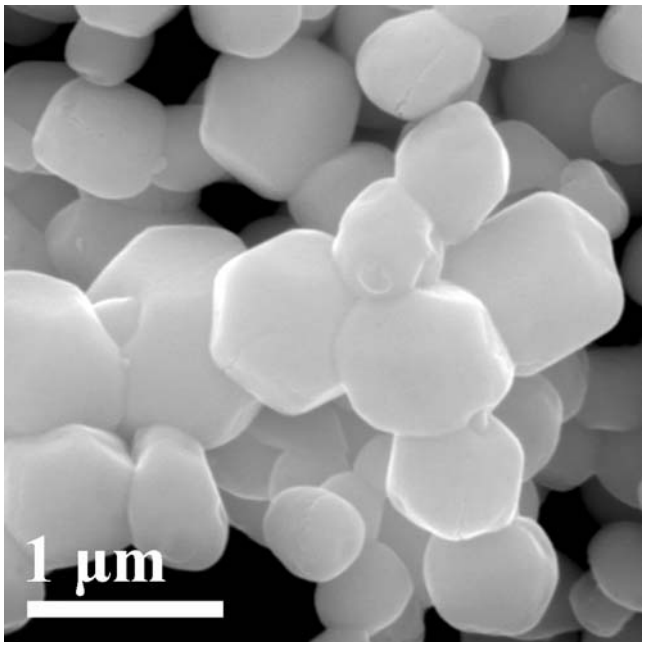

Fig. S1 SEM image of Ag_3PO_4 nanoparticles.

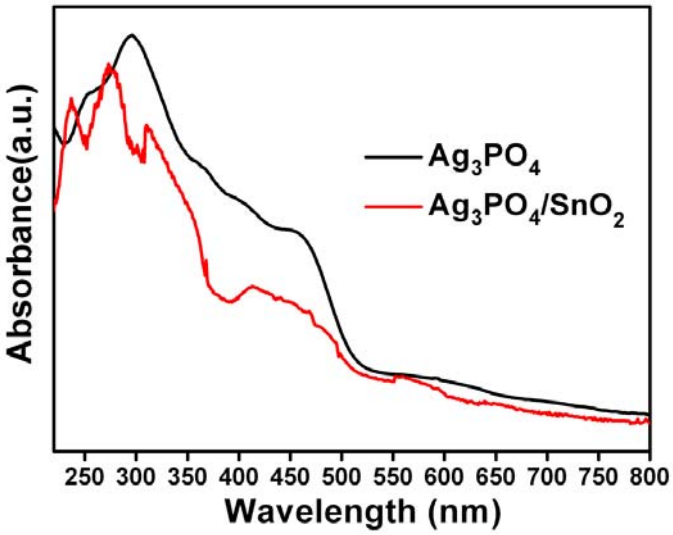

Fig. S2 UV-vis absorption spectra of Ag_3PO_4 and Ag_3PO_4/SnO_2.