

Supplementary Information

Preparation of InP quantum dots - TiO₂ nanoparticle composites with enhanced visible light induced photocatalytic activity

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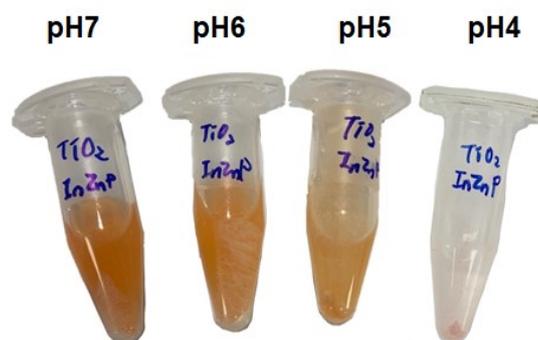


Figure S1. Images of InP/ZnSe QDs and TiO₂ NPs after centrifugation of InP/ZnSe QD and TiO₂ NP suspension in aqueous solution over pH range of 4–7.

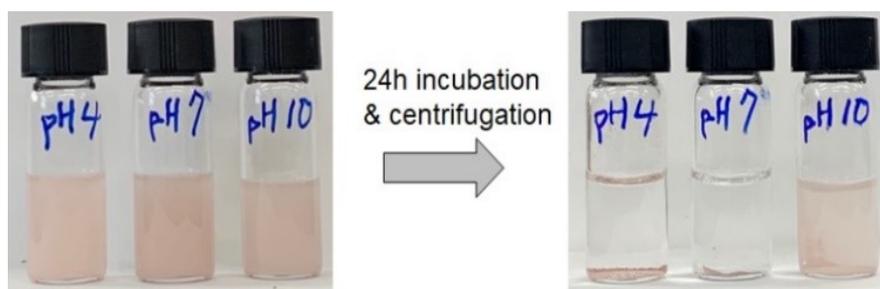


Figure S2. Sample vials of InP/ZnSe QD–TiO₂ NP composite powder dispersed in aqueous media with different pH values by sonication (left), and after centrifugation and incubation for 24 h (right).

Note: In a basic medium (pH 10), the QDs were detached from the TiO₂ NPs, and free standing QDs were dispersed in the aqueous solution, whereas the TiO₂ NPs precipitated after centrifugation.

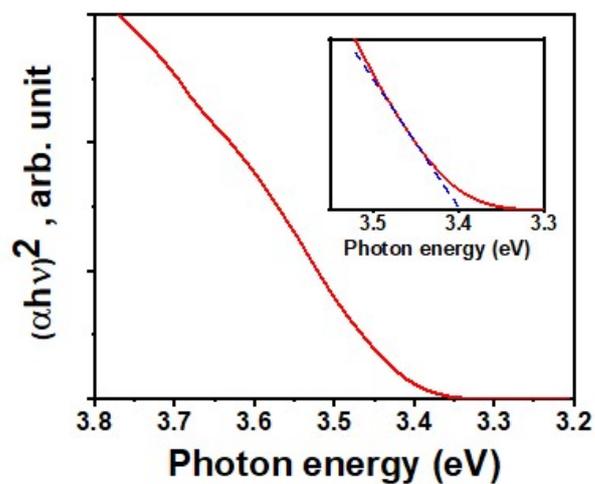


Figure S3. Tauc plot of the optical transmittance spectrum for the TiO₂ NPs. Inset is linearly extrapolating the onset region of the spectrum to determine optical band gap of the TiO₂ NPs.

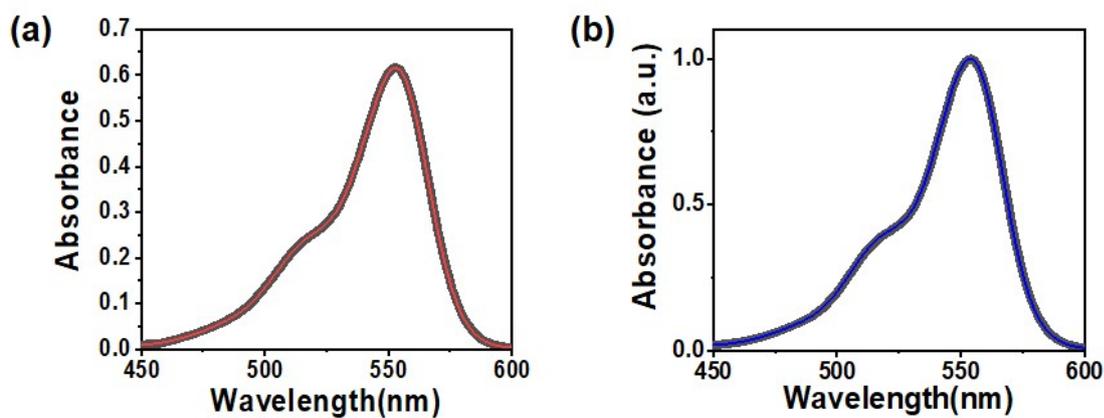


Figure S4. (a) Initial (black) UV-vis absorption spectrum of rhodamine B and that after 24 h in dark (red) in presence of InP/ZnSe QD-TiO₂ NP composite. (b) Initial (black) UV-vis absorption spectrum of rhodamine B and that after 16 h under 10mW 505 nm *cw* laser illumination (blue).

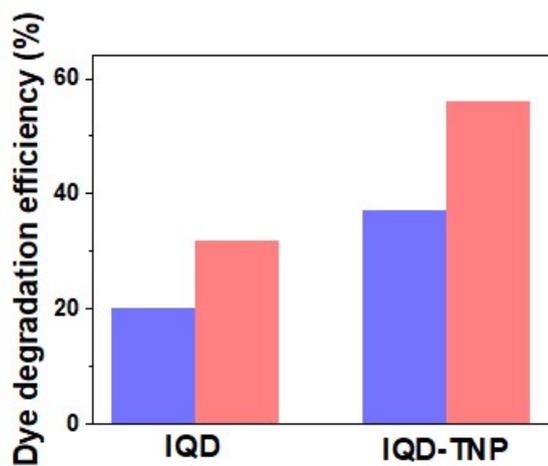


Figure S5. The rhodamine B dye degradation efficiencies for the InP/ZnSe QDs and InP/ZnSe QD–TiO₂ NP composites with the different QD contents. Blue and red bars indicate 0.42 and 0.70 nmol of QD contents in the photocatalytic samples, respectively.

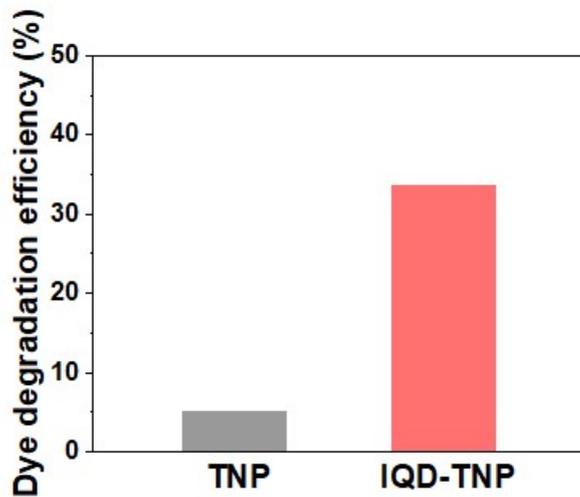


Figure S6. Comparison of the rhodamine B dye degradation efficiencies of the TiO₂ NPs (black bar) and InP/ZnSe QD–TiO₂ NP composites (red bar) under a UV lamp (15 W, 312 nm) for 10 min.