Supplementary Materials:

Cationic Dye Removal Using Novel Magnetic/Activated Charcoal/β-Cyclodextrin/Alginate Polymer Nanocomposite

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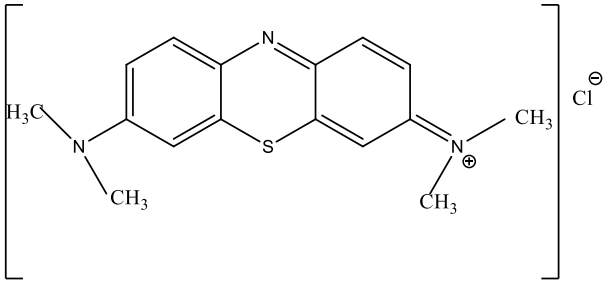

Figure S1. (**A)** The chemical structure of Methylene Blue Dye.

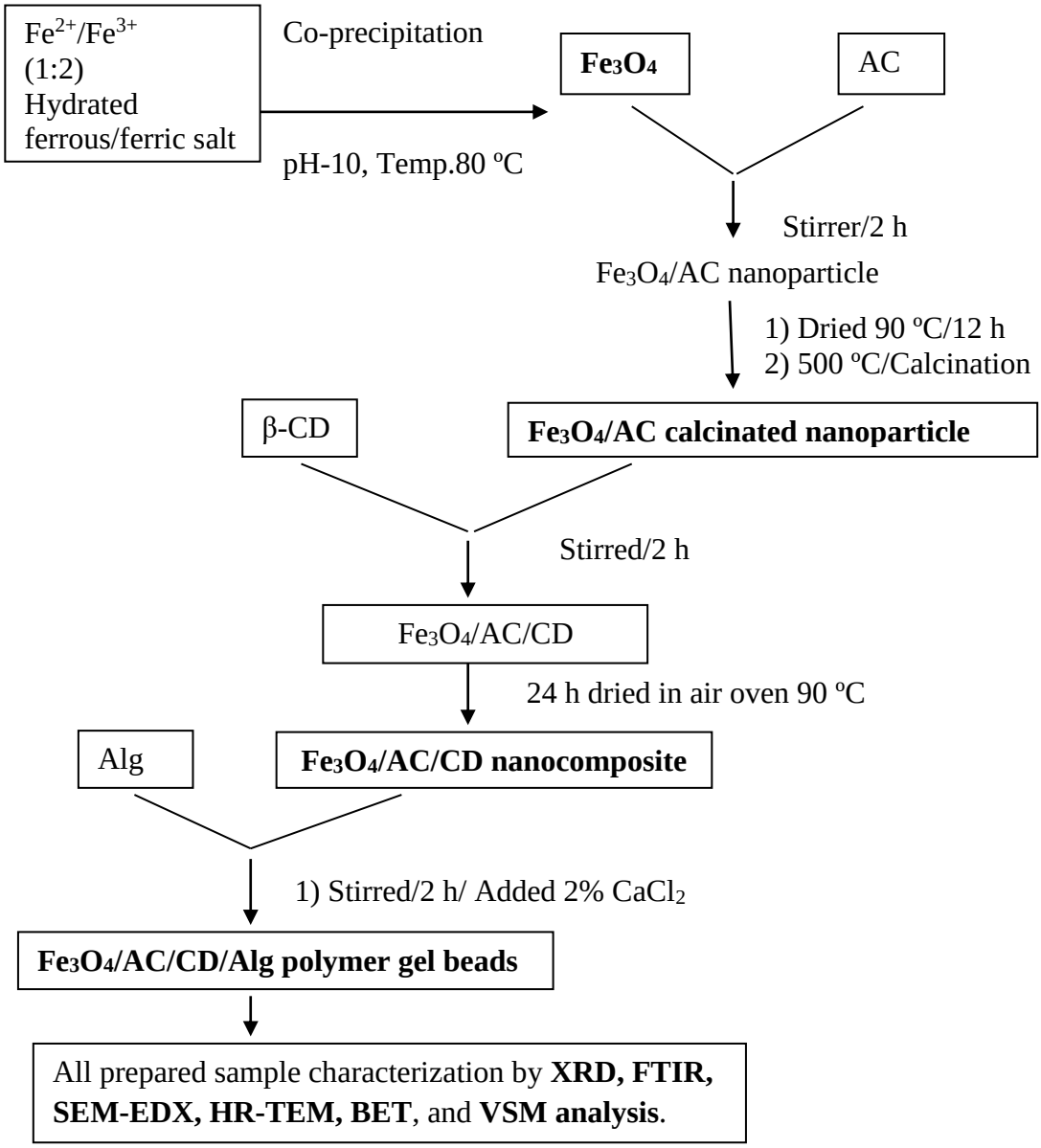

Figure S1. (**B**) Scheme outlining all the steps involved in the synthesis of Fe_3O_4 /AC, Fe_3O_4/AC/CD and Fe_3O_4/AC/CD/Alg nanocomposite from preparation to analysis.

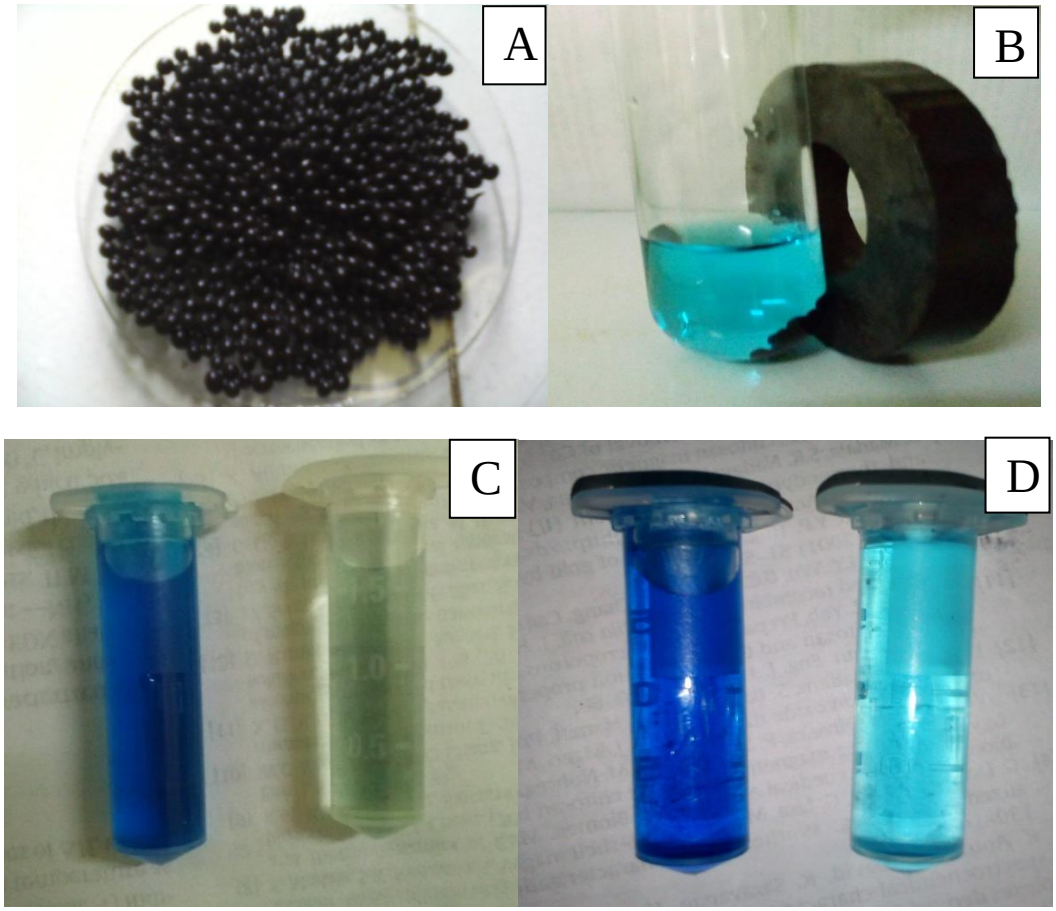

Figure S2. (**A**) Fe_3O_4/AC/CD/Alg polymer gel beads (**B**) image of Fe_3O_4/AC/CD/Alg nanocomposite attracted by a magnet (**C**) Before and after adsorption of MB solution by dry powder beads and (**D**) polymer gel beads.

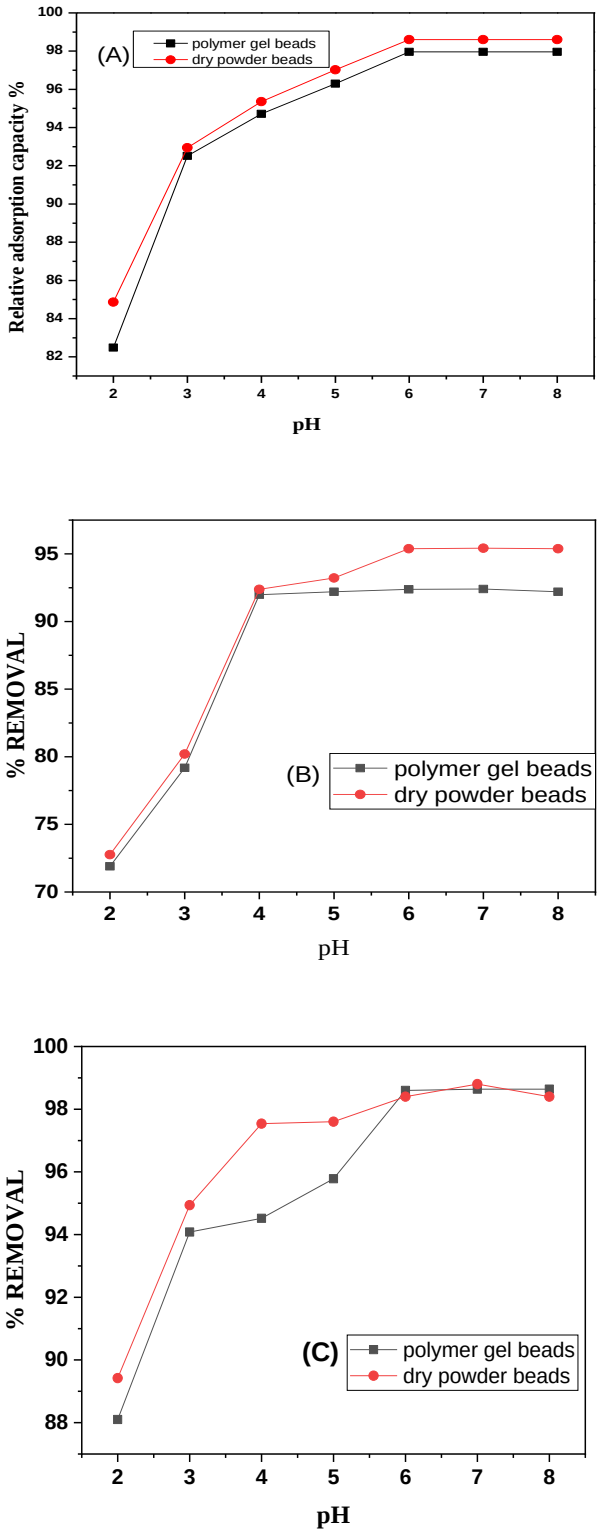

Figure S3. Effect of the dye solution pH range from 2 to 8 on the amount of dye adsorption capacity (initial dye concentration = 5 ppm, dosage Fe_3O_4/AC/CD/Alg polymer beads = 0.2 g/10ml dye solution, agitation speed = 150 rpm, room temperature), with contact time = 90 min (**A**), 60 min (**B**) and 120 min (**C**).

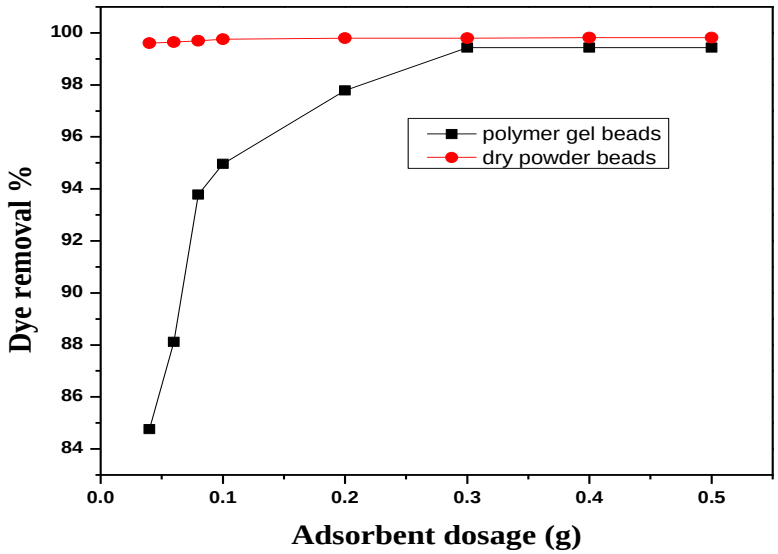

Figure S4. (**A**) Effect of adsorbent dosage on the adsorption of MB by polymer gel beads and dry powder beads (mass of catalyst= 0.04–0.5 g, pH= 6).

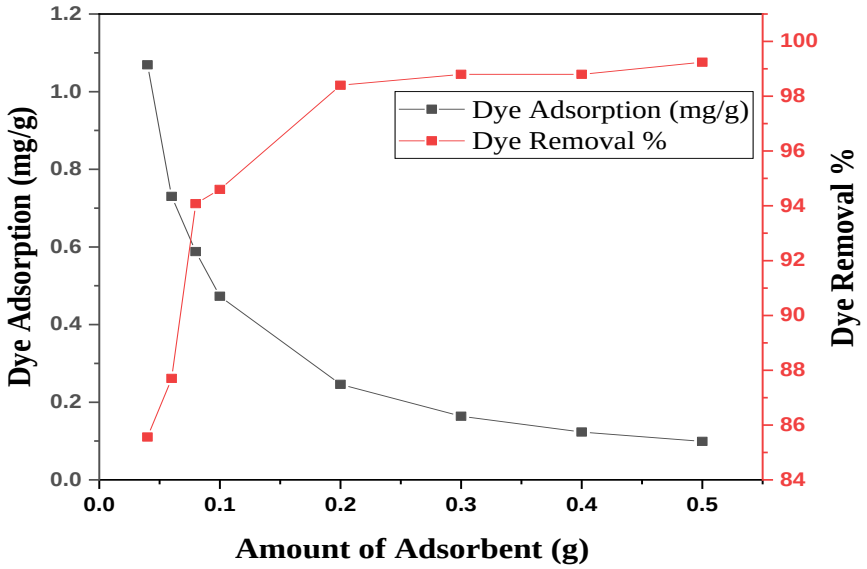

Figure S4. (**B**) Effect of adsorbent dosage on the adsorption capacity and % removal of MB for Fe_3O_4/AC/CD/Alg polymer beads (initial dye concentration = 5 ppm, pH = 6, contact time = 90 min).

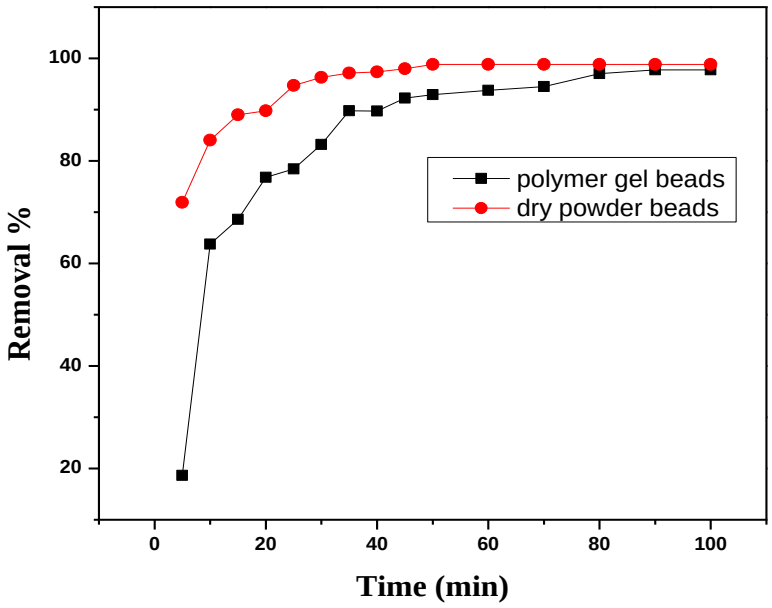

Figure S5. Effect of contact time on MB adsorption by polymer gel beads and dry powder beads (initial MB concentration = 5 mg/L; adsorbent dose = 0.02g; pH = 6).

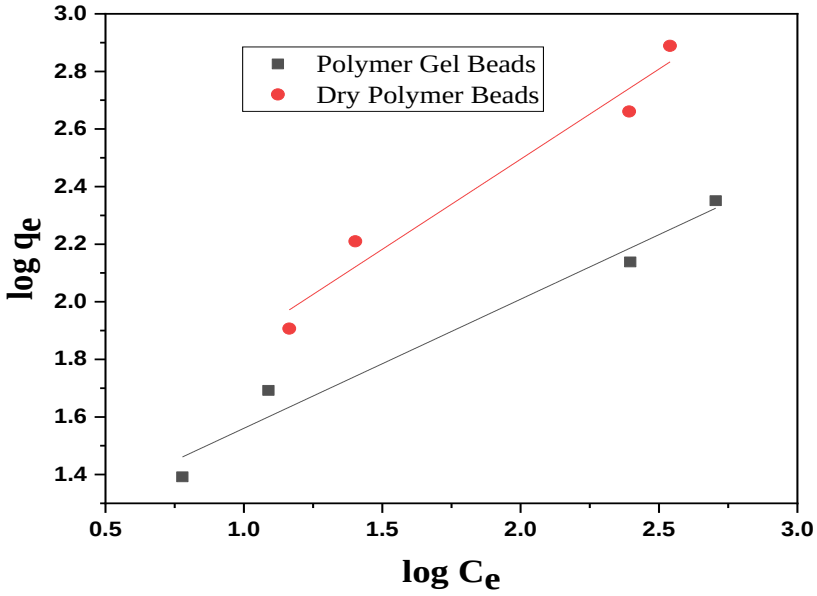

Figure S6. Fit of Freundlich isotherm on MB adsorption on Fe_3O_4/AC/CD/Alg polymer gel beads and dry powder polymer beads.