Supporting Information

Engineering crystal planes and band structure of 2D tin sulfide nanosheets and its photocatalytic degradation performance

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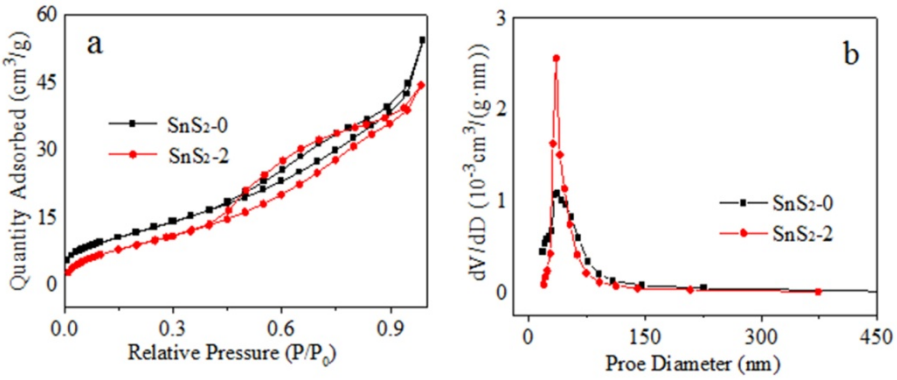

Figure S1 (a) N_2 adsorption-desorption isotherm and (b) pore size distribution of SnS_2-0 and SnS_2-2

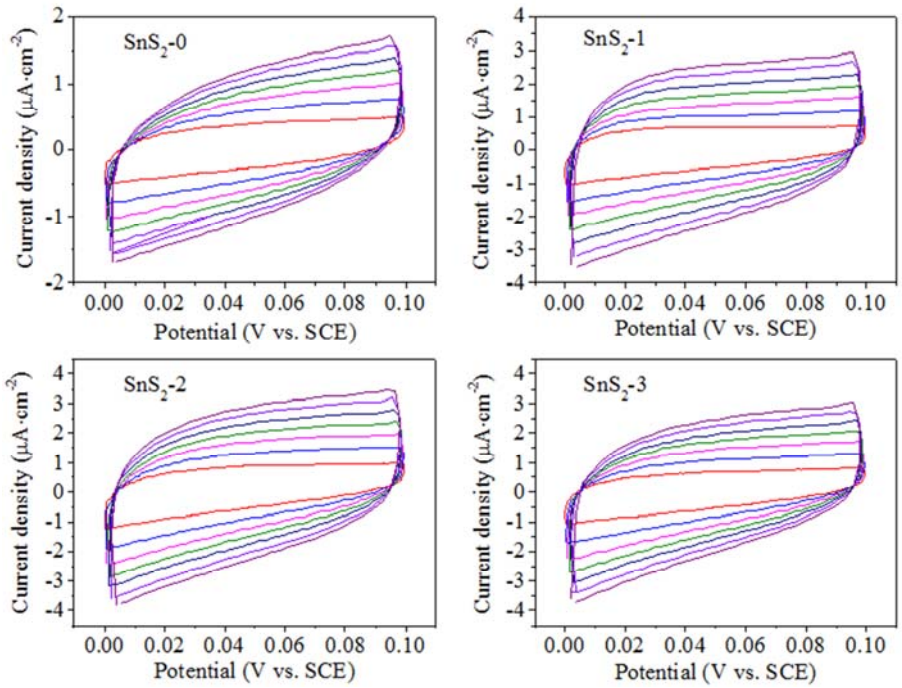

Figure S2 Cyclic voltammetry curves of SnS_2-x at different scan rates

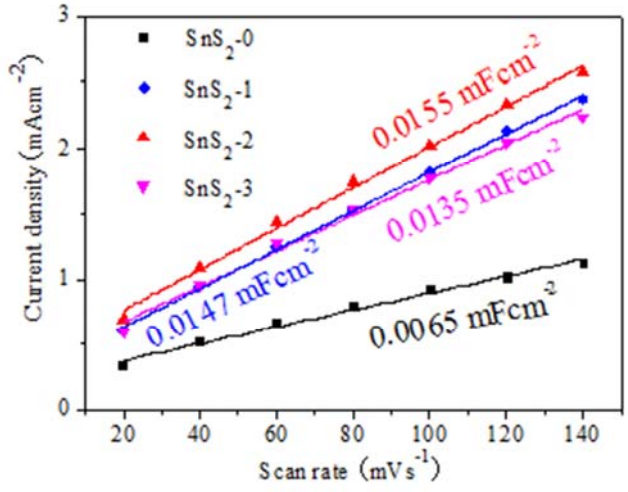

Figure S3 The linear relationship between the current density and scan rate

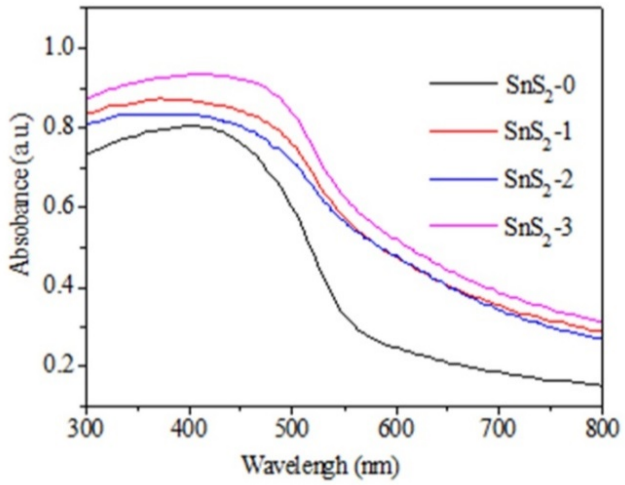

Figure S4 UV-Vis diffuse reflectance spectra (DRS) of different SnS_2 materials

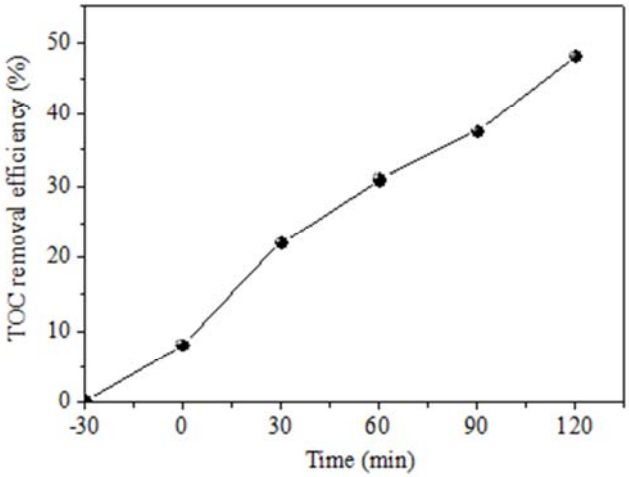

Figure S5 TOC removal efficiency of SnS_2-2 during the degradation of RhB

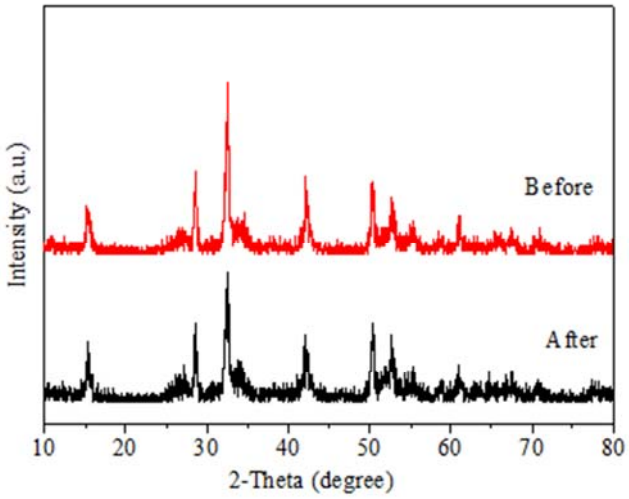

Figure S6 XRD patterns of SnS_2-2 before and after reactions

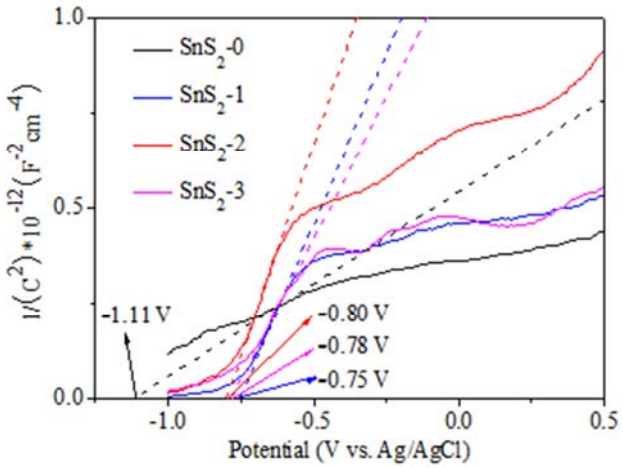

Figure S7 Mott-Schottky plot of SnS_2-x materials

Table S1 the band gap, conduction band and valence band potential of SnS_2-x

Catalyst	E_g	E_{CB}	E_{VB}
SnS2-0	1.91eV	-1.01eV	0.9eV
SnS2-1	1.87eV	-0.65eV	1.22eV
SnS2-2	1.42eV	-0.70eV	0.72eV
SnS2-3	1.55eV	-0.68eV	0.87eV

Table S2 Photocatalytic activity of SnS_2 compared with other reported materials

Photocatalysts	Catal. dosage (g L^{-1})	Rh.B Concentration (mg L^{-1})	Light Source	Time (min)/ Degradation (%)	Ref.
SnO_2/ZnS	1	10	500W Xe lamp	150/96	[1]
SnS_2/NH_2-MIL-125 (Ti)	1	40	300W Xe lamp	80/90.5	[2]
SnS nanoparticles	1	14.4	80 W high-pressure mercury lamp	180/90.97	[3]
g-C_3N_4/BiOBr	1	10	300W Xe lamp	150/ 97.9	[4]
$BiFeO_3$/SnS_2NCs	0.1	15	10 W tungsten halogen lamp	120/78	[5]
SnO_2/TiO_2/PVDF	N.A.	10	250W Xe lamp	240/92	[6]
SnS_2-CdO	0.06	12	350W Xe lamp	210/86.11	[7]

ZnO/CA/SnS	0.6	4.8	Sunlight	175/99	[8]
SnS_2-2	0.5	20	300W Xe lamp	120/94.5	This work

References

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