## **Supporting Information for**

## Dual-functional photocatalysis for hydrogen evolution from

## industrial wastewaters

Zhaoyong Lin, Lihua Li, Lili Yu, Weijia Li and Guowei Yang

State Key Laboratory of Optoelectronic Materials and Technologies, Nanotechnology

Research Center, School of Materials Science & Engineering, Sun Yat-sen University,

Guangzhou 510275, Guangdong, P. R. China



Fig. S1. SEM image of Cu<sub>2</sub>O cube in low magnitude. The scale bar represents 1  $\mu m$ .



Fig. S2. SEM image of Cu<sub>2</sub>O truncated cube in low magnitude. The scale bar represents 1  $\mu m$ .



Fig. S3. SEM image of Cu<sub>2</sub>O cubooctahedron in low magnitude. The scale bar represents 1  $\mu m$ .



Fig. S4. SEM image of Cu<sub>2</sub>O truncated octahedron in low magnitude. The scale bar represents 1  $\mu m$ .



Fig. S5. SEM image of Cu<sub>2</sub>O octahedron in low magnitude. The scale bar represents 1  $\mu m$ .



Fig. S6. Cu 2p XPS pattern of Cu<sub>2</sub>O.



**Fig. S7.** The absorbance variation of the RhB solution without photocatalyst (characteristic wavelength is set as 554 nm).



Fig. S8. Cycling tests of the photocatalyst under AM 1.5 irradiation.



**Fig. S9.** The absorbance variation of the MO solution without photocatalyst (characteristic wavelength is set as 464 nm).



**Fig. S10.** The absorbance variation of the MB solution without photocatalyst (characteristic wavelength is set as 664 nm).