

Supplementary Information

Hierarchically triangular prism structured Co_3O_4 : Self-supported fabrication and photocatalytic property

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Experimental:

The phase purity crystal structures of as-synthesized samples were detected by an X-ray diffractometer (XRD) (Xpert, Pro, Holland). The morphology was examined by transmission electron microscopy (TEM) (JEOL, JEM-2100, Japan), scanned electron microscopy (SEM) (JEOL, JSM-6490LV, Japan), and field emission scanned electron microscopy (FESEM) (JEOL, JSM-7600F, Japan). The surface area was analyzed using the surface area and porosity analyzer (Tri-star 3000, Micromeritics, U.S.A.) by nitrogen adsorption at 77 K using the Brunauer-Emmett-Teller (BET) method. The concentration of oxidized products from isopropanol (IPA) was detected by the gas chromatograph-mass spectrometry (GC-MS, Agilent 6890N/5973I, USA). The quantification of production was based on the external standard and the use of calibration curve.

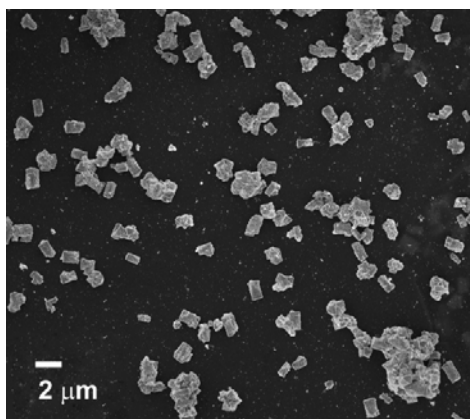


Fig. 1 Low magnification SEM image of triangular prism

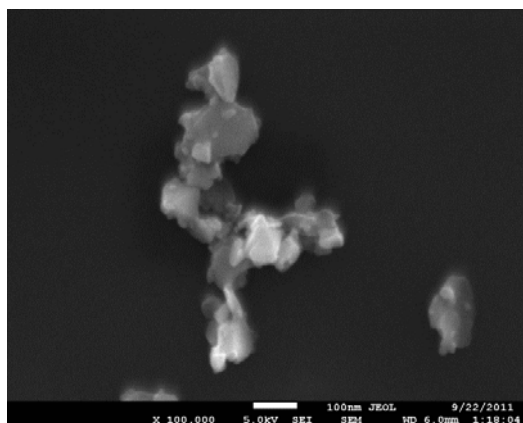


Fig. S2 SEM image – ammonia (1 mL)

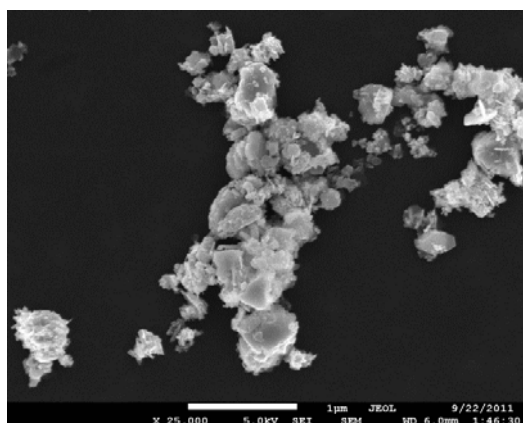


Fig. S3 SEM image – ammonia (5 mL)

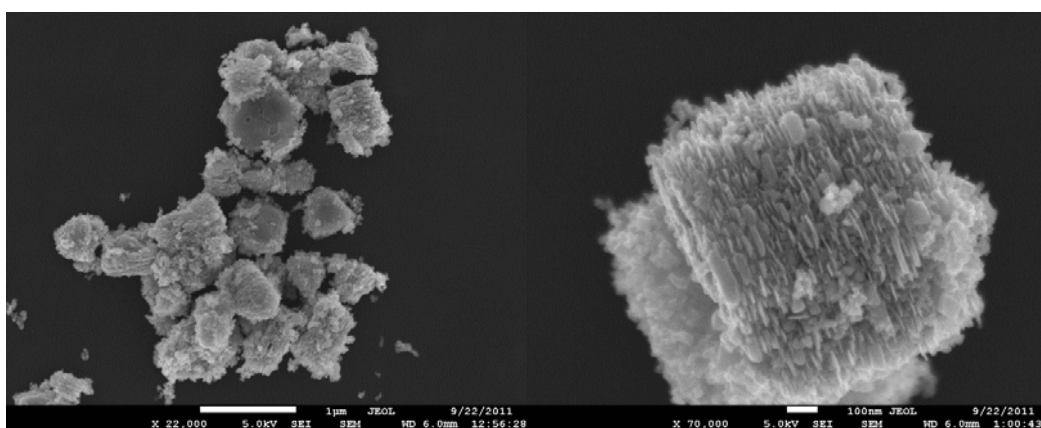


Fig. S4 SEM image – ammonia (20 mL)

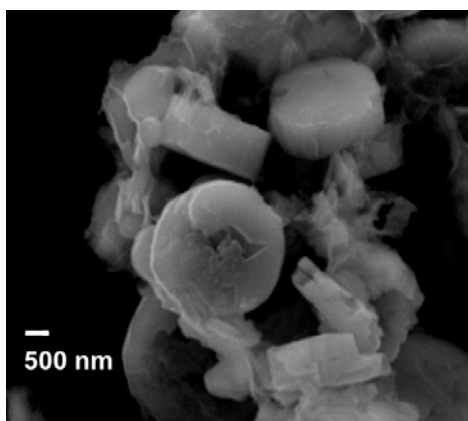


Fig. S5 SEM image of as-synthesized sample in the absence of Na_3PO_4

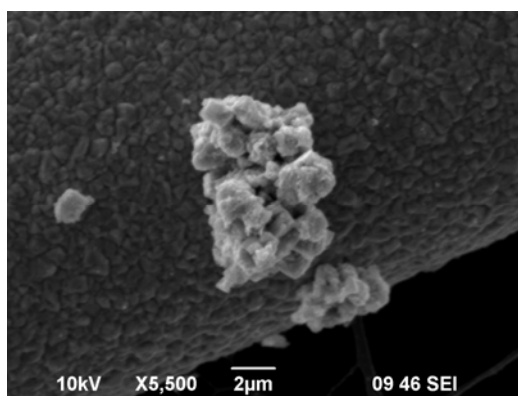


Fig. S6 SEM image – molar ratio $\text{Na}_3\text{PO}_4:\text{Co}(\text{Ac})_2$ (1:1)

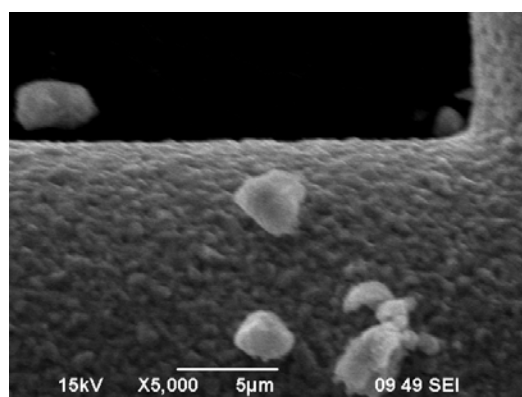


Fig. S7 SEM image – molar ratio $\text{Na}_3\text{PO}_4:\text{Co}(\text{Ac})_2$ (1.8:1)

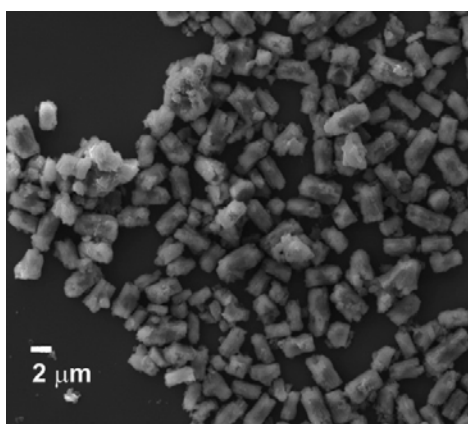


Fig. S8 Low magnification SEM image of trunk-like sample

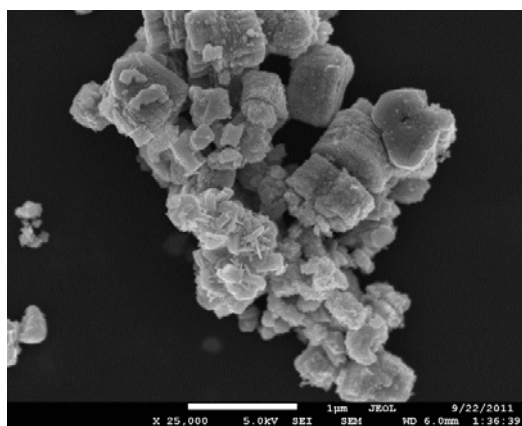


Fig. S9 SEM image – Using 0.1 mol NaOH

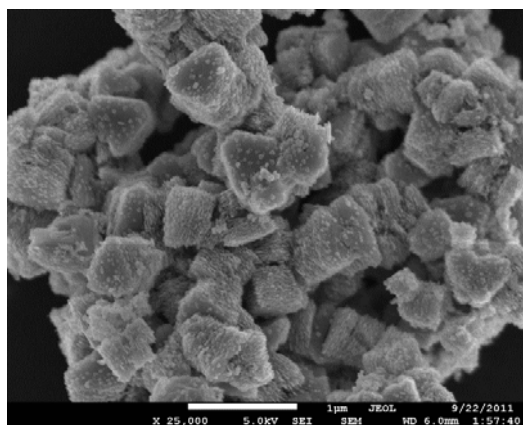


Fig. S10 SEM image – Using 0.2 mol NaOH

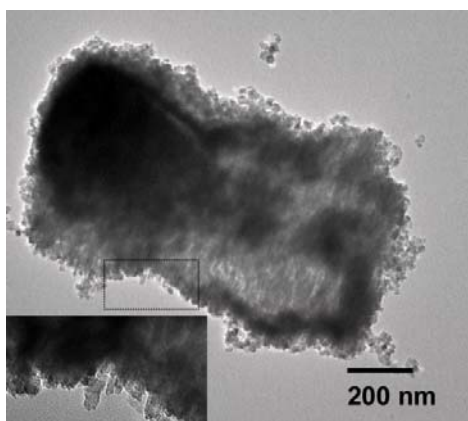


Fig. S11 TEM image of a typical triangular prism Co_3O_4

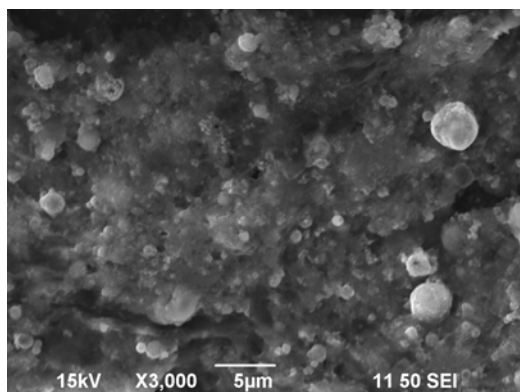


Fig. S12 Morphology of NH_4CoPO_4

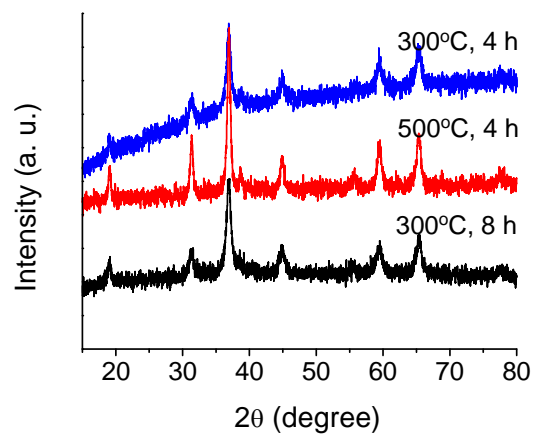


Fig. S13 XRD patterns of Co_3O_4 at different calcination conditions