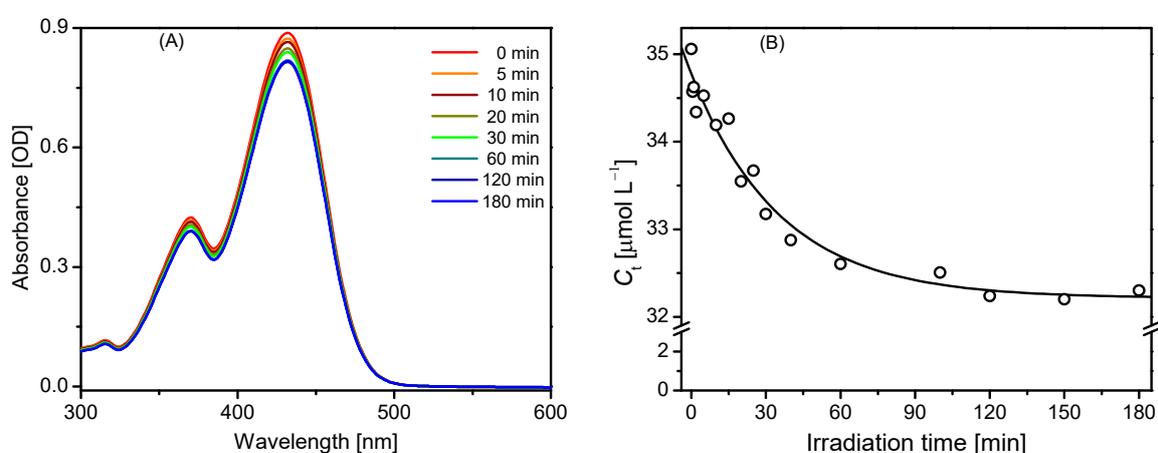


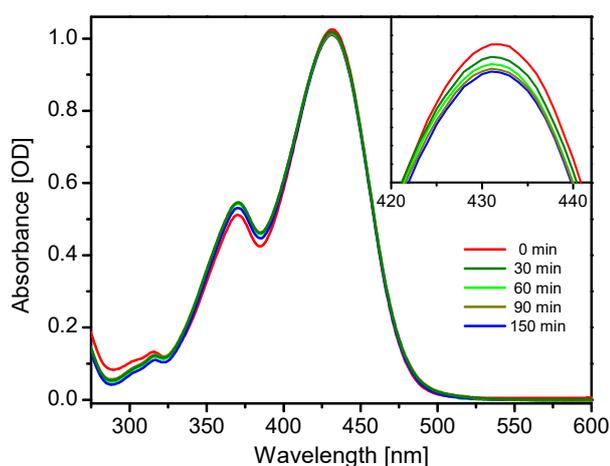
## Supplementary Materials

# Auramine O UV Photocatalytic Degradation on TiO<sub>2</sub> Nanoparticles in a Heterogeneous Aqueous Solution

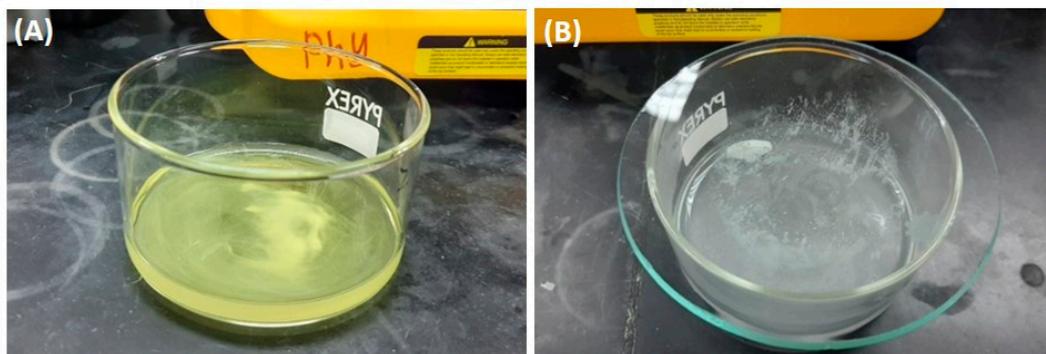
Cristina Pei Ying Kong, Nurul Amanina A. Suhaimi, Nurulizzatul Ningsheh M. Shahri,  
Jun-Wei Lim, Muhammad Nur, Jonathan Hobley, and Anwar Usman



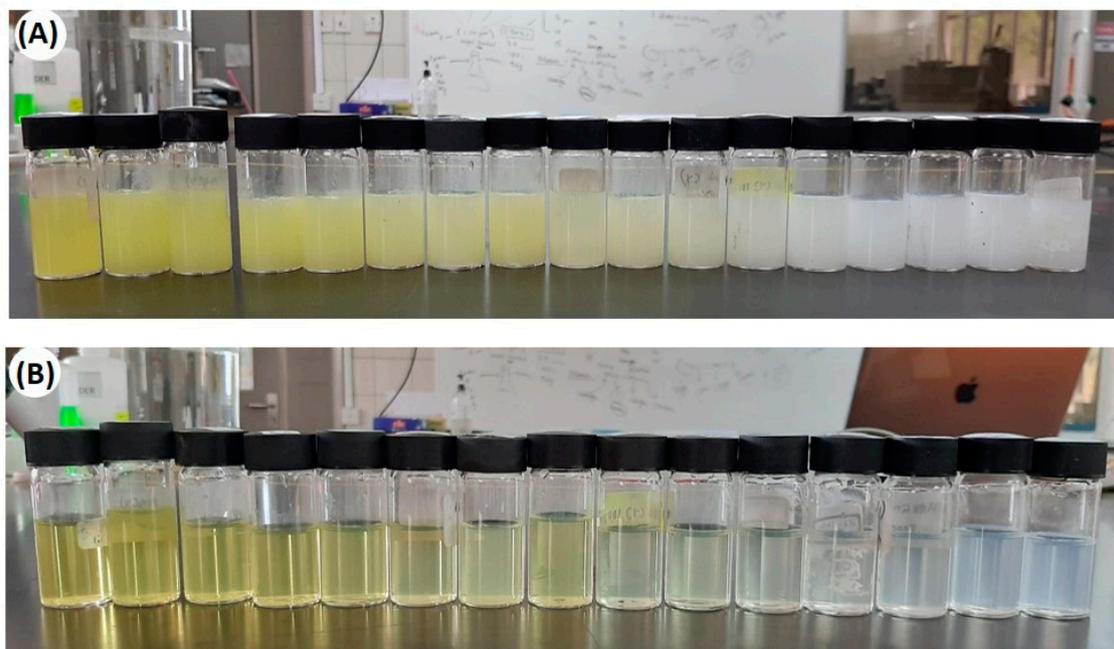
**Figure S1.** (A) UV-Vis absorption spectra following photolytic decomposition of 9.5 ppm AO, equivalent to  $35.06 \mu\text{mol L}^{-1}$ , at different times under 365-nm light irradiation with no catalyst, and (B) the concentration of AO as a function of irradiation time. The solid line is the best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



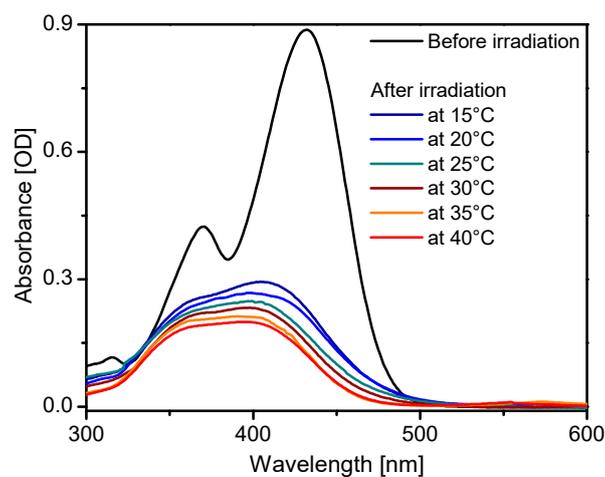
**Figure S2.** Absorption spectra of AO ( $35.06 \mu\text{mol L}^{-1}$ ) in aqueous colloidal solution in the presence of 5 mg TiO<sub>2</sub> NPs in the dark at different contact times, revealing inefficient adsorption of the dye on the catalyst.



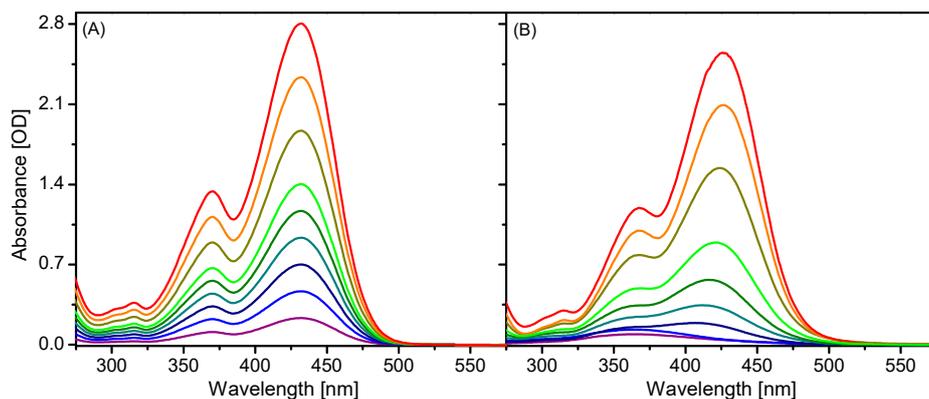
**Figure S3:** A colloidal mixture of 20 mL of AO solution ( $35.06 \mu\text{mol L}^{-1}$ ) mixed with 2.5 mg  $\text{TiO}_2$  NPs; **(A)** before irradiation and **(B)** after irradiation



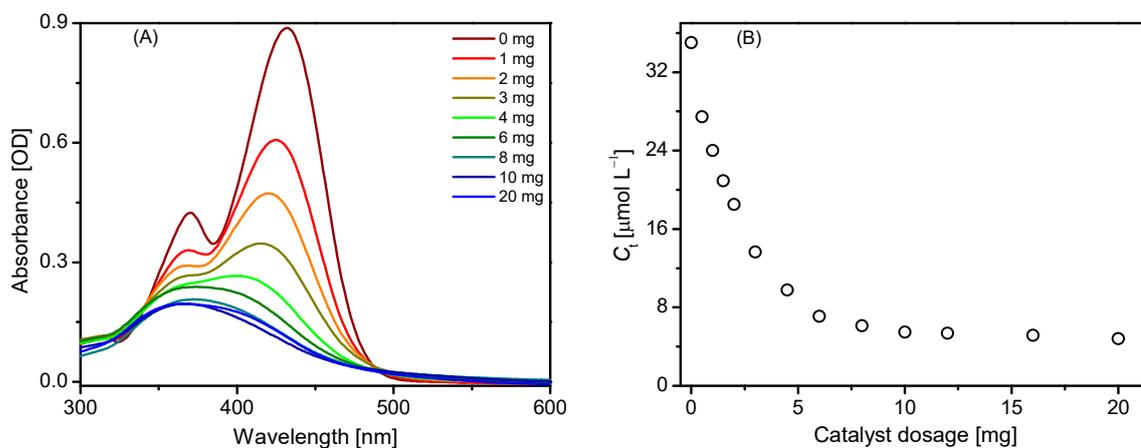
**Figure S4:** A colloidal mixtures of 20 mL of AO solution ( $35.06 \mu\text{mol L}^{-1}$ ) mixed with 5 mg  $\text{TiO}_2$  NPs after 365-nm light irradiation at different irradiation times, showing the colour reduction as the dye is consumed; **(A)** before and **(B)** after centrifugation.



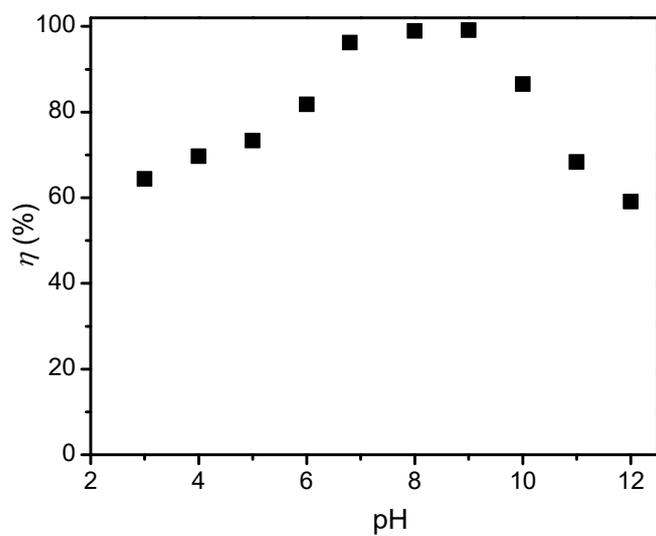
**Figure S5.** Absorption spectra of AO ( $35.06 \mu\text{mol L}^{-1}$ ) in aqueous colloidal mixture with 5 mg  $\text{TiO}_2$  NPs after irradiated for 30 mins at different temperatures, as indicated.



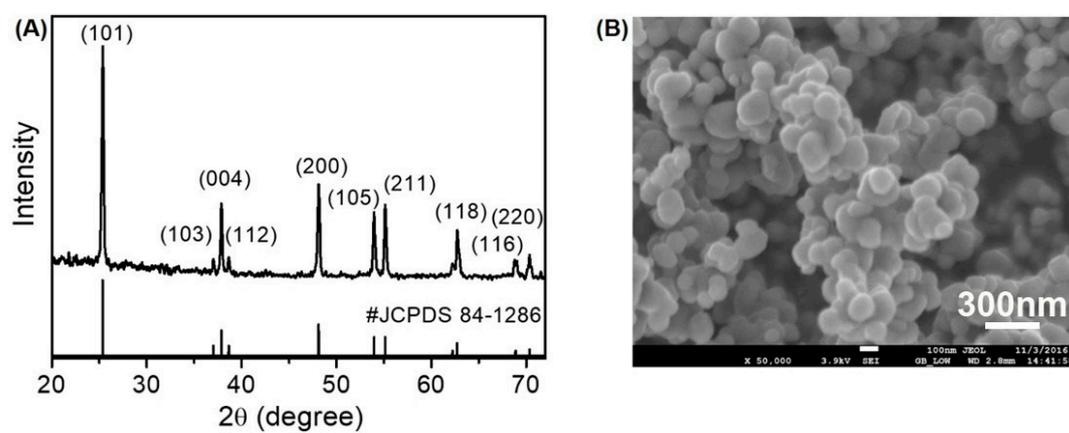
**Figure S6.** Absorption spectra of different concentrations AO in an aqueous colloidal mixture with 5 mg  $\text{TiO}_2$  NPs; (A) before and (B) after 365-nm UV light irradiation for 30 min.



**Figure S7.** (A) Absorption spectra of different concentrations AO ( $35.06 \mu\text{mol L}^{-1}$ ) in aqueous colloidal mixture with different masses of  $\text{TiO}_2$  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  $\eta$  value of photocatalytic degradation of AO ( $35.06 \mu\text{mol L}^{-1}$ ) in aqueous colloidal mixture with 5 mg  $\text{TiO}_2$  NPs at different pHs.



**Figure S9.** (A) XRD patterns of anatase  $\text{TiO}_2$  NPs, with comparison to standard data (#JCPDS 84-1286) and (B) SEM image of  $\text{TiO}_2$  NPs at  $\times 50,000$  magnification