Electronic Supplementary Information

Enhancement of Photocatalytic Synchronous Removal of Cr (VI) and RhB over RP Modified Flower-like SnS_2 Revised

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Table S1 Comparation of photocatalytic performance of typical SnS_2-based photocatalysts in recent reports

Photocatalysts / Amount (mg)	Journals/ Publication date	Solutions / Volume (mL)/concentration (ppm)	Time (min)	Photocatalytic removal rate	Ref.
RP/SnS_2/ 35	Nanoscale Advances	Cr (VI)/ 100/ 40 RhB/ 100/ 10	50	**92.0** **98.1**	**This study**
$ZnIn_2S_4$/SnS_2 / 50	Chinese Journal of Catalysis / 2020	Cr (VI)/ 100/ 50	70	**100**	[21]
2D SnO_2/SnS_2 / 50	Chinese Journal of Catalysis/ 2020	RhB/ 100/10	60	**94.17**	[22]

Ni-doped SnO_2-SnS_2 / 10	Journal of Hazardous Materials/ 2019	MO/ 50/10	80	**92.7**	[23]
2D MoS_2/SnS_2 / 20	Journal of Alloys and Compounds/2019	MB/ 100/ 10	60	**81**	[24]
WO_3@SnS_2 / 20	Journal of Colloid and Interface Science/ 2020	Cr (VI)/ 50/ 20 RhB/ 50/ 20	100	**79.5** **94.1**	[25]
3D biomass carbon-SnS_2/ 50	Chemical Engineering Journal/ 2019	Cr (VI)/ 100/ 50	120	**63.2**	[26]

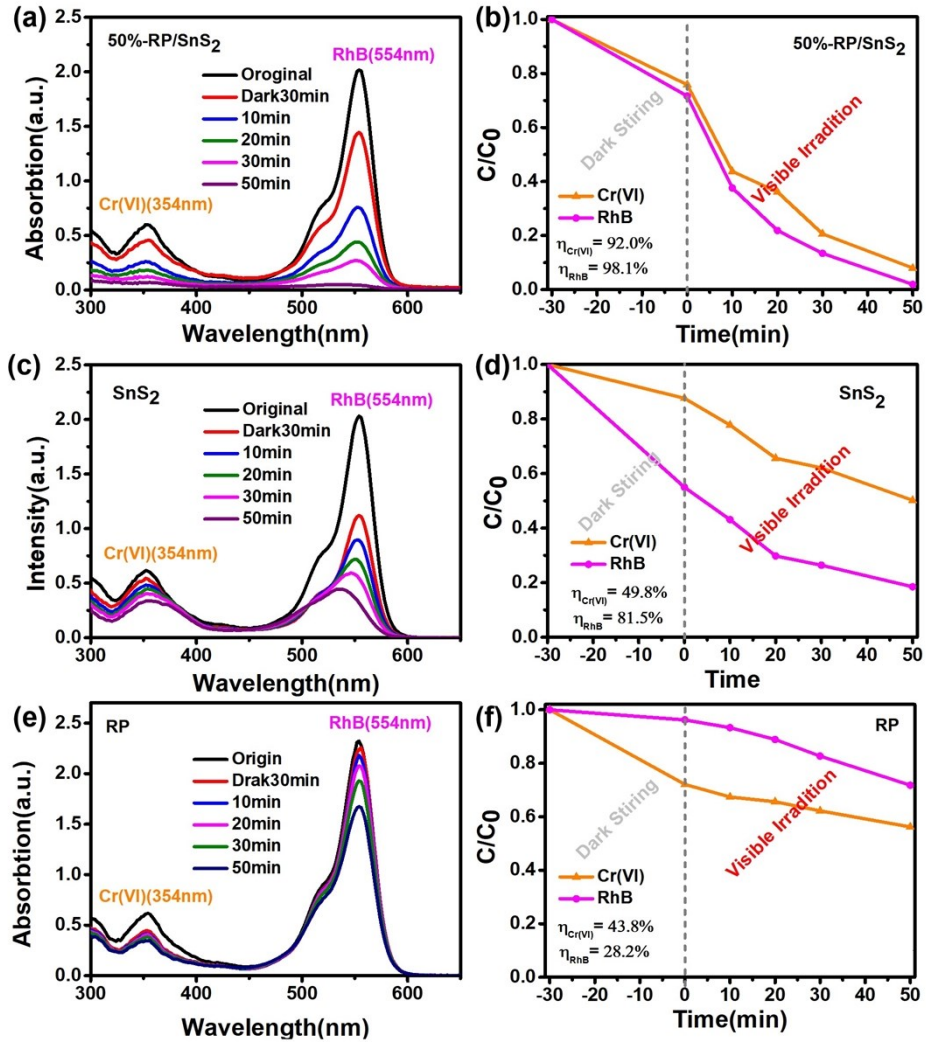

Fig. S1 Comparison of photocatalytic activity of (a, b) 50%-RP/SnS_2, (c, d) SnS_2 and (e,f)

RP under visible light irradiation

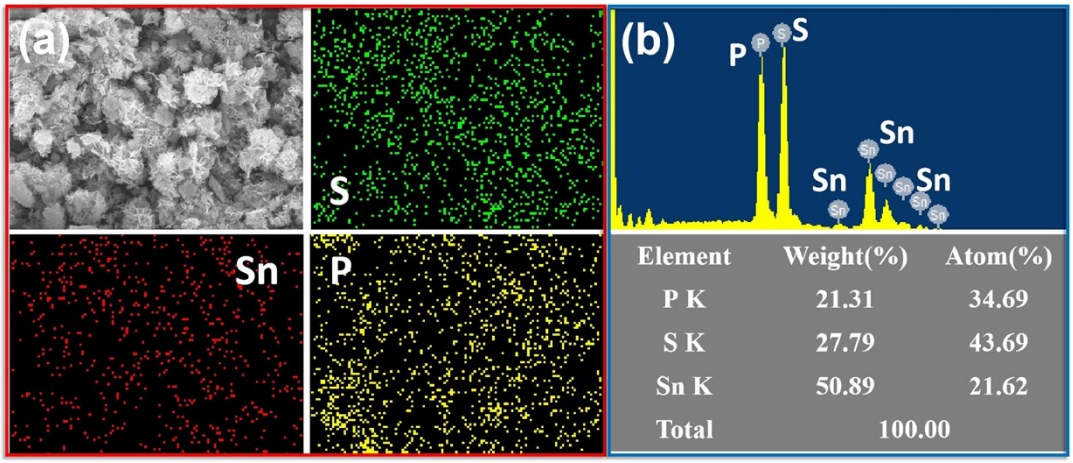

Fig. S2 (a) SEM images, Elemental mapping images of P, S and Sn in plane and (b) EDS spectrum of 50%-RP/SnS_2

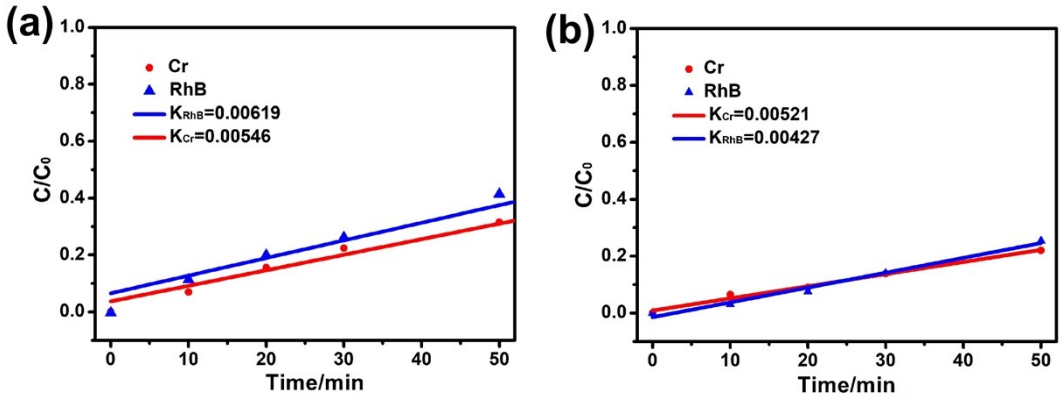

Fig. S3 Comparison of the fitted reaction kinetic curves ($-\ln(C/C_0)=kt$) in the photocatalytic removal of Cr(VI) and RhB by (a) SnS_2 and (b) RP

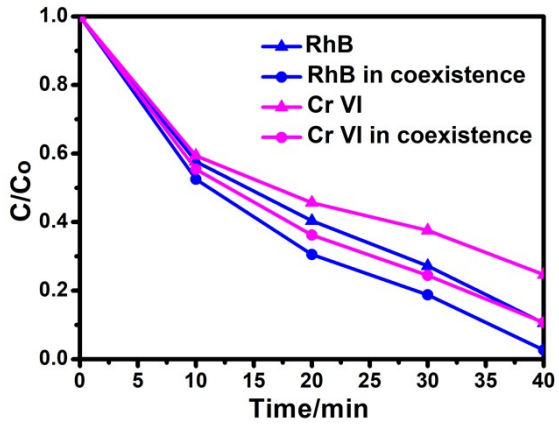

Fig. S4 Photoreduction of Cr(VI) and photooxidation of RhB by 50%-RP/SnS_2 with

different situation

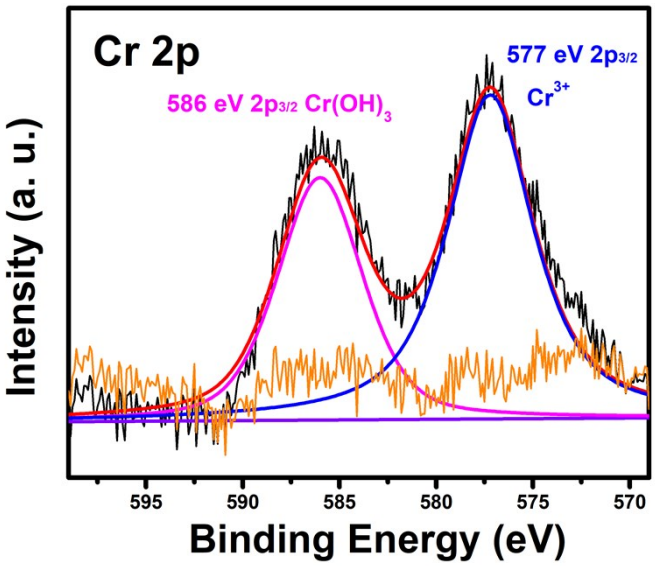

Fig. S5 XPS spectrum of Cr 2p on the surface of RP/SnS_2 after the photocatalytic reaction