Electronic Supplementary Information for

Hydrothermal synthesis and selectively photocatalytic properties of tetragonal star-like ZrO_2 nanostructures

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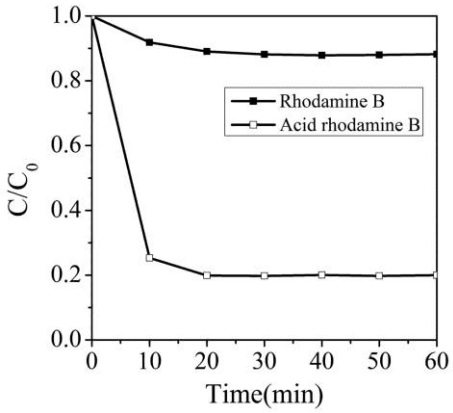

Fig. S1 The RhB and Acid RhB concentration as a function of keeping time before UV irradiation over tetragonal star-like ZrO_2 product.

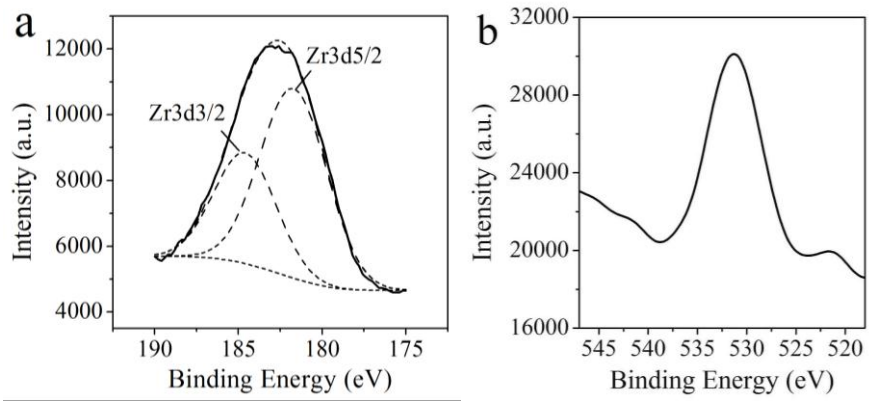

Fig. S2 XPS spectra of the typical product. (a) Zr3d, (b) O1s.

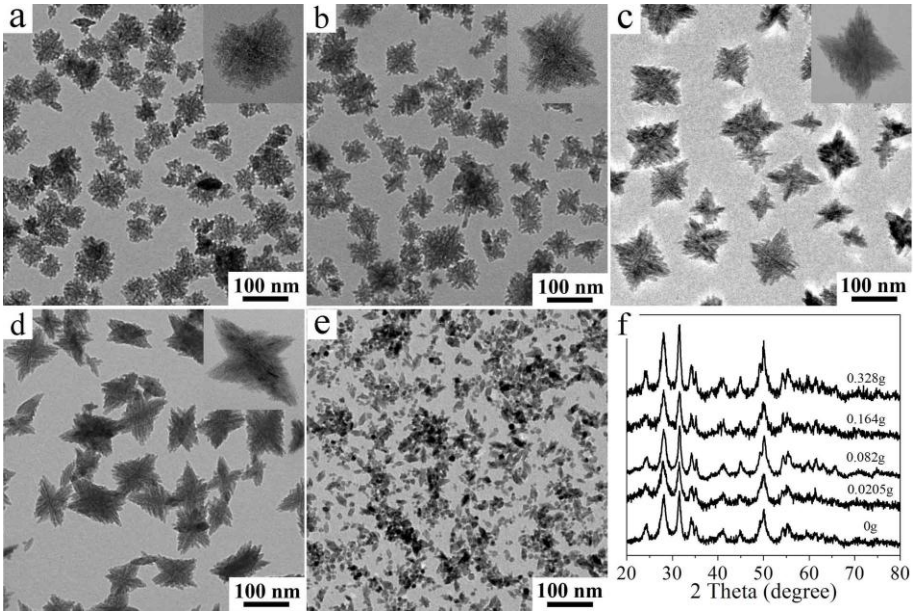

Fig. S3 TEM images and XRD patterns (f) of the products obtained by reacting at 240 °C for 6 h with different amount of NaAc: (a) 0, (b)0.0205 g, (c) 0.082 g, (d) 0.164 g, (e) 0.328 g. Insets in a, b, c, d are the corresponding enlarged TEM images.

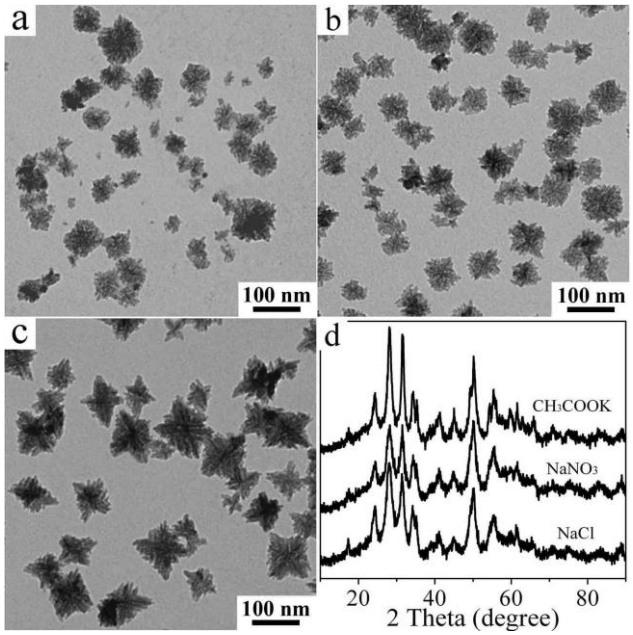

Fig. S4 TEM images and XRD patterns (d) of the products obtained by reacting at 240°C for 6 h with different reagents (keeping $ZrOCl_2 \cdot 8H_2O$ unchanged): (a) NaCl, (b) $NaNO_3$, (c) CH_3COOK.

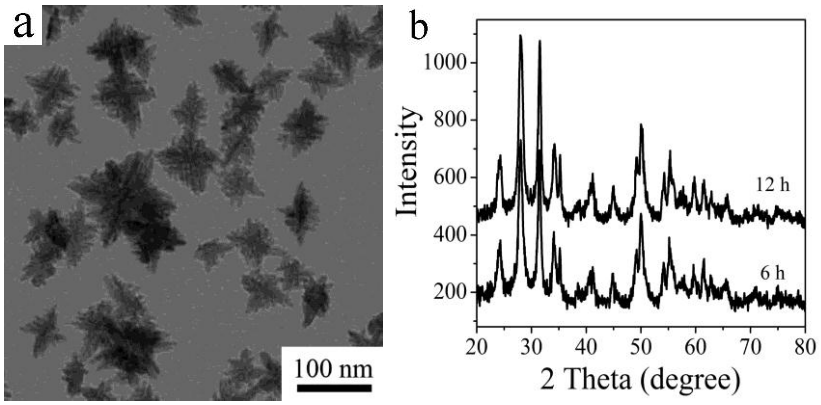

Fig. S5 The TEM image of the product obtained by 12 h reaction (a) and the XRD patterns of the products obtained by 12 h and 6 h (b).

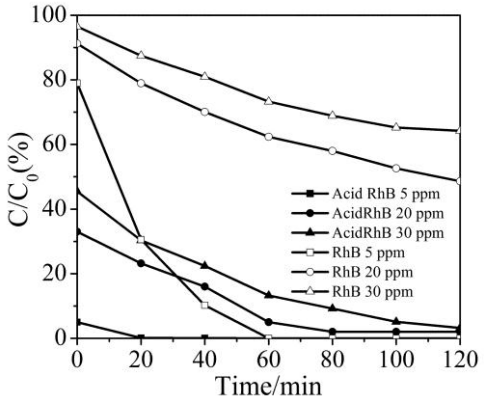

Fig. S6 Photocatalytic degradation of RhB and Acid RhB with different concentrations.