

Supporting Information for

Ag/BiPO₄ heterostructure: synthesis, characterization and its enhanced photocatalytic properties

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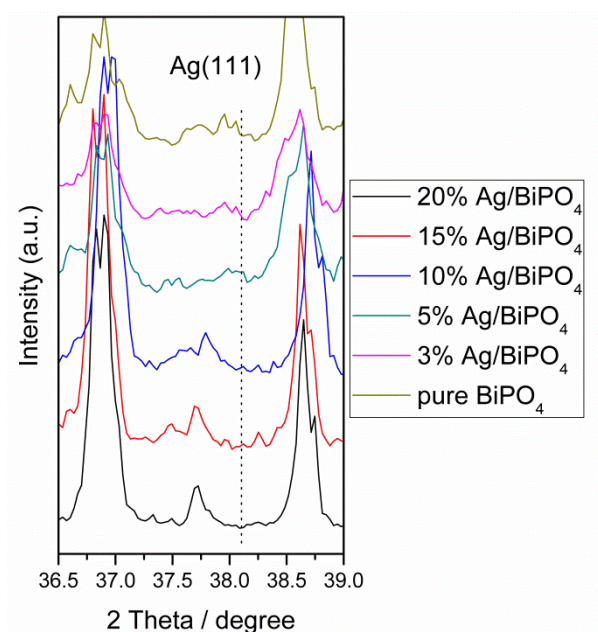


Fig. S1 Enlarged XRD patterns in the range of 36.5-39°.

Table 1 The relative intensity of Ag (111) to BiPO₄ (-101) peak

Ag contents	(-101) peak intensity of BiPO ₄ (2θ=17.02)	(111) peak intensity of Ag (2θ=38.1)	Ag / BiPO ₄
0%	611	203	0.332
3%	736	230	0.312
5%	651	233	0.358
10%	532	303	0.570
15%	332	275	0.772
20%	423	234	0.553

Table 1 shows the relative intensity of Ag (111) to BiPO₄ (-101) peak. It can be seen that with the increasing Ag loading, the ratio of Ag / BiPO₄ is partial increased.

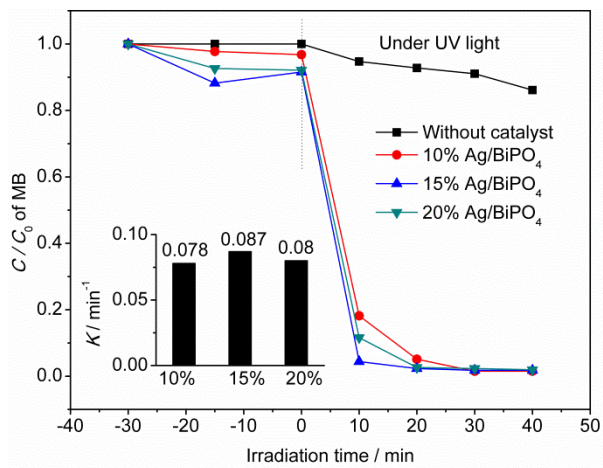


Fig. S2 Photocatalytic activity of samples under UV light irradiation

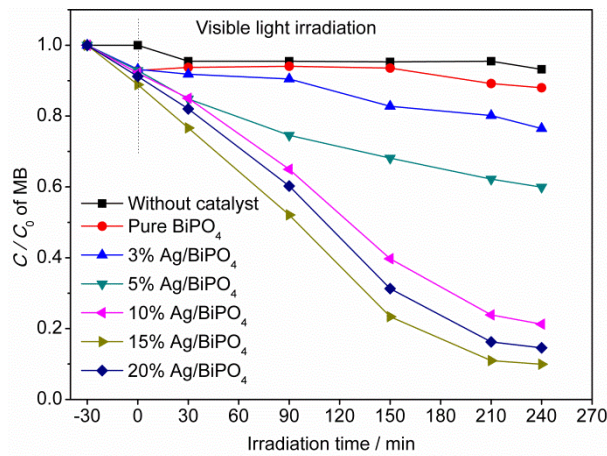


Fig. S3 Photocatalytic activity of samples under visible light irradiation

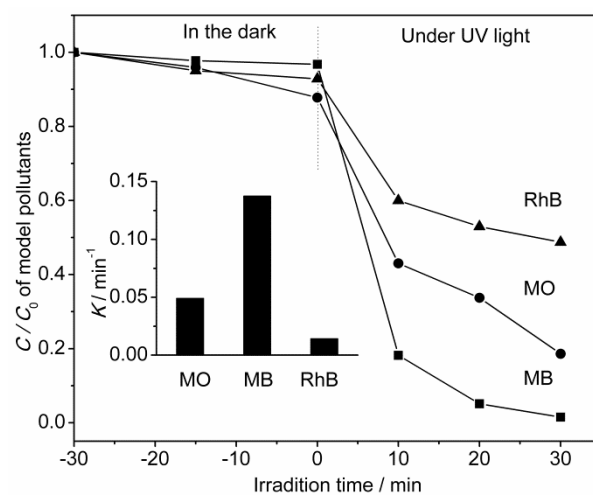


Fig. S4 Degradation toward different model pollutants with different chromophore under UV light irradiation

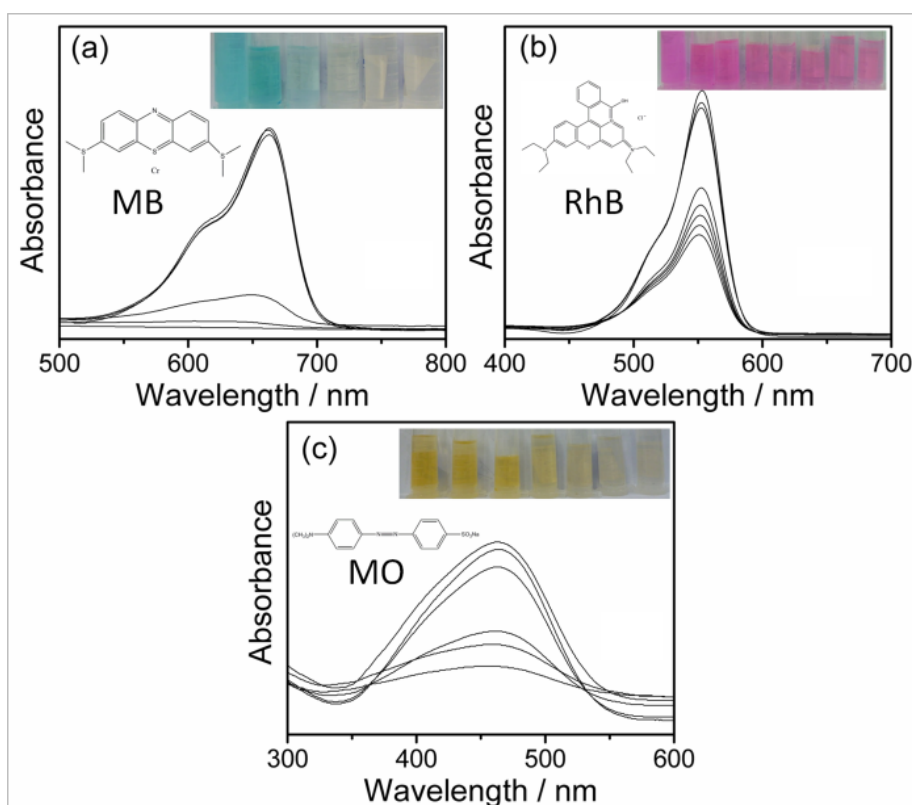


Fig. S5 The corresponding UV-vis spectra of different model pollutants solution reduction with time

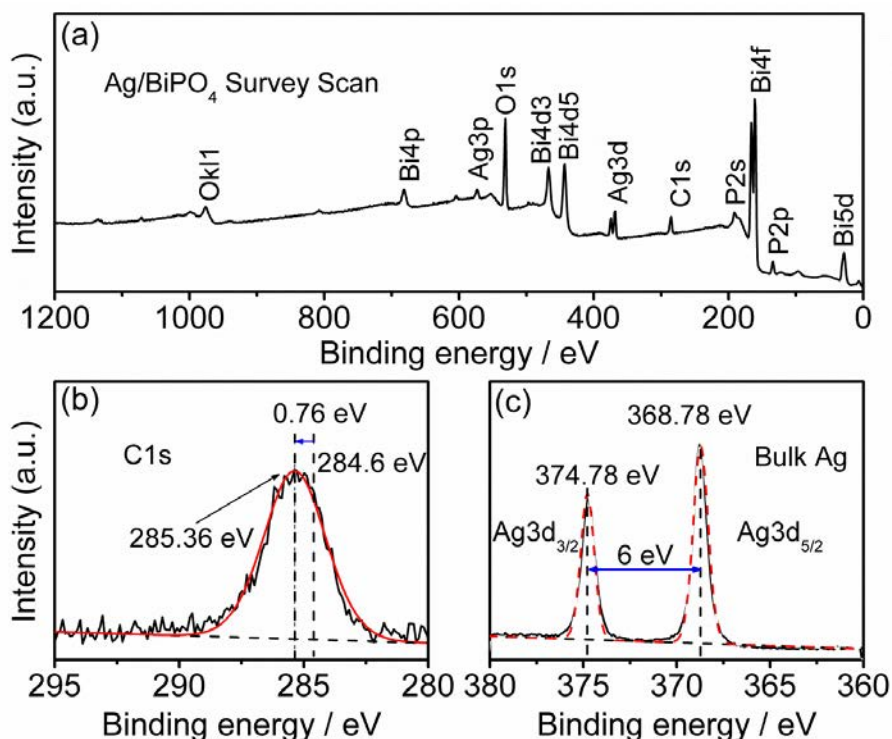


Fig. S6 (a) XPS full spectrum of the as-synthesized sample with a Ag content of 10 mass%; (b) the relevant C1s reference spectrum and (c) Pure bulk Ag 3d reference spectrum.

Fig.S6 (a) shows the XPS full spectrum. The presence of C comes mainly from pump oil due to vacuum treatment before the XPS test. The peak of C1s reference spectrum (Fig.S6(b)) of located at 285.36 eV and shows a positive shift approximately 0.76 eV to higher binding energies compared with that of C1s(284.6 eV). The fine scan spectrum of other elements of Ag/BiPO₄ was also calibrated. The peaks of bulk Ag 3d reference located at 368.78 and 374.78 eV and the peak width at maxima is 6 eV.

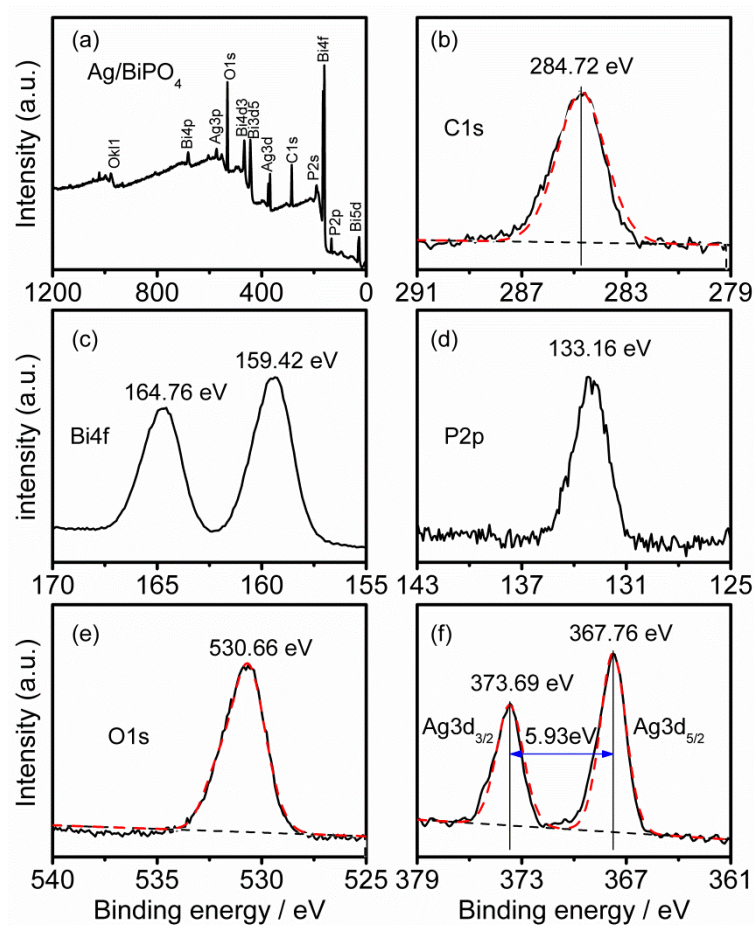


Fig.S7 XPS of Ag/BiPO₄ after photocatalytic degradation. (a) full survey scan. (b) C1s reference spectrum. (c) Bi 4f spectra. (d) P 2p spectra. (e) O 1s spectra. (f) Ag 3d spectra. The black solid lines are experimental data, the red dash lines are fitting spectra, and the black dash lines are fitting lines in (e) and (f).

Figure S7 shows the XPS of Ag/BiPO₄ after the MB degradation experiments. It could be clear seen that the peak width at maxima is also about 6 eV. This value is in accord with that of bulk Ag (Ag 3d_{5/2}, 368.2 eV; Ag 3d_{3/2}, 374.2 eV) and Ag/BiPO₄ before degradation experiments. It could infer that the valence state of Ag is still remaining zero.

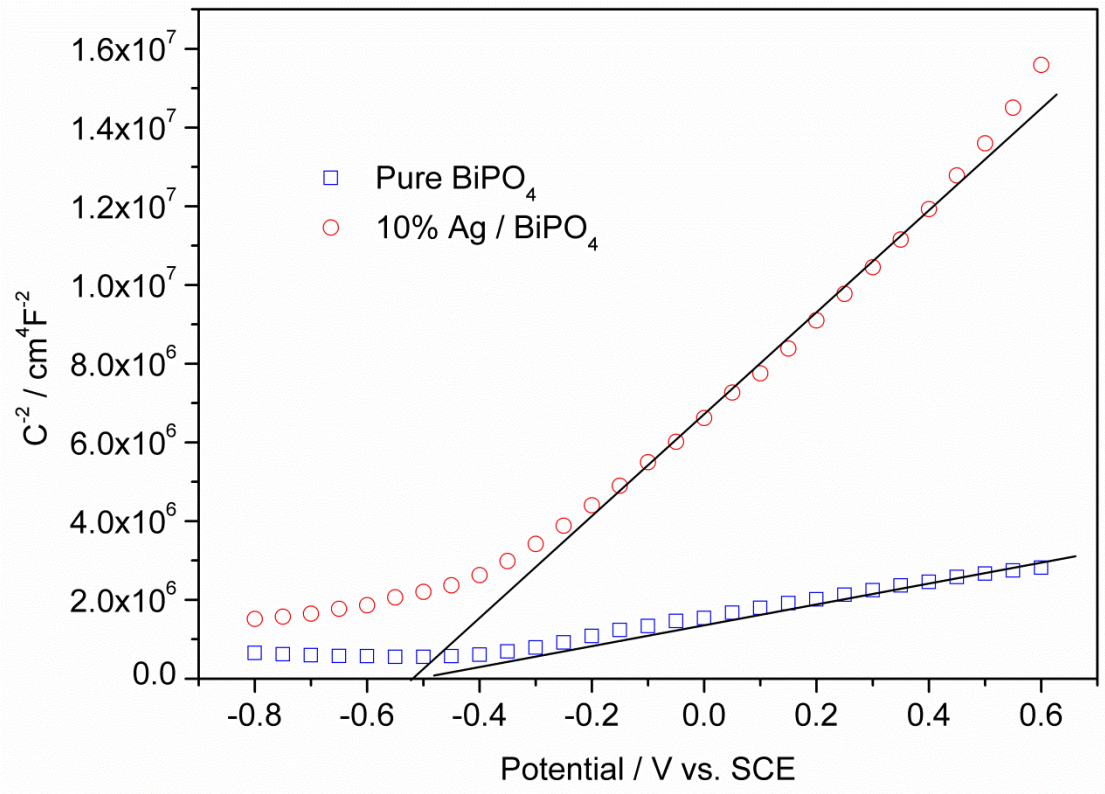


Figure S8. Mott-Schottky (MS) plots of the BiPO₄ and Ag / BiPO₄ film electrodes.

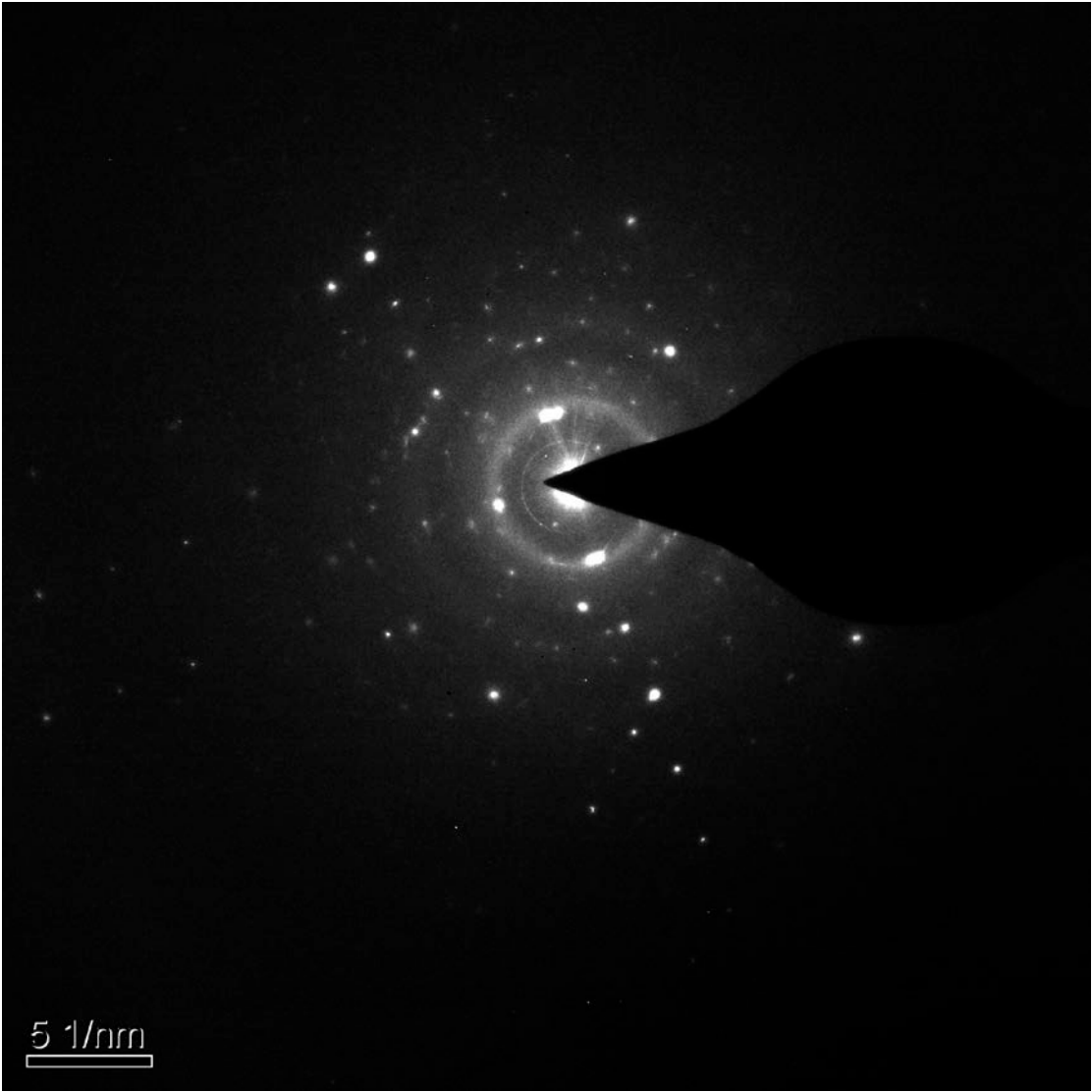


Figure S9 The SAED pattern of Ag/BiPO₄

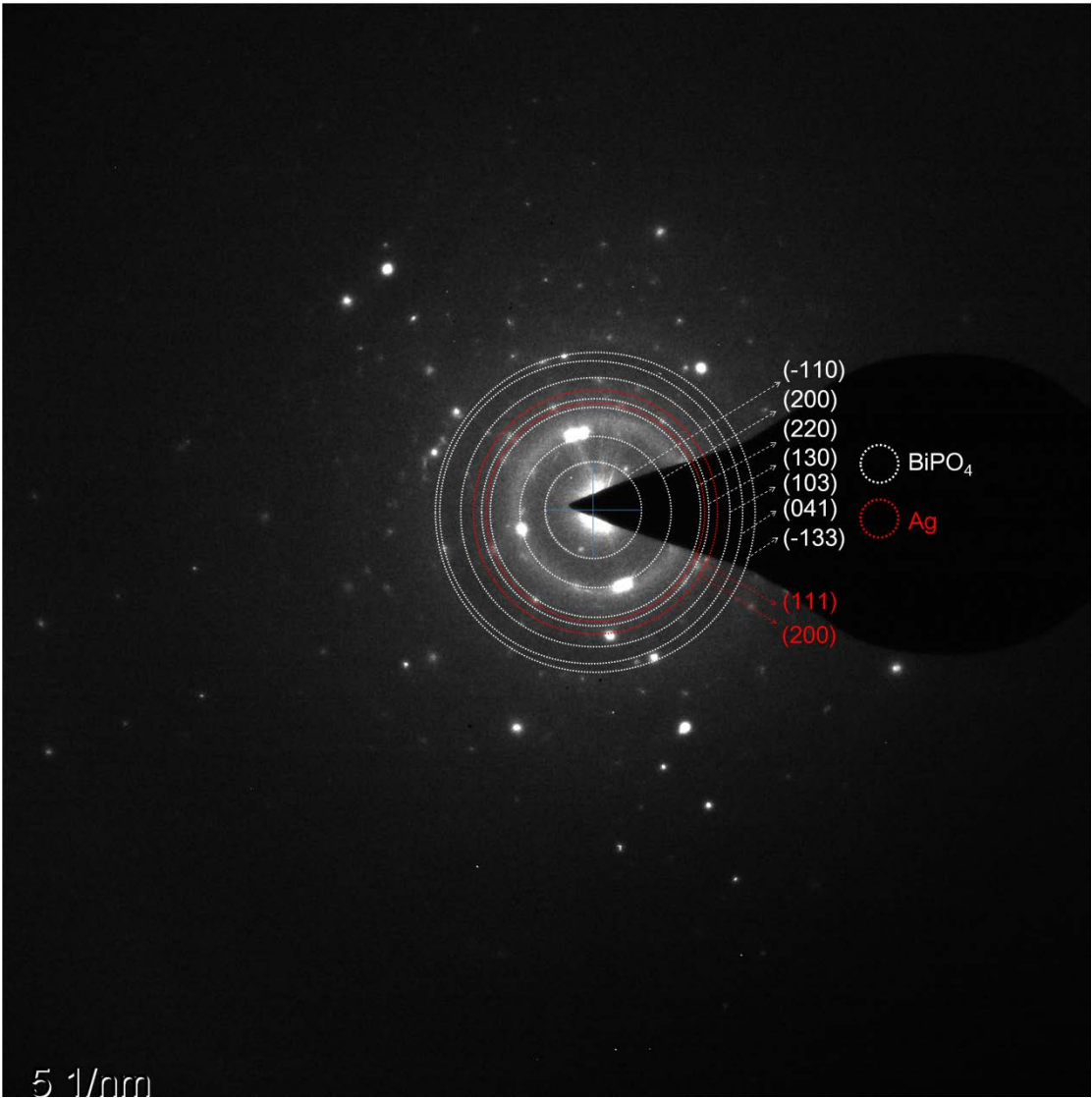


Figure S10 The marked SAED pattern of Ag/BiPO₄