Supporting Information

Ultrafine Ag/polyoxometalate-doped AgCl nanoparticles in metal-organic framework as efficient photocatalysts under visible light

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Contents:

1. The small- and wide-angle XRD of NH₂-MIL-101 (Al)
2. The IR spectra of NH₂-MIL-101 (Al), POM-AgCl@NH₂-MIL-101 (Al), and Ag/POM-AgCl@NH₂-MIL-101 (Al)
3. The full scan survey XPS spectra of Ag/POM-AgCl@NH₂-MIL-101 (Al)
4. The EDX spectra of Ag/POM-AgCl@NH₂-MIL-101 (Al)
5. The diffuse-reflectance UV/Vis spectra of Ag/POM-AgCl@NH₂-MIL-101 (Al) synthesized by irradiating different time of POM-AgCl@NH₂-MIL-101 (Al) under UV lamp
6. SEM image of the prepared NH₂-MIL-101 (Al)
7. TEM and HRTEM images of the POM-AgCl@NH₂-MIL-101 (Al)
8. TEM image of the Ag/AgCl@NH₂-MIL-101 (Al)
9. SEM image of Ag/AgCl and Ag/POM-AgCl
10. Absorption spectra of the RhB aqueous solution over Ag/POM-AgCl@NH₂-MIL-101 (Al) as a function of irradiation time under visible light illumination
11. SEM images of Ag/AgCl, Ag/POM-AgCl and TEM images of Ag/AgCl@NH₂-
MIL-101 (Al), Ag/POM-AgCl@NH₂-MIL-101 (Al)
Fig. S1 (a) Small-angle and (b) wide-angle XRD of NH$_2$-MIL-101 (Al). Both small-angle and wide-angle XRD patterns of the NH$_2$-MIL-101 (Al) were well matched with those reported in the literatures. (P. Serra-Crespo, E. V. Ramos-Fernandez, J. Gascon and F. Kapteijn, Chem. Mater., 2011, 23, 2565-2572; and L. Bromberg, X. Su and T. A. Hatton, ACS Appl. Mater. Interfaces, 2013, 5, 5468-5477.)

Fig. S2 IR spectra of (a) NH$_2$-MIL-101 (Al), (b) POM-AgCl@NH$_2$-MIL-101 (Al), (c) Ag/POM-AgCl@NH$_2$-MIL-101 (Al).
**Fig. S3** The full scan survey XPS spectra of Ag/POM-AgCl@NH$_2$-MIL-101 (Al) composite material.

**Fig. S4** The EDX spectra of Ag/POM-AgCl@NH$_2$-MIL-101 (Al).
**Fig. S5** diffuse-reflectance UV/Vis spectra of Ag/POM-AgCl@NH$_2$-MIL-101 (Al) synthesized by irradiating different time of POM-AgCl@NH$_2$-MIL-101 (Al) under UV lamp. The data of 0 hour was the DRS of POM-AgCl@NH$_2$-MIL-101 (Al). The region of 400-700 nm was marked with green rectangle frame for highlight.

**Fig. S6** SEM image of the prepared NH$_2$-MIL-101 (Al).
**Fig. S7** TEM (a) and HRTEM (b) images of the POM-AgCl@NH₂-MIL-101 (Al).

**Fig. S8** TEM image of the Ag/AgCl@NH₂-MIL-101 (Al).
**Fig. S9** SEM image of Ag/AgCl (a) and Ag/POM-AgCl (b).

**Fig. S10** Absorption spectra of the RhB aqueous solution over Ag/POM-AgCl@NH$_2$-MIL-101 (Al) as a function of irradiation time under visible light illumination.
Fig. S11 SEM image of Ag/AgCl (a) and Ag/POM-AgCl (b). TEM image of Ag/AgCl@NH$_2$-MIL-101 (Al) (c) and Ag/POM-AgCl@NH$_2$-MIL-101 (Al) (d).