Electronic Supplementary Information

Superparamagnetic γ-Fe_2O_3@SiO_2 nanoparticles: a novel support for the immobilization of [$VO(acac)_2$]

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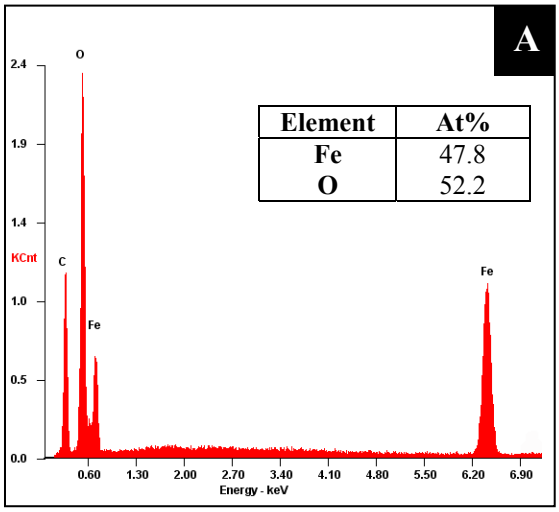
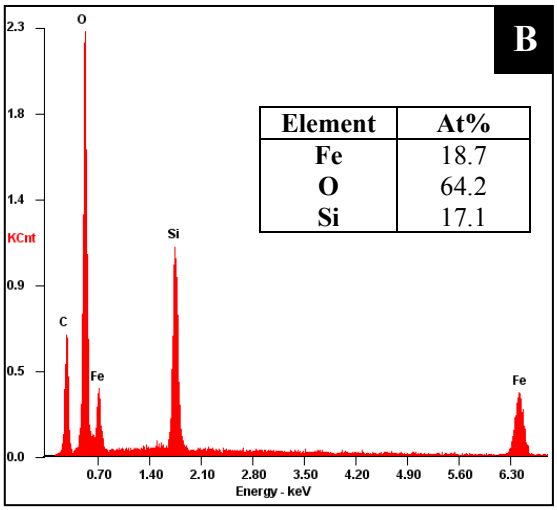
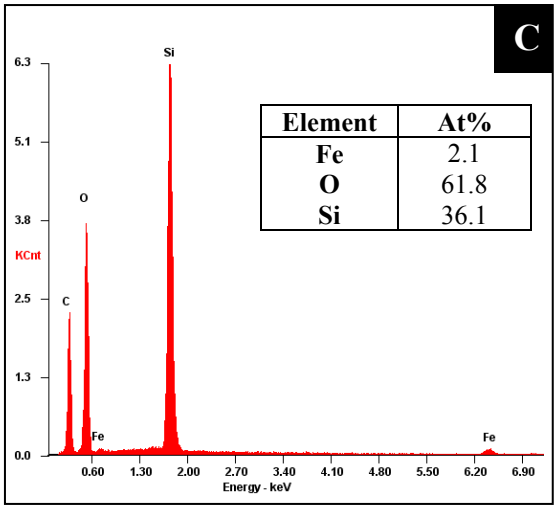
Figure S1. EDS spectra of (A) γ-Fe_2O_3, (B) γ-Fe_2O_3@SiO_2-1 and (C) γ-Fe_2O_3@SiO_2-2 nanomaterials (inset: atomic percentages of Fe, O and Si), obtained during SEM experiments.





Element	At%
Fe	18.7
O	64.2
Si	17.1



Element	At%
Fe	2.1
O	61.8
Si	36.1

Figure S2. FTIR spectra of (a) γ-Fe_2O_3, (b) γ-Fe_2O_3@SiO_2–1 and (c) γ-Fe_2O_3@SiO_2–2 nanomaterials.

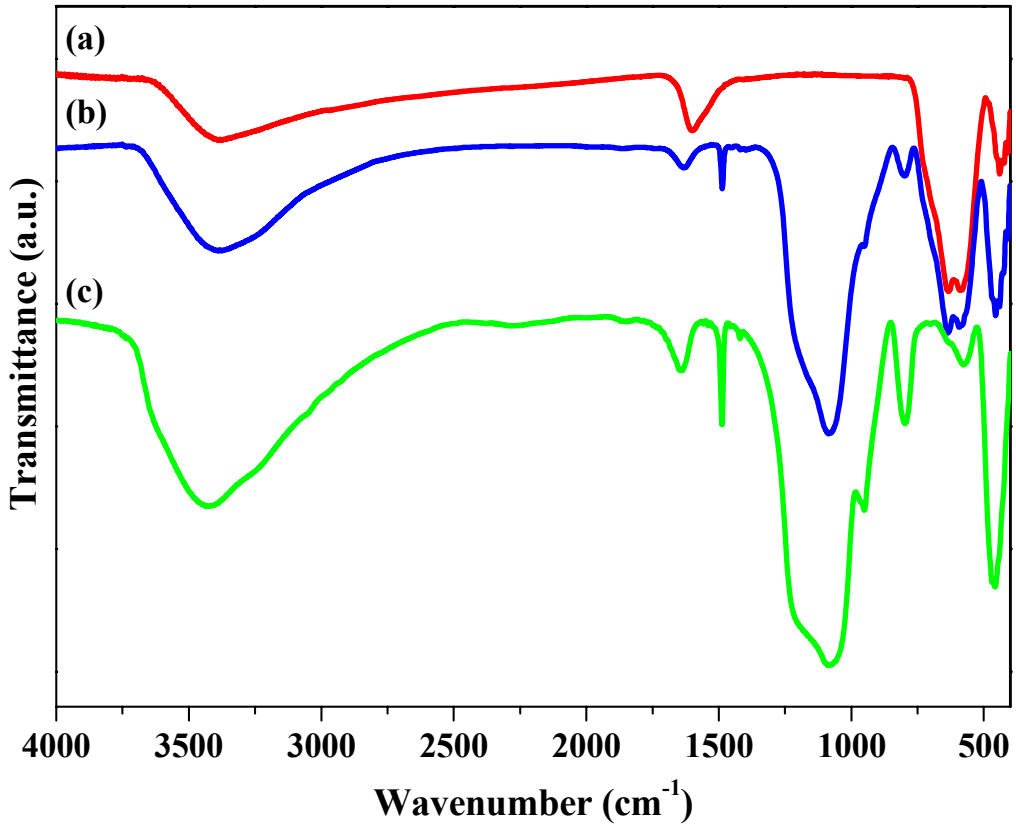
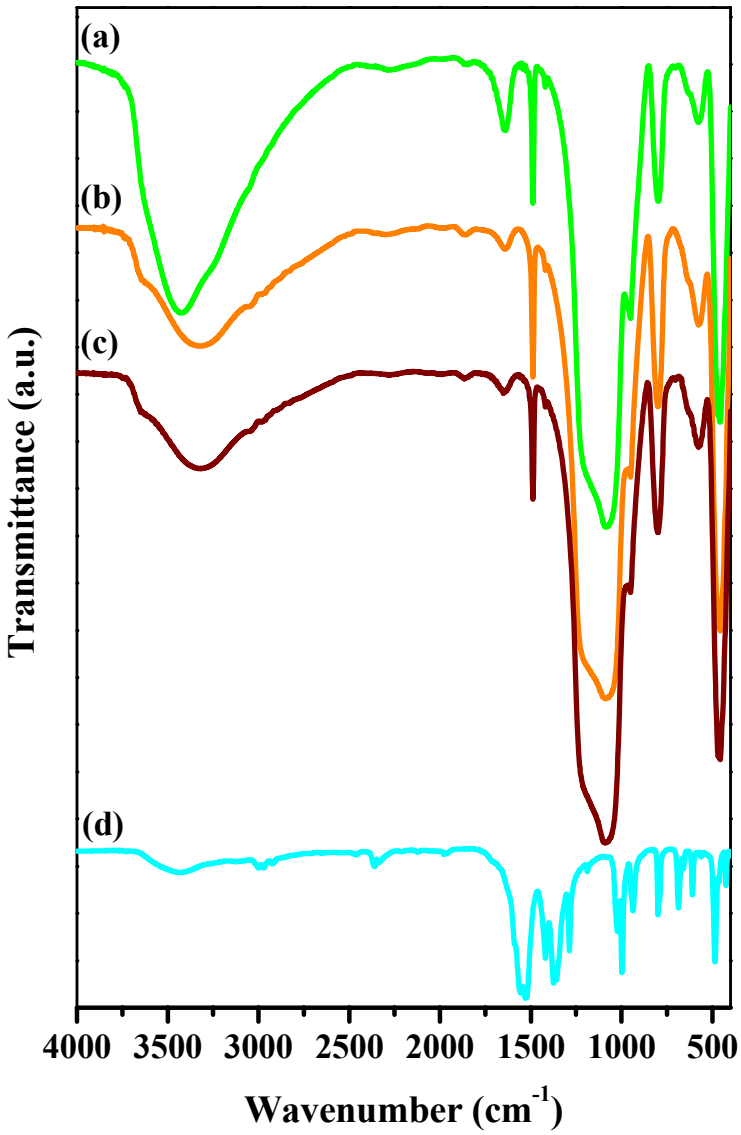


Figure S3. FTIR spectra of (a) γ-Fe_2O_3@SiO_2–2, (b) γ-Fe_2O_3@SiO_2–NH_2, (c) γ-Fe_2O_3@SiO_2–NH_2-V and (d) [$VO(acac)_2$].



Equation S1: Estimation of γ-Fe_2O_3 nanoparticles size by XRD

The average particles size of the uncoated γ-Fe_2O_3, d_{XRD}, was estimated from the FWHM of the (311) reflection, using the Debye-Scherrer equation:[1]

$$d_{XRD} = \frac{K\lambda}{\beta \cos\theta}$$

where K is the Debye-Scherrer constant (K = 0.9 for spherical shape), λ is the wavelength of the Cu Kα radiation, β is the FWHM and θ is the Bragg angle.

1 R. E. Dinnebier, S. J. L. Billinge (Eds.), *Powder Diffraction: Theory and Practice*, RSC Publishing, Cambridge, UK, 2008.