

Supporting Information

for

High photocatalytic activity of Fe₂O₃/TiO₂ nanocomposites prepared by photodeposition for degradation of 2,4-dichlorophenoxyacetic acid

Shu Chin Lee¹, Hendrik O. Lintang^{1,2} and Leny Yuliati^{*1,2}

Address: ¹Centre for Sustainable Nanomaterials, Ibnu Sina Institute for Scientific and Industrial Research, Universiti Teknologi Malaysia, 81310 UTM Johor Bahru, Johor, Malaysia and ²Ma Chung Research Center for Photosynthetic Pigments, Universitas Ma Chung, Villa Puncak Tidar N-01, Malang 65151, East Java, Indonesia

Email: Leny Yuliati - leny.yuliati@machung.ac.id

*Corresponding Author

Additional Figures

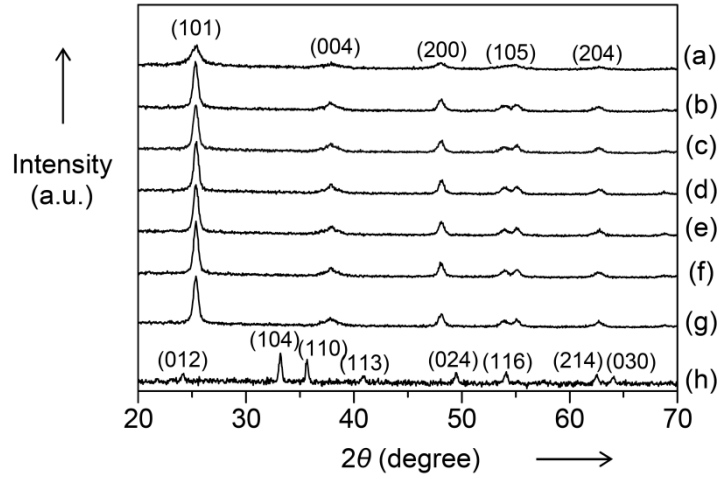


Figure S1: XRD patterns of (a) TiO₂ (NT), (b) TiO₂ (IM_T), (c) Fe₂O₃(0.1)/TiO₂ (IM), (d) Fe₂O₃(0.25)/TiO₂ (IM), (e) Fe₂O₃(0.5)/TiO₂ (IM), (f) Fe₂O₃(0.75)/TiO₂ (IM), (g) Fe₂O₃(1)/TiO₂ (IM), and (h) Fe₂O₃.

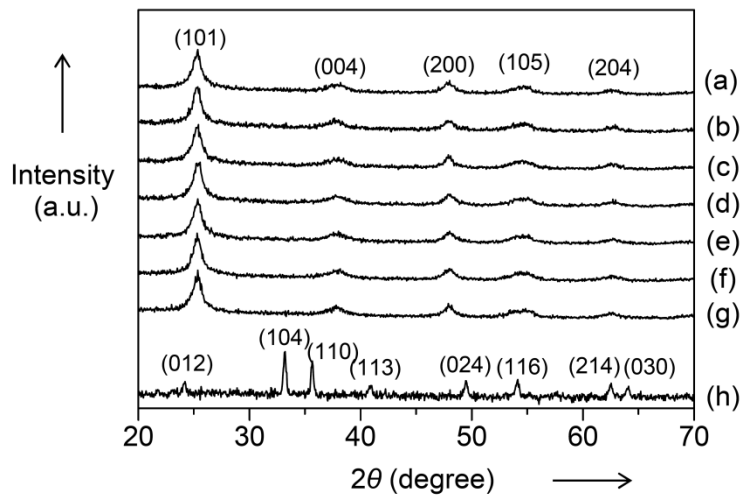


Figure S2: XRD patterns of (a) TiO₂ (NT), (b) TiO₂ (PD_T), (c) Fe₂O₃(0.1)/TiO₂ (PD), (d) Fe₂O₃(0.25)/TiO₂ (PD), (e) Fe₂O₃(0.5)/TiO₂ (PD), (f) Fe₂O₃(0.75)/TiO₂ (PD), (g) Fe₂O₃(1)/TiO₂ (PD), and (h) Fe₂O₃.

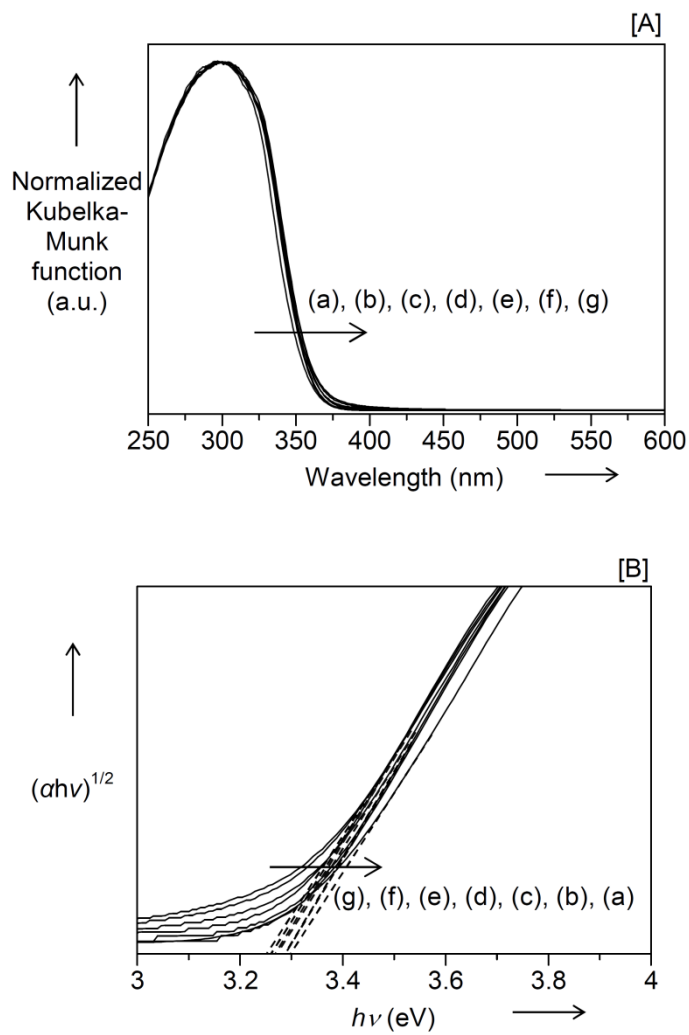


Figure S3: [A] DR UV-visible spectra and [B] Tauc plots of (a) TiO₂ (NT), (b) TiO₂ (IM_T), (c) Fe₂O₃(0.1)/TiO₂ (IM), (d) Fe₂O₃(0.25)/TiO₂ (IM), (e) Fe₂O₃(0.5)/TiO₂ (IM), (f) Fe₂O₃(0.75)/TiO₂ (IM), and (g) Fe₂O₃(1)/TiO₂ (IM).

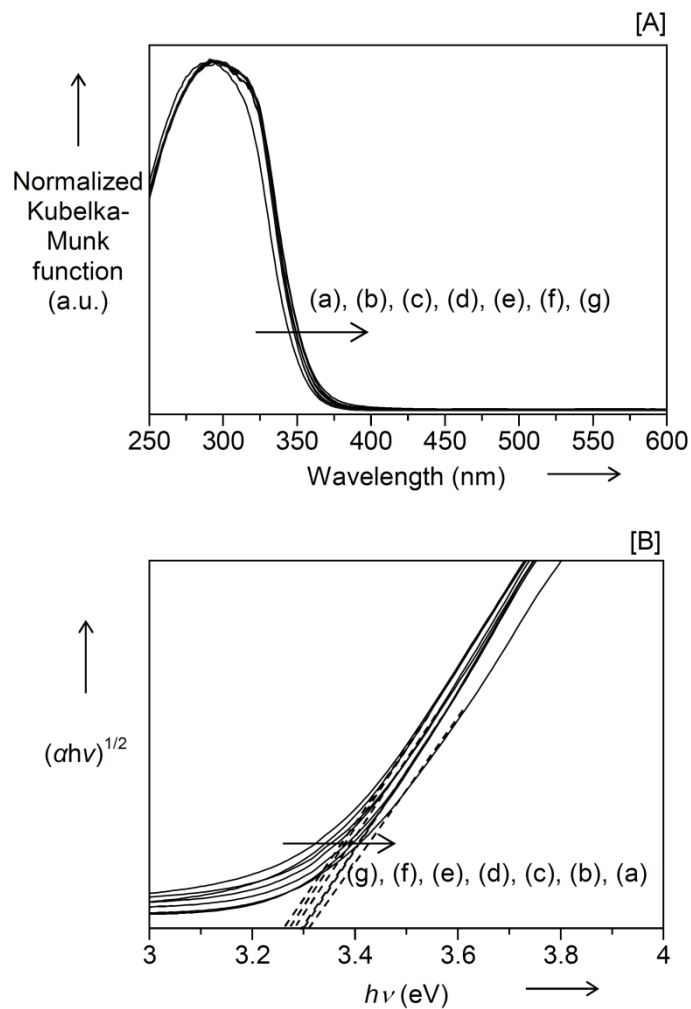


Figure S4: [A] DR UV-visible spectra and [B] Tauc plots of (a) TiO₂ (NT), (b) TiO₂ (PD_T), (c) Fe₂O₃(0.1)/TiO₂ (PD), (d) Fe₂O₃(0.25)/TiO₂ (PD), (e) Fe₂O₃(0.5)/TiO₂ (PD), (f) Fe₂O₃(0.75)/TiO₂ (PD), and (g) Fe₂O₃(1)/TiO₂ (PD).

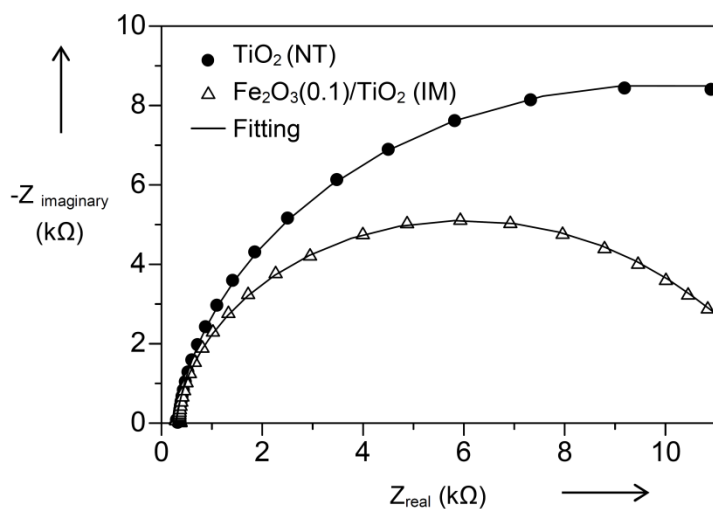


Figure S5: Nyquist plots of unmodified TiO_2 (NT) and $\text{Fe}_2\text{O}_3(0.1)/\text{TiO}_2$ (IM) with the respective model fitting. 10 mg photocatalyst [TiO_2 (NT) and $\text{Fe}_2\text{O}_3(0.1)/\text{TiO}_2$ (IM)] and 10 μL nafion (Aldrich, 5%) were dispersed in 1 mL water and were sonicated for 10 min to form a homogeneous colloidal suspension, prior to deposition onto the SPE.

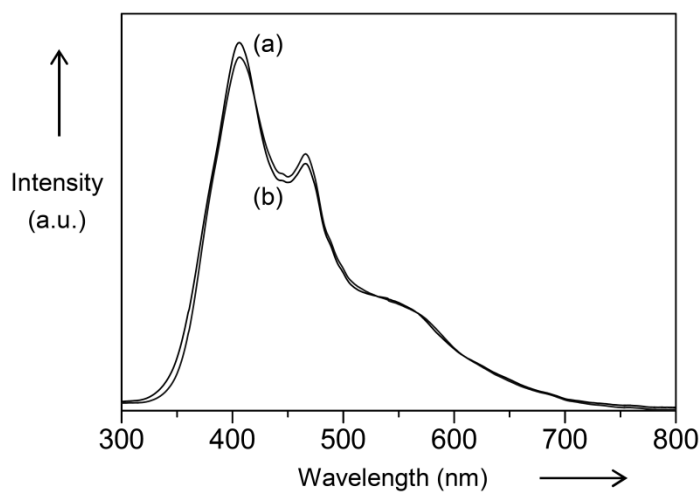


Figure S6: Emission spectra of (a) unmodified TiO_2 (NT) and (b) $\text{Fe}_2\text{O}_3(0.1)/\text{TiO}_2$ (IM).

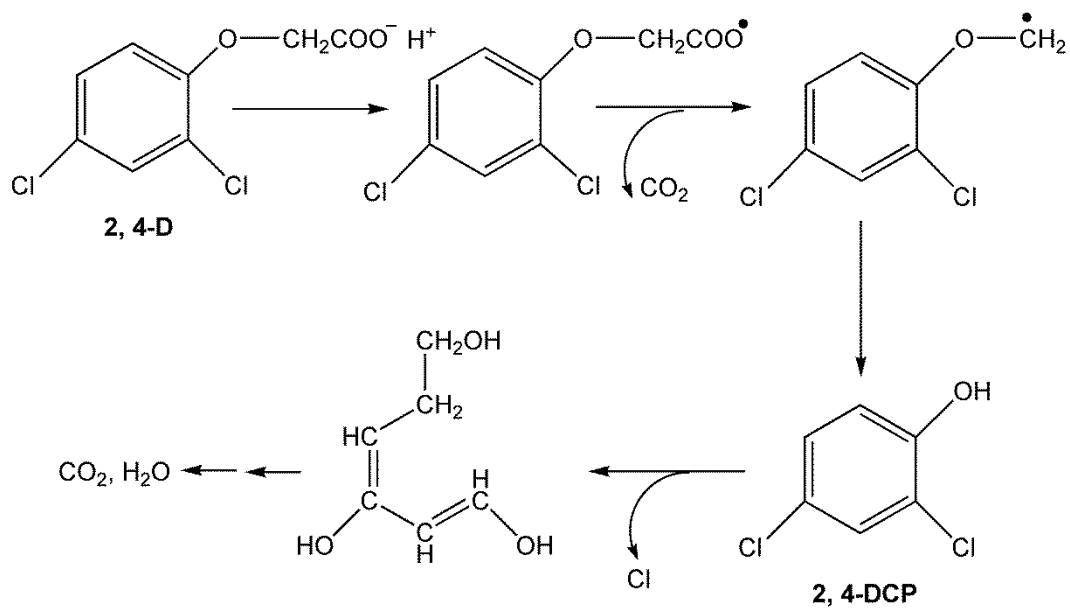


Figure S7: Proposed mechanism for photocatalytic degradation of 2,4-D.