Electronic Supplementary Material (ESI) for CrystEngComm

A facile synthesis of single crystal TiO_2 nanorods with reactive {100} facets and their enhanced photocatalytic activity

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Supplementary Information:

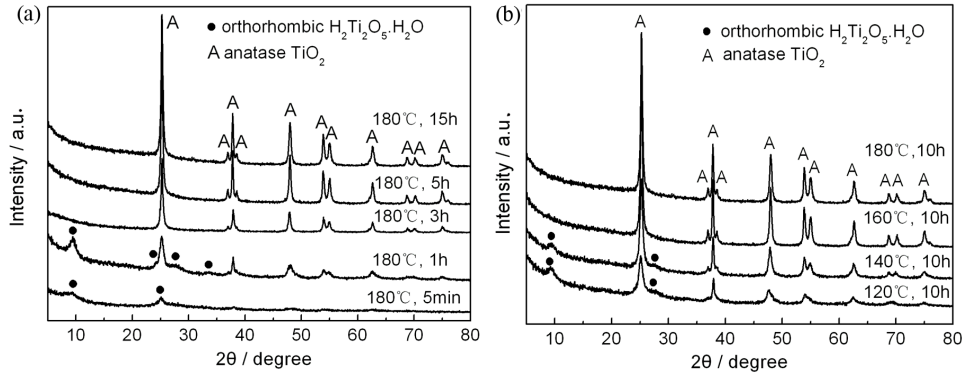

Fig. S1 XRD patterns of the products synthesized by (a) the different time durations at 180 °C and (b) the different temperature for 10 h.

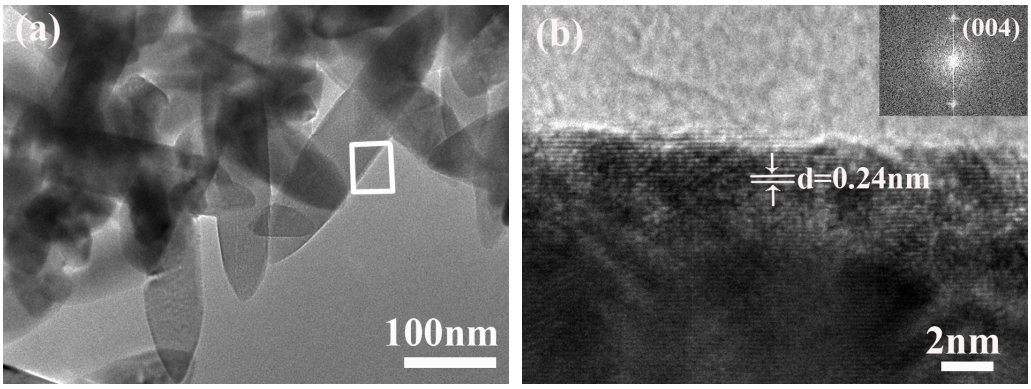

Fig. S2 (a) TEM image of the TiO_2 nanorods, (b) HRTEM image taken from the central area of an individual nanorod (highlighted by a rectangular box in Fig. S2a), inset is the corresponding FFT pattern.

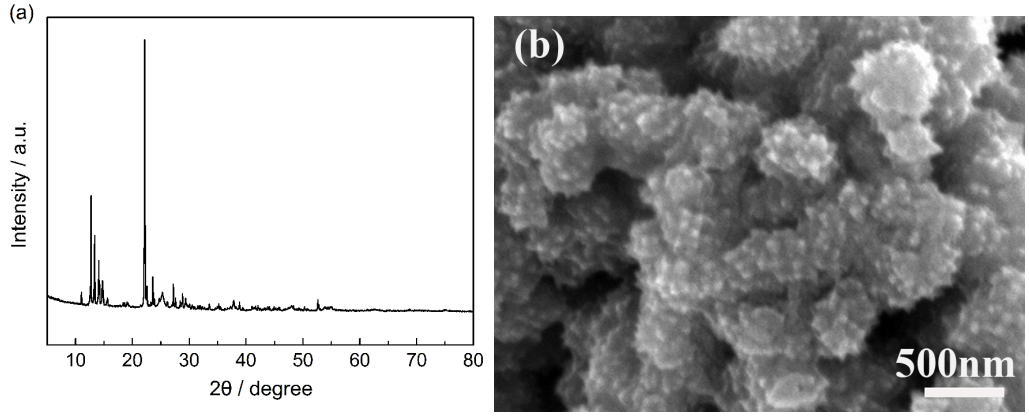

Fig. S3 (a) XRD and (b) FESEM image of the product synthesized at 180 °C for 1 h without the addition of urea.

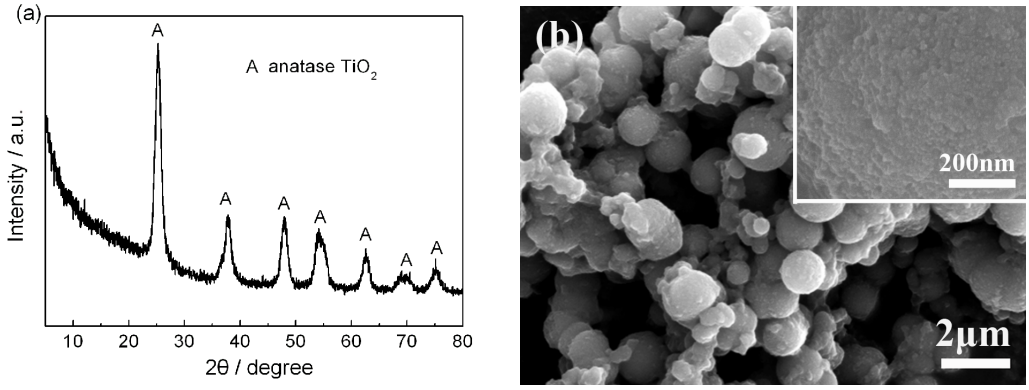

Fig. S4 (a) XRD and (b) FESEM image of the product synthesized at 180 °C for 1 h without the addition of EDTA. The inset in (b) is the enlarged image of the surface of a single microsphere.

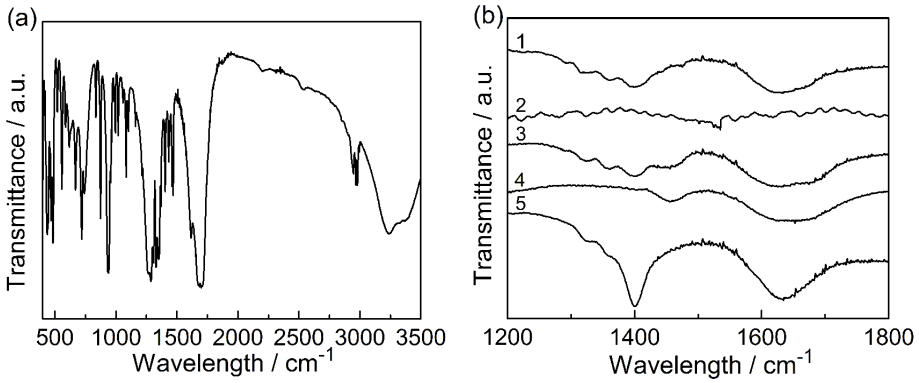

Fig. S5 (a) FT-IR spectrum of the precipitation [Ti(H_2O)(edta)], (b) FT-IR spectra of the different solution samples: (1) EDTA solution, (2) solution containing Ti(SO_4)$_2$ and EDTA, (3) solution containing urea and EDTA, (4) solution containing Ti(SO_4)$_2$, urea and EDTA, (5) reaction solution after hydrothermal treatment at 180 °C for 10 h.

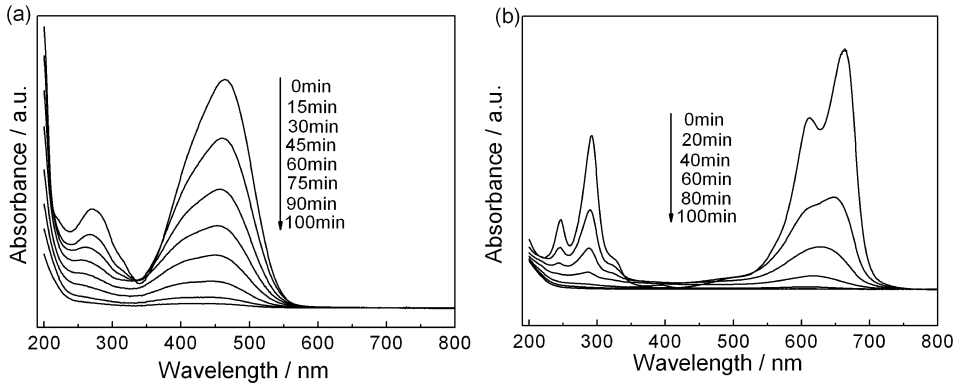

Fig. S6 Time-dependent optical absorbance spectra for (a) the MO and (b) the MB solutions with the presence of the as-synthesized TiO_2 nanorods.

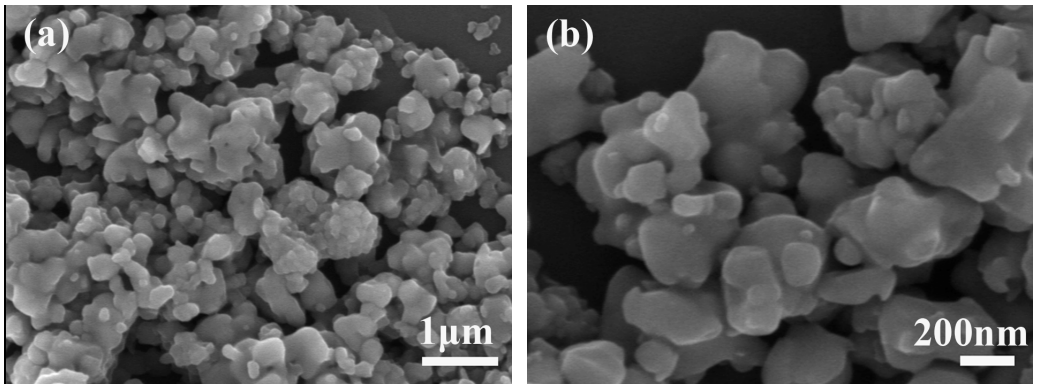

Fig. S7 (a) and (b) FESEM images of the commercial TiO_2 powder.

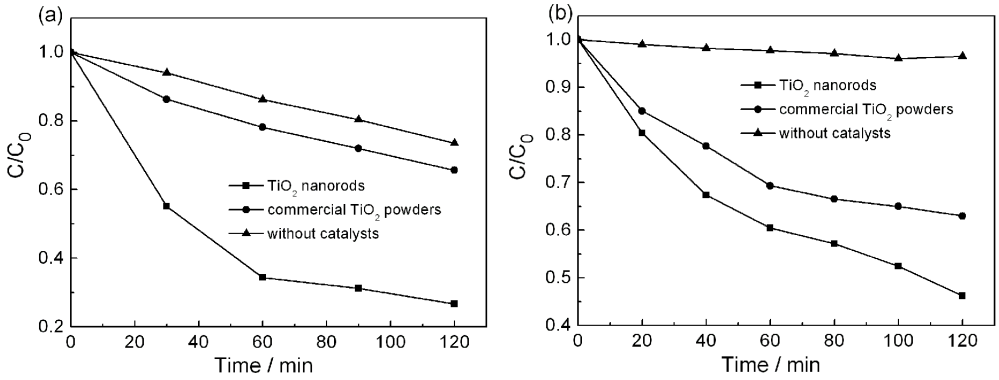

Fig. S8 Normalization concentration of (a) 2,4-dichlorophenoxyacetic acid and (b) Cr(VI) versus the exposure time to UV light in the presence of different TiO_2 catalysts.

Table 1 pH value of the reaction solution after hydrothermal treatment for the different times.

Reaction time	0 min	5 min	1 h	3 h	5 h	10 h	15 h
pH value	1.87	4.21	8.22	8.61	9.25	8.95	8.60

Table 2 pH value of the mixture of different reagents dispersed in deionized water at room temperature.

reagents	$Ti(SO_4)_2$	urea	$Ti(SO_4)_2$+urea	$Ti(SO_4)_2$+EDTA	$Ti(SO_4)_2$+EDTA+urea
pH value	1.14	6.24	1.30	1.85	1.87