

Supporting Information

Preparation and Characterization of Stable Biphase TiO₂ Photocatalyst with High Crystallinity, Large Surface Area and Enhanced Photoactivity

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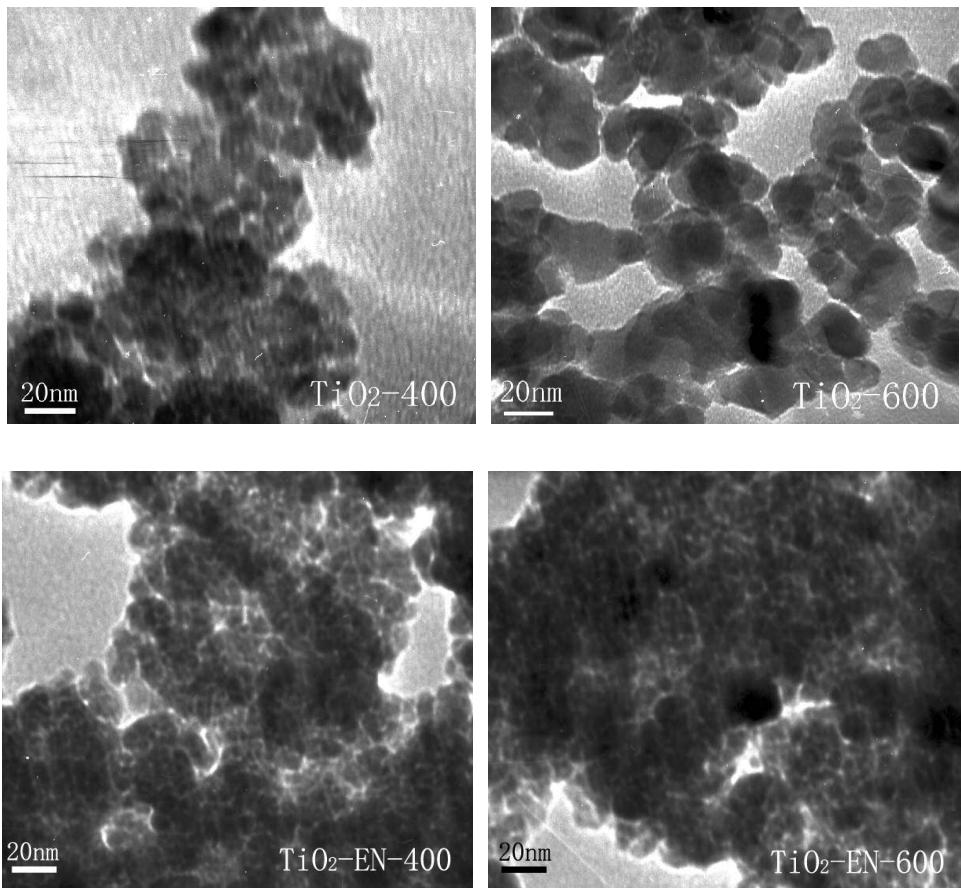


Figure S1. TEM images of TiO₂-*T* and TiO₂-EN-*T* samples calcined at 400 and 600 °C.

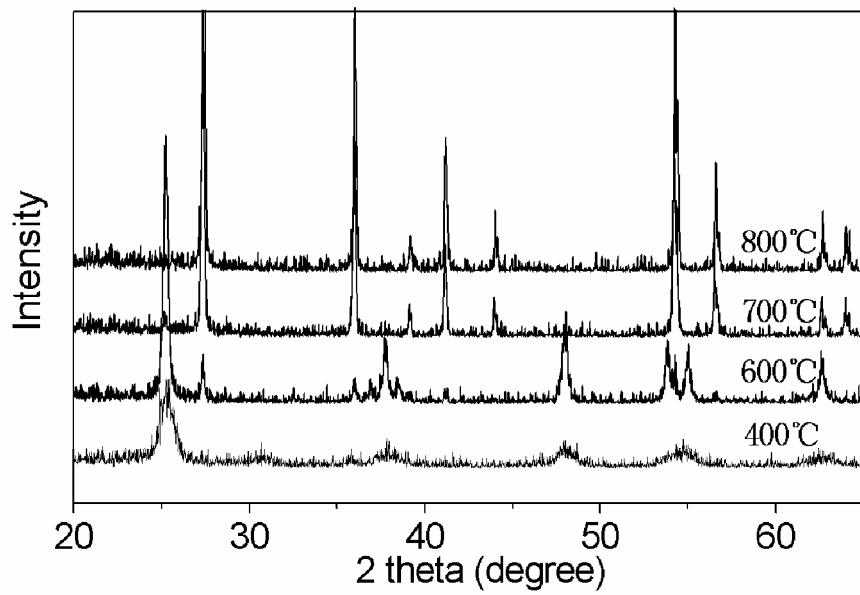


Figure S2. XRD patterns of TiO_2 samples (prepared without using CTAB and EN-treatment under similar conditions to the TiO_2 prepared using CTAB) calcined at different temperatures.

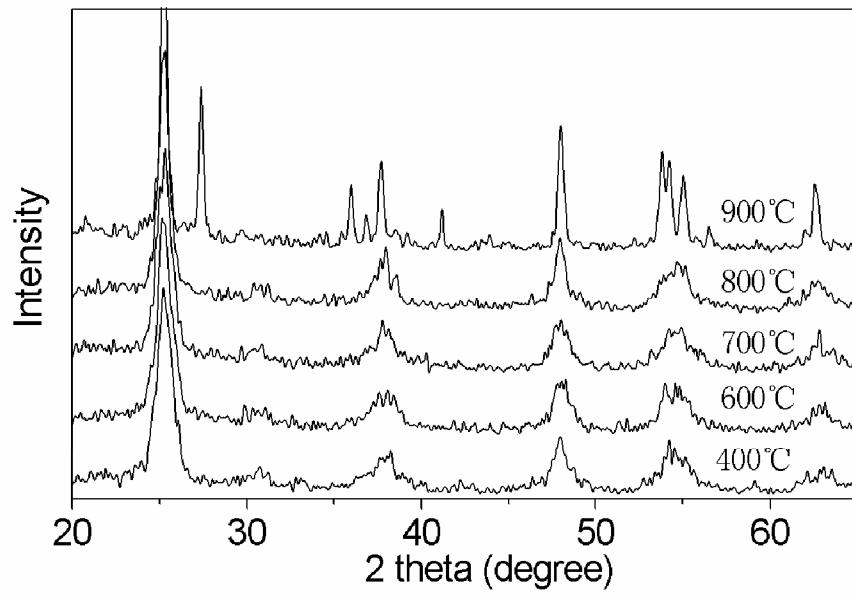


Figure S3. XRD patterns of EN-treated TiO_2 samples (prepared without using CTAB under similar conditions to the TiO_2 prepared using CTAB) calcined at different temperatures.

Table: Physicochemical properties of the two series of TiO₂ prepared without using CTAB under similar conditions to the TiO₂ prepared using CTAB

Materials	calcination temperatures (°C)	phase content (%)	crystalline size (nm)	S _{BET} (m ² /g)
TiO ₂	400	A (83.4), B (16.6)	A (14.7), B (11.2)	78.7
	600	A (69.2), R (30.8)	A (22.7), R (32.8)	37.5
	700	A (5.6), R (94.4)	A (30.6), R (42.5)	3.8
	800	R (100)	R (46.8)	1.2
EN-TiO ₂	400	A (76.6), B (23.4)	A (12.7), B (9.2)	145.8
	600	A (79.2), B (20.8)	A (14.8), B (11.6)	123.4
	700	A (80.3), B (19.7)	A (16.4), B (13.1)	102.3
	800	A (82.1), B (17.9)	A (18.2), B (15.5)	61.6
	900	A (67.6), R (32.4)	A (35.5), R (48.2)	1.2

Where TiO₂ and EN-TiO₂ represent the samples prepared without using EN-treatment and using EN-treatment, respectively. A, R, and B represent the anatase, rutile and brookite phase, respectively.

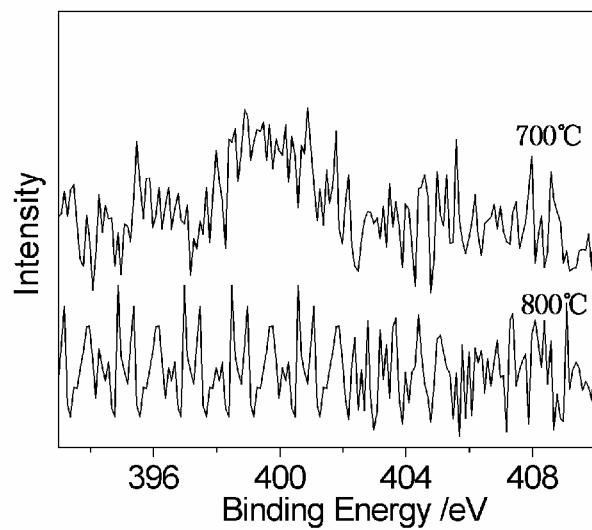


Figure S4. The XPS spectra for the N1s region of the EN-treated TiO₂ samples (prepared without using CTAB under similar conditions to the TiO₂ prepared using CTAB) calcined at 700 and 800 °C.

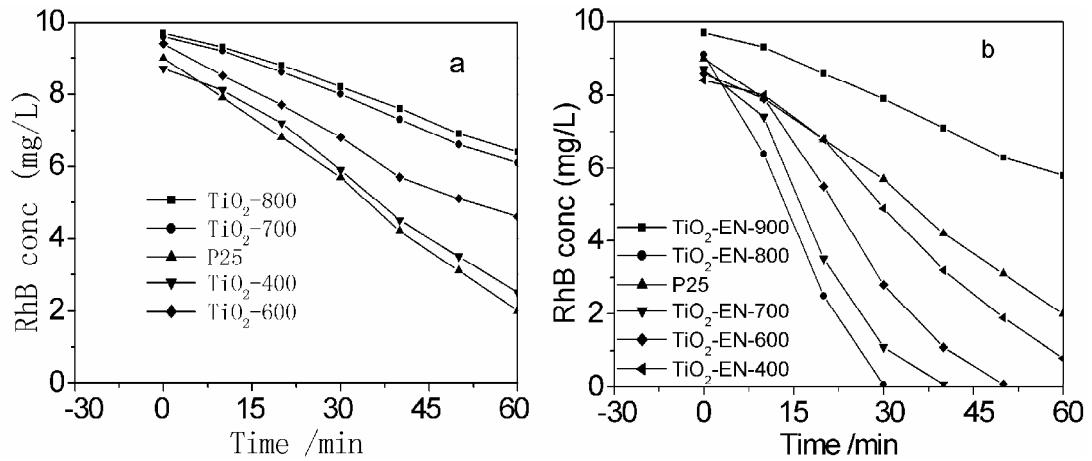


Figure S5. Results of the photocatalytic degradation of RhB in aqueous solutions (10 mg/L, 20 mL) under UV irradiation in the presence of 50 mg photocatalysts calcined at different temperatures. The negative time scale presents the time period, where the solution was not irradiated with UV-light. (a) TiO_2 -*T*; (b) TiO_2 -EN-*T*.