Supporting Information

Probing the Inhomogeneity and Intermediate in the photosensitized Degradation of Rhodamine B by Ag_3PO_4 Nanoparticle from Ensemble to Single Molecule

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Figure 1S shows the XRD pattern of the as-obtained product. All of the diffraction peaks can be indexed to the cubic structure of Ag_3PO_4 (JCPDS card No.06-0505). The X-ray photoelectron spectroscopy (XPS) was carried out to investigate the surface compositions and chemical state of the as-prepared Ag_3PO_4 nanoparticles (Figure S2). In the XPS analysis, the binding energies were corrected by referencing C 1s of 284.80 eV. The Ag 3d spectra of Ag_3PO_4 is composed of two individual peaks at ~374 and ~368 eV, which can be attributed to Ag $3d_{3/2}$ and Ag $3d_{5/2}$ binding energies, respectively (Figure S2b). In Figure S2c, the P 2p peak of the Ag_3PO_4 product appears at ca. 132 eV, which corresponded to P^{5+}, and the O 1s binding energy (Figure S2d) of ca. 530 eV is in agreement with O^{2-} anion. Therefore, the XPS analysis confirms the purity of Ag_3PO_4 product.

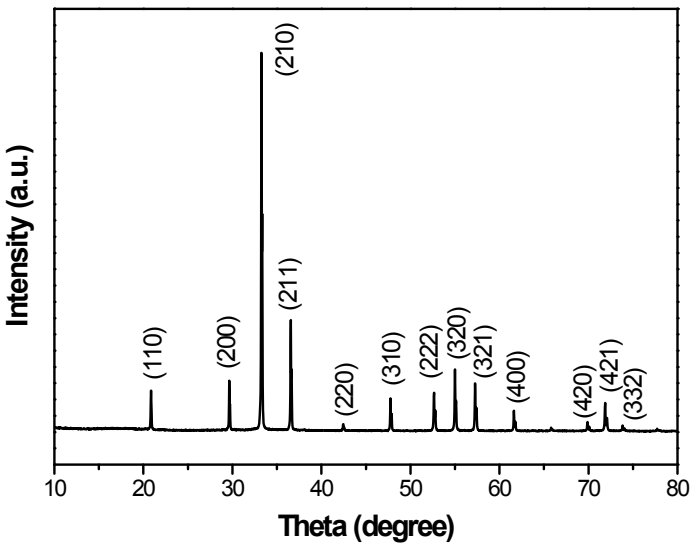

Figure S1. The XRD pattern of Ag_3PO_4 nanoparticles. All of the diffraction peaks can be indexed to the cubic structure of Ag_3PO_4 (JCPDS card No.06-0505).

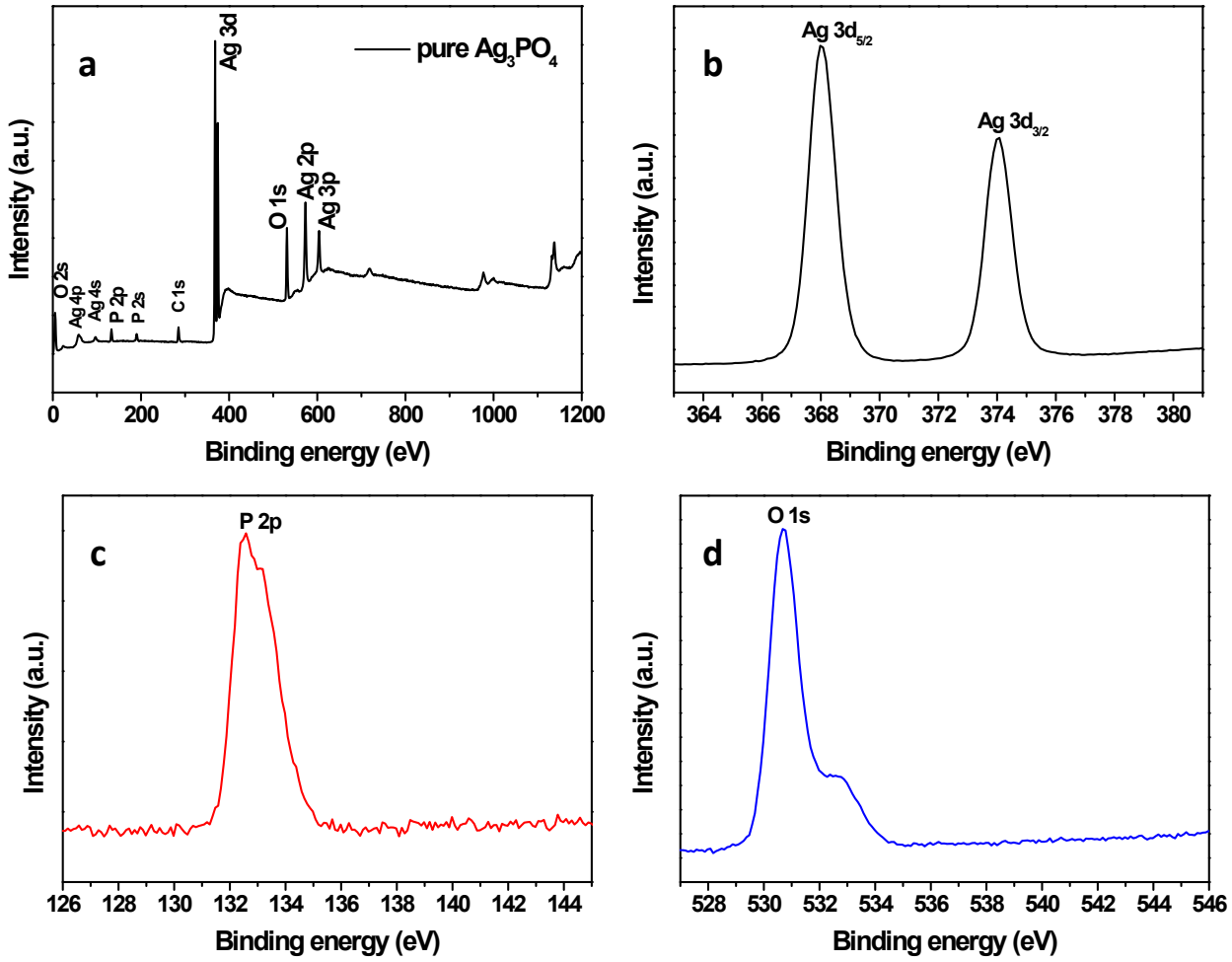

Figure S2. XPS spectra of Ag3PO4 sample. (a) survey XPS spectrum, (b) Ag 3d , (c) P 2p,(d) O 1s.