

Supplementary Materials

Auramine O UV Photocatalytic Degradation on TiO₂ Nanoparticles in a Heterogeneous Aqueous Solution

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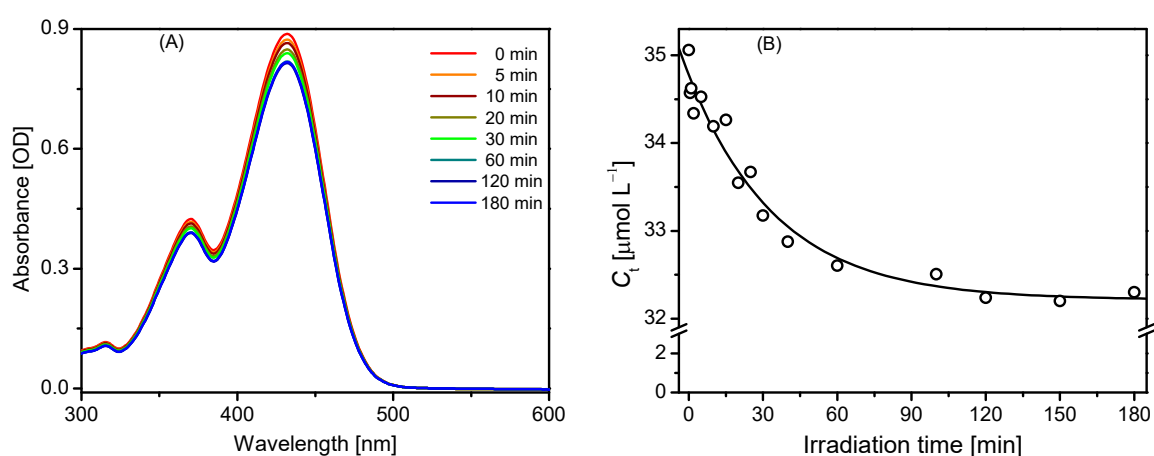


Figure S1. (A) UV-Vis absorption spectra following photolytic decomposition of 9.5 ppm AO, equivalent to 35.06 $\mu\text{mol L}^{-1}$, at different times under 365-nm light irradiation with no catalyst, and (B) the concentration of AO as a function of irradiation time. The solid line is the best fit of a single exponential function to the experimental data.

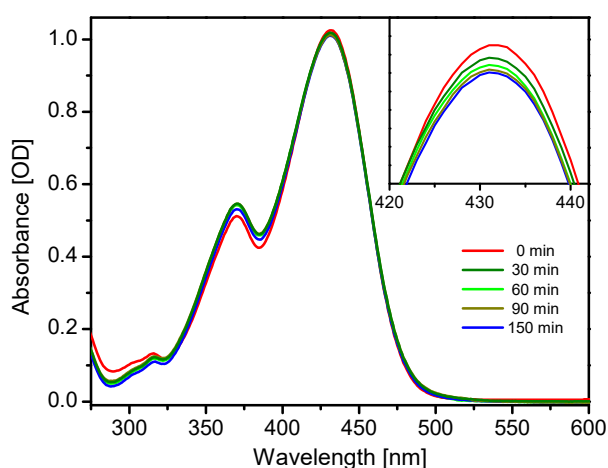


Figure S2. Absorption spectra of AO (35.06 $\mu\text{mol L}^{-1}$) in aqueous colloidal solution in the presence of 5 mg TiO₂ NPs in the dark at different contact times, revealing inefficient adsorption of the dye on the catalyst.

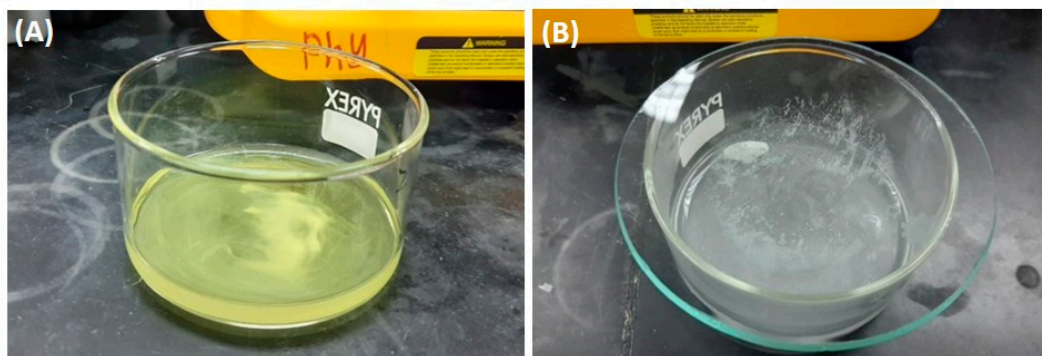


Figure S3: A colloidal mixture of 20 mL of AO solution ($35.06 \mu\text{mol L}^{-1}$) mixed with 2.5 mg TiO_2 NPs; **(A)** before irradiation and **(B)** after irradiation

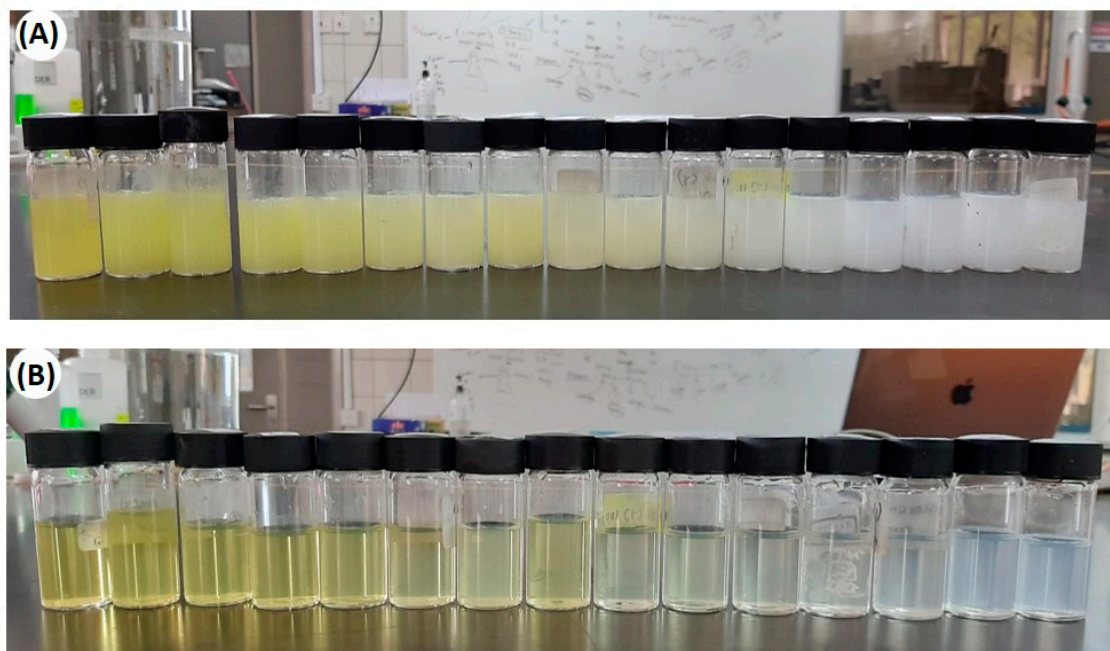


Figure S4: A colloidal mixtures of 20 mL of AO solution ($35.06 \mu\text{mol L}^{-1}$) mixed with 5 mg TiO_2 NPs after 365-nm light irradiation at different irradiation times, showing the colour reduction as the dye is consumed; **(A)** before and **(B)** after centrifugation.

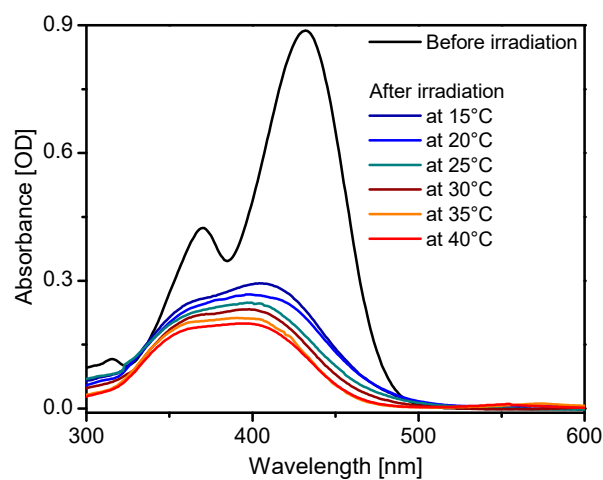


Figure S5. Absorption spectra of AO ($35.06 \mu\text{mol L}^{-1}$) in aqueous colloidal mixture with 5 mg TiO_2 NPs after irradiated for 30 mins at different temperatures, as indicated.

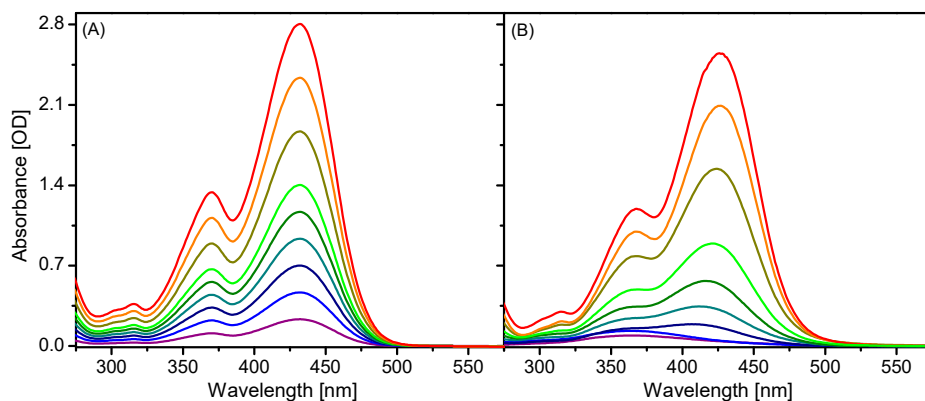


Figure S6. Absorption spectra of different concentrations AO in an aqueous colloidal mixture with 5 mg TiO_2 NPs; (A) before and (B) after 365-nm UV light irradiation for 30 min.

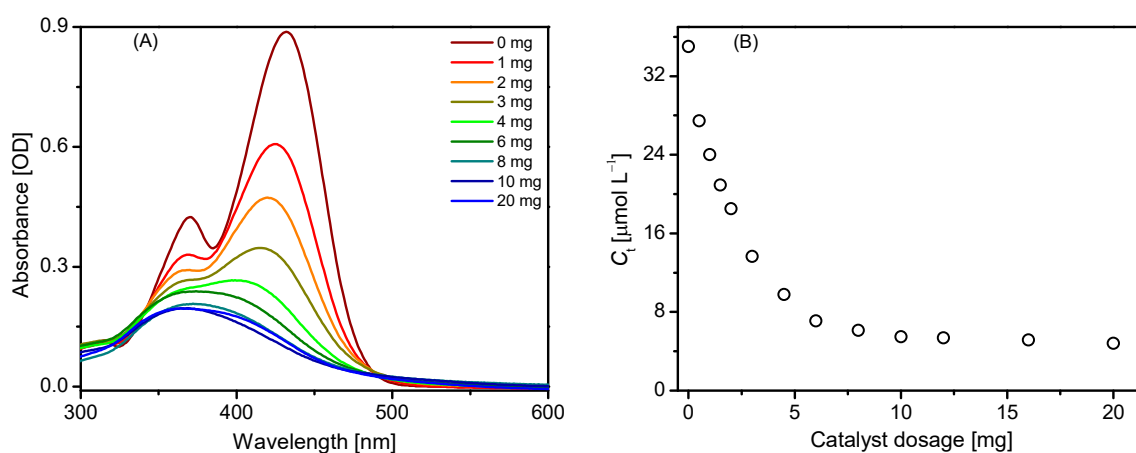


Figure S7. (A) Absorption spectra of different concentrations AO ($35.06 \mu\text{mol L}^{-1}$) in aqueous colloidal mixture with different masses of TiO_2 NPs, as indicated, after irradiation for 30 mins; and (B) A plot of the remaining AO concentration (C_t) as a function of the catalyst dosage.

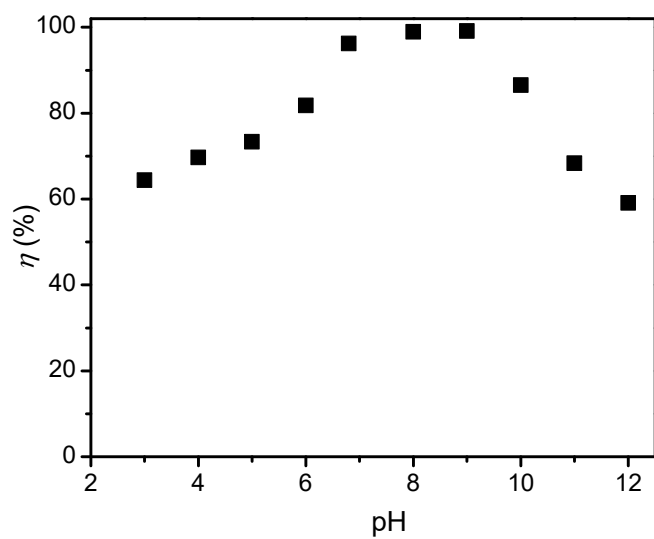


Figure S8. The plot of η value of photocatalytic degradation of AO ($35.06 \mu\text{mol L}^{-1}$) in aqueous colloidal mixture with 5 mg TiO_2 NPs at different pHs.

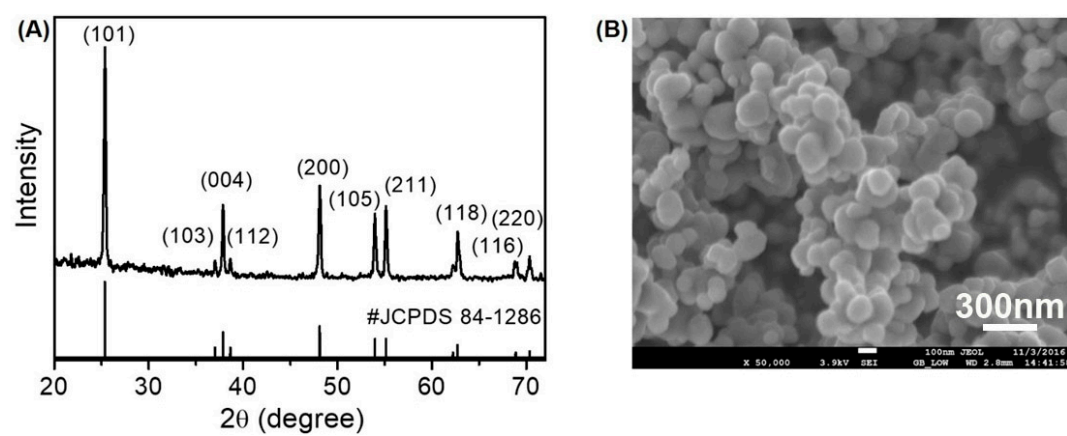


Figure S9. (A) XRD patterns of anatase TiO_2 NPs, with comparison to standard data (#JCPDS 84-1286) and (B) SEM image of TiO_2 NPs at $\times 50,000$ magnification