Supporting Information

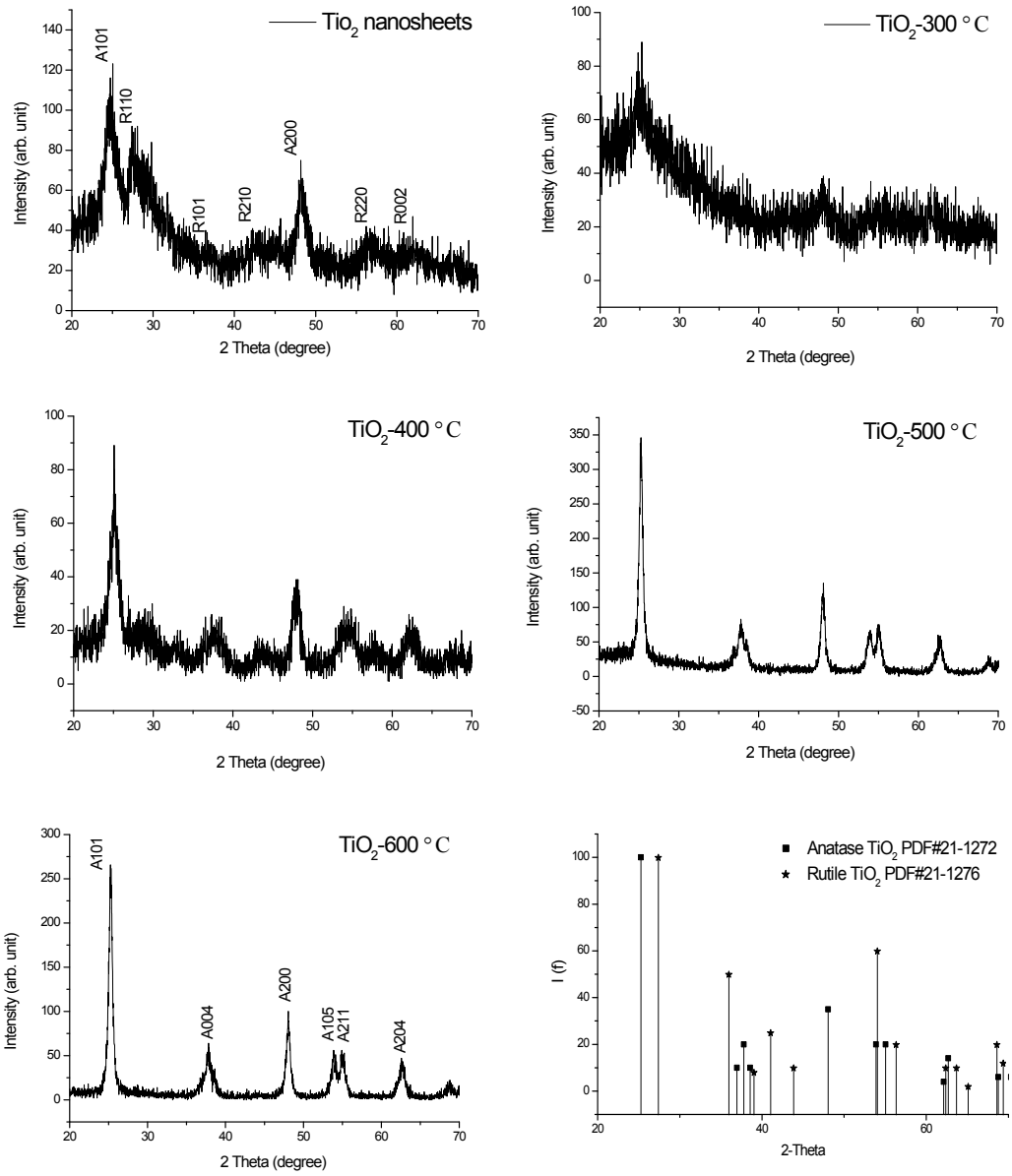

Fig. S1 XRD of samples derived from TiO_2 nanosheets calcined at various temperatures. (■: anatase (PDF#21-1272); ★: rutile (PDF#21-1276)).

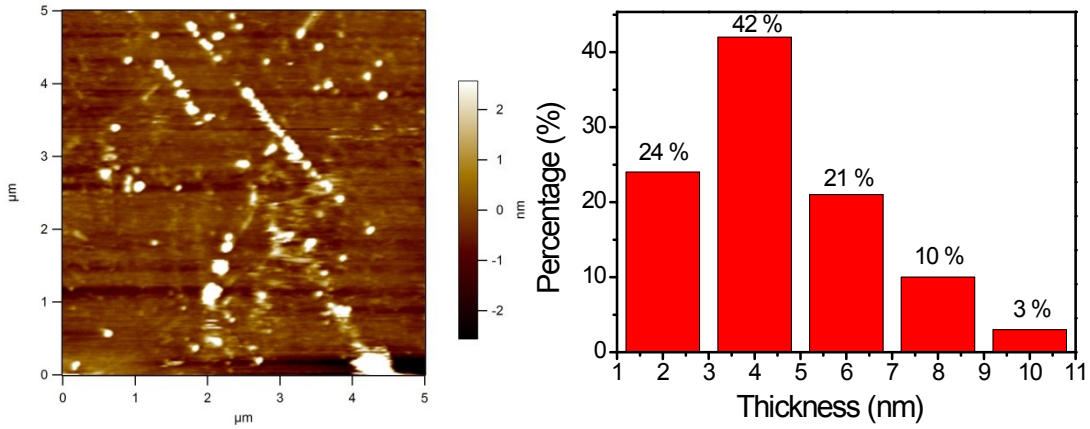

Fig. S2 AFM image of the as-grown 2D TiO_2 nanosheets and the corresponding statistical thickness distribution.

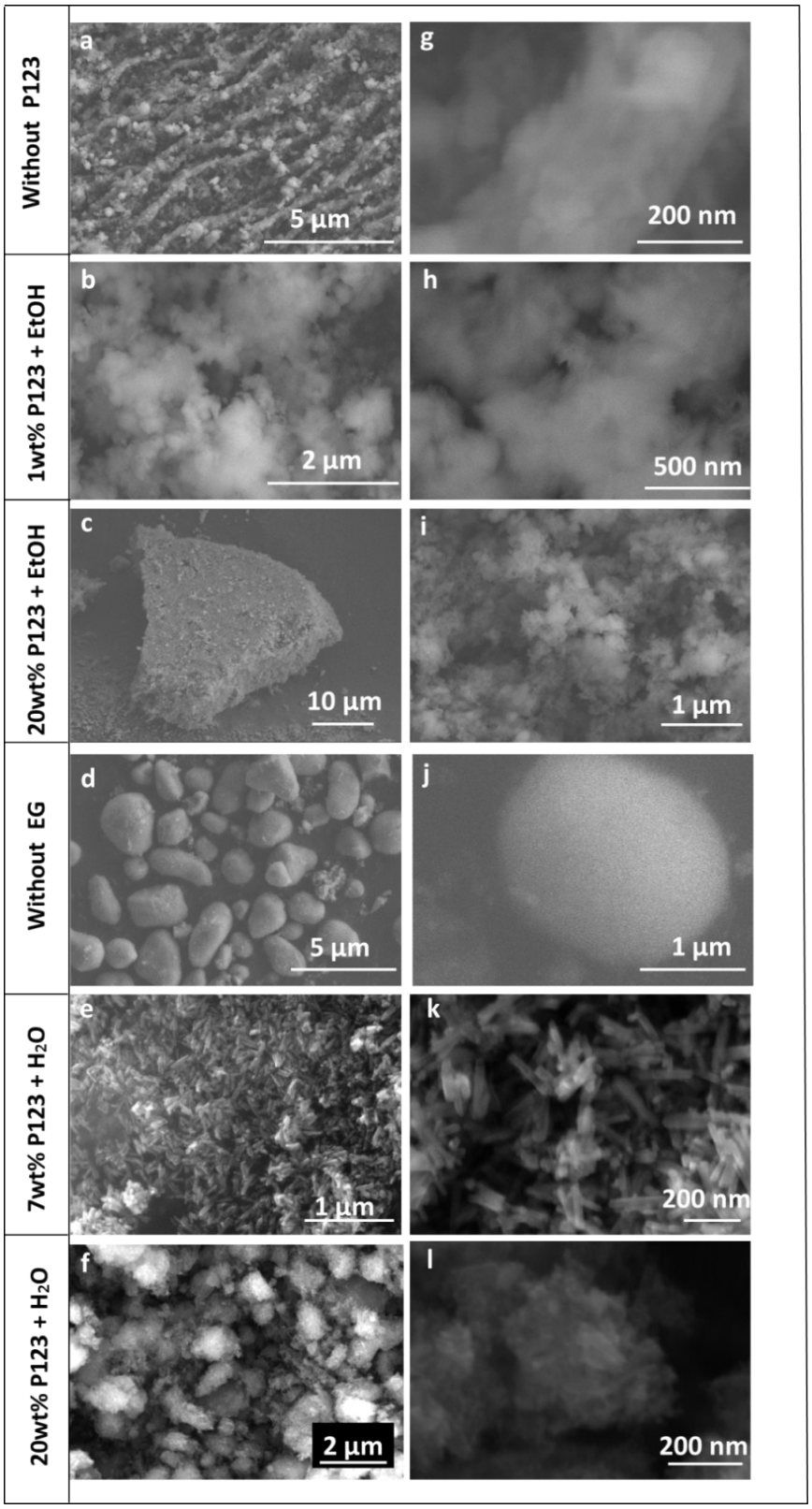

Fig. S3 Roles of the addition of P123, EG, and EtOH in the synthesis of the 2D TiO_2 nanosheets. (a, g) Morphology of the products of TiO_2 synthesized from the solution without P123; (b, h) morphology of the products of TiO_2 synthesized from the solution with the addition of 1 wt% P123; (c, i) morphology of the products of TiO_2 synthesized from the solution with the addition of

20 wt% P123; (d, j) morphology of the products of TiO_2 synthesized from the solution without EG; (e, k, f, l) morphology of the products of TiO_2 synthesized from the solution with the addition of water. The results show that all of the added P123, EG, and water are crucial for the formation of 2D TiO_2 nanosheets.

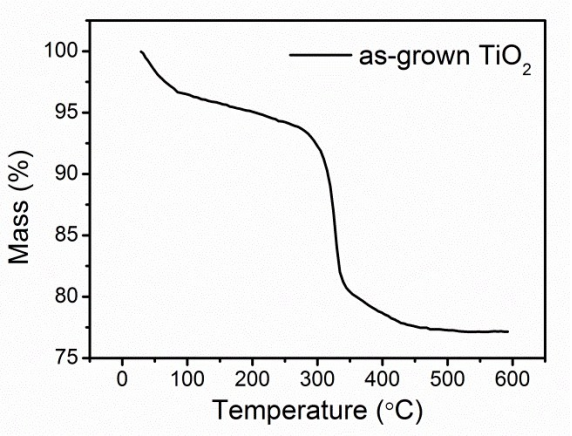

Fig. S4 TG curve of the as-grown TiO_2 nanosheets, indicating the residual organic species are completely consumed at a temperature of 500°C.

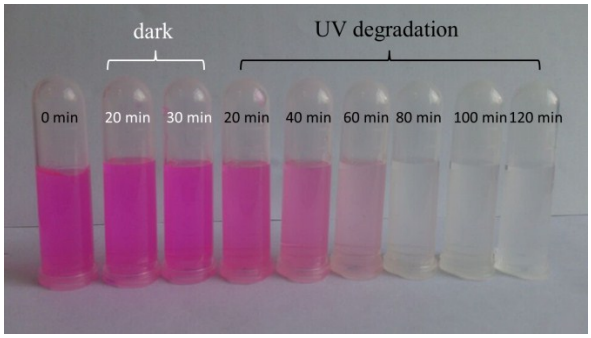

Fig. S5 The photograph of adsorption process in dark and photodegradation process under UV irradiance of RhB by 2D TiO_2 nanosheets calcined at 500 °C.

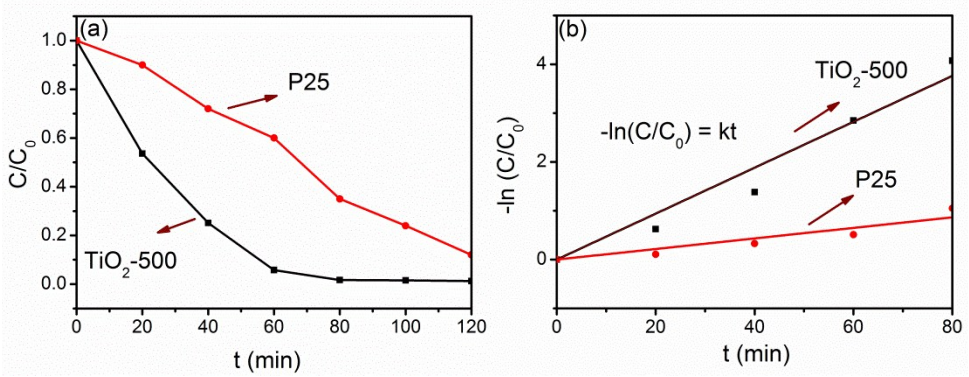

Fig. S6 (a)Photodegradation curves of RhB over TiO_2-500 and P25 TiO_2. (b) –ln (C/C_0) versus time

curves. The apparent rate constant for RhB photodegradation by TiO_2-500 (0.0471 min^{-1}) is 4.3 times higher than that with P25 TiO_2 (0.0108 min^{-1}).

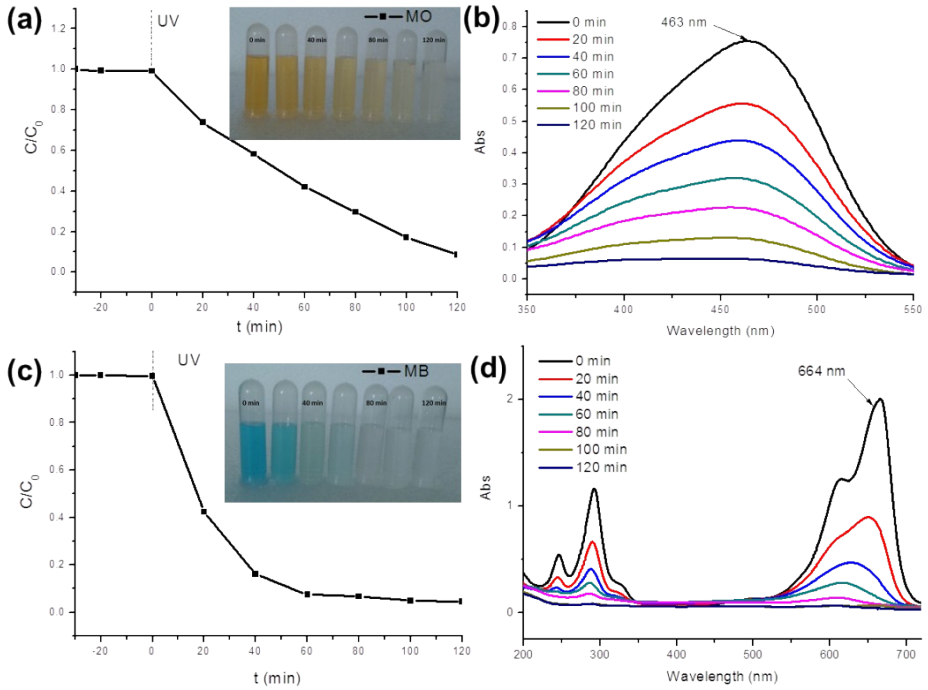

Fig. S7 (a, c) Photo-degradation rate of MO, MB by TiO_2-500 catalyst under UV irradiation. The insets are photograph showing the corresponding photodegradation process of MO and MB. (b, d) UV-Vis absorption spectra of MO, MB with TiO_2-500 catalyst as a function of irradiation time.