

# Supporting Information

## Evolution of Waste Iron Rust into Magnetically Separable g-C<sub>3</sub>N<sub>4</sub>-Fe<sub>2</sub>O<sub>3</sub> Photocatalyst: An Efficient and Economical Waste Management Approach

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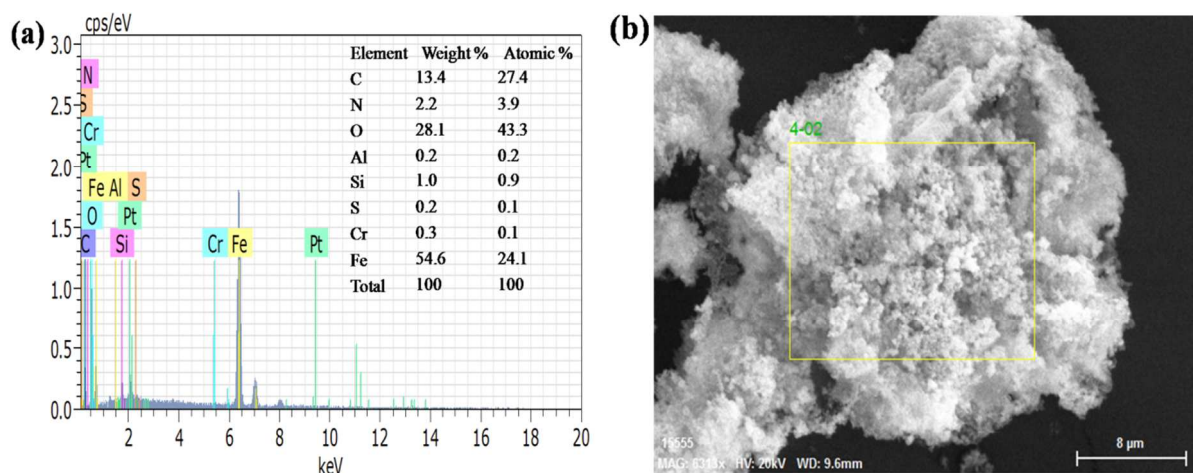
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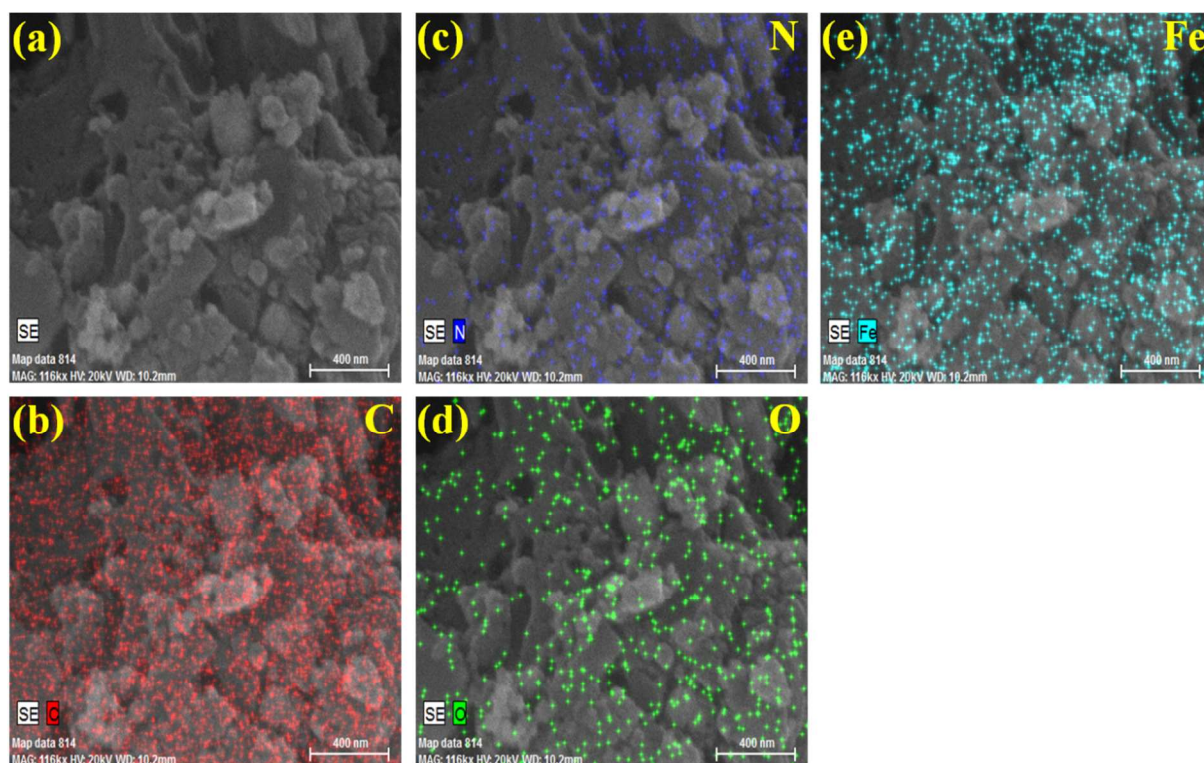
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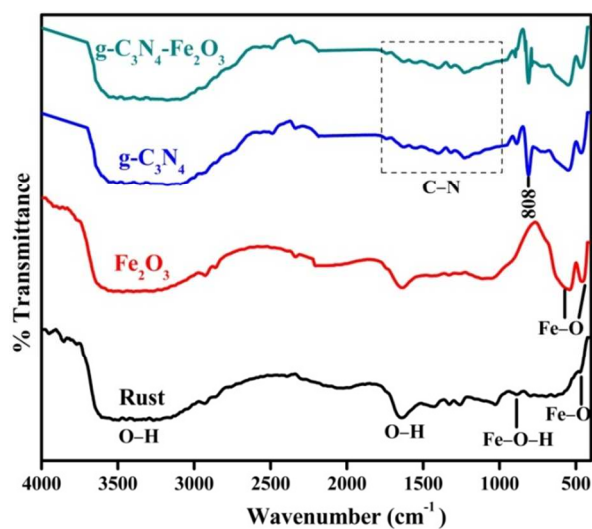
### Supporting Figures:



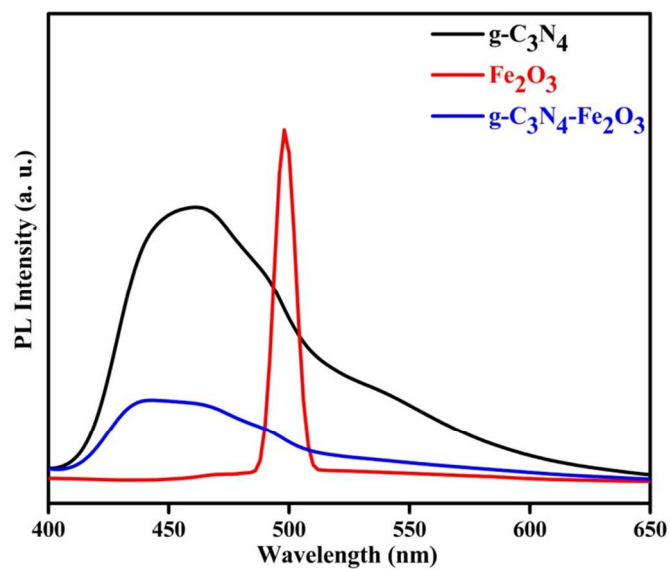
**Figure S1:** EDS spectrum (a) and SEM image (b) of as-obtained iron rust.



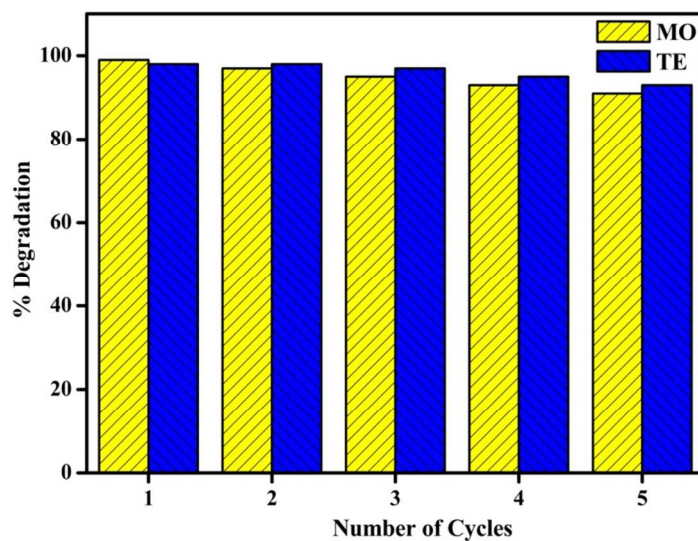
**Figure S2:** (a) SEM and corresponding elemental mappings images of  $C_3N_4-Fe_2O_3$ : (b) C element, (c) N element, (d) O element, (e) Fe element



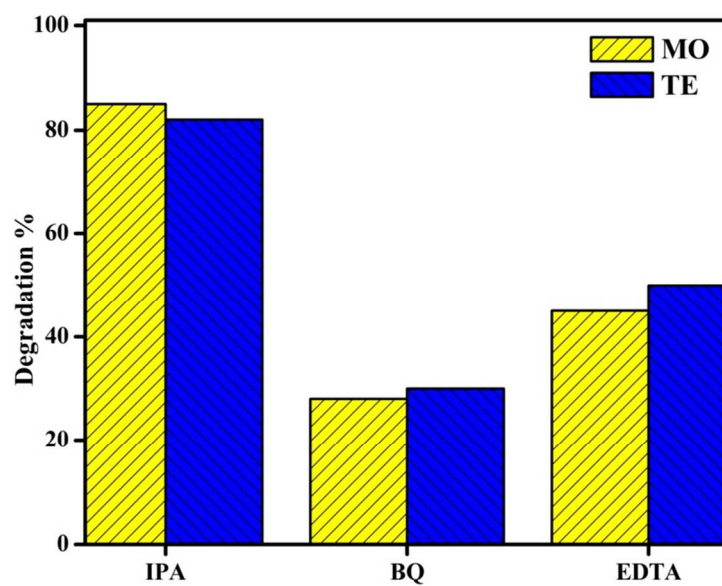
**Figure S3:** FT-IR spectra of Rust,  $Fe_2O_3$ ,  $g-C_3N_4$ , and  $g-C_3N_4-Fe_2O_3$



**Figure S4:** Photoluminescence (PL) spectra of Fe<sub>2</sub>O<sub>3</sub>, g-C<sub>3</sub>N<sub>4</sub>, and g-C<sub>3</sub>N<sub>4</sub>-Fe<sub>2</sub>O<sub>3</sub>.



**Figure S5:** Reusability of the g-C<sub>3</sub>N<sub>4</sub>-Fe<sub>2</sub>O<sub>3</sub> for MO and TE degradation under sunlight irradiation.



**Figure S6:** Effects of different scavengers on the photodegradation of MO and TE in the presence of the g-C<sub>3</sub>N<sub>4</sub>-Fe<sub>2</sub>O<sub>3</sub> under sunlight irradiation.