

Electronic Supplementary Information

Twins in polyhedral 26-facet Cu_7S_4 cages: Synthesis, characterization and their enhancing photochemical activities

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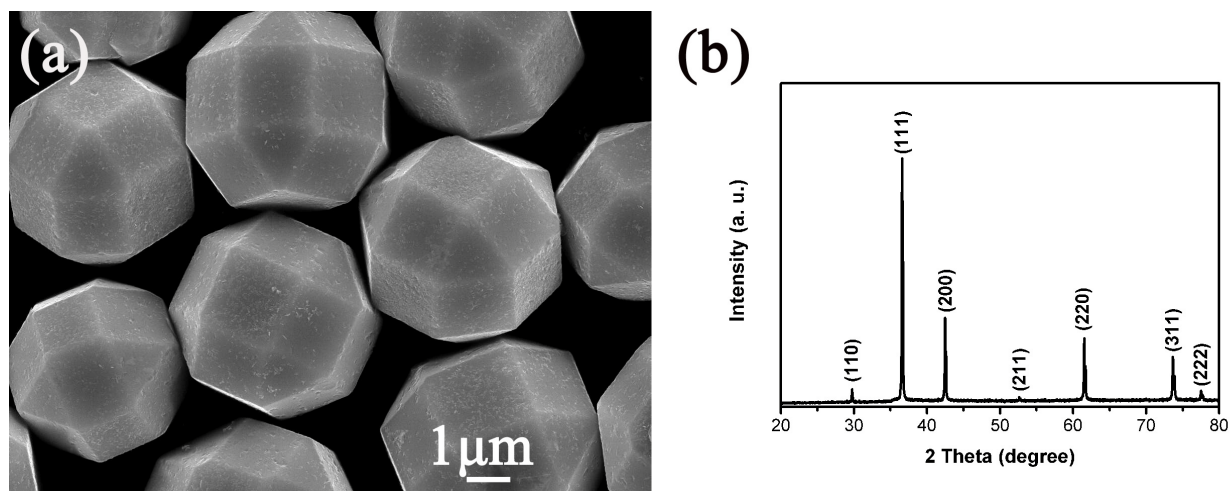


Fig. S1. (a) FESEM image of the polyhedral 26-facet Cu_2O templates; (b) the corresponding XRD pattern.

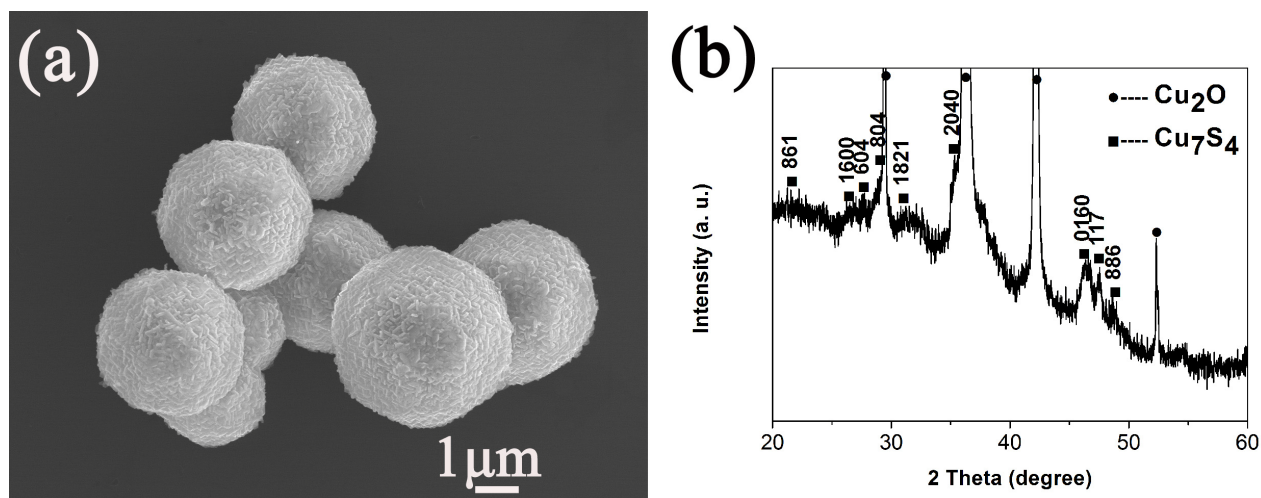


Fig. S2. (a) FESEM image of the polyhedral 26-facet Cu₂O@Cu₇S₄ core/shell architectures obtained in anhydrous ethanol reaction system; (b) the corresponding XRD pattern.

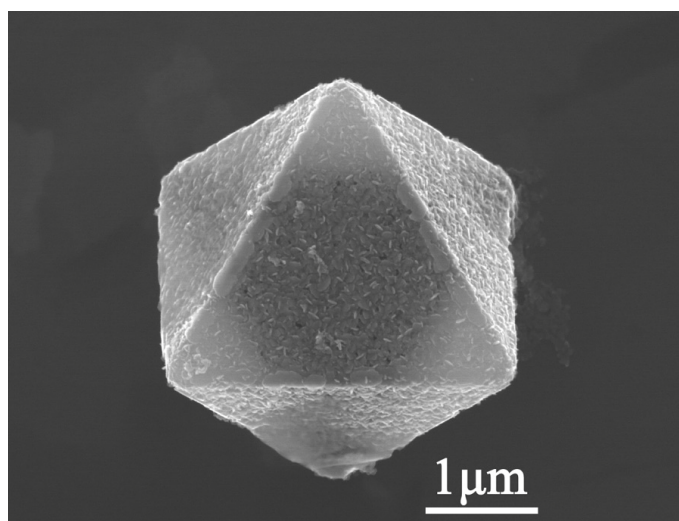


Fig.S3. FESEM image of the copper sulfide octahedral microcage with nanoplates building blocks.

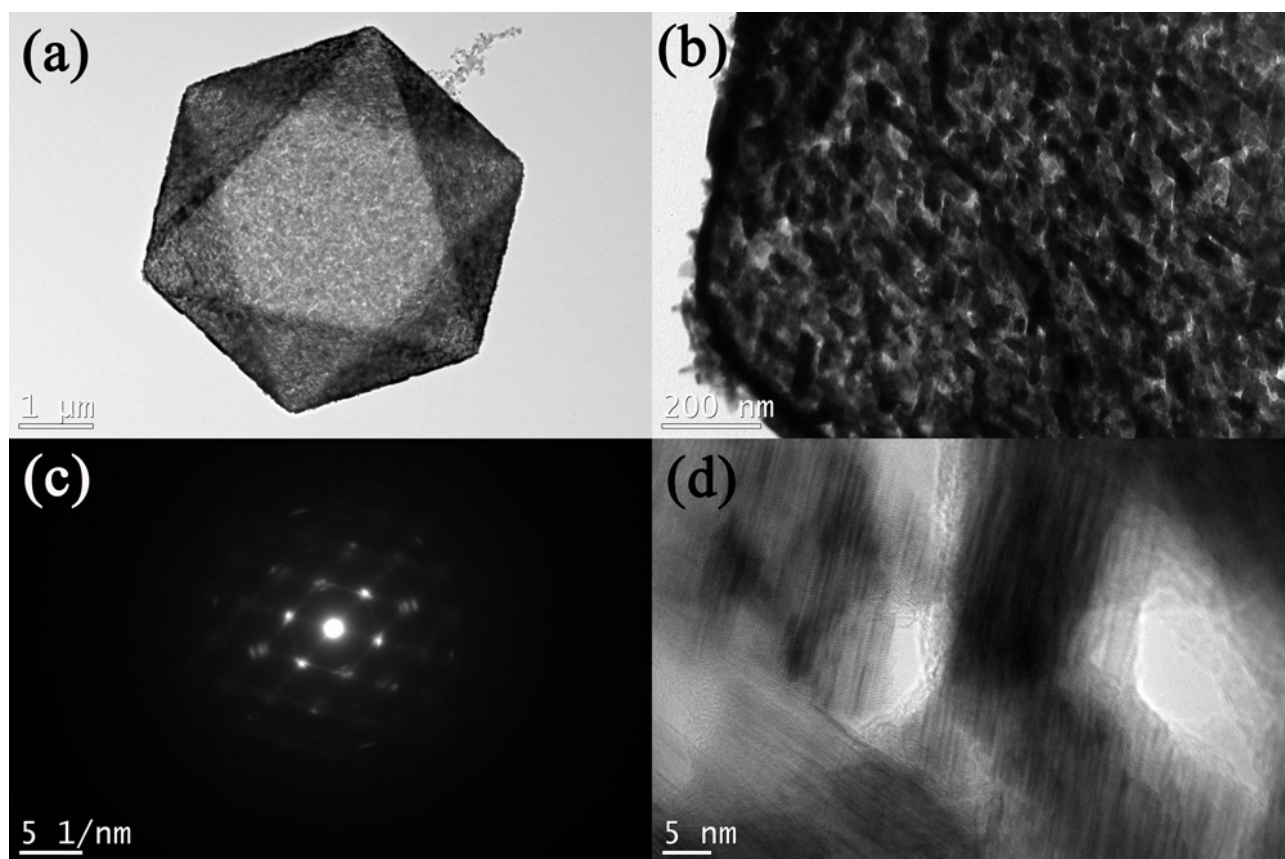


Fig. S4. (a) TEM image of an octahedral microcage; (b) High-magnification TEM image of the octahedral microcage; (c) SAED pattern of the octahedral microcage; (d) HRTEM image of the nanotwinned structures of the octahedral microcage.

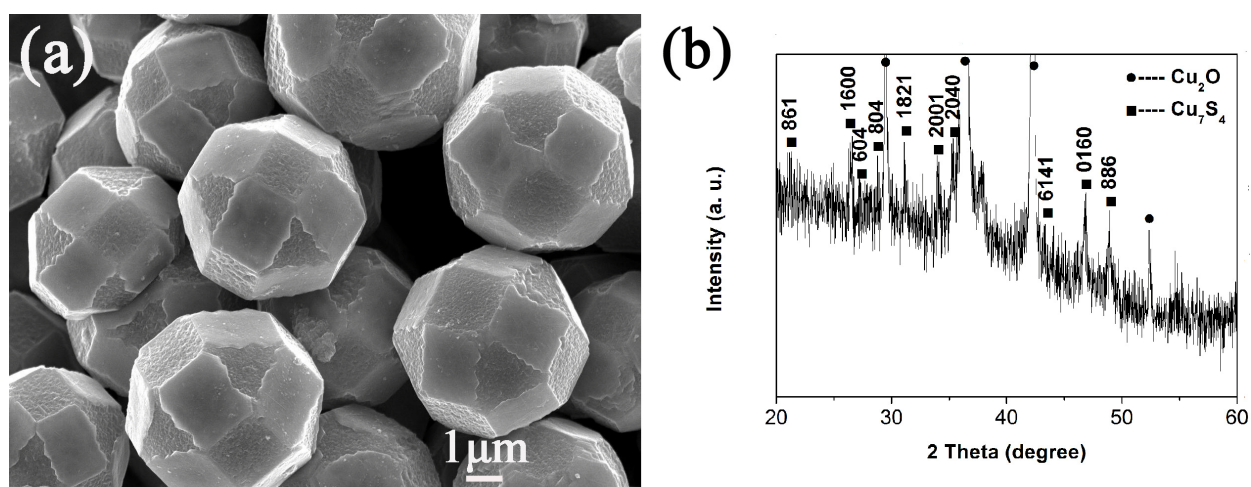


Fig. S5. (a) FESEM image of the polyhedral 26-facet $\text{Cu}_2\text{O}@ \text{Cu}_7\text{S}_4$ core/shell architectures obtained in pure water system; (b) the corresponding XRD pattern.

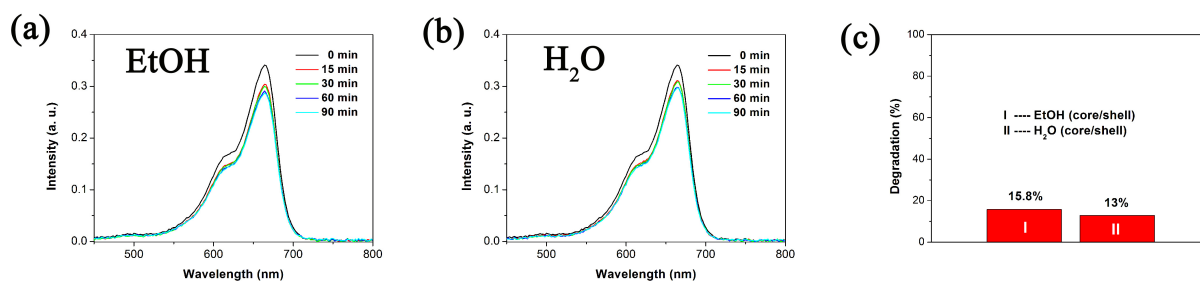


Fig. S6 (a) Absorption spectra of a solution of MB solution in the presence of the Cu₂O@Cu₇S₄ core/shell architectures synthesized in anhydrous ethanol (EtOH) system; (b) Absorption spectra of a solution of MB solution in the presence of the Cu₂O@Cu₇S₄ core/shell architectures synthesized in pure water (H₂O) system; (c) A plot of the extent of photodegradation of MB by different catalysts under natural light, Panel I: the Cu₂O@Cu₇S₄ core/shell architectures synthesized in anhydrous ethanol (EtOH) system, Panel II: the Cu₂O@Cu₇S₄ core/shell architectures synthesized in pure water (H₂O) system.

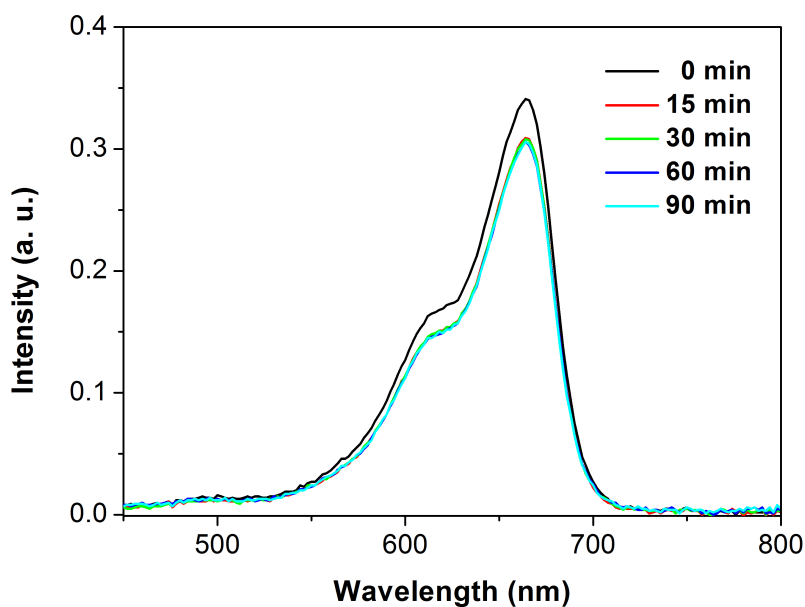


Fig. S7 Absorption spectra of a solution of MB solution in the presence of the Cu₇S₄ cages synthesized in anhydrous ethanol (EtOH) system without the aid of H₂O₂ molecules.