Electronic Supplementary Material (ESI) for RSC Advances

Electronic Supplementary Information

Room temperature solution synthesis of hierarchical bows-like Cu_2O with high visible-light driven photocatalytic activity

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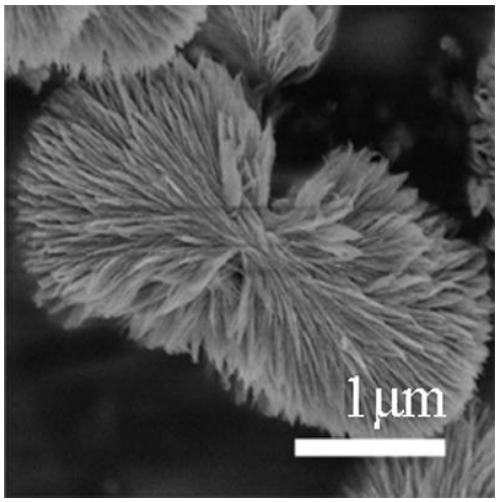

Fig. S1 High- magnification SEM image of the hierarchical bows-like Cu_2O.

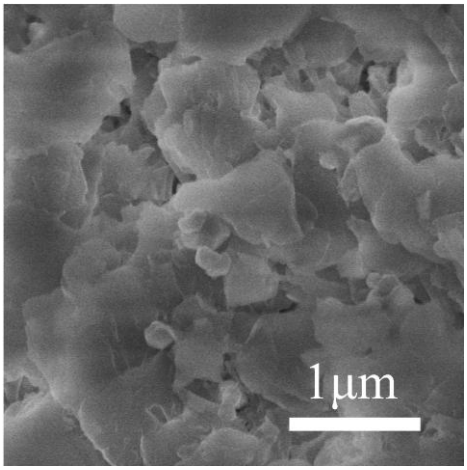

Fig. S2 SEM images of the Cu_2O crystal in the presence of SDS (0.1 g).

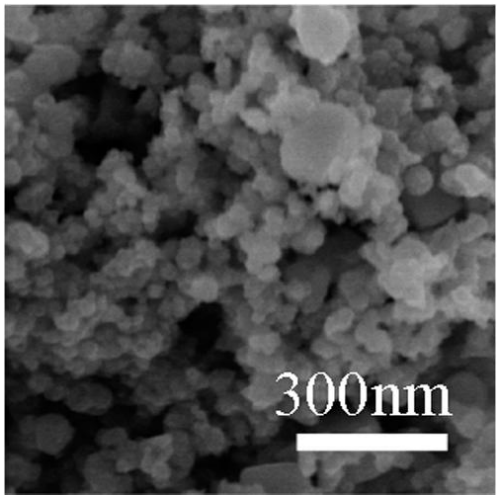

Fig. S3 SEM images of the Cu_2O crystal in the presence of CTAB (0.1 g)

Fig. S4 The color change of the solutions obtained at different reaction time during the formation process of hierarchical bows-like Cu_2O: (a) 0 min, (b) 90 min, (c) the supernatant after centrifugation of the solution obtained at 90 min, (d) 200 min, (e) the supernatant after centrifugation of the solution obtained at 200 min.

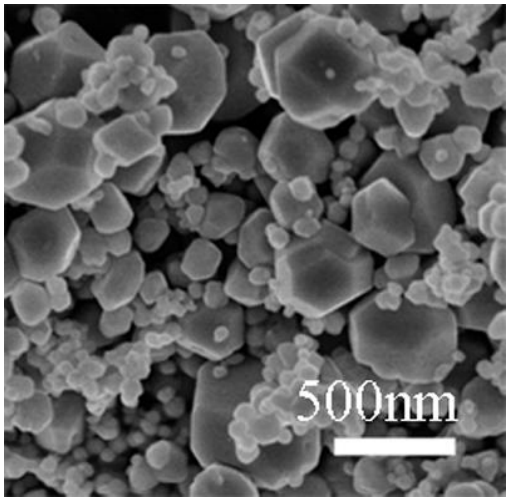

Fig. S5 SEM image of Cu_2O crystal formed under the condition of nitrogen.

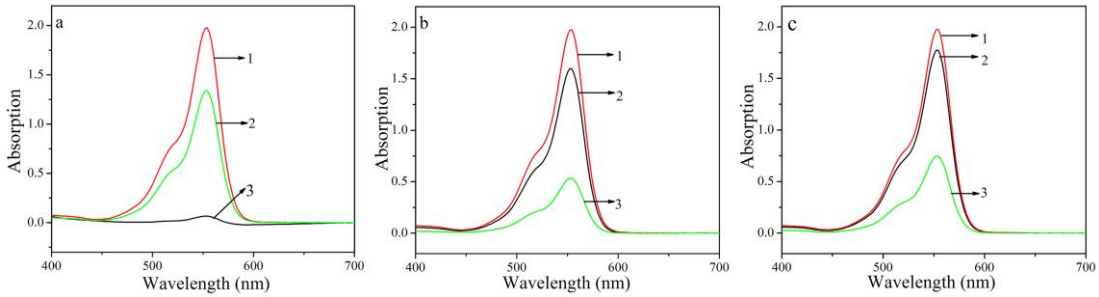

Fig. S6 The Uv-vis absorption spectra of the RhB solutions after dark adsorption and visible-light photocatalytic degradation in the presence of the different catalysts. a: bows-like Cu_2O, b: nitrogen-doped anatase TiO_2, c: nitrogen-doped Degussa P25. (1: Initial RhB solution, 2: After dark adsorption (30 min), 3: After 120 min photocatalytic test).

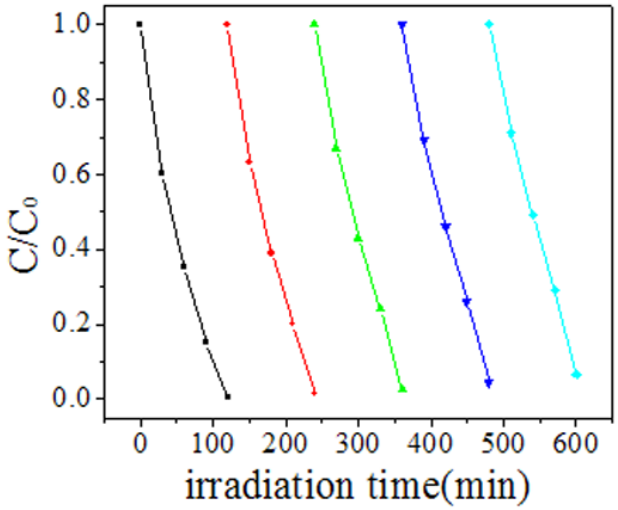

Fig. S7 Cycling runs in the photodegradation of RhB in the presence of hierarchical bows-like Cu_2O under visible light irradiation.

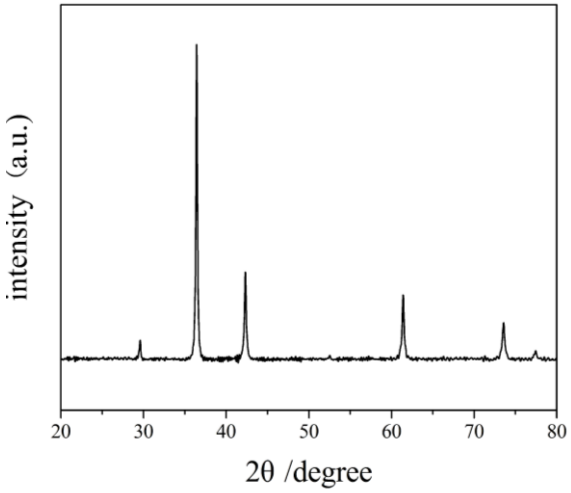

Fig. S8 XRD patterns of the Cu_2O crystal sample prepared from the solid after photocatalytic test.

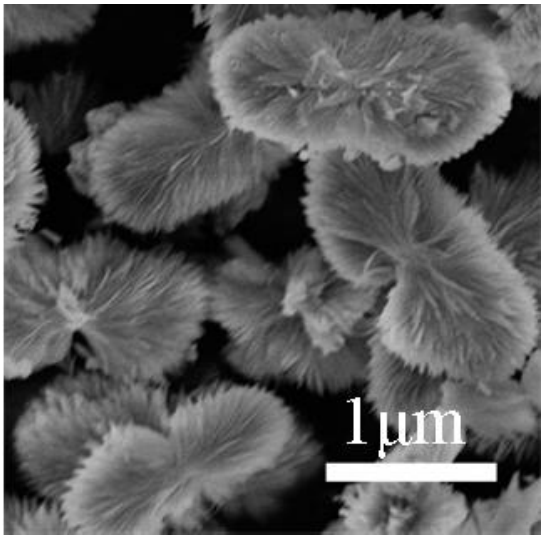

Fig. S9 SEM image of the Cu_2O crystal sample prepared from the solid after photocatalytic test.

Table S1 The copper ions concentrations of the solutions obtained after different reaction time determined by the flame atomic absorption spectrometry (AAS, Thermo Elemental SOLAAR-M, limit of identification: 5 m g/L).

Reaction time (min)	0	90	200	420
Copper ions concentration (mol/L)	0.017	0.003	0.007	0.015

Table S2 The RhB concentrations after dark adsorption and visible-light photocatalytic degradation in the presence of the different catalysts.

RhB Concentration (mg/L) / Sample name	Initial concentration of RhB	After dark adsorption (30 min)	After photocatalytic reaction (120 min)
bows-like Cu_2O	10	6.8	0.05
nitrogen-doped anatase TiO_2	10	8.75	2.75
nitrogen-doped Degussa P25	10	8	3.70