## **Supplementary Materials**

## Additive-Free Rice Starch-Assisted Synthesis of Spherical Nanostructured Hematite for Degradation of Dye Contaminant

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**Figure S1.** Structural analysis (**a**) methylene blue (MB) with the chemical formula of C<sub>16</sub>H<sub>18</sub>ClN<sub>3</sub>S; and (**b**) ball and stick model based on Molecular Mechanics-2 (MM2) for MB at different perspectives showing a sterically hindered central portion of molecules. The presence of Cl<sup>-</sup> is omitted to avoid bulky structures.



**Figure S2.** Morphological analysis for Sp-HNP showing the spherical morphology on a surface plot analyzed using ImageJ from Java-based software version 1.52e.



**Figure S3.** Rice starch (RS) granules model representing linear amylose and branched amylopectin chains.



**Figure S4.** Photo-captured image on Sp-HNP (reddish-brown powder), showing a magnetic response when applied with an external magnet.



**Figure S5.** Catalytic activity for the degradation of MB (**a**) Photo-captured images for MB/Sp-HNP/H<sub>2</sub>O<sub>2</sub>/UV; Ultraviolet–visible (UV–Vis) spectra for different conditions: (**b**) MB/UV/H<sub>2</sub>O<sub>2</sub>; (**c**) MB/H<sub>2</sub>O<sub>2</sub>; and (**d**) MB/UV without the presence of the Sp-HNP catalyst