

Supporting Information

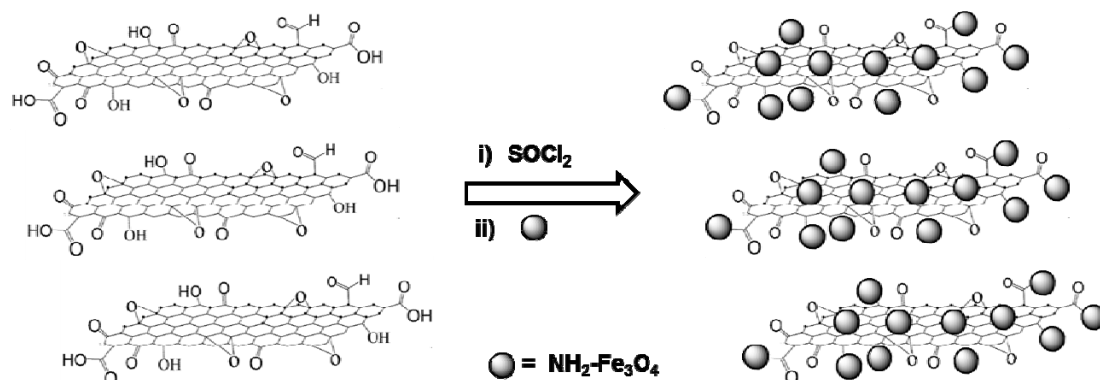
A facile chemical method to produce superparamagnetic graphene oxide-Fe₃O₄ hybrid composite and its application to the removal of dyes from aqueous solution

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Scheme 1. A schematic illustration for the preparation of GO- Fe_3O_4 hybrid composite.

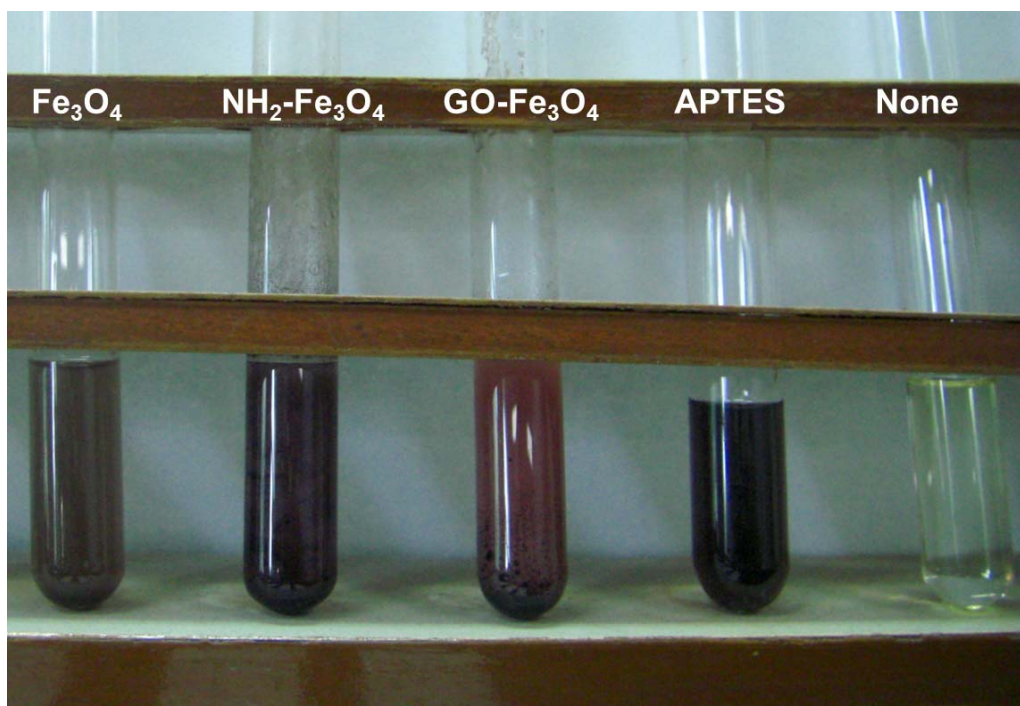


Figure S1. Photos of the presence or absence of primary amine groups on the surface of materials confirmed by using a Kaiser test. (Only $\text{NH}_2\text{-Fe}_3\text{O}_4$ and APTES exhibited classic color changes)

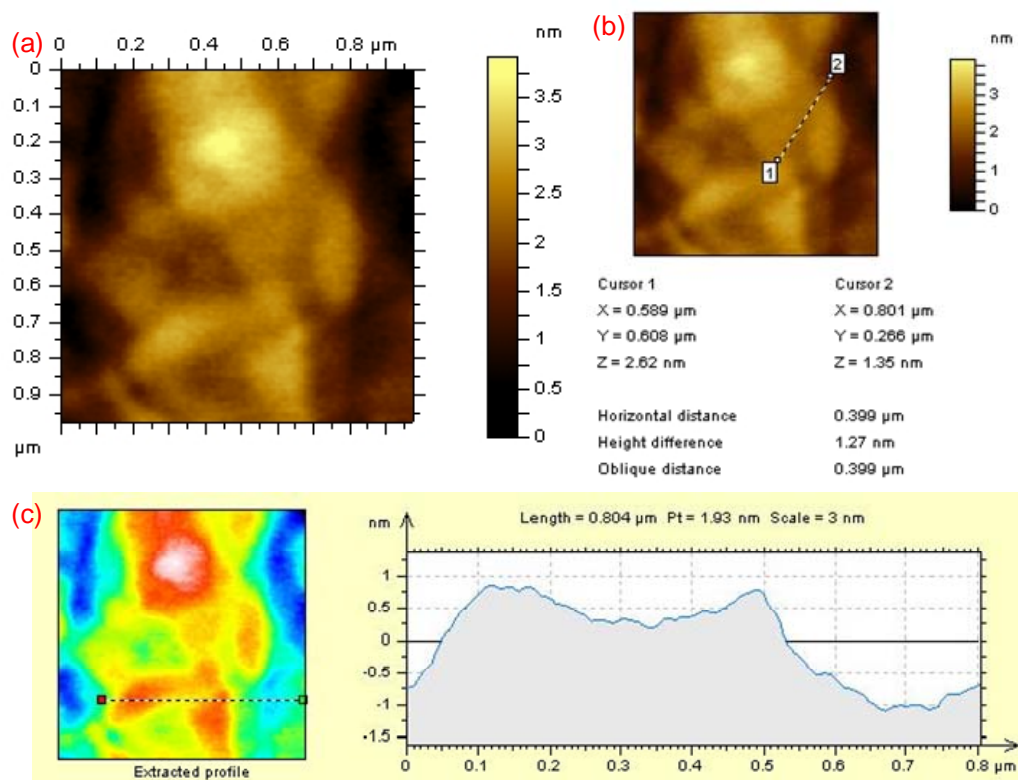


Figure S2. AFM images and cross-section analysis of GO

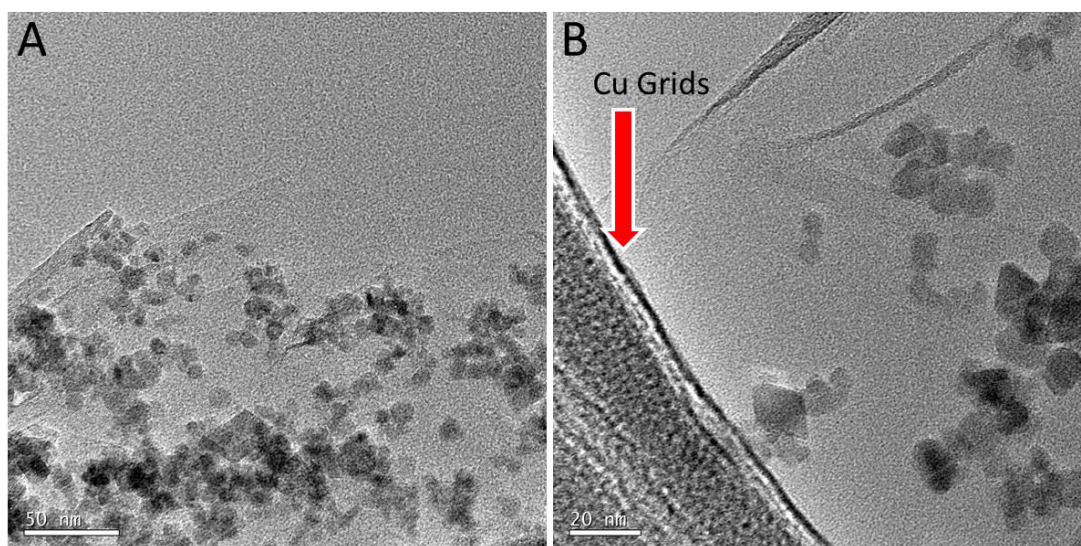


Figure S3. TEM images of the GO-Fe₃O₄ hybrid composite after adsorption of Methylene Blue. (Scale bar: A: 50 nm, B: 20 nm)

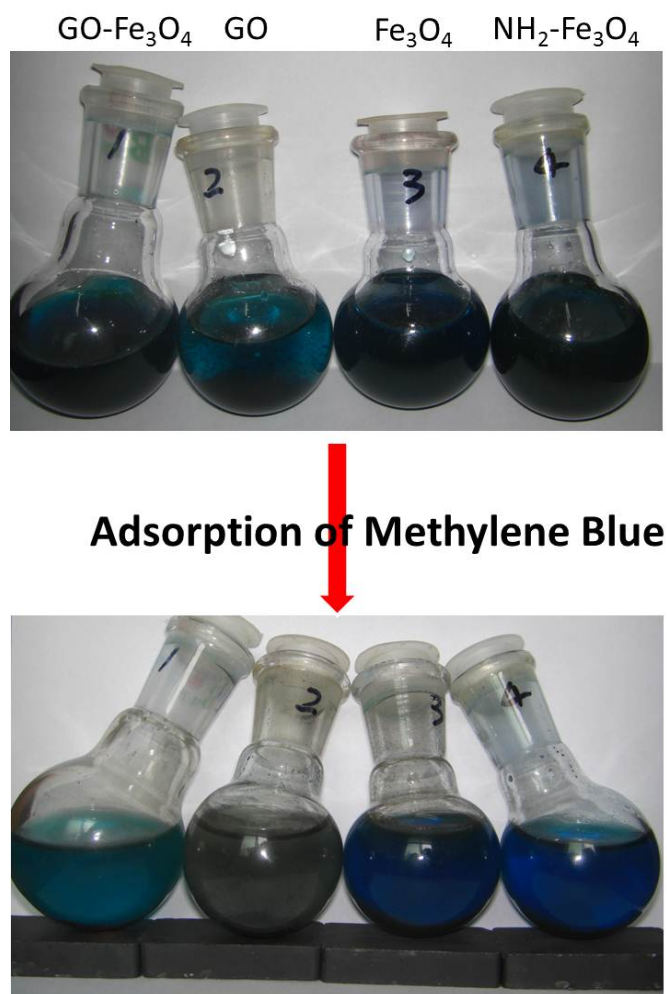


Figure S4. Photos of GO-Fe₃O₄ hybrid composite, GO nanosheets, Fe₃O₄ and NH₂-Fe₃O₄ nanoparticles responded to a magnet in MB solution before and after adsorption. Adsorption capacities for GO-Fe₃O₄, GO, Fe₃O₄ and NH₂-Fe₃O₄ are 17.1, 19.4, 3.1 and 4.5 mg/g, respectively. (The adsorption experiment was studied at 20 mg/L initial concentration of MB and 25 mg of each nanomaterials)

Adsorbent	Adsorption capacity (mg g ⁻¹)	Reference
GO-Fe ₃ O ₄ hybrids	167.2 for Methylene Blue 171.3 for Neutral Red	[this work]
Na-ghassoulite	135 for Methylene Blue	34(a)
kaolinite	76.9 for Methylene Blue	34(b)
tanned solid wastes	84 for Methylene Blue	34(c)
activated carbon	521 for Methylene Blue	34(d)
Surfactant-Modified Zeolite	6.67 for Reactive Black 5 15.66 for Reactive Red 239	34(e)
Activated Carbon/Cobalt Ferrite/Alginate Composite Beads	39.3 for Methylene Blue	34(f)
MWCNTs with Fe ₂ O ₃	42.3 for Methylene Blue 77.5 for Neutral Red	34(g)
Rhizopus oryzae Biomass	39.1 for Rhodamine B	34(h)

Table S1. Comparison results about removal of dyes from aqueous solution.