

Electronic supplementary information

**Rhombic dodecahedral Ag₃PO₄ architectures: controllable synthesis,
formation mechanism and photocatalytic activity**

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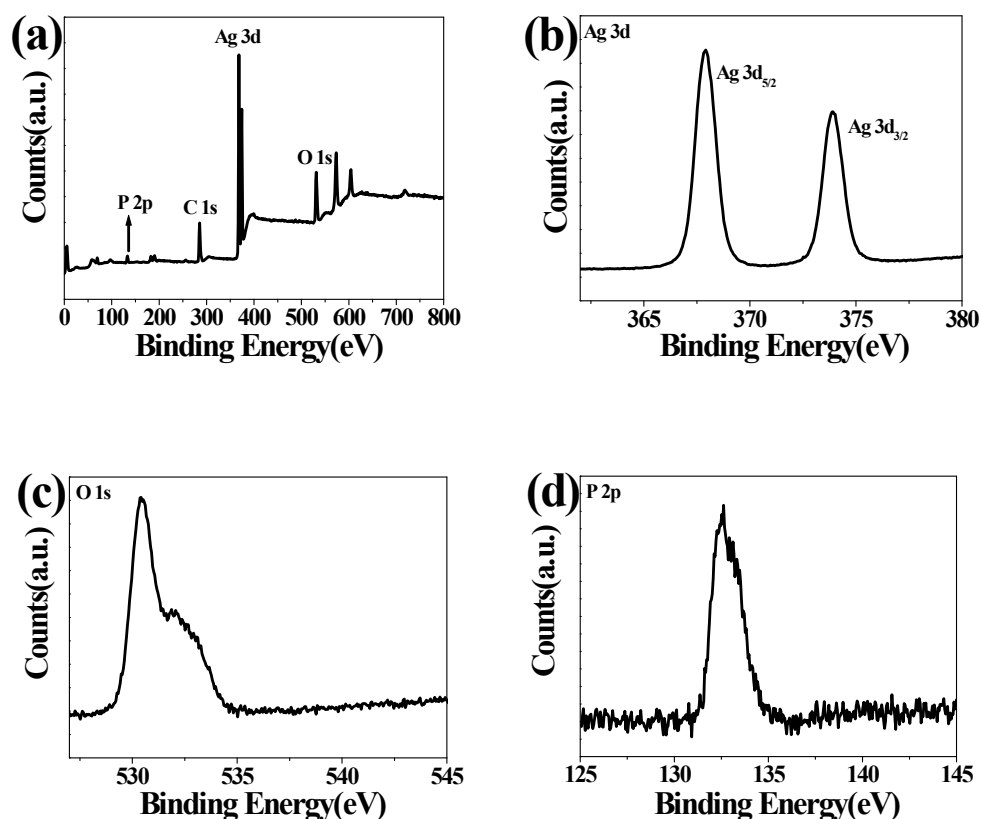


Fig. S1. XPS spectra of (a) survey (b) Ag 3d, (c) O 1s and (d) P 2p in Ag₃PO₄ rhombic dodecahedrons.

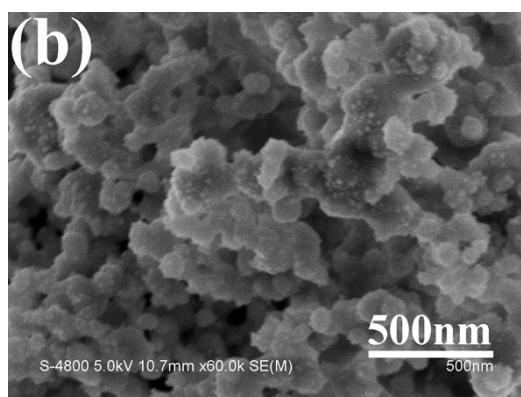
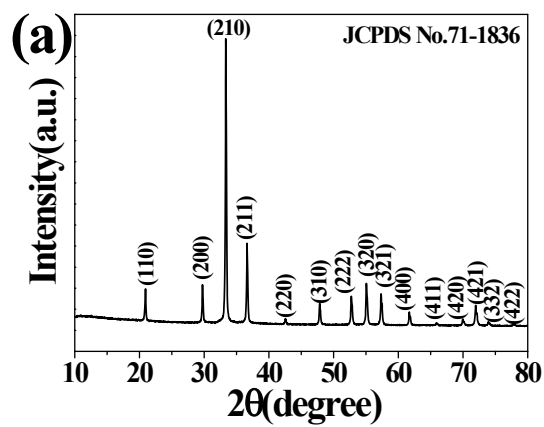


Fig. S2. (a) XRD pattern and (b) SEM image of as-prepared irregular Ag_3PO_4 particles.

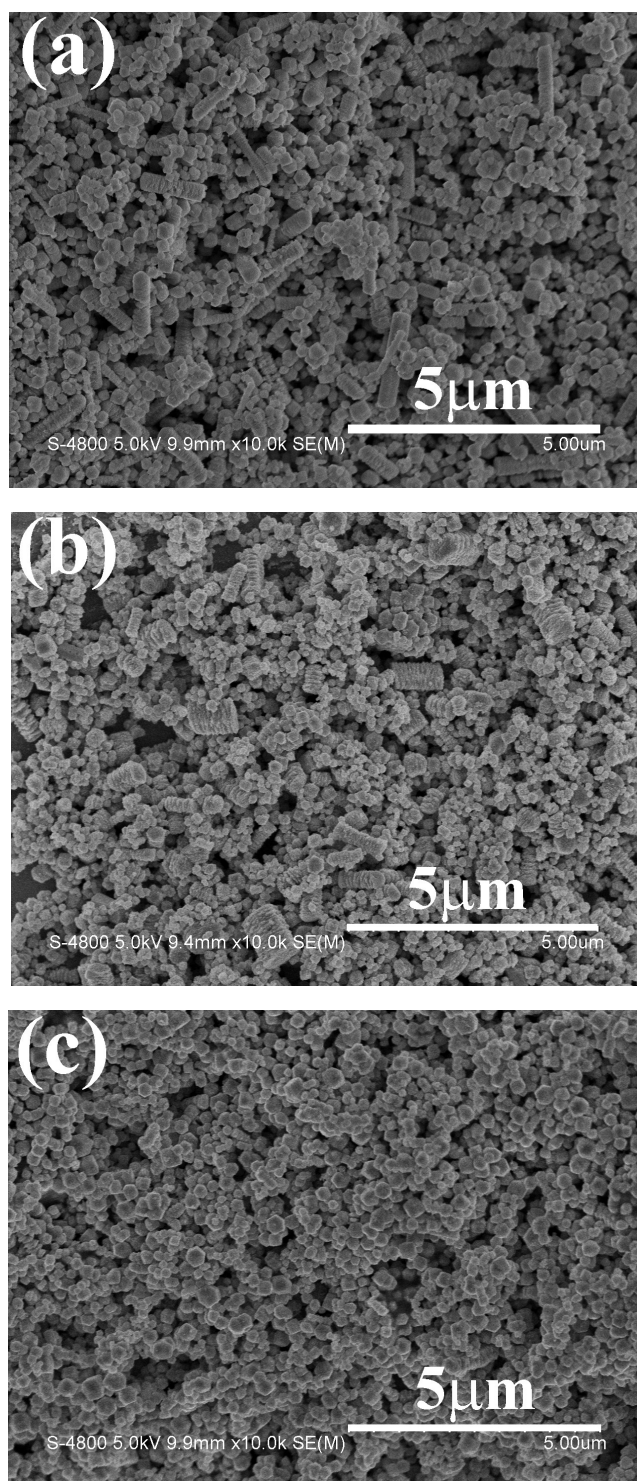


Fig. S3. SEM images of the samples obtained at different concentrations of $\text{NH}_4\text{H}_2\text{PO}_4$ solutions: (a) 3.3 mM, (b) 5.0 mM, and (c) 6.7 mM.

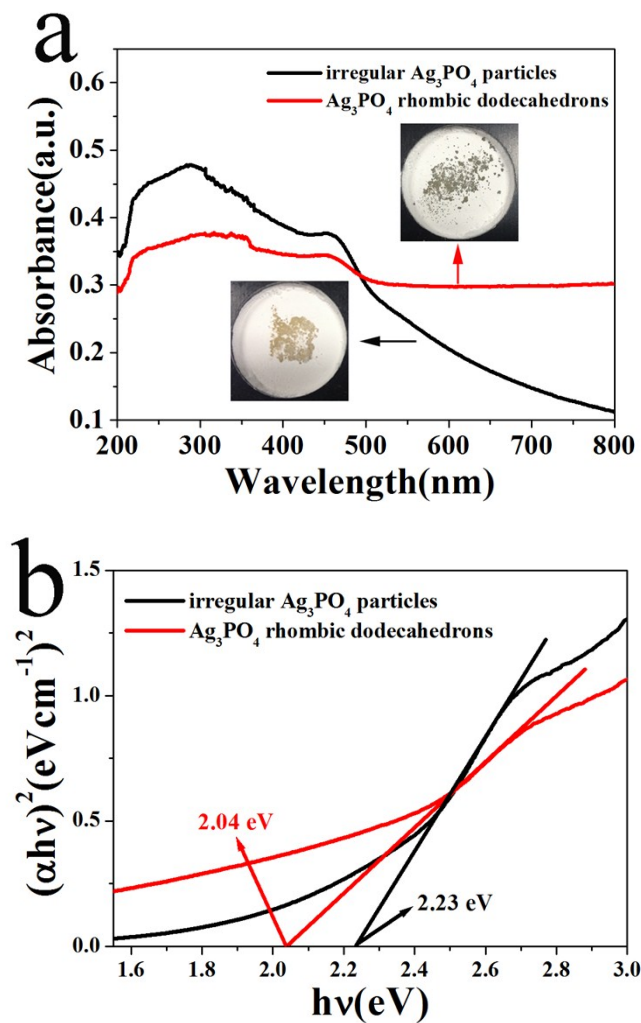


Fig. S4. (a) UV-vis diffuse reflectance spectra and (b) Plots of $(\alpha h\nu)^2$ versus $h\nu$ of irregular Ag_3PO_4 particles and Ag_3PO_4 rhombic dodecahedrons.

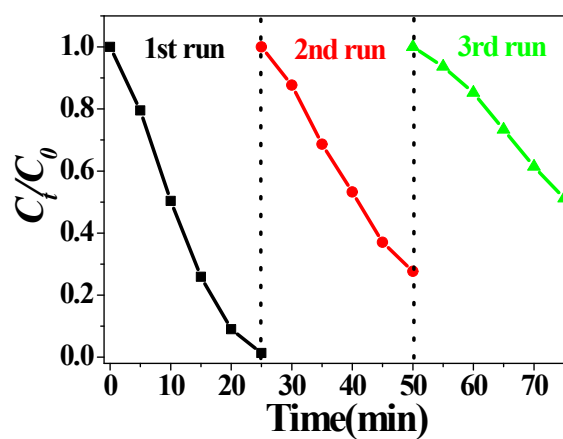


Fig. S5. Cycling photodegradation curves of RhB in water over the rhombic dodecahedral Ag_3PO_4 sub-microcrystals under visible light irradiation.