Supporting Information

Pt nanowires-anchored dodecahedral $Ag_3PO_4\{110\}$ constructed for significant enhancement of photocatalytic activity and anti-photocorrosion: spatial separation of charge carriers and photogenerated electron utilization

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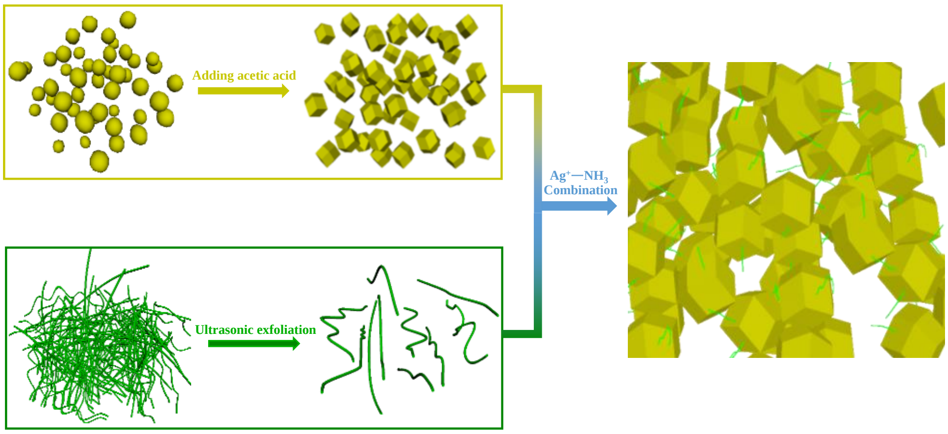

Scheme S1. Preparation of Pt nanowires-anchored dodecahedral Ag_3PO_4\{110\}.

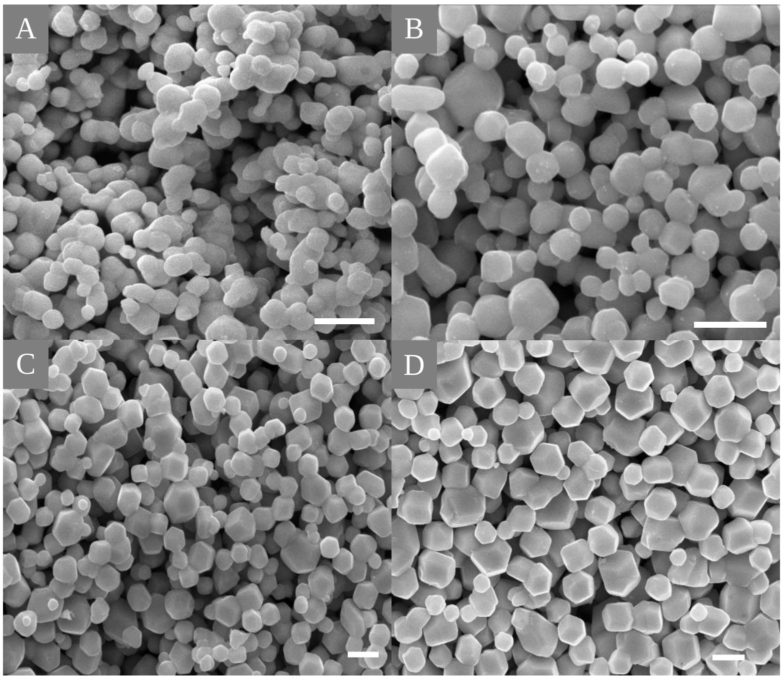

Fig. S1. SEM images of pure Ag_3PO_4 with adding different amount of acetic acid during the synthesis process. (A) 0 mL, (B) 0.1 mL, (C) 0.2 mL, (D) 0.4 mL.

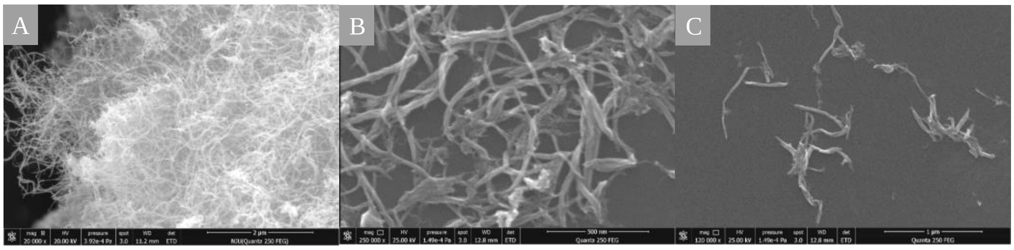

Fig. S2. SEM images of Pt nanowires before and after ultrasonic exfoliation (A) 0 h (B) 5 h and (C) 10 h.

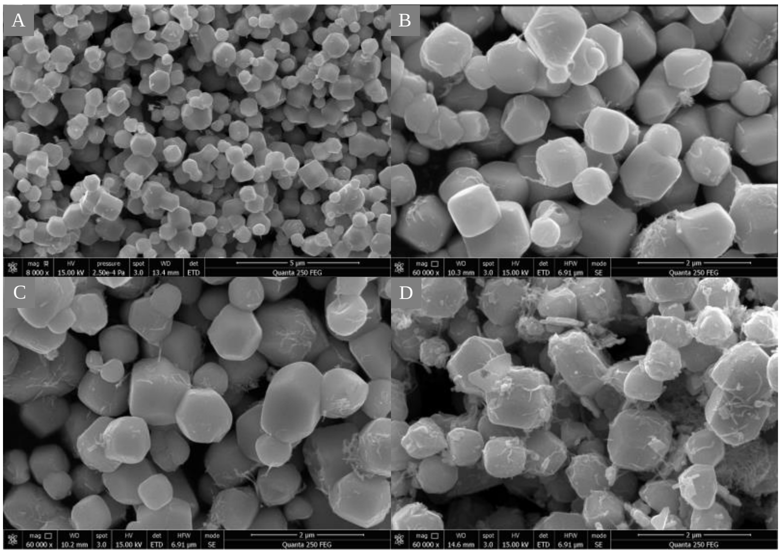

Fig. S3. SEM images of Pt nanowires-anchored dodecahedral Ag_3PO_4\{110\} with different amount of Pt nanowires: (A) 0.2 ωt%, (B) 0.5 ωt%, (C) 1 ωt%, (D) 2 ωt%.

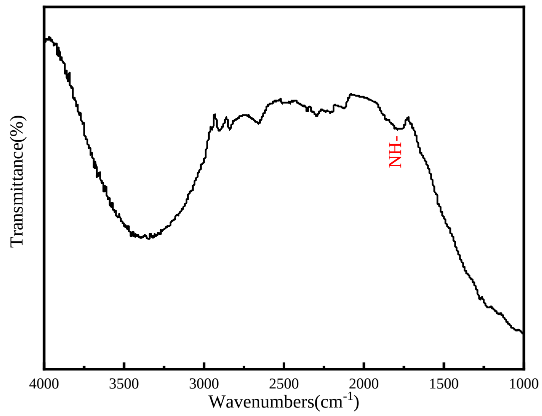

Fig. S4. FT-IR spectrum of as-prepared Pt nanowires.

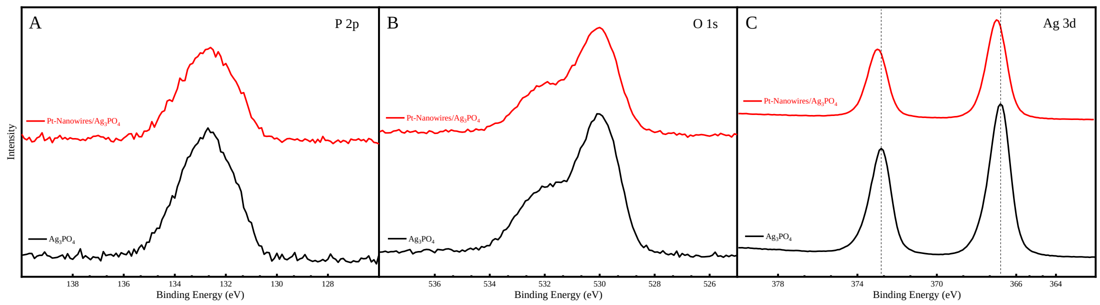

Fig. S5. The high resolution XPS spectrum of (A) P 2p, (B) O 1s, (C) Ag 3d of pure Ag_3PO_4 and Pt-nanowires/Ag_3PO_4 composite.

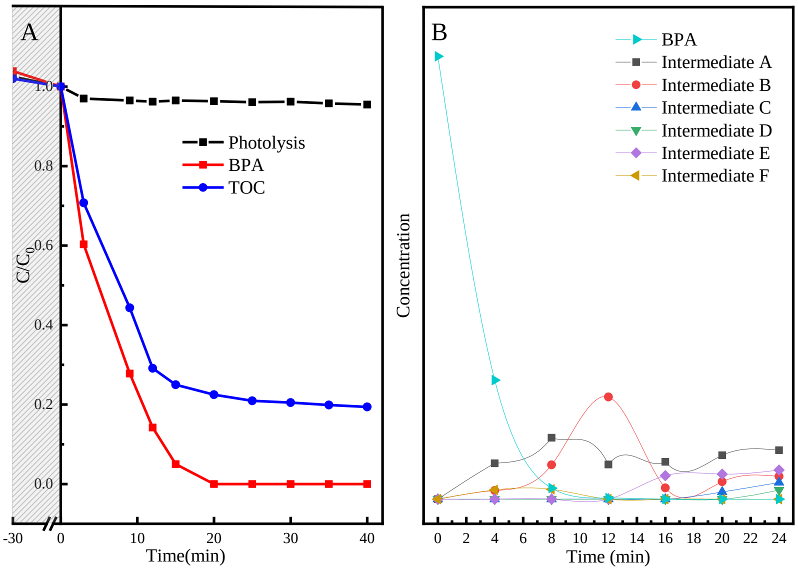

Fig. S6. Photolysis curves and photocatalytic degradation curves (A) of bisphenol A and the corresponding TOC removal curves over 2 ωt% Pt nanowires-anchored dodecahedral Ag_3PO_4{110}; (B) the concentration variation curves of BPA and its intermediate product in the degradation process.

High performance liquid chromatograph (HPLC) was used to monitor the BPA and the intermediates concentration. An Agilent TC-C18 column with two Varian ProStar 210 pumps and a Varian ProStar 325 UV–vis Detector was used to analyze the concentration of BPA (wavelength = 230 nm).

Table. S1. Photocatalytic degradation of RhB over Ag_3PO_4-based photocatalysts in previous literatures and this work.

Photocatalyst	Light source	Pollutant concentration	Degradation	Reference
Ag_3PO_4 porous microcubes (0.375g/L)	500W Xe lamp ($\lambda \geq 400$ nm)	8ppm	95% RhB degraded within 24 min	[1]
Branch Ag_3PO_4 crystal (0.83g/L)	350W ($\lambda \geq 400$ nm)	10ppm	98% RhB degraded within 35 min	[2]
Ag_3PO_4 tetrapods (1g/L)	300W ($\lambda \geq 400$ nm)	8ppm	95% RhB degraded within 15min	[3]

Ag/Ag_3PO_4 coaxial hetero-nanowires (2g/L)	300W ($\lambda \geq 400$ nm)	8ppm	98% RhB degraded within 6min	[4]
Pd(0.1wt%)/Ag_3PO_4 (1g/L)	300W ($\lambda \geq 400$ nm)	5ppm	95% RhB degraded within 15min	[5]
Au(0.1wt%)/Ag_3PO_4 (1g/L)	300W ($\lambda \geq 400$ nm)	5ppm	94% RhB degraded within15min	[5]
0.5ωt% Pt nanowires-anchored dodecahedral Ag_3PO_4 (0.3g/L)	350W ($\lambda \geq 400$ nm)	5ppm	99.5% RhB degraded within 10 min	this work
0.5ωt% Pt nanowires-anchored dodecahedral Ag_3PO_4 (0.3g/L)	500W ($\lambda \geq 400$ nm)	5ppm	98% RhB degraded within 5min	this work
0.5ωt% Pt nanowires-anchored dodecahedral Ag_3PO_4 (0.3g/L)	350W ($\lambda \geq 400$ nm)	10ppm	99% RhB degraded within 10min	this work
0.5ωt% Pt nanowires-anchored dodecahedral Ag_3PO_4 (1g/L)	350W ($\lambda \geq 400$ nm)	5ppm	98% RhB degraded within 3min	this work

References

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