

## Electronic Supplementary Information

# Photocatalytic activity of Ag/CuO/WO<sub>3</sub> under visible-light irradiation

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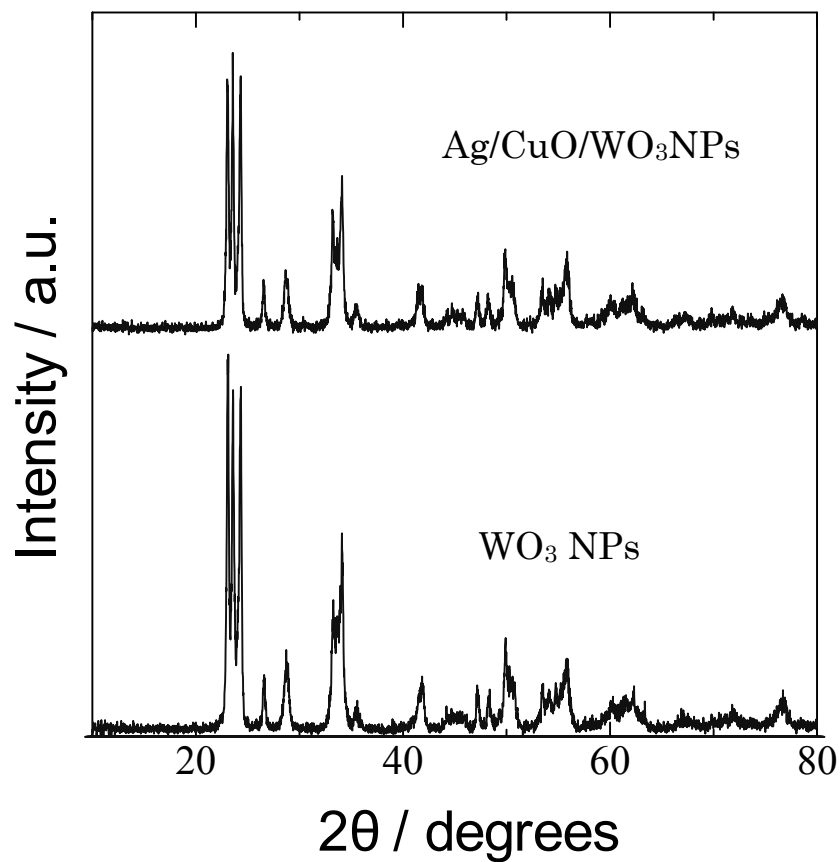


Fig. S1. XRD patterns of WO<sub>3</sub> and Ag/CuO/WO<sub>3</sub> NPs.

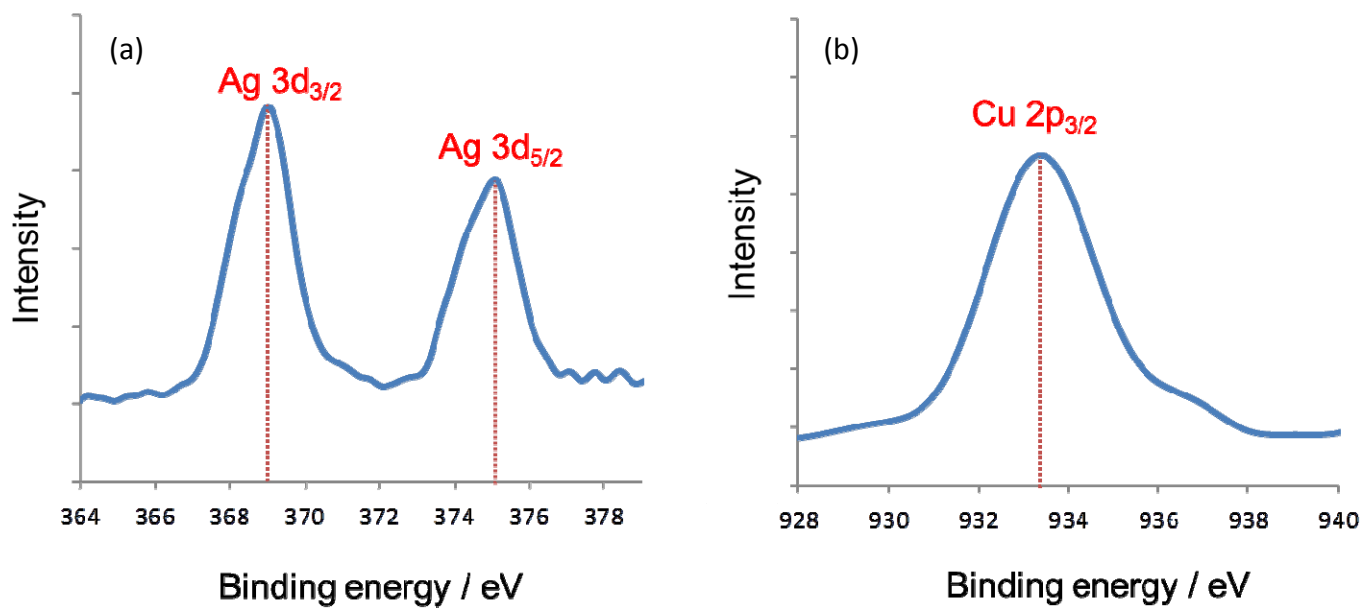
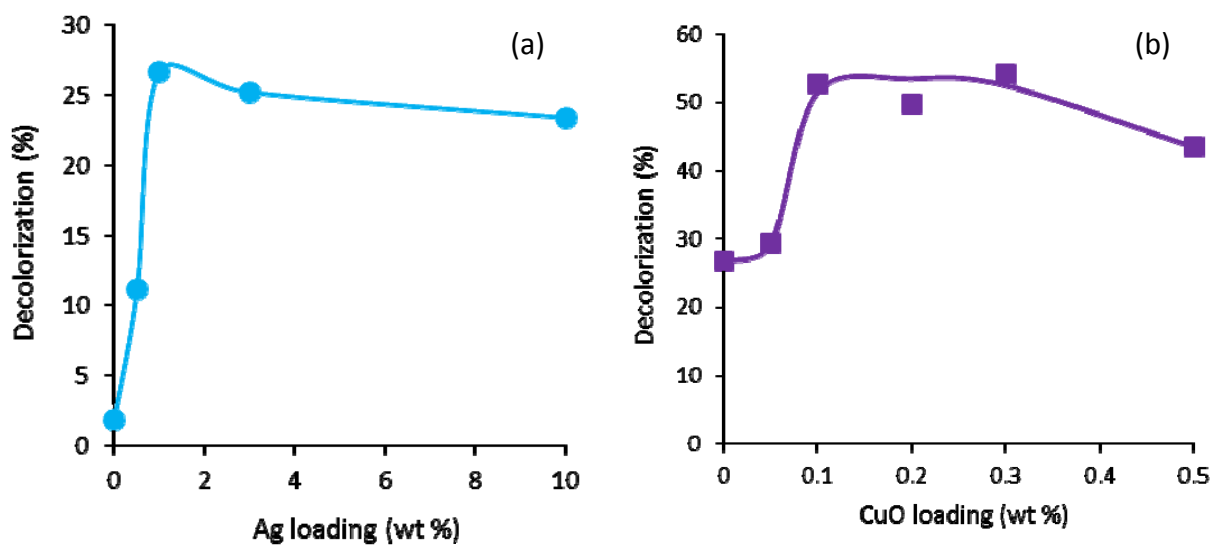
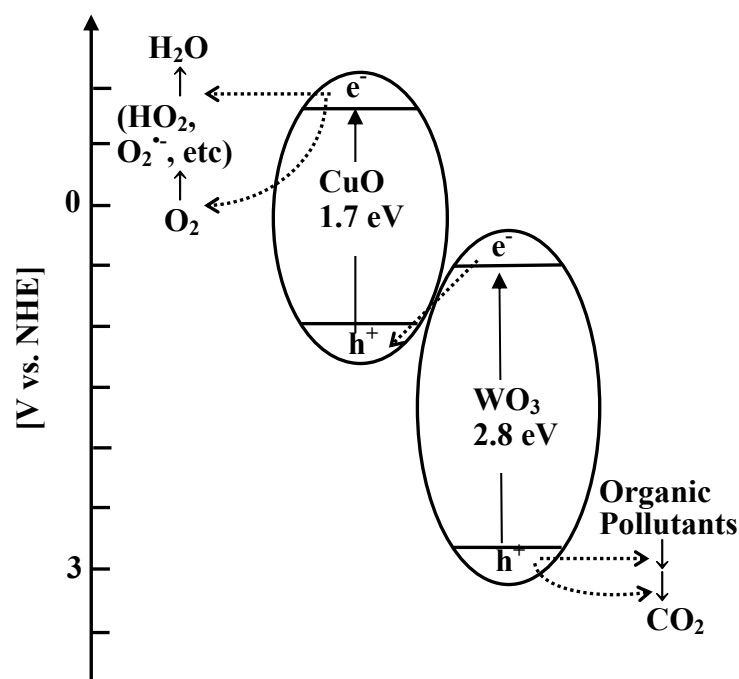


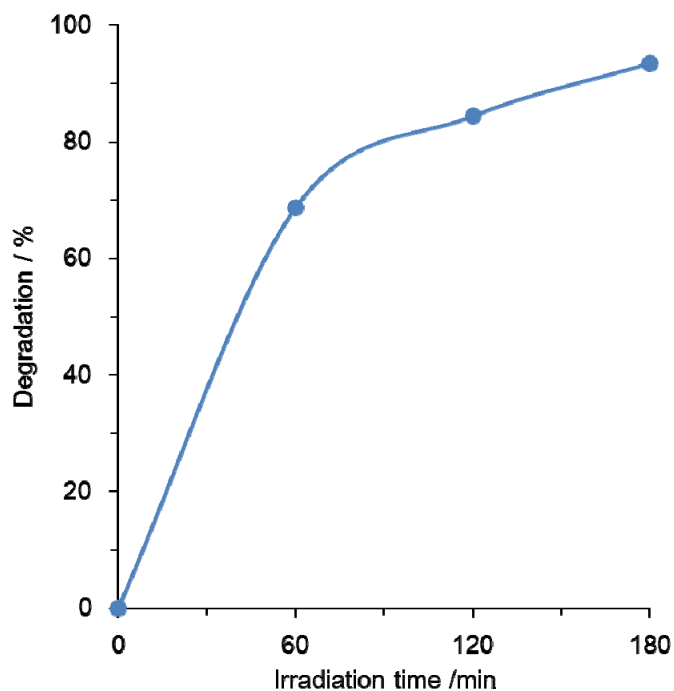
Fig. S2. XPS spectra of Ag/CuO/WO<sub>3</sub> NPs in (a) the Ag 3d<sub>5/2</sub> and Ag 3d<sub>3/2</sub>, and (b) the Cu 2p<sub>3/2</sub> binding energy regions.



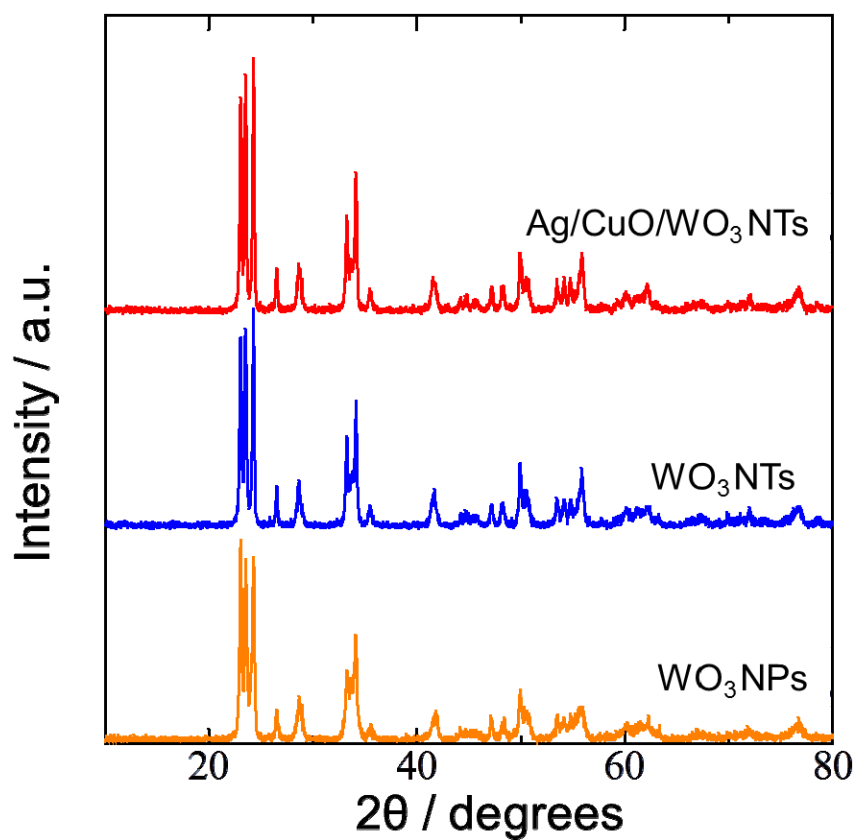
**Fig. S3.** (a) Effect of Ag loading on the decolorization of AR 88 with WO<sub>3</sub> NPs under visible light irradiation. (b) Effect of CuO loading on the decolorization of AR 88 with Ag/WO<sub>3</sub> NPs under visible light irradiation.



**Fig. S4.** Energy levels of the conduction and valence band edges vs NHE for WO<sub>3</sub> and CuO.



**Fig. S5.** Degradation of 2-chlorophenol (10 mg/L) with Ag/CuO/WO<sub>3</sub> NPs under visible-light irradiation.



**Fig. S6.** XRD patterns of WO<sub>3</sub> NTs and Ag/CuO/WO<sub>3</sub> NTs, together with that of WO<sub>3</sub> NPs.

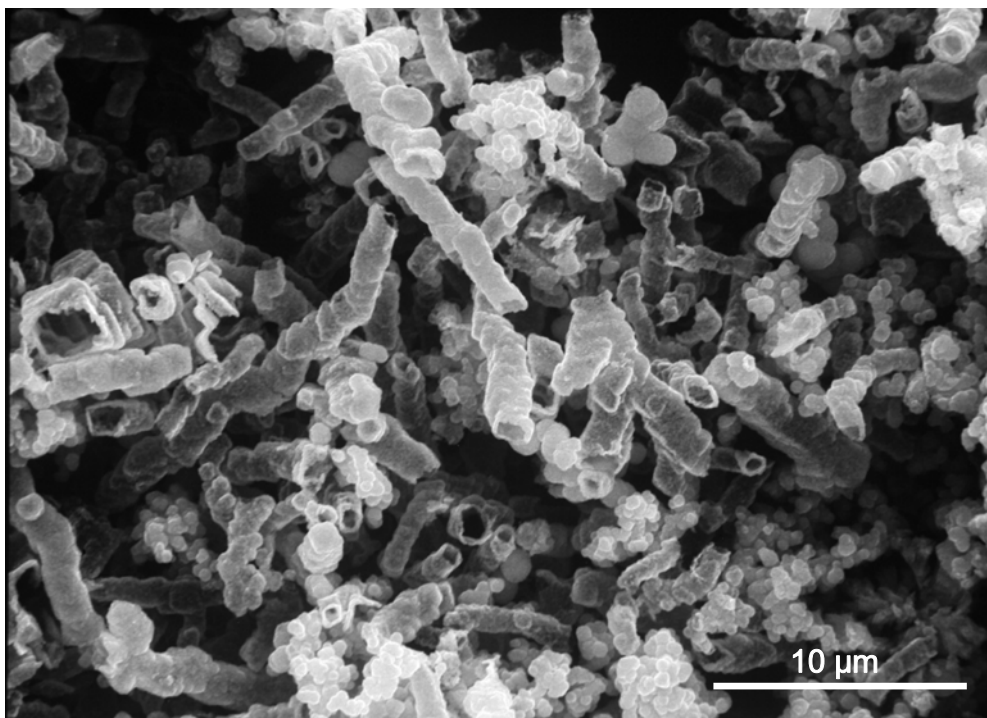


Fig. S7. SEM image of Ag/CuO/WO<sub>3</sub> NTs.

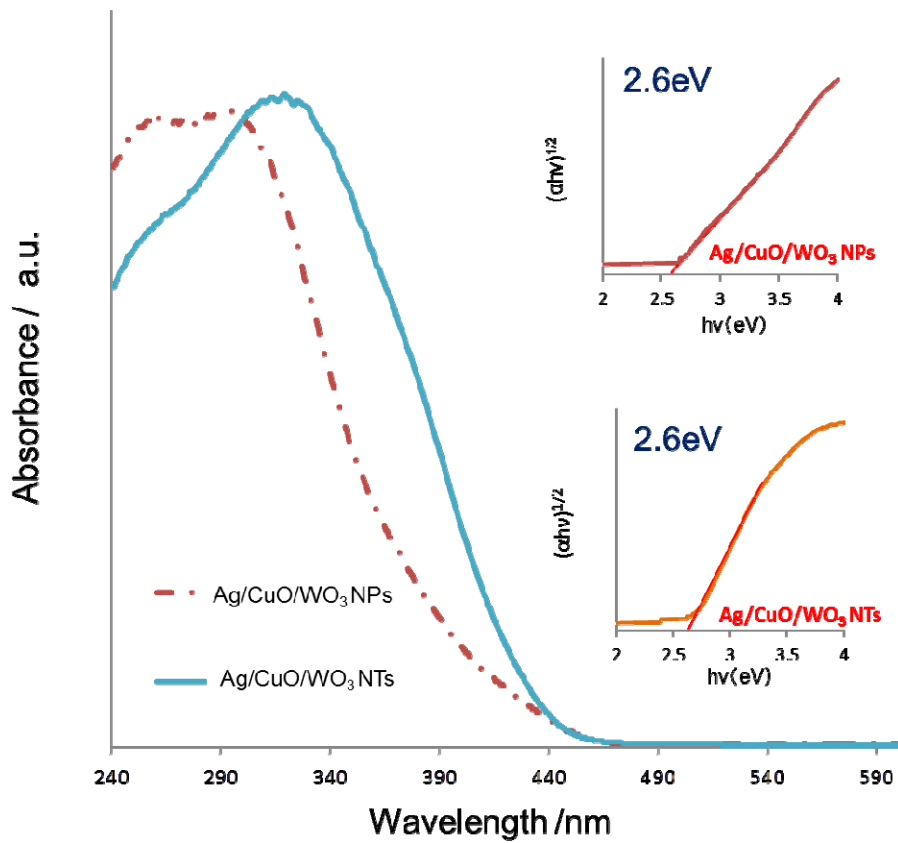
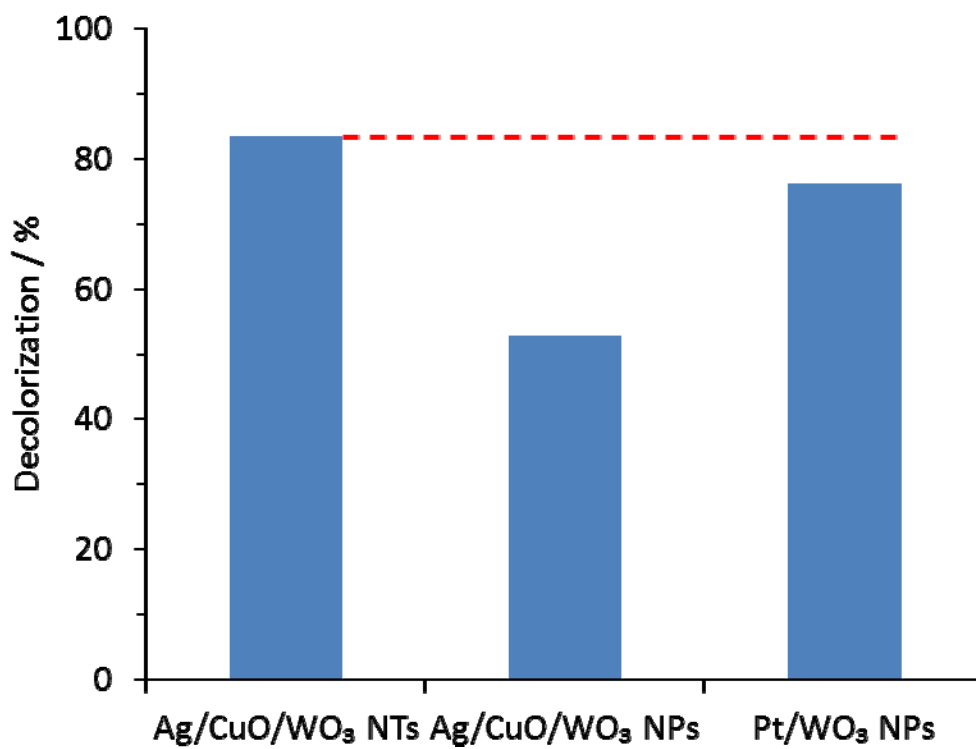


Fig. S8. UV-Visible absorption spectra of Ag/CuO/WO<sub>3</sub> NTs.



**Fig. S9.** Comparative experiments of the photocatalytic activities on the decolorization of AR 88 under visible light irradiation for 120 min.