

## Supporting Information

### **Hollow Cu<sub>2</sub>O Microspheres with Two Active {111} and {110} Facets for Highly Selective Adsorption and Photodegradation of Anionic Dye**

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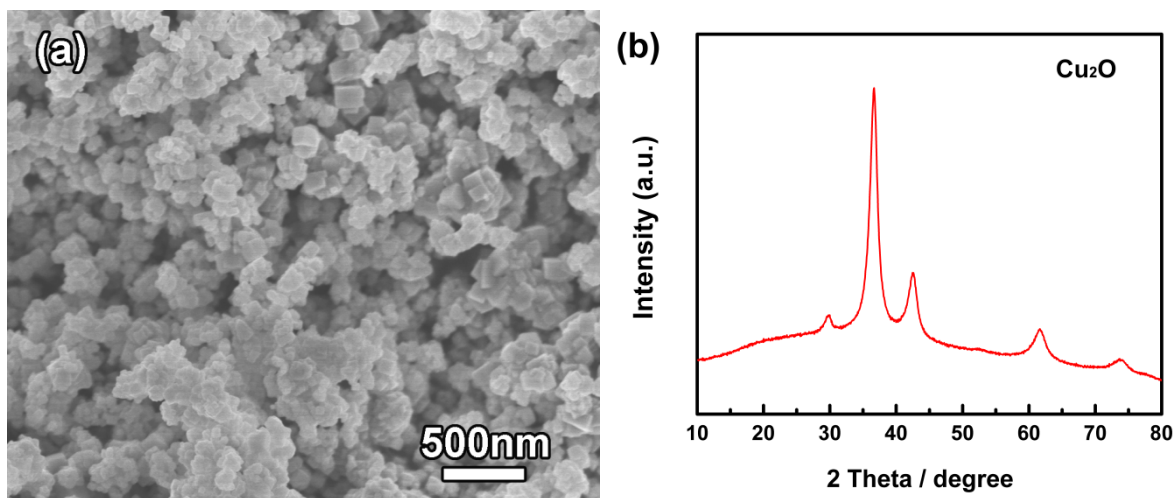
*† These authors contributed equally to this work.*

**Table 1.** Photodegradation rates of the single pollutant and the mixed pollutants on S1.

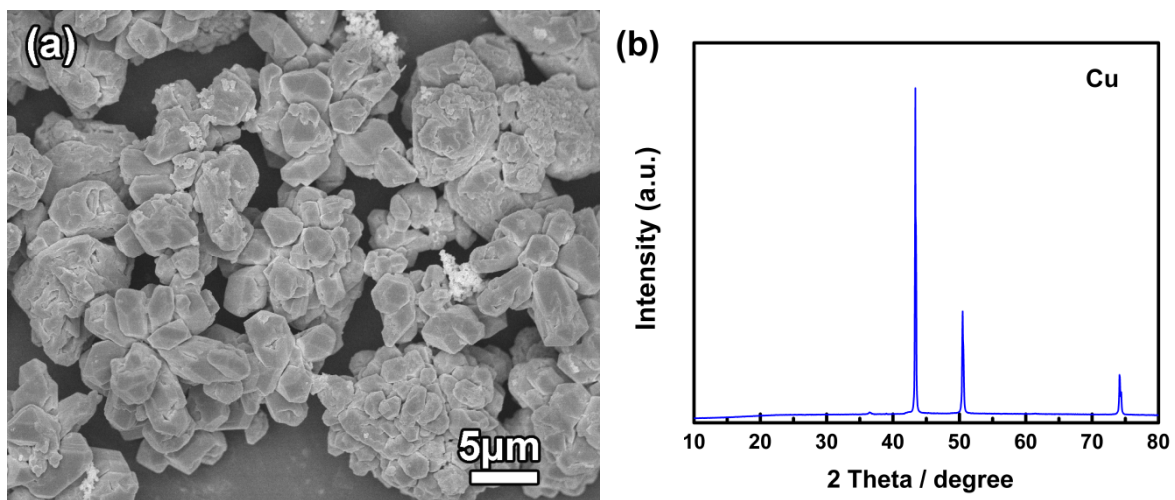
Photodegradation rates ( $\times 10^{-3} \text{ min}^{-1}$ )	MO	RhB	Phenol
Single pollutant	76.37	6.36	3.88
Mixed pollutants	118.41	0.86	0.16

**Table 2.** The PH values of MO aqueous solution during photodegradation on S1.

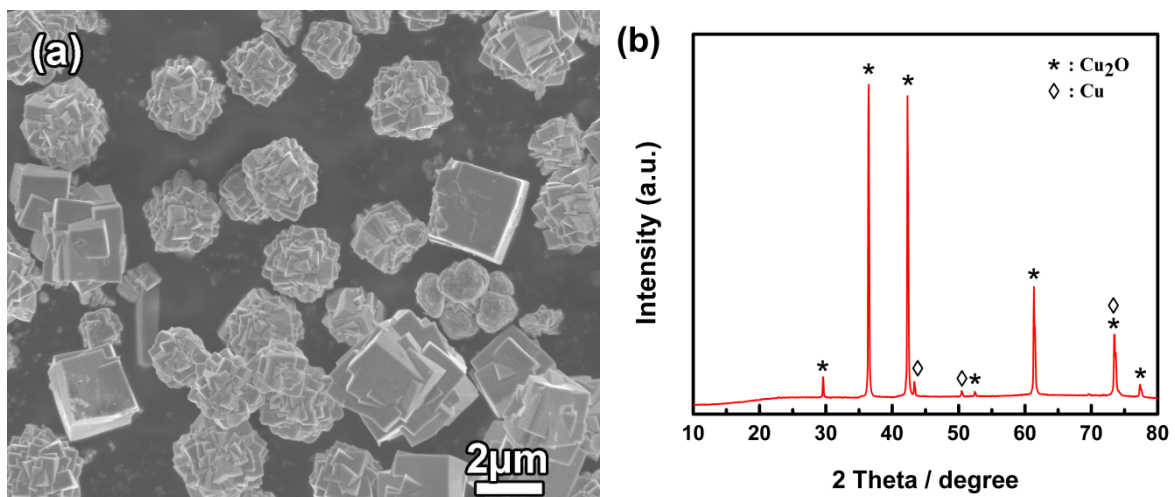
Reaction time (min)	0	10	20	30	40	50	60
PH values	8.82	8.48	8.00	7.74	7.32	7.15	7.04



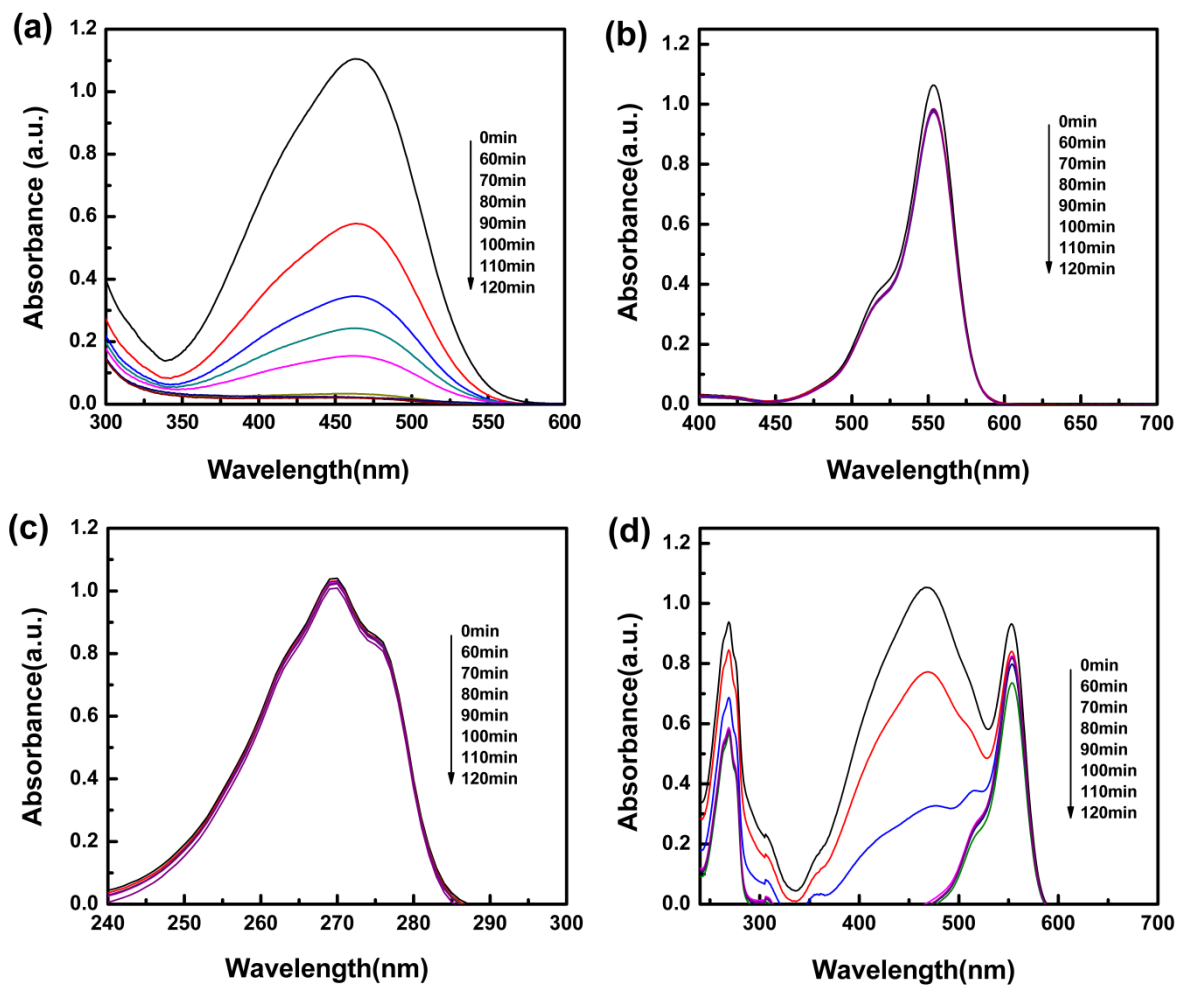
**Fig. S1.** The SEM image (a) and XRD patterns (b) of the product without EG added in the reaction system.



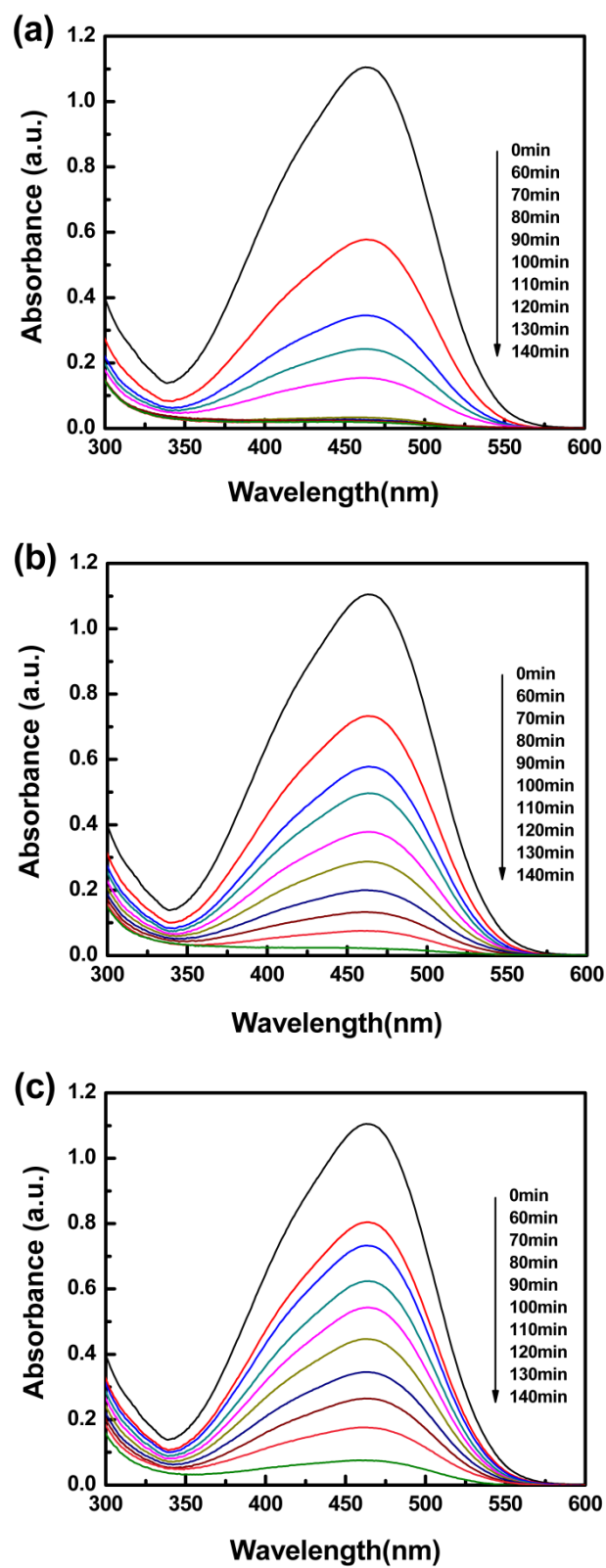
**Fig. S2.** The SEM image (a) and XRD patterns (b) of the product with 20 ml water added in the reaction system.



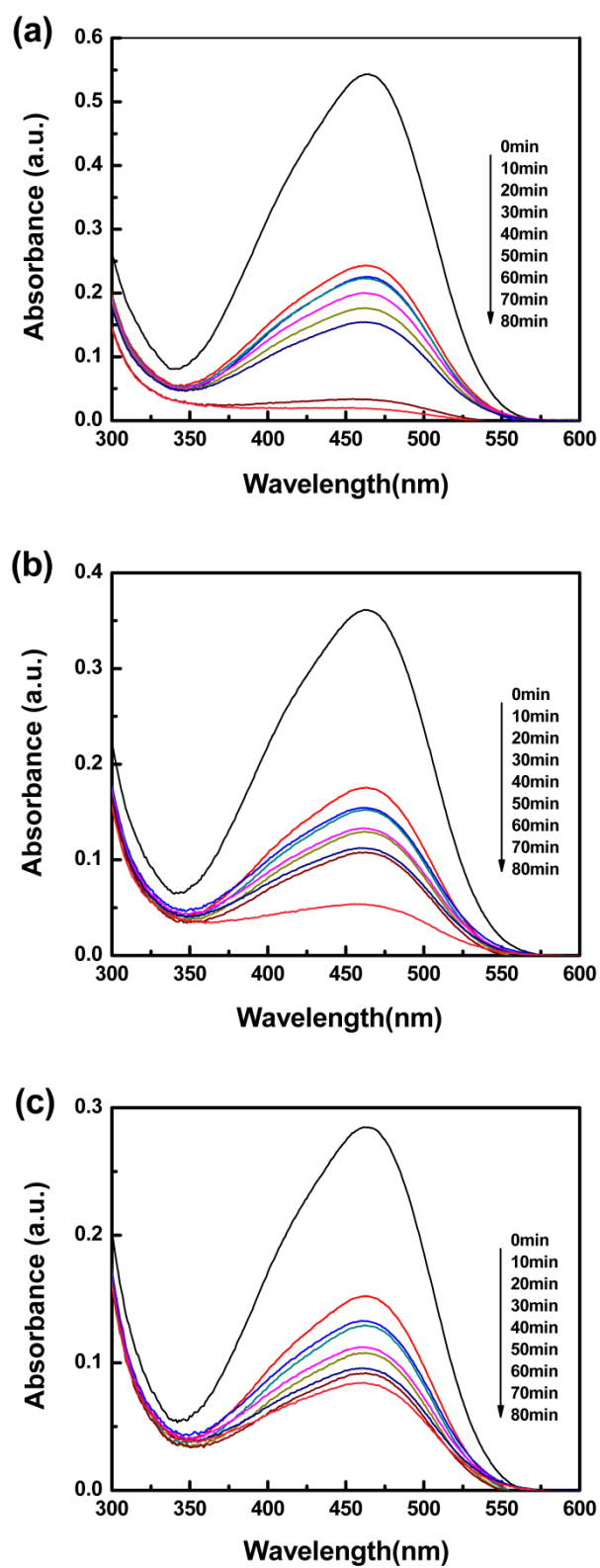
**Fig. S3.** The SEM image (a) and XRD patterns (b) of the product at 120 min with 2 ml water added in the reaction system.



**Fig. S4.** The proceeding changes of the static adsorption-desorption equilibrium (0-60 min) and photodegradation curves (60-120 min) of the organic pollutants on S1: (a) MO, (b) RhB, (c) phenol and (d) the mixture of MO, RhB and phenol.

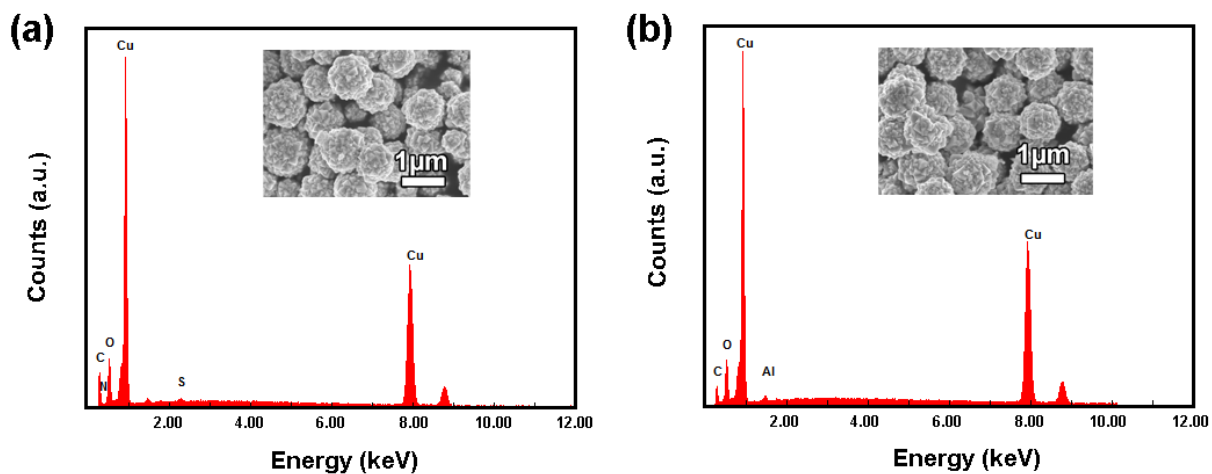


**Fig. S5.** The progressive spectral changes for the static adsorption-desorption equilibrium (0-60 min) and photodegradation curves (60-140 min) of MO on S1 (a), S2 (b) and S3 (c), respectively.



**Fig. S6.** The progressive spectral changes for the dynamic adsorption curves of MO on S1 (a), S2 (b) and S3 (c) during the photodegradation process, respectively.





**Fig. S7.** The EDX patterns of S1 after static adsorption at 60 min (a) and after visible light illumination for 80 min (b). The inserts are the corresponding SEM images of the samples.