Supporting Information

Size-controlled Synthesis of $BiPO_4$ Nanocrystals for Enhanced Photocatalytic Performance

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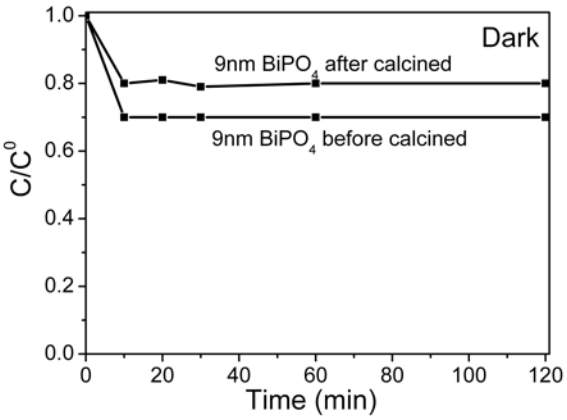

Figure S1. Absorption-desorption equilibrium curves of $BiPO_4$ nanocrystals.

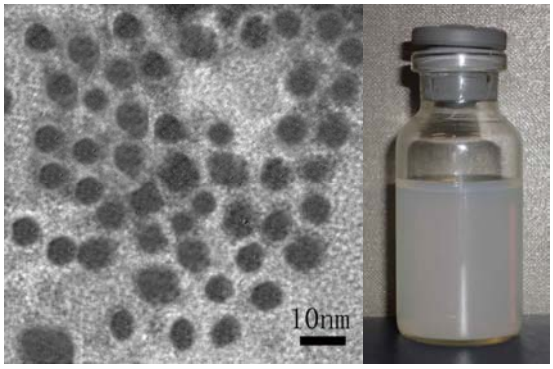

Figure S2. HRTEM and Photograph (placed for three months) of the monodisperse $BiPO_4$ nanocrystals. Nanocrystal concentration 10g/L in cyclohexane

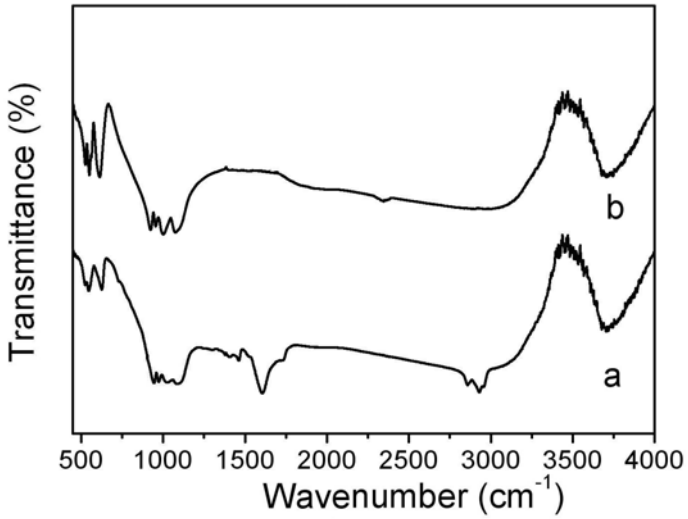

Figure S3. IR spectra of $BiPO_4$ nanocrystals (a) before and (b) after OA removal.

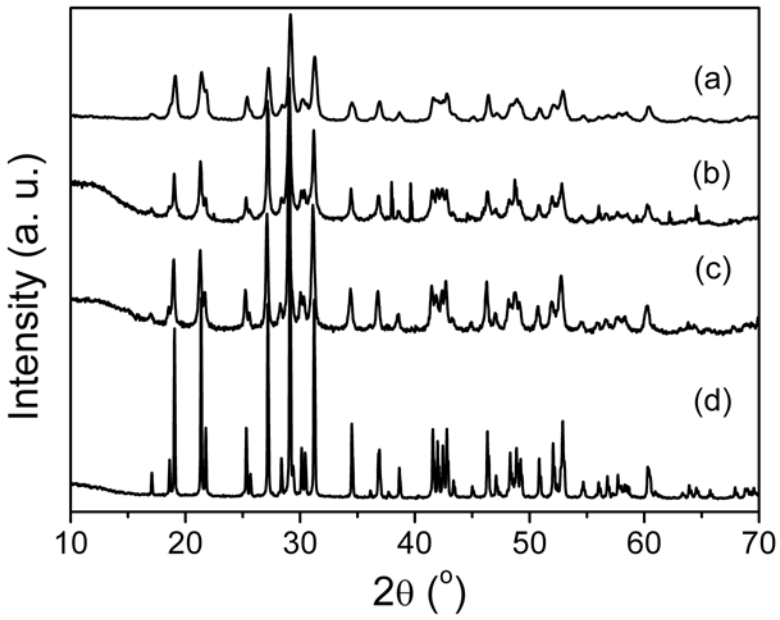

Figure S4. XRD patterns of the monodisperse $BiPO_4$ nanocrystals obtained at different OA/ BEHP ratio (v/v): (a) 30/10, (b) 25/15, (c) 20/20, and (d) 10/30.

The gas-phase products Detection. The gas-phase products during the reaction were analyzed using a on-line gas analyzer (QIC-20, Hiden) equipped with the mass spectrometer. To avoid the influence of oleic acid, the reaction without oleic acid was carried out, in whose system only bis(2-ethylhexyl) phosphate and $Bi(NO_3)_3$ were used as starting materials. The outlet gas was detected. N_2 (impurity with Ar) is used as the carrier gas.

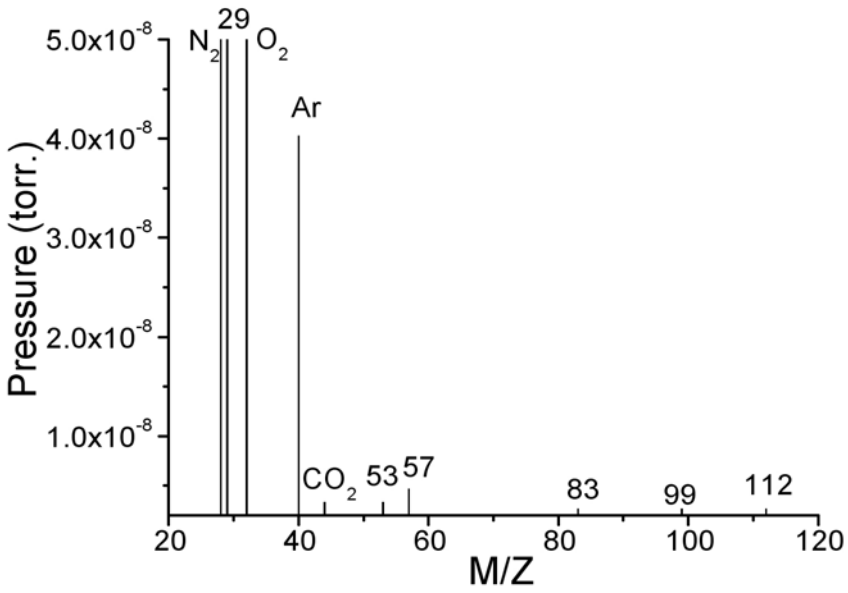

Figure S5. MS spectra of low mass species of gas-phase products. The presence of fragment ion peaks is as follows: M/Z=29($C_2H_5^+$), M/Z=53 ($C_4H_5^+$), M/Z=57 ($C_4H_9^+$), M/Z=83($C_6H_{11}^+$), M/Z=99 ($H_4PO_4^+$), M/Z=112(C_8H_{16}). It is well known that the molecular ion peaks in alcohols often disappeared. From the above figure, the peaks at M/Z=29, M/Z=57, M/Z=83, M/Z=112 are due to the characteristic fragment ion peak of 2-ethyl-1-hexanol (M=130), while the peaks at M/Z=53, and M/Z=99 can be attributed to the characteristic fragment ion peak of bis(2-ethylhexyl) phosphate. Fragment ion peak at M/Z=29 is both for 2-ethyl-1-hexanol and bis(2-ethylhexyl) phosphate. It is also noted that the strongest peak of 2-ethyl-1-hexanol is at M/Z=57 consistent with the standard card.(standard data from http://webbook.nist.gov/) Therefore, it can be recognized that there is 2-ethyl-1-hexanol in the products.