Electronic Supplementary Information

CuS-Bi_2S_3 Hierarchical Architectures: Controlled Synthesis and Enhanced Visible-Light Photocatalytic Performance for Dye Degradation

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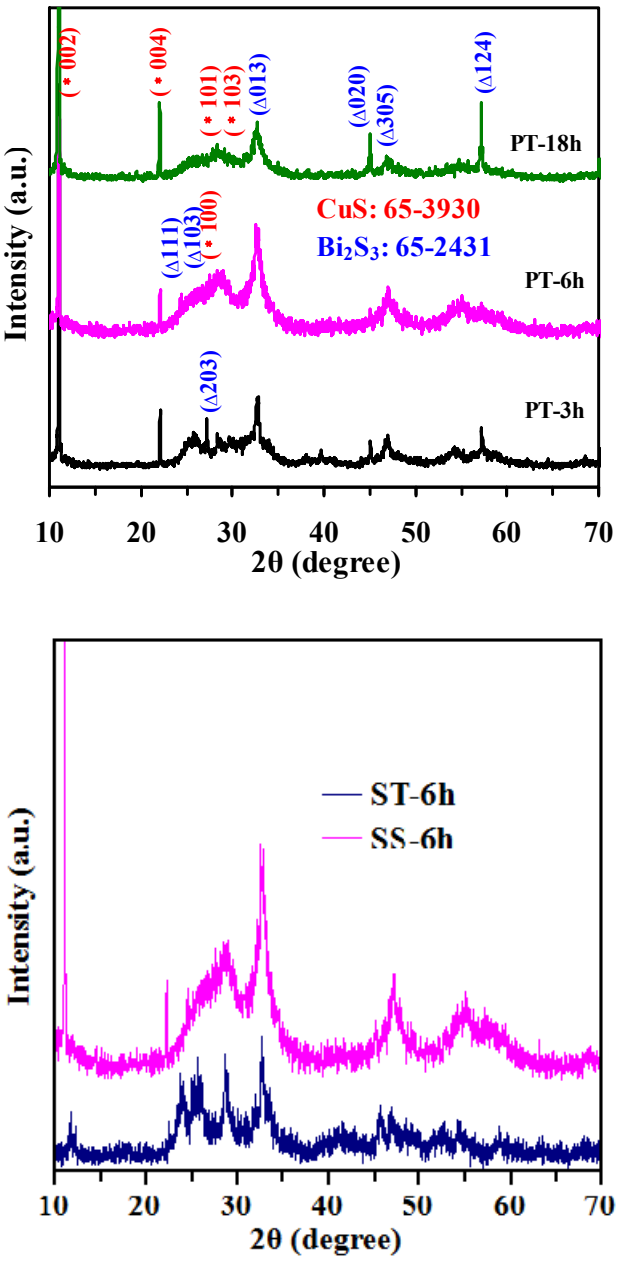

Figure S1. XRD patterns of PT-3h, PT-6h, PT-18h, ST-6h and SS-6h.

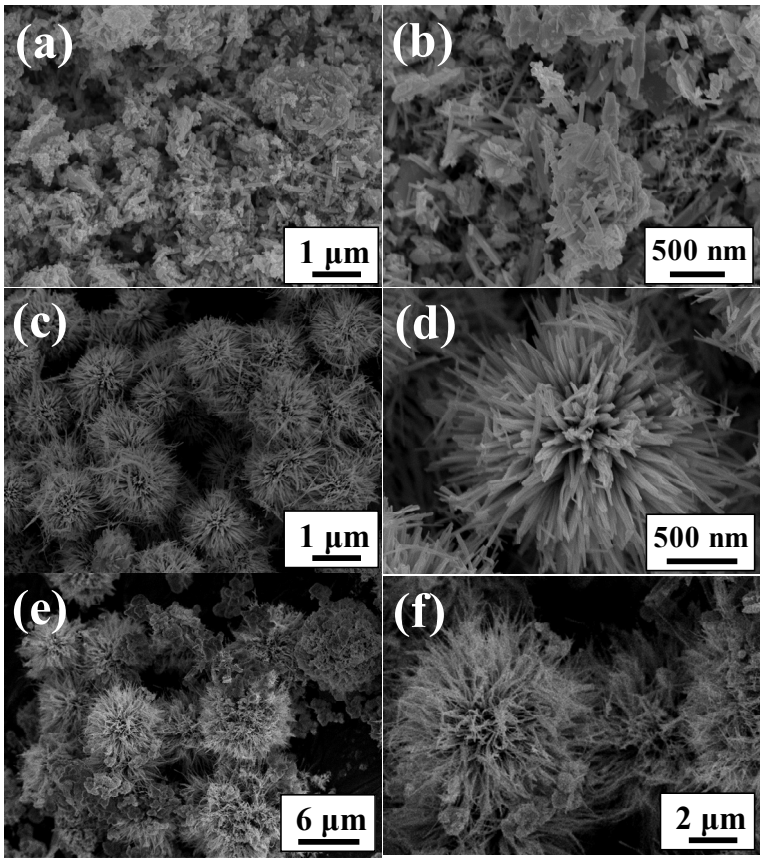

Figure S2. SEM images of (a)(b) TU-3h, (c)(d) TU-6h and (e)(f) TU-18h

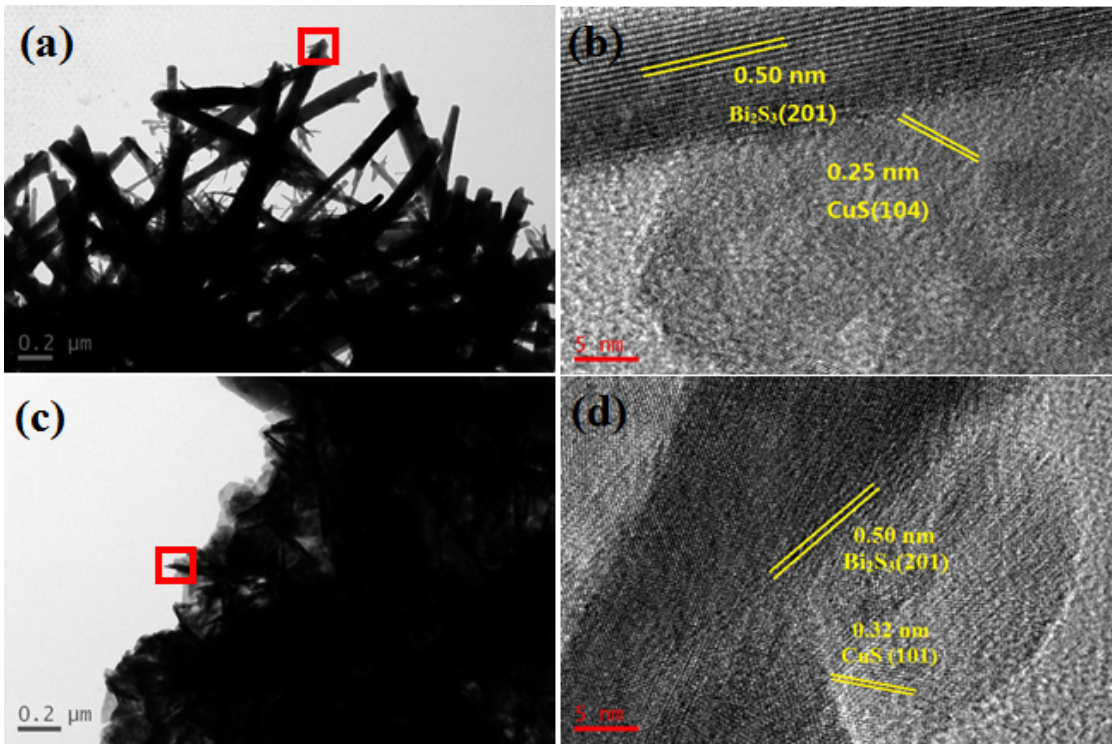

Figure S3. TEM and HRTEM images of composite samples prepared using (a)(b) TU (thiourea) and (c)(d) ST (sodium thiosulfate) as sulfur sources

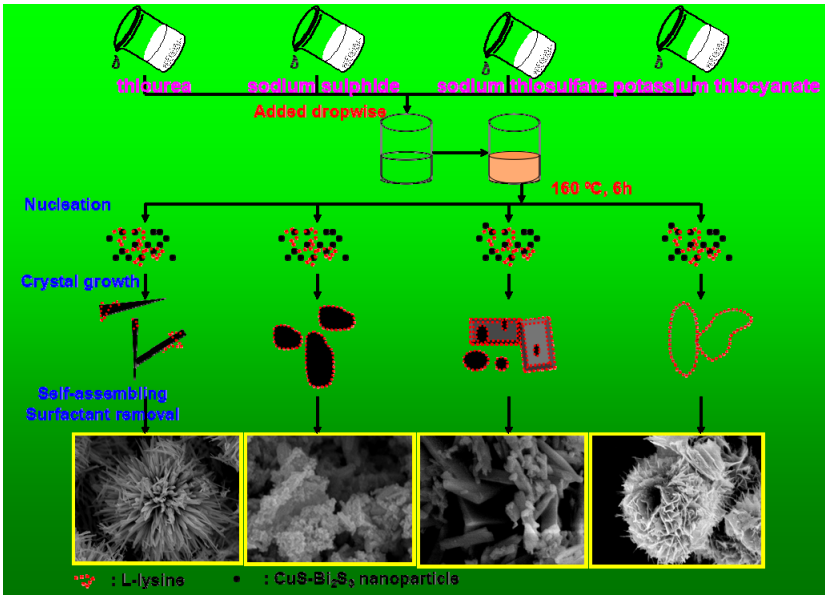

Figure S4. Possible growth mechanism for the CuS-Bi_2S_3 composites using TU (thiourea), SS (sodium sulphide), ST (sodium thiosulfate) and PT (potassium thiocyanate) as sulfur sources.

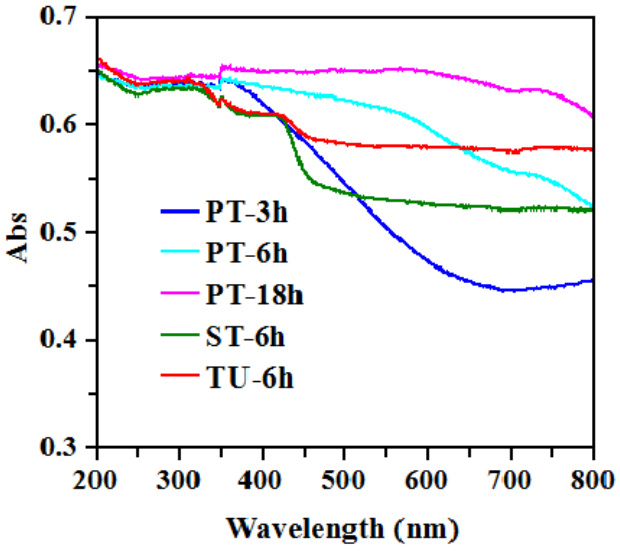

Figure S5. UV-vis absorption spectra of PT-3h, PT-6h, PT-18h, ST-6h, and TU-6h

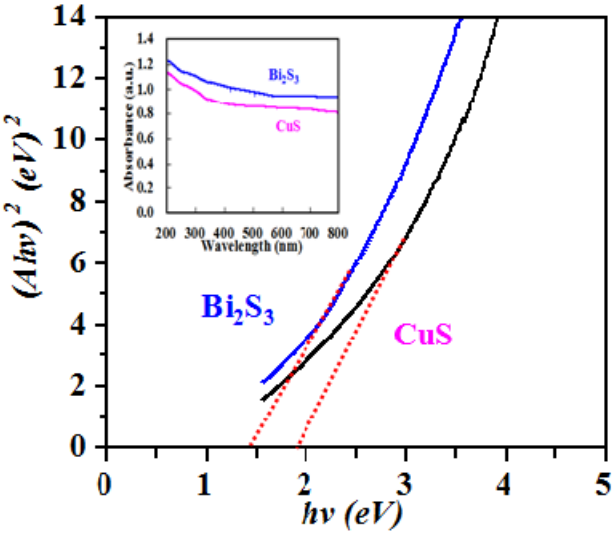

Figure S6. *hv-(Ahv)*^{2} plot of CuS, Bi_2S_3 and their UV-vis absorption spectra (inset)

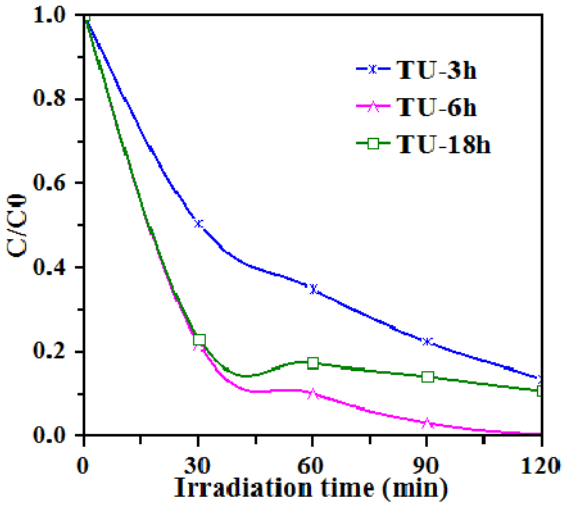

Figure S7. Photocatalytic degradation of Rh-B (2×10^{-5} mol/L) over TU-3h, TU-6h and TU-18h

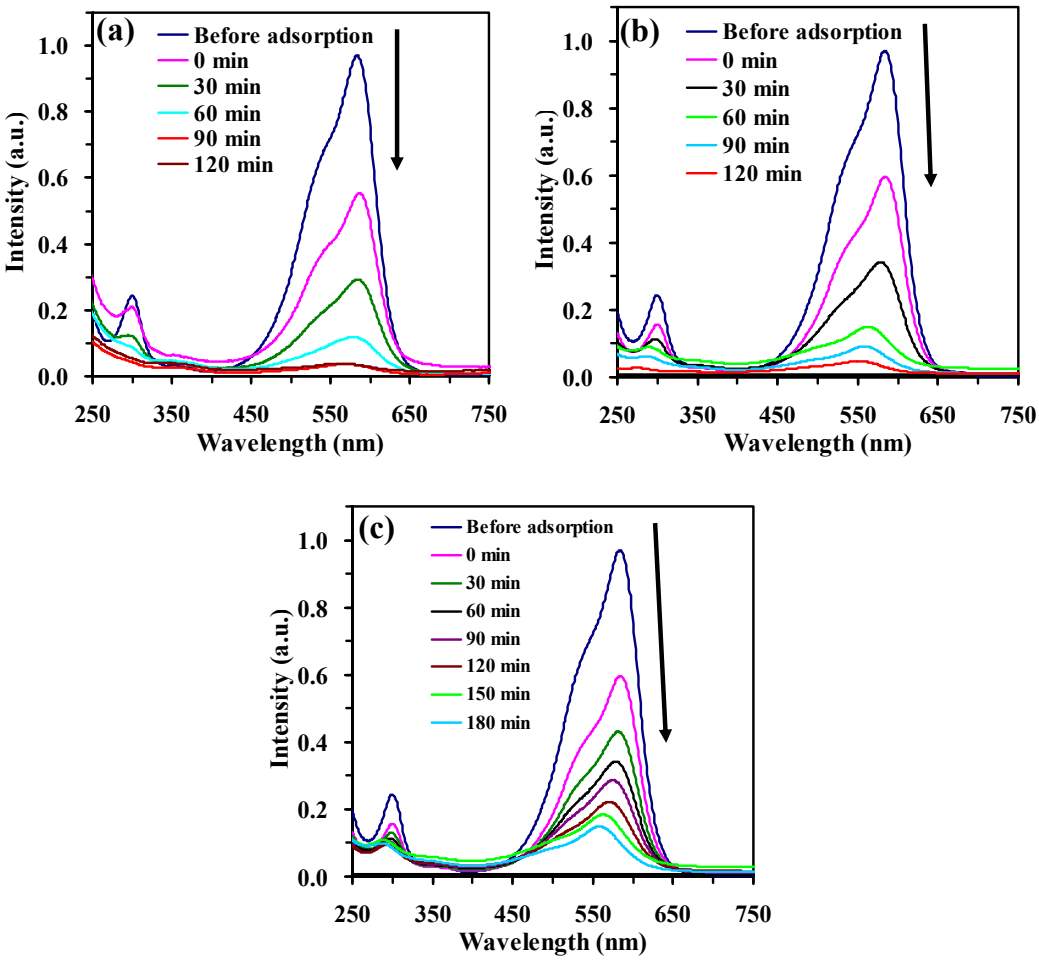

Figure S8. UV-vis absorption of crystal violet at different irradiation time over (a) PT-6h, (b) TU-6h and (c) Bi_2S_3

Table S1. Degradation rate constants for Rh-B and CV on the as prepared samples.

	k (min^{-1})					
	TU-6h	PT-6h	ST-6h	SS-6h	CuS	Bi_2S_3
Rh-B	0.0388	0.0348	0.0321	0.0016	0.0010	0.0011
CV	0.0398	0.0412	0.0330	0.0197	0.0007	0.0112

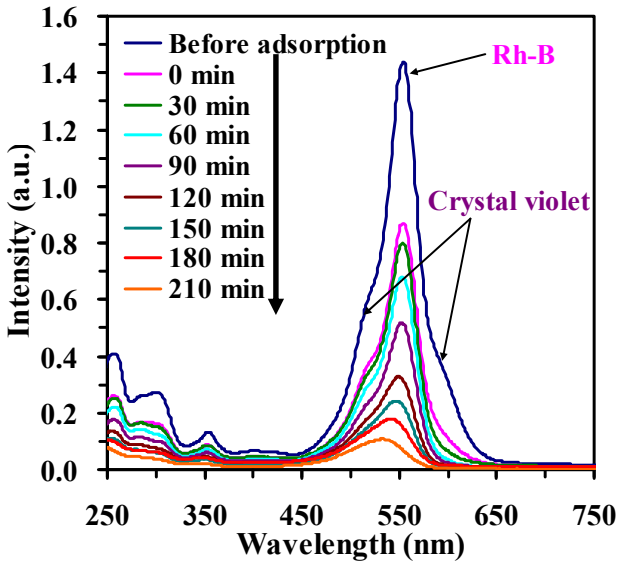

Figure S9. UV-vis absorption of Rh-B and crystal violet (mixed solution) at different irradiation time over PT-6h

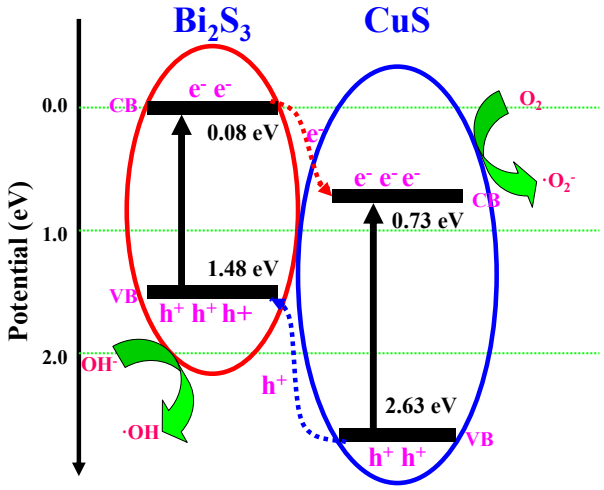

Figure S10. Band gap structures of CuS and Bi_2S_3 and the possible process for the separation of charge carriers