Electronic Supplementary Material (ESI) for RSC Advances.

Synthesis of γ-Fe_2O_3@SiO_2@Polypyrrole Core/Shell/Shell Nanospheres with Flexible Controllability of Electromagnetic Properties

Yajie Zhang, Zhiming Zhang, Shicong Xu, Liangmin Yu and Qunwei Tang

Supporting Information

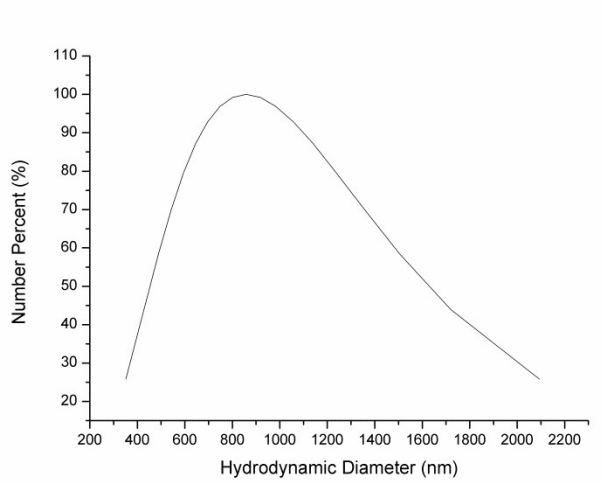

Figure S1. Dynamic light scattering profile of $FSHP_{1.0}$-2 in alcohol. The average hydrodynamic diameter is 858 nm, PDI: 0.34.

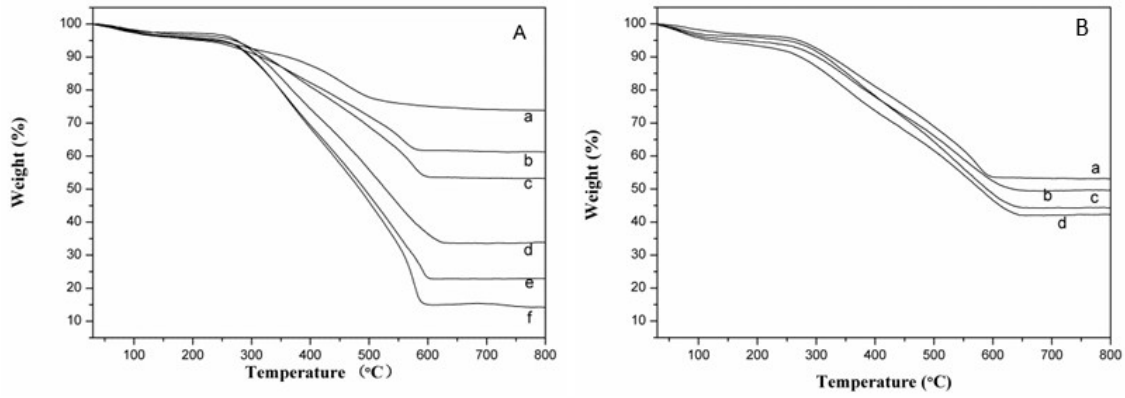

Figure S2. TG curves registered under air atmosphere: A: FSH (a), and $FSHP_x$-2 samples with different FSH dosage: $FSHP_{1.0}$-2 (b), $FSHP_{0.6}$-2 (c), $FSHP_{0.2}$-2 (d), $FSHP_{0.1}$-2 (e), $FSHP_{0.05}$-2 (f); B: $FSHP_{0.6}$-y samples with different polymerization conditions: $FSHP_{0.6}$-2 (a), $FSHP_{0.6}$-3 (b), $FSHP_{0.6}$-4 (c), $FSHP_{0.6}$-1 (d).

Table S1. FSH mass fraction of the $FSHP_x$-2 and $FSHP_{0.6}$-y samples calculated by the residual mass fractions at 800 °C.

Sample	Residual mass fraction (wt%)	FSH mass fraction (wt%)*
FSH	73.8	\
$FSHP_{1.0}$-2	61.3	83.1
$FSHP_{0.6}$-2	53.2	72.1
$FSHP_{0.2}$-2	33.9	45.9
$FSHP_{0.1}$-2	23.0	31.2
$FSHP_{0.05}$-2	14.2	19.2
$FSHP_{0.6}$-1	42.3	57.3
$FSHP_{0.6}$-3	49.6	67.2

$FSHP_{0.6}$-4	44.3	60.0

* It is reasonable to consider that the residual mass at 800 °C was attributed to the residue of γ-Fe_2O_3@SiO_2 for each sample. In other words, the residues at 800 °C are the same substance for each sample. So we propose a method to calculate the FSH mass fraction of the $FSHP_x$-2 and $FSHP_{0.6}$-y samples. Here we designate the FSH mass fraction of FSHP samples as **x**, mass of FSHP as **a** g and residual mass fraction of FSH and FSHP samples at 800 °C as **b** and **c**, respectively. So there is:

$$\mathbf{a \cdot x \cdot b = a \cdot c}$$

$$\mathbf{x} = \frac{c}{b}$$

(b and c are given by TGA data)