

Effects of structural, optical and ferromagnetic states on the photocatalytic activities of Sn-TiO₂ nanocrystals

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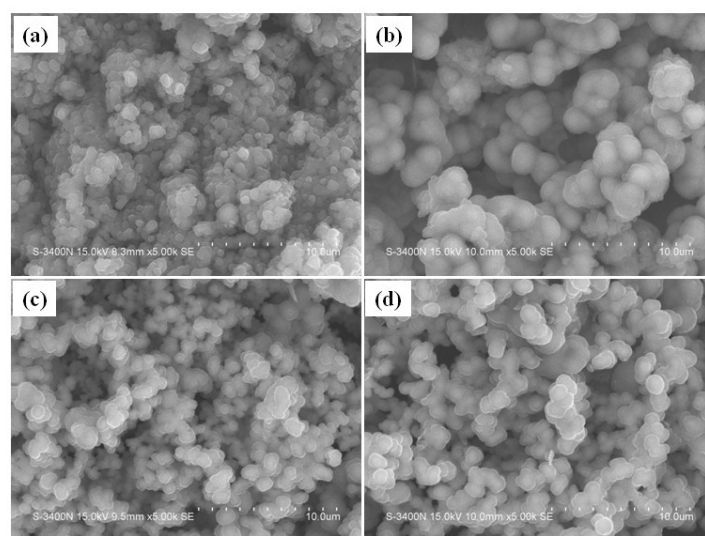


Fig. S1 SEM images of (a) Sn-Ti-0.05, (b) Sn-Ti-0.17, (c) Sn-Ti-1.14 and (d) Sn-Ti-1.37 samples.

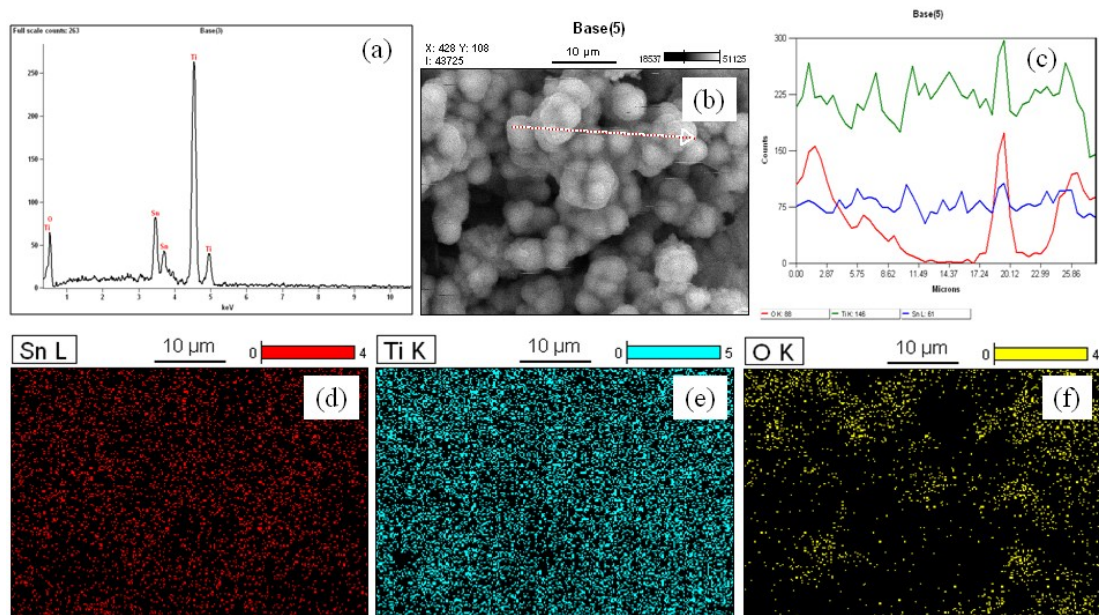


Fig. S2 EDX spectrum (a), line spectra (b, c) and mappings (d, e, f) of Sn-Ti-0.17 sample.

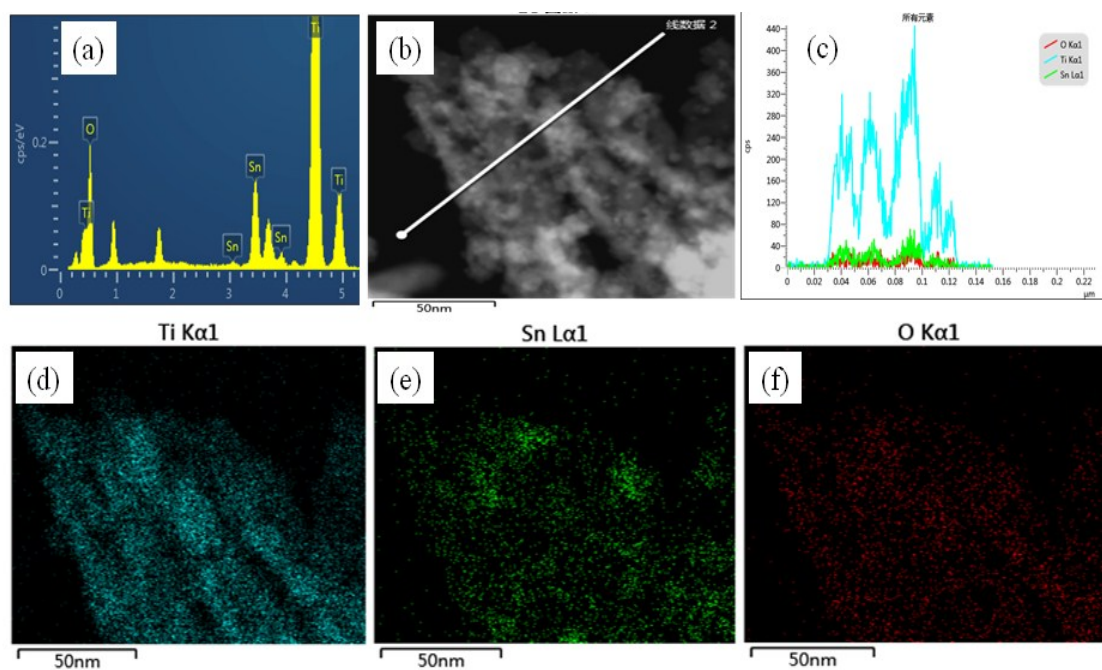


Fig. S3 EDX spectrum (a), line spectra (b, c) and mappings (d, e, f) of Sn-Ti-0.30 sample.

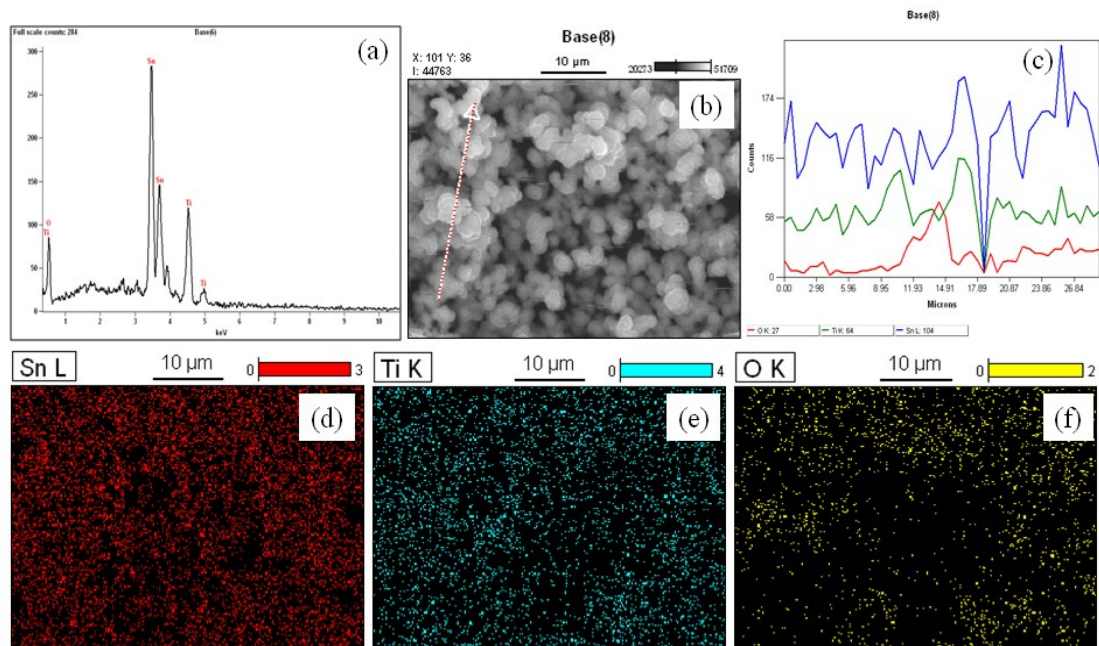


Fig. S4 EDX spectrum (a), line spectra (b, c) and mappings (d, e, f) of Sn-Ti-1.14 sample.

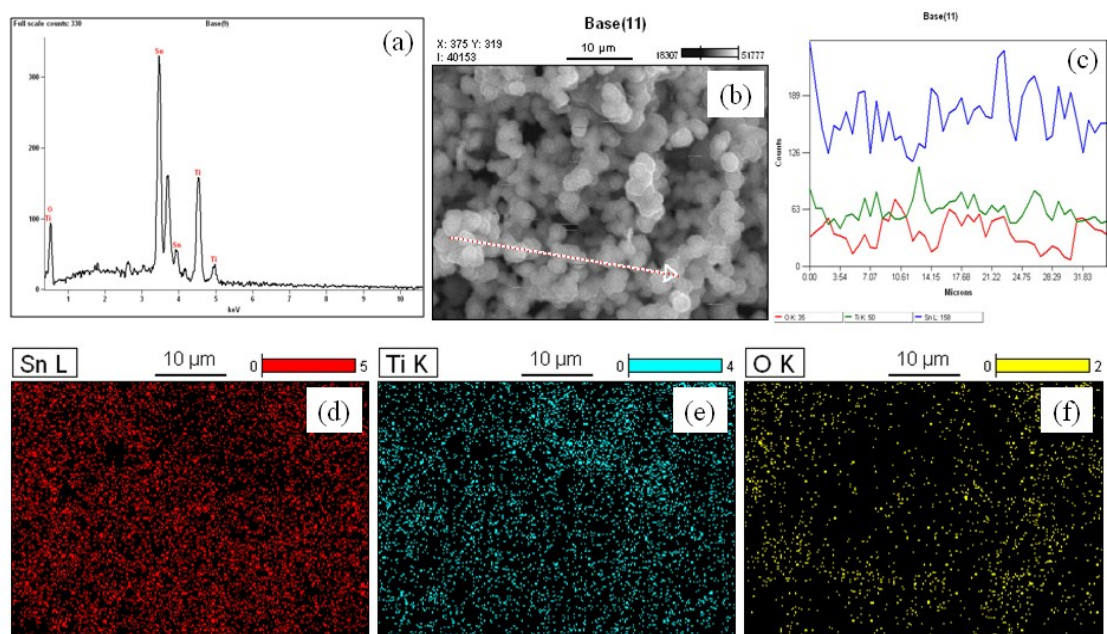


Fig. S5 EDX spectrum (a), line spectra (b, c) and mappings (d, e, f) of Sn-Ti-1.37 sample.

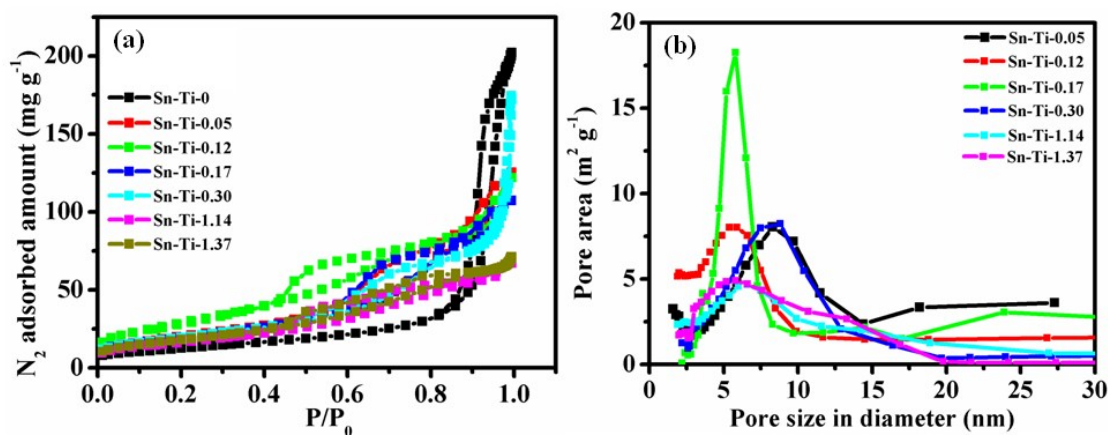


Fig. S6 (a) Nitrogen adsorption-desorption isotherms and (b) pore-size distribution curves for Sn-Ti-x samples.

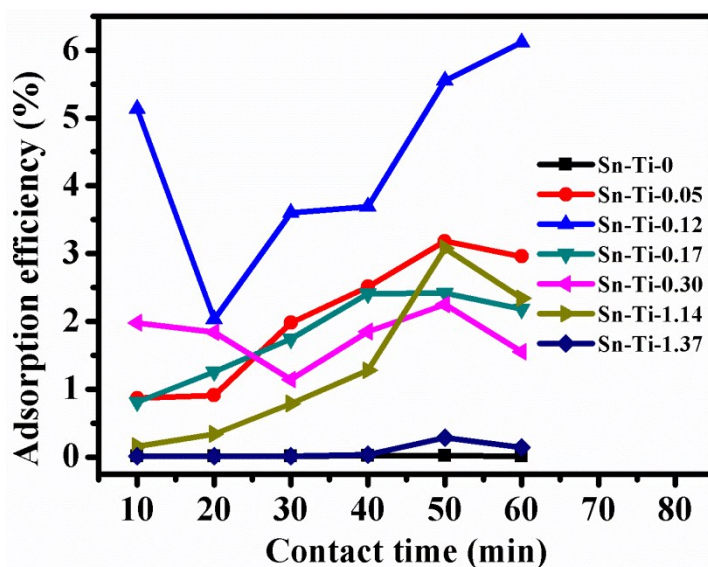


Fig. S7 MO adsorption efficiency of Sn-Ti-x samples vs contact time in distilled water at room temperature.

In a typical adsorption process, 80 mL of MO aqueous solution with initial concentration 10^{-5} M and 50 mg of Sn-Ti-x samples were separately taken in 100 mL beaker and then the entire solution was stirred at room temperature and at neutral pH condition (performed in dark place). The filtrate solutions were centrifuged after

definite time intervals and the supernatants were subjected to electronic absorption spectroscopic analysis at 464 nm. Adsorption efficiency calculated from $AE = [(A_i - A_t)/A_i] \times 100 \%$, where, A_i and A_t are the absorbance of the adsorption solutions initially and at definite time interval ' t ', respectively.

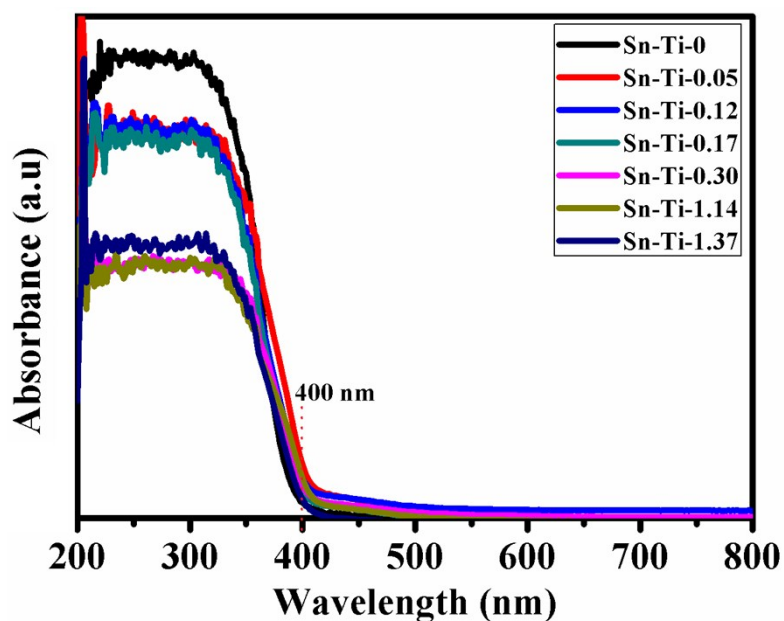


Fig. S8 DRS spectra of Sn-Ti-x samples.

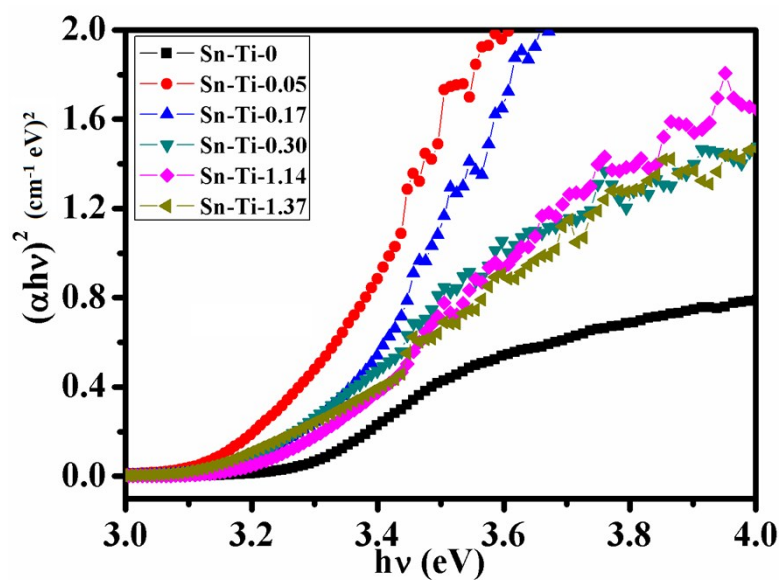


Fig. S9 Band gap energy Kubelka-Munk curve for Sn-Ti-x samples.

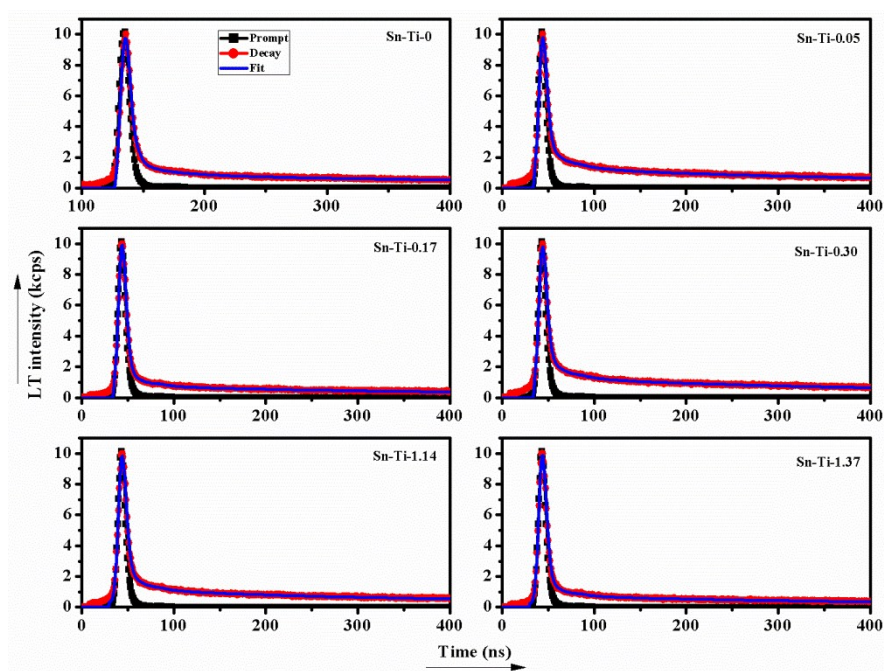


Fig. S10 Life time decay profiles of Sn-Ti-x samples.

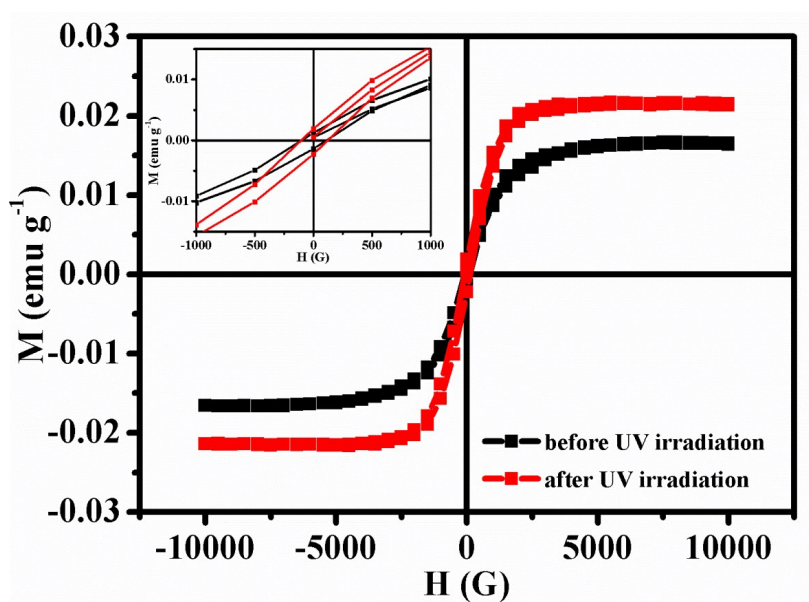


Fig. S11 Room temperature magnetic hysteresis loops of Sn-Ti-0.05 sample isolated from phenol degraded waste water solution under UV light irradiation at 300 min, the inset gives the enlarged M-H curves between -1000 G and 1000 G.