

Space-confined growth of Ag_3PO_4 nano particles within WS_2 sheets: Ag_3PO_4 / WS_2 composite as a visible-light-driven photocatalyst for decomposing dyes

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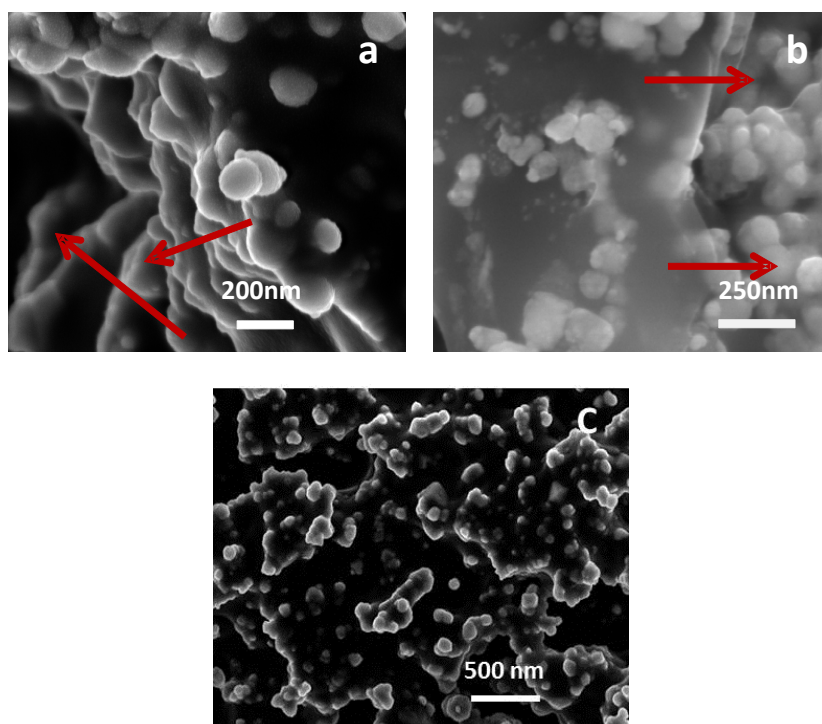


Fig.S1 FESEM images of AW0.01 a) without ultrasonic treatment (side); b) with high - power ultrasonic treatment; c) without ultrasonic treatment (top).

We detected the morphology of Ag_3PO_4 / WS_2 composite (AW0.01) using FESEM. FESEM image of AW0.01 without ultrasonic treatment is shown in Fig.S1a. The results indicate that the layer- by -layer structure

consisted of nano Ag_3PO_4 particles and WS_2 sheets are formed. After high - power ultrasonic treatment (Fig.S1b), Ag_3PO_4 nano particles sandwiched between WS_2 sheets are still be observed. Fig.S1c shows the morphology of AW0.01 from the top (without ultrasonic treatment). Though slight amounts of Ag_3PO_4 nano particles are assembled together, most of the nano particles are uniformly dispersed on the surface of WS_2 sheets.

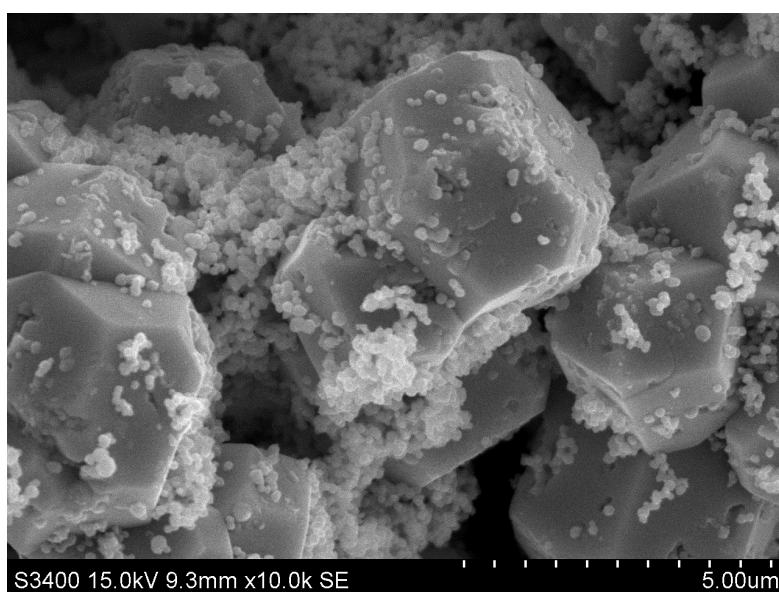


Fig. S2 The SEM image of pure Ag_3PO_4 .

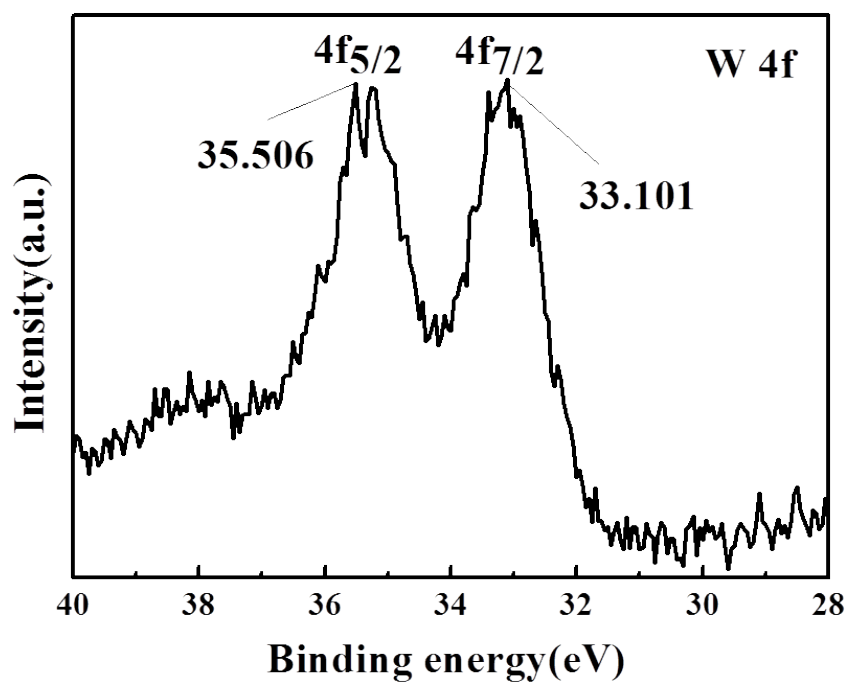


Fig.S3 The high-resolution XPS spectrum of W4f.

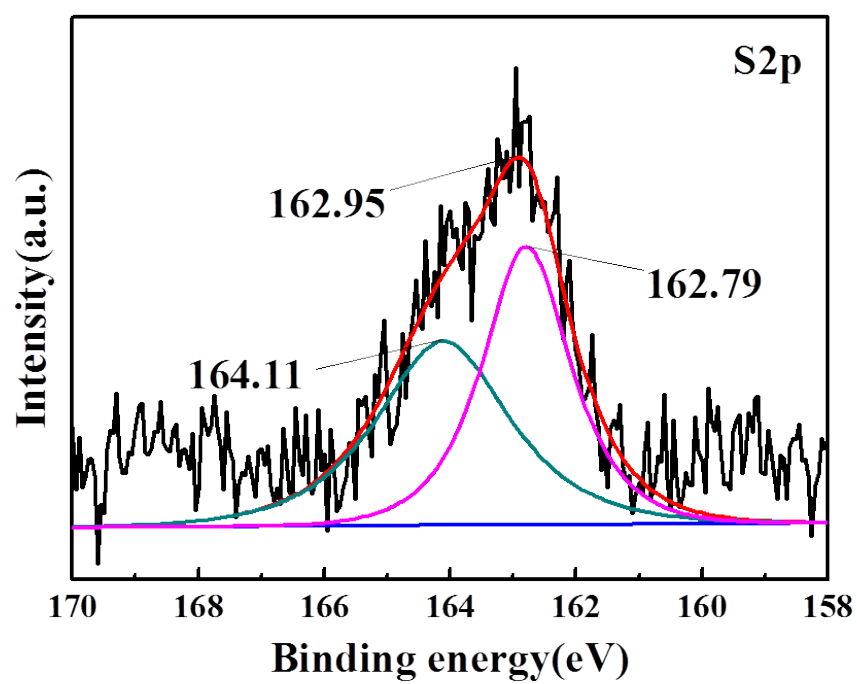


Fig. S4 The high-resolution XPS spectrum of S2p.

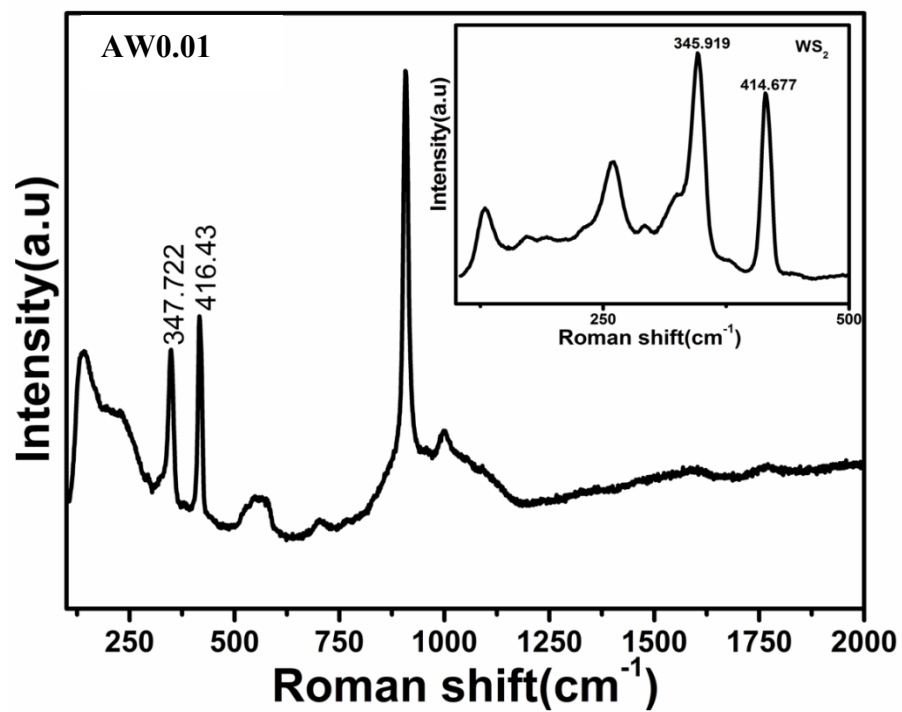


Fig.S5 Raman spectra of pure WS₂ and AW0.01.

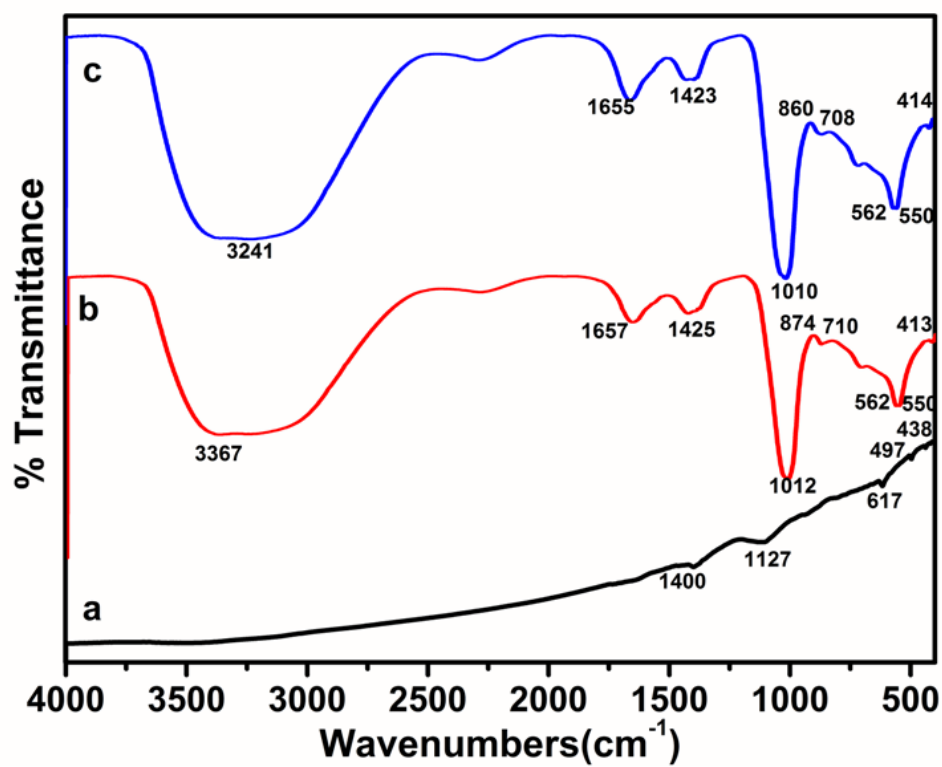


Fig.S6 FTIR spectra of a) WS₂ sheets, b) pure Ag₃PO₄ and c) AW0.01.

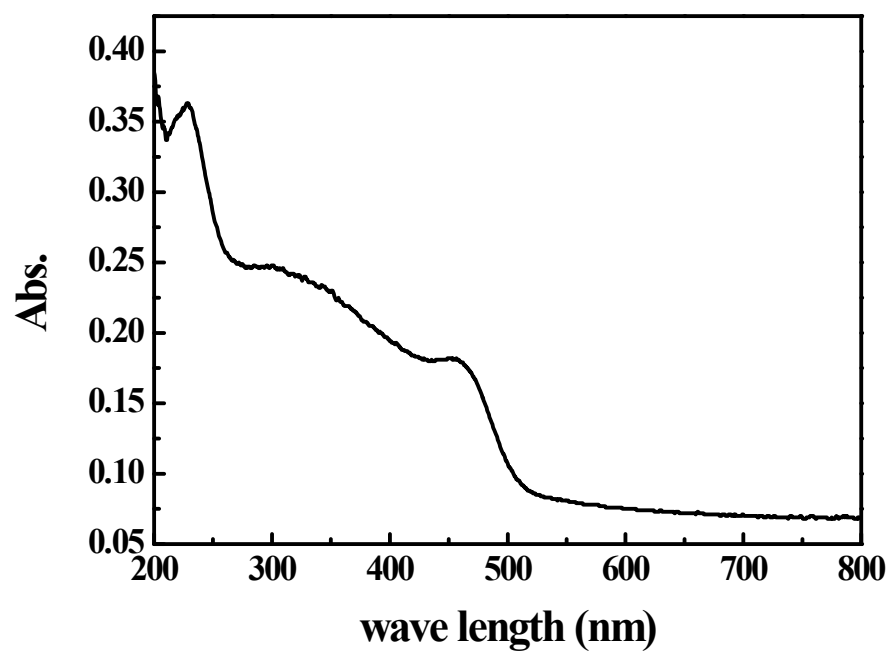


Fig.S7 UV-vis diffusive reflectance spectrum of pure Ag_3PO_4 .

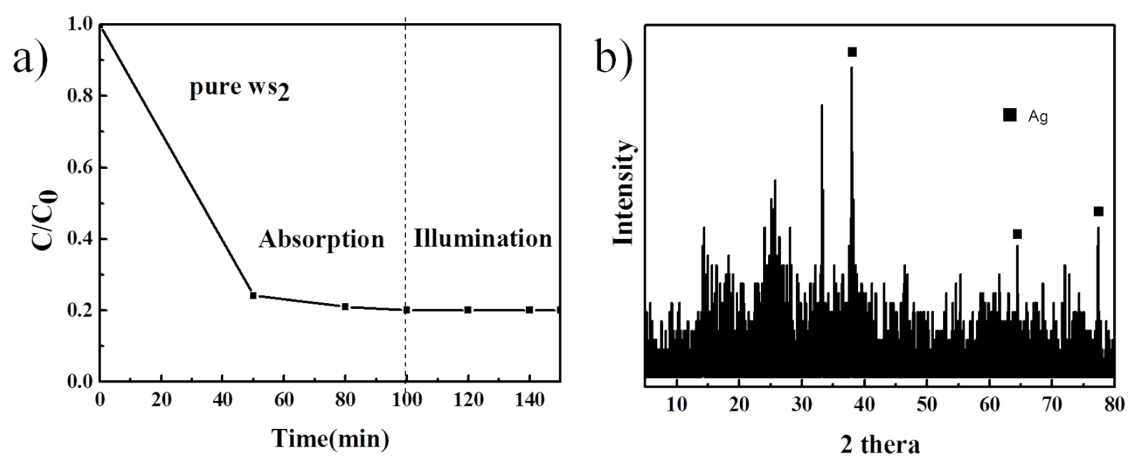


Fig.S8 (a) The absorption and degradation curves of WS_2 ; (b) The XRD pattern of AW0.01 after four RhB degradation processes.

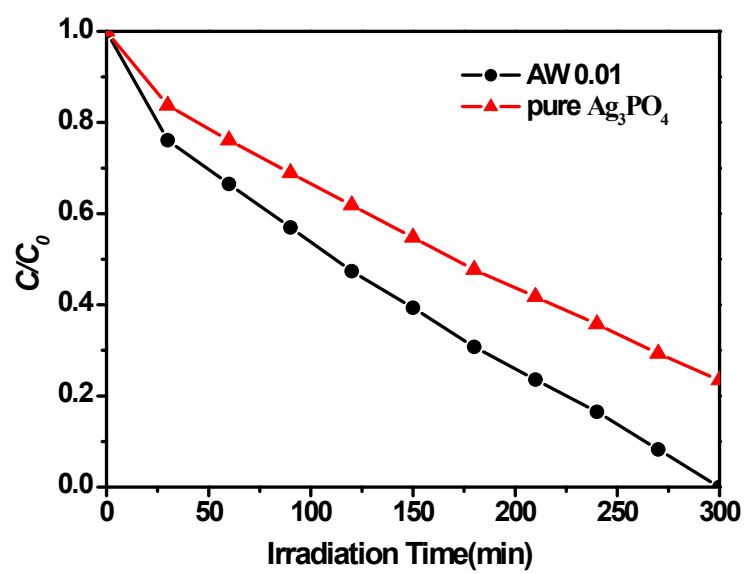


Fig. S9 Photocatalytic degradation curves of phenol solution over pure Ag_3PO_4 and AW0.01.

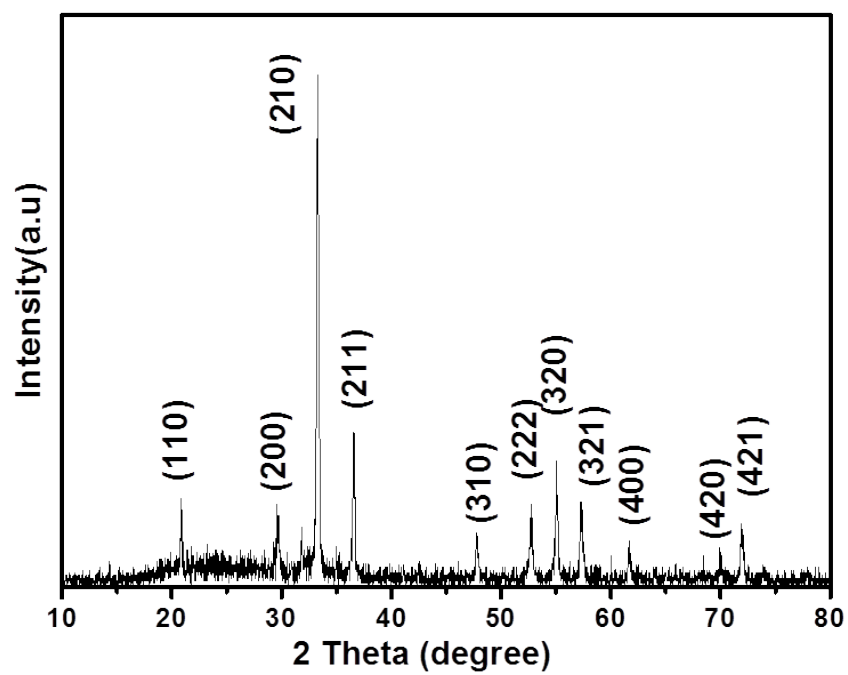


Fig.S10 XRD pattern of AW0.01 after 6- months storage.