

Supporting Information for

Improved visible-light photocatalysis of nano-Bi₂Sn₂O₇ with dispersed s-bands

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1. Related Characterization on Commercial Bi₂O₃ and SS-Bi₂Sn₂O₇

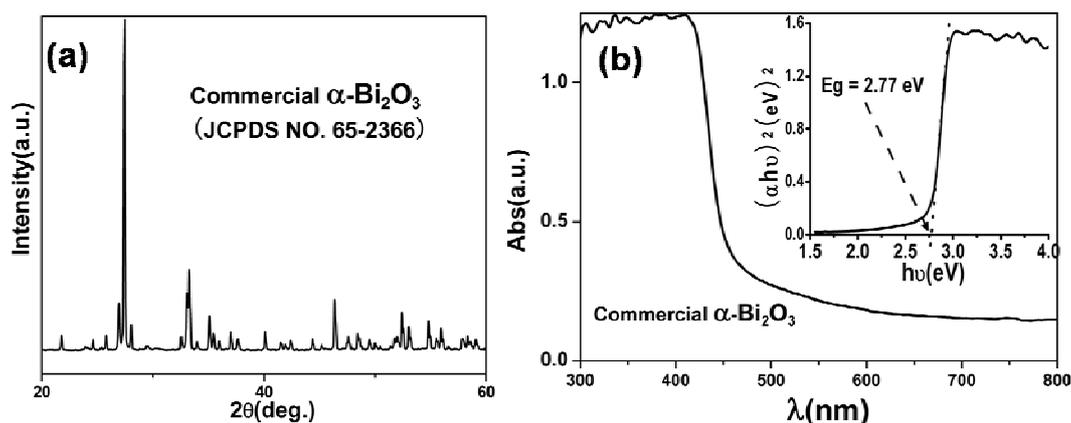


Fig. S1 (a) XRD pattern and (b) UV-Vis spectrum for commercial Bi₂O₃.

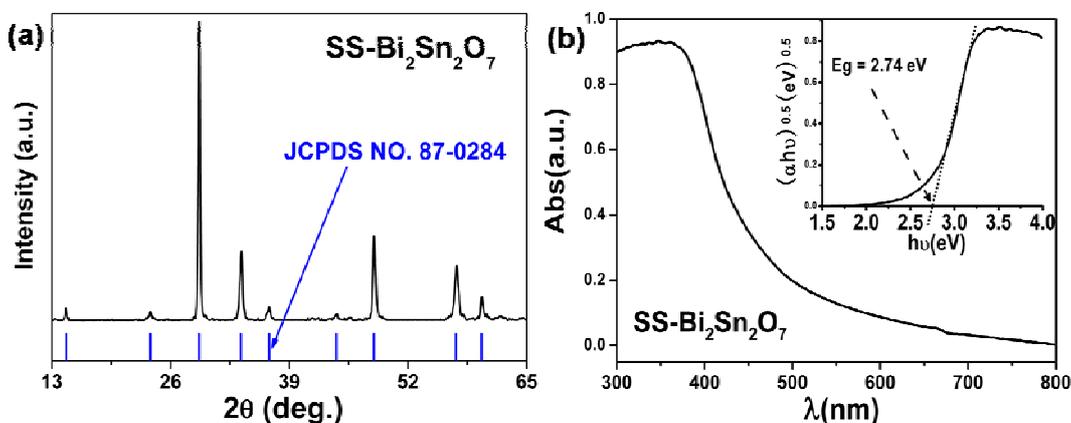


Fig. S2 (a) XRD pattern and (b) UV-Vis spectrum for SS-Bi₂Sn₂O₇.

2. Photocatalytic Degradation Results

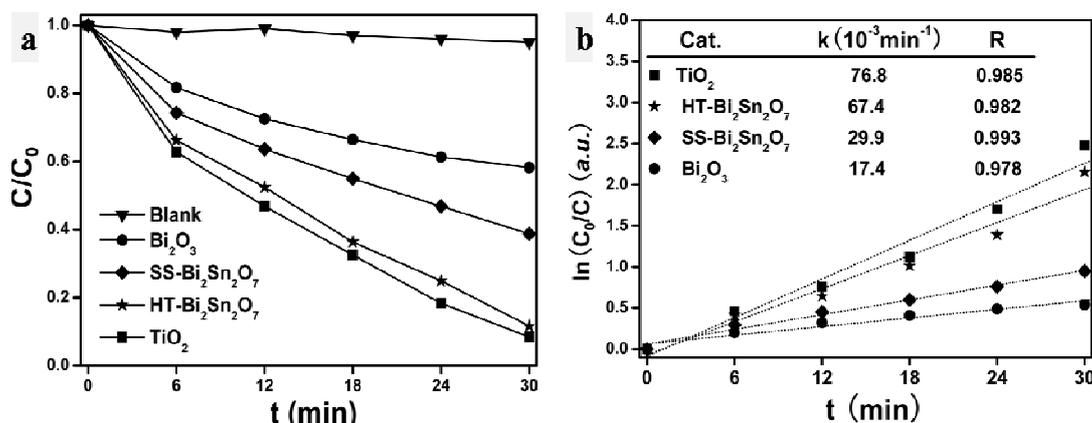


Fig. S3 Photocatalytic degradation of methyl orange under UV-light.

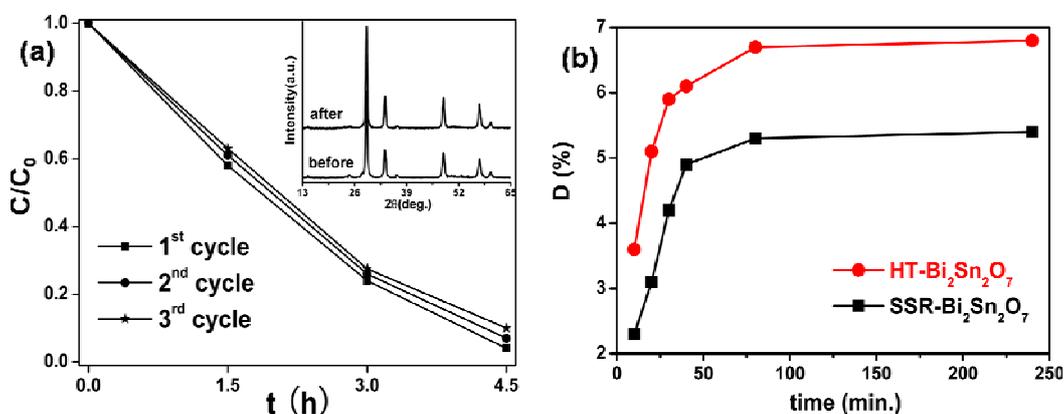


Fig. S4 (a) The cyclability of $\text{HT-Bi}_2\text{Sn}_2\text{O}_7$ and the XRD patterns before and after reaction under visible-light irradiation. (b) Equilibrium adsorption of MO. $D = (C_0 - C)/C_0 * 100\%$, where C_0 is the initial MO concentration and C is the concentration after equilibrium adsorption.*

* In our experimental, the equilibrium adsorption is obtained after 240 mins. D is 5.5% and 6.8% for $\text{SSR-Bi}_2\text{Sn}_2\text{O}_7$ and $\text{HT-Bi}_2\text{Sn}_2\text{O}_7$, respectively, indicating that the adsorption difference should not be responsible for the photocatalysis discrepancy observed during the tests.

3. Visible-light driven photodecomposition of MO over the obtained nanocrystalline $\text{HT-Bi}_2\text{Sn}_2\text{O}_7$ at different reaction times (240 °C)

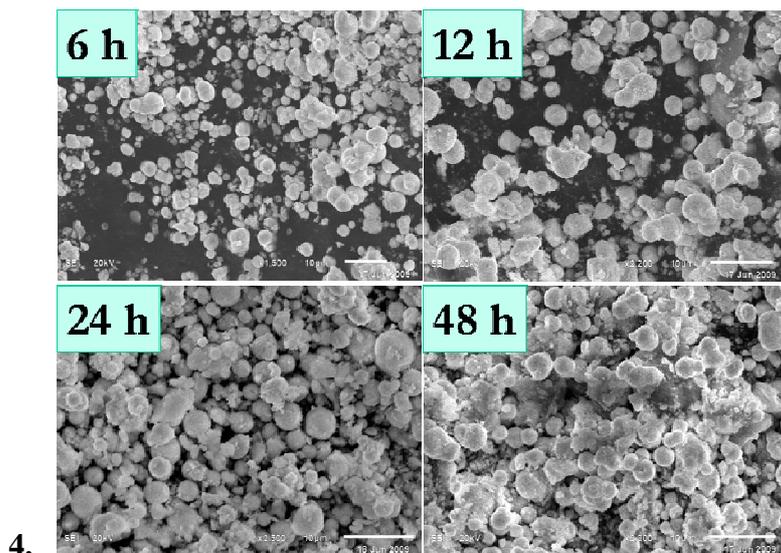


Fig. S5 SEM images for the obtained $\text{Bi}_2\text{Sn}_2\text{O}_7$ at various reaction time.

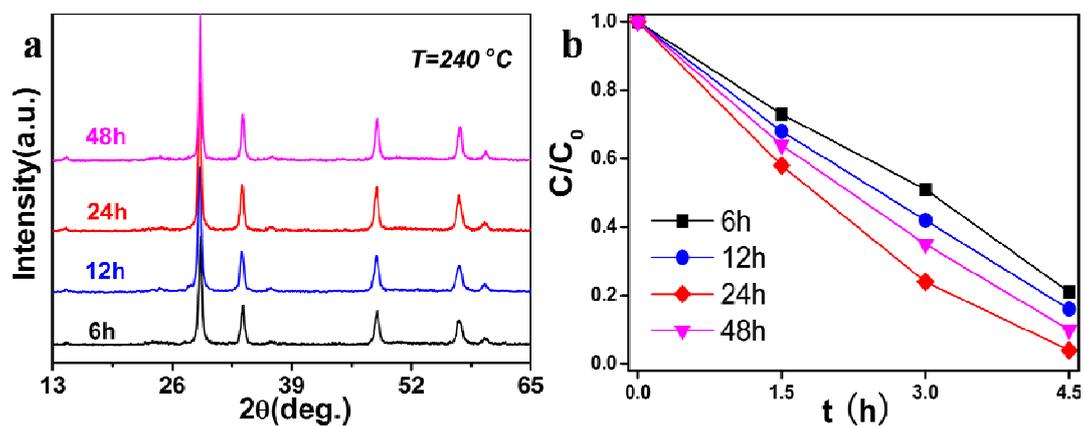


Fig. S6 (a) XRD and (b) photocatalytic test of MO over $\text{Bi}_2\text{Sn}_2\text{O}_7$ obtained at various reaction times.

Table S1 The S_{BET} and reaction constant K of $\text{Bi}_2\text{Sn}_2\text{O}_7$

Catalyst	$S_{\text{BET}}(\text{m}^2/\text{g})$	$K(\text{h}^{-1})$	R
240 °C/6h	80.1	0.389	0.96
240 °C/12h	75.3	0.462	0.97
240 °C/24h	68.5	0.623	0.98
240 °C/48h	50.2	0.546	0.98