Development of AgFeO₂/rGO/TiO₂ Ternary Composite Photocatalysts for Enhanced Photocatalytic Dye Decolorization

Nasir Shehzad ^{1,+}, Muhammad Zafar ^{2,+}, Muhammad Ashfaq ^{3,+}, Abdul Razzaq ^{1,+}, Parveen Akhtar ³, Nabeel Ahmad ¹, Ainy Hafeez ¹, Kshaf Azam ¹, Murid Hussain ^{1,*}, Woo Young Kim ^{4,*}.

- ¹ Department of Chemical Engineering, COMSATS University Islamabad, Lahore 54000, Pakistan; nasir.shehzad@cuilahore.edu.pk (N.S.); abdulrazzaq@cuilahore.edu.pk (A.R.); nabeelahmad@cuilahore.edu.pk (N.A); ainyhafeez@cuilahore.edu.pk (A.H); kshaf@hotmail.co.uk (K.A)
- ² Institute of Energy and Environmental Engineering, University of the Punjab, Lahore 54590, Pakistan; zafar.ieee@pu.edu.pk (M.Z.)
- ³ Department of Chemistry, The University of Lahore, 1-Km Raiwind Road, Lahore 54000, Pakistan. ashfaqishaq2@gmail.com (M.A); parveen.akhter@chem.uol.edu.pk (P.A)
- ⁴ Department of Electronic Engineering, Faculty of Applied Energy System, Jeju National University, Jeju Special Self-Governing Province, Jeju-si 63243, Korea
- * Corresponding: drmhussain@cuilahore.edu.pk (M.H.); semigumi@jejunu.ac.kr (W.Y.K.)
- **†** These authors contributed equally to this work.



Figure S1 Schematic of experimental setup



Figure S2. Absorption spectra for MB dye degradation under neutral conditions for (a) TiO₂, (b) 2.5% AgFeO₂/rGO/TiO₂ and (c) 5% AgFeO₂/rGO/TiO₂.



Figure S3. Absorption spectra for MB dye degradation for 2.5% AgFeO₂/rGO/TiO₂ under (a) neutral, (b) acidic and (c) basic conditions.



Figure S4. Absorption spectra for MB dye degradation for 5% $AgFeO_2/rGO/TiO_2$ under (a) neutral, (b) acidic and (c) basic conditions.