

Supporting Information.

Surfactant-assisted hydrothermal synthesis of rGO/SnIn₄S₈ nanosheets and its application in complete removal of Cr(VI)

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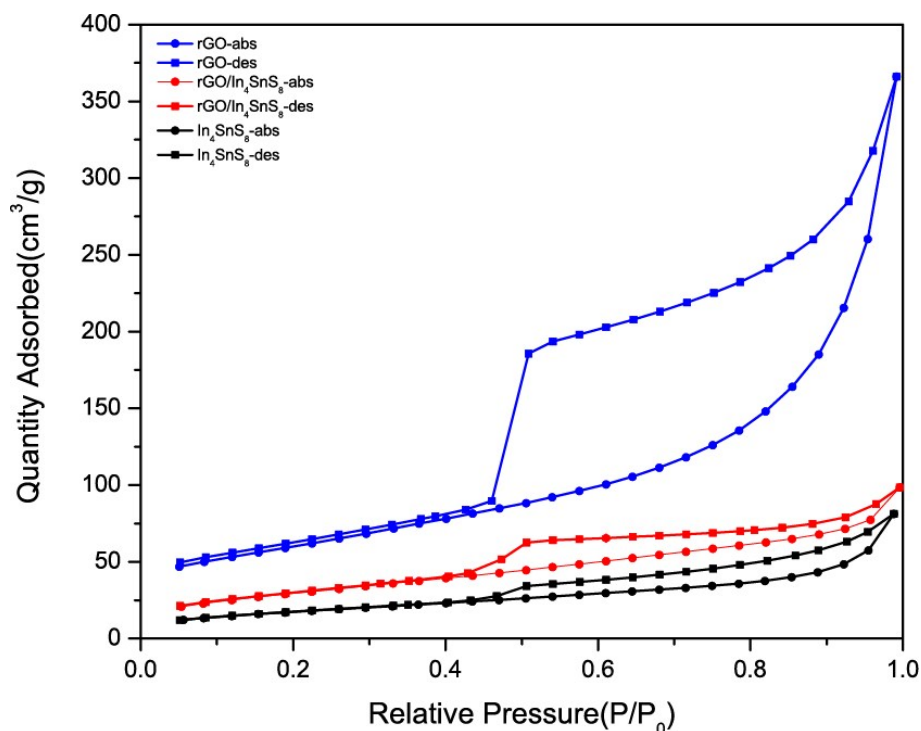


Fig. S1. Nitrogen adsorption-desorption isotherm of rGO, In₄SnS₈ and rGO/SnIn₄S₈.

Table S1 Comparison of photocatalytic activity between rGO/SnIn₄S₈ and other reported photocatalysts under visible light irradiation

Sample	Cr(VI) Concentration (mg/L)	Catalyst Concentration (g/L)	Irradiation time (min)	Resul t (%)	Reference
TiO ₂ (P25)	10	0.67	180	50	1
TiO ₂ (pure)	10	0.67	180	30	2
TiO ₂ /rGO	10	0.67	180	98	
CuO/ZrO ₂ - MCM-41	20	1	30	99	3
CdS	10	1	250	79	4
CdS/rGO	10	1	250	92	
SnS ₂	50	1	150	36	5
SnS ₂ /rGO	50	1	150	90	
SnIn ₄ S ₈	50	0.2	60	89	Present
rGO/SnIn ₄ S ₈	50	0.2	30	99	work

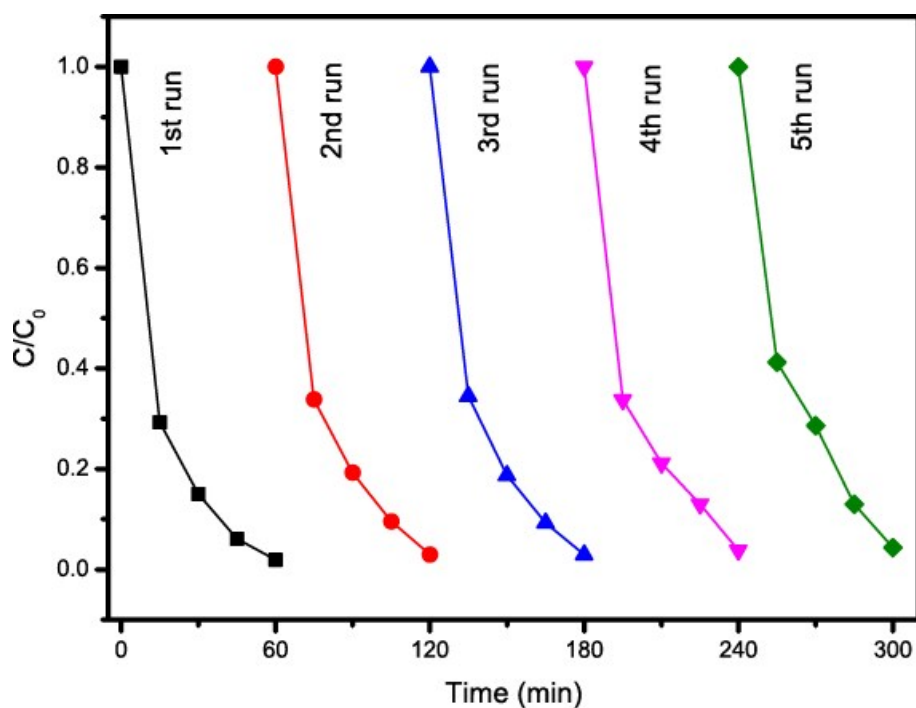


Fig. S2 Recycled photocatalytic reduction of Cr(VI) over the rGO/SnIn₄S₈. Experimental conditions: 50mg/L initial Cr(VI) concentration, 0.5mM citric acid, 0.1g/L catalyst, pH 2, N₂ purging.

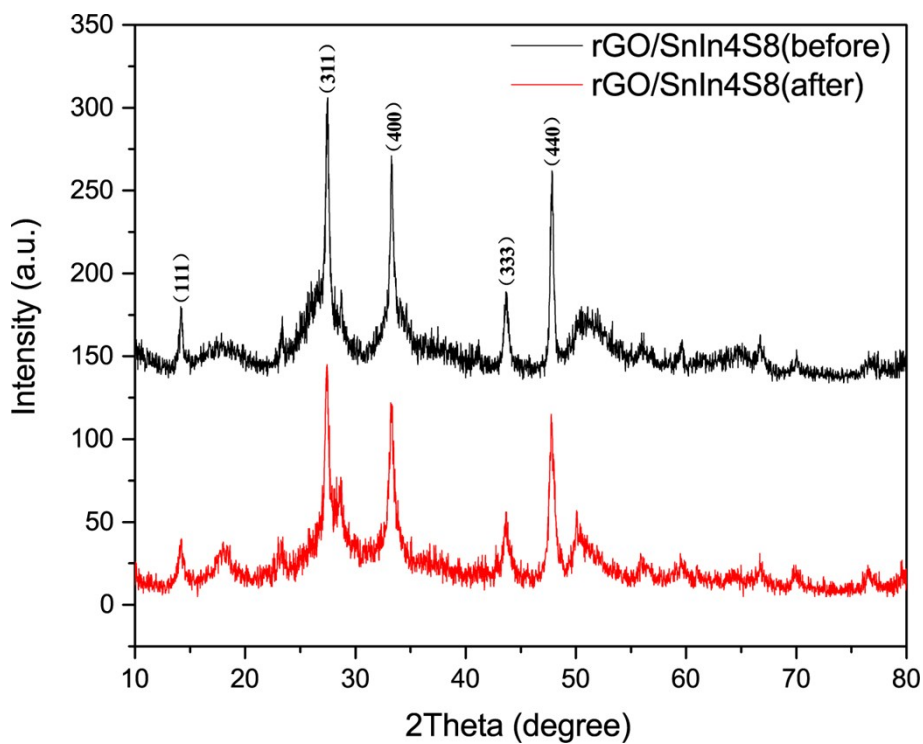


Fig. S3 The XRD analysis of rGO/SnIn₄S₈ before and after 5 times photocatalytic reaction.

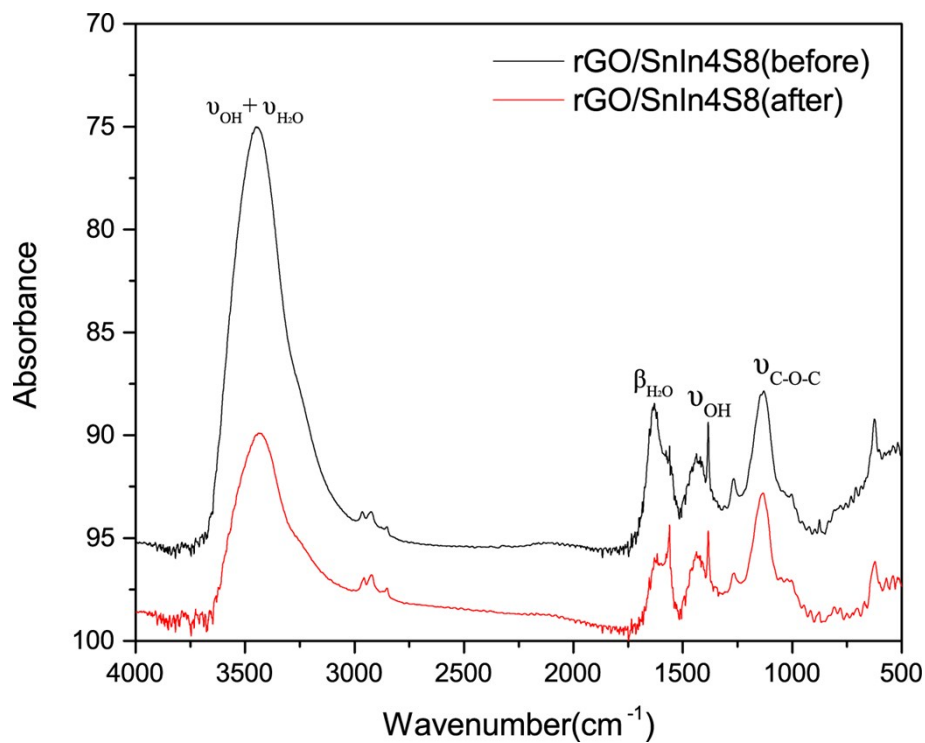


Fig. S4 The FTIR Spectra of rGO/SnIn₄S₈ before and after 5 times photocatalytic reaction.

References

- 1 L. Wang, X. Li, W. Teng, Q. Zhao, Y. Shi, R. Yue and Y. Chen, *J. Hazard. Mater.*, 2013, **244-245**, 681-688.
- 2 L. Liu, C. Luo, J. Xiong, Z. Yang, Y. Zhang, Y. Cai and H. Gu, *J. Alloy. Compd.*, 2017, **690**, 771-776.
- 3 B. Nanda, A. C. Pradhan and K. M. Parida, *Chem. Eng. J.*, 2017, **316**, 1122-1135.
- 4 X. Liu, L. Pan, T. Lv, G. Zhu and Z. Sun, *Chem. Commun.*, 2011, **47**, 11984-11986.
- 5 H. Liu, L. Deng, Z. Zhang, J. Guan, Y. Yang and Z. Zhu, *J. Mater. Sci.*, 2015, **50**, 3207-3211.