Electronic Supplementary Material (ESI) for Journal of Materials Chemistry

Supporting Information

Magnetic CMP Microspheres: Multifunctional Poly(phenylene ethynylene) Frameworks with Covalently Built-in Fe_3O_4 Nanocrystals Exhibiting Pronounced Sensitivity for Acetaminophen Microdetection

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Section A. FTIR spectrum of the bromophenyl-modified Fe_3O_4 nanocrystals

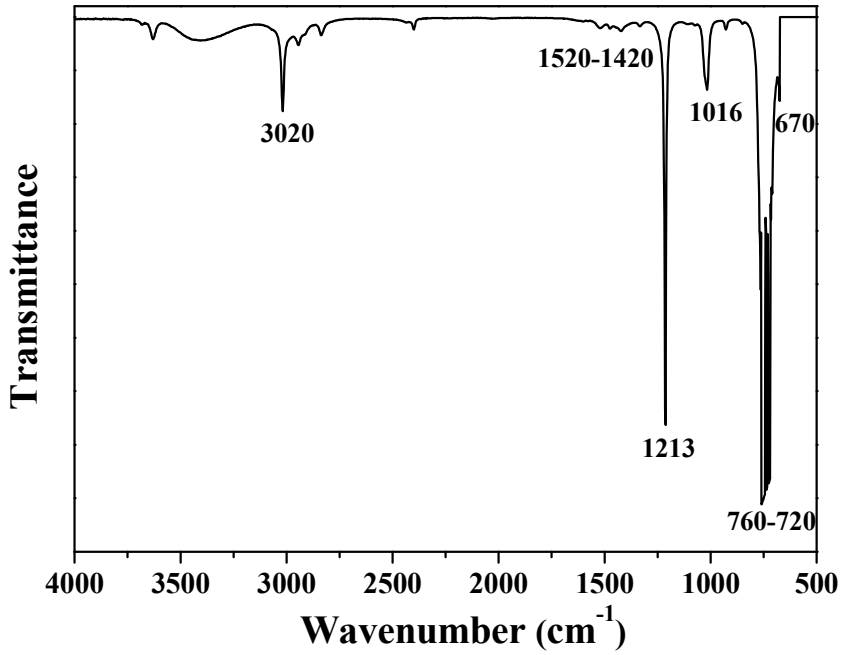

Fig. S1 FTIR spectrum of the bromophenyl-modified Fe_3O_4 nanocrystals. The peaks at 3020 cm^{-1}, 1520-1420 cm^{-1}, 1213 cm^{-1}, 1016 cm^{-1}, 760-720 cm^{-1} and 670 cm^{-1} are ascribed to aromatic C-H stretch from phenyl group, aromatic ring vibration, C-C stretch, Si-O stretch, C-H out of plane deformation band from phenyl ring, and Fe-O stretch, respectively.

Section B. Element mapping image of Fe_3O_4@CNPC

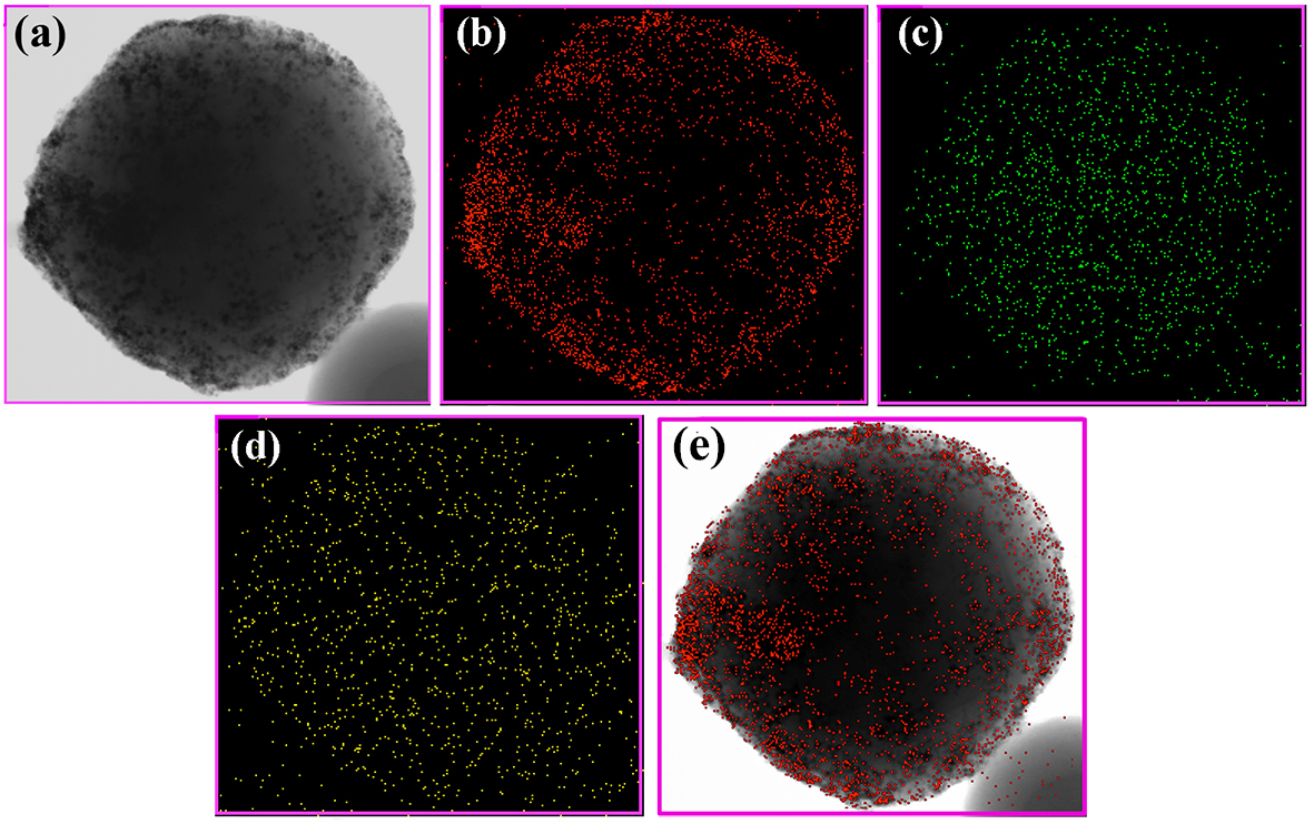

Fig. S2 STEM image of Fe_3O_4@CNPC (a), element mapping images of Fe (b), Si (c) and Br (d), and a composite image (e) that combines images of (a) and (b).

Section C. TGA profiles of Fe_3O_4@CNPC

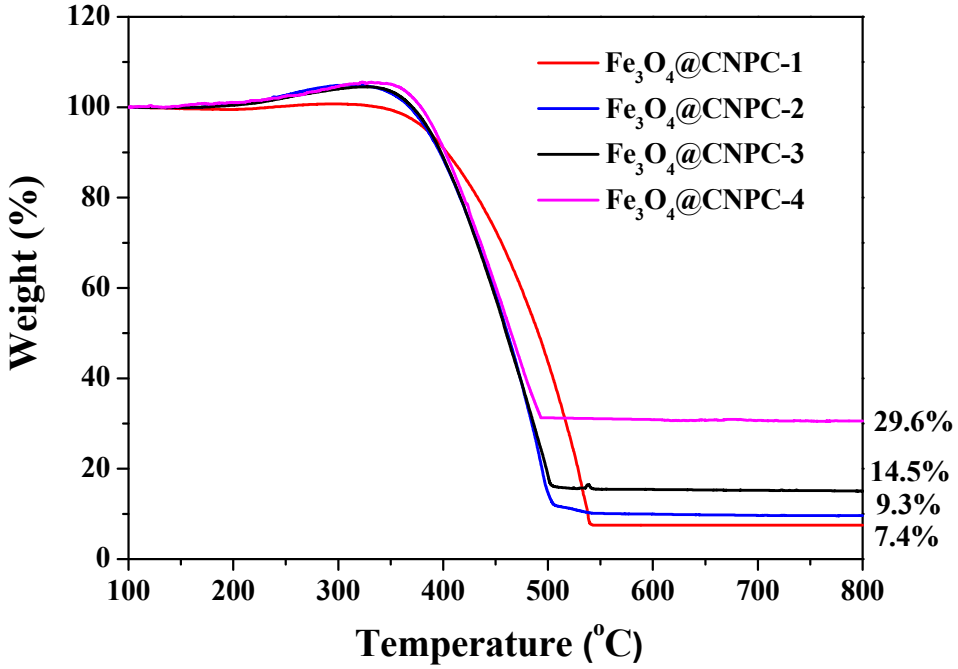

Fig. S3 TGA profiles of four Fe_3O_4@CNPC samples with different magnetic contents, measured with the thermogravimetric analyzer in air atmosphere.

Section D. TEM image of Fe_3O_4@CNPC-4

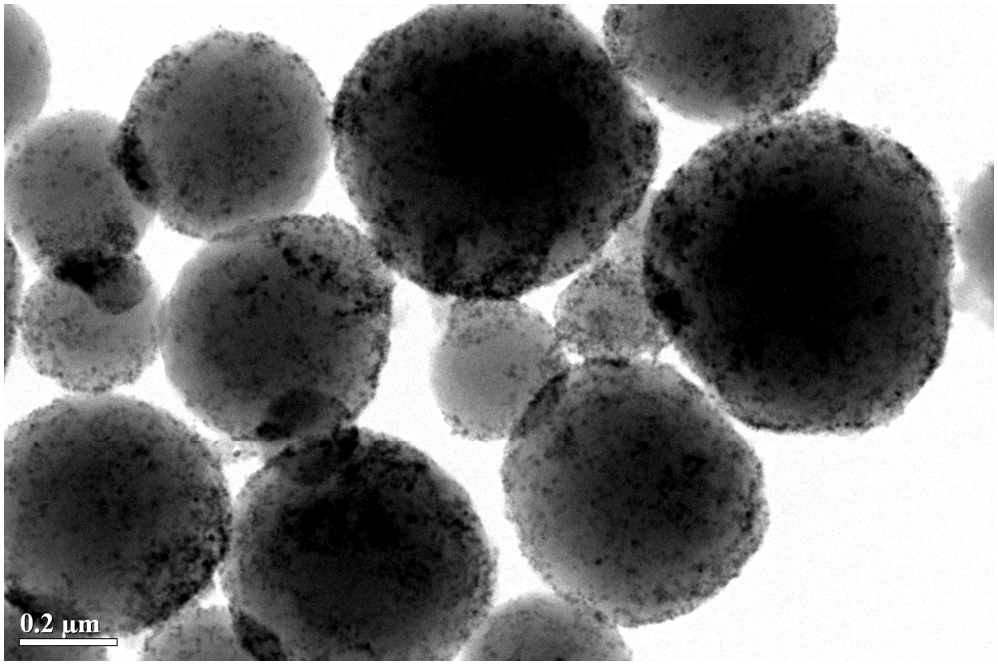

Fig. S4 TEM image of Fe_3O_4@CNPC-4 with 29.6 wt.% of magnetic content.

Section E. TEM image of control Fe_3O_4/CNPC synthesized using the unmodified Fe_3O_4

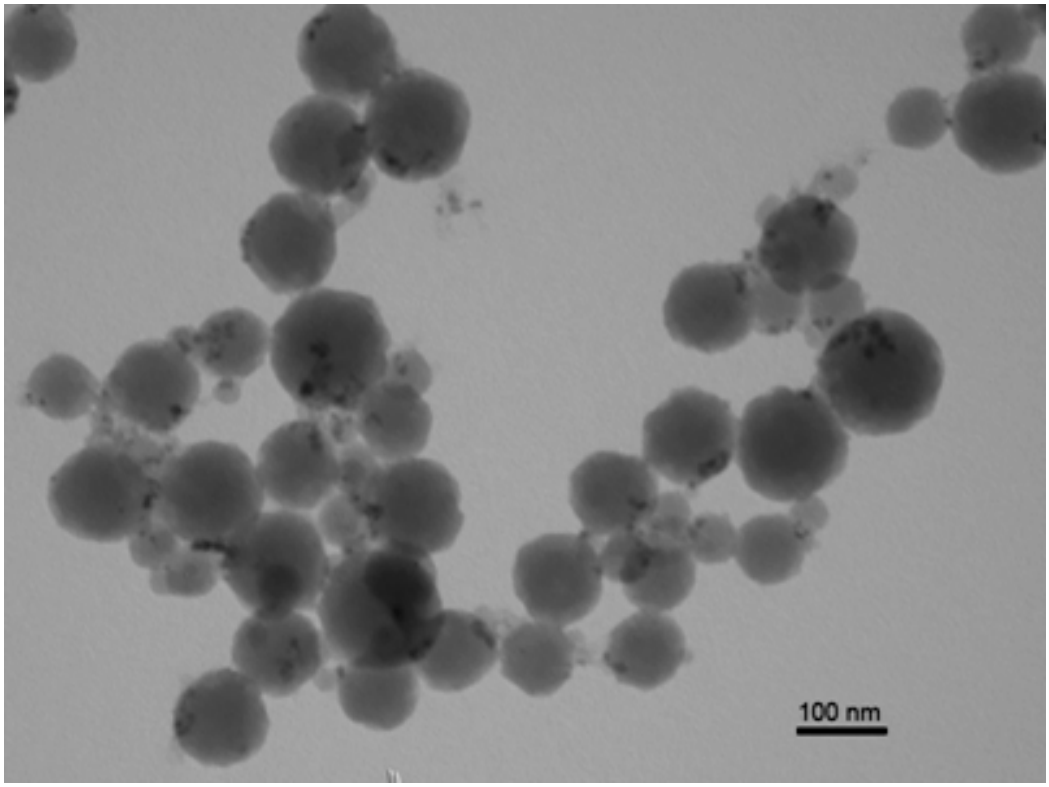

Fig. S5 TEM image of the control Fe_3O_4/CNPC synthesized using the unmodified Fe_3O_4.

Section F. Pore size distribution of CNPC

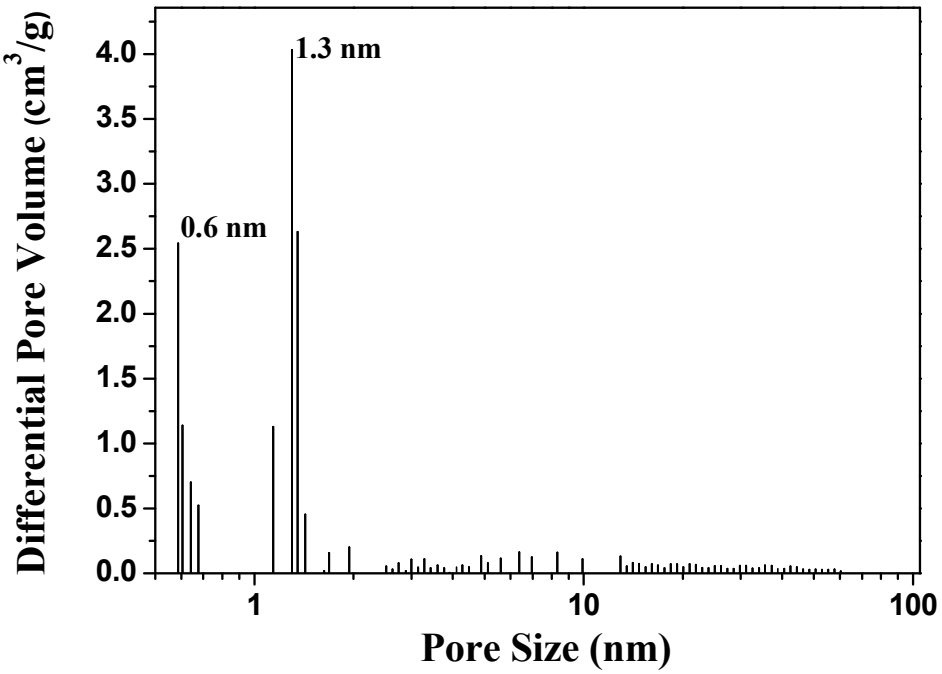

Fig. S6 Pore size distribution of CNPC, which is calculated by NLDFT model.

Section G. N_2 uptake isotherm of control Fe_3O_4/CNPC

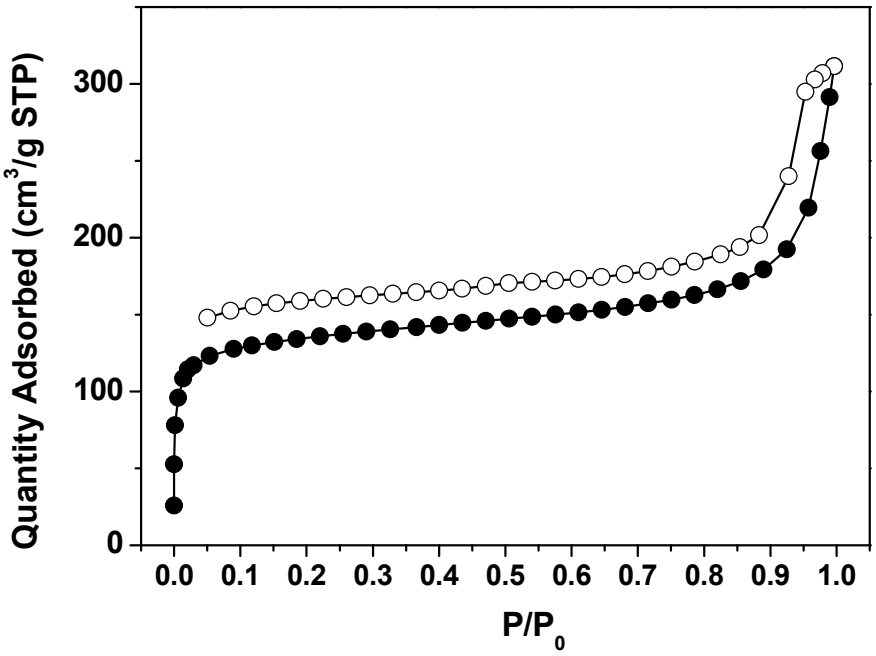

Fig. S7 N_2 uptake isotherm of the control Fe_3O_4/CNPC synthesized by surface deposition of Fe_3O_4 nanocrystals onto CNPC. The BET Surface area is 423.7 m^2/g, the pore volume at P/P_0=0.99 is 0.48 cm^3/g and the pore size calculated by NLDFT method is 1.2 nm.

Section H. A photograph of enrichment/dispersion of Fe_3O_4@CNPC in water manipulated by a magnet

Fig. S8 Photograph of dispersion (left) and collection (right) of Fe_3O_4@CNPC in water manipulated by a magnet.

Section I. Detection of APAP by using CNPC

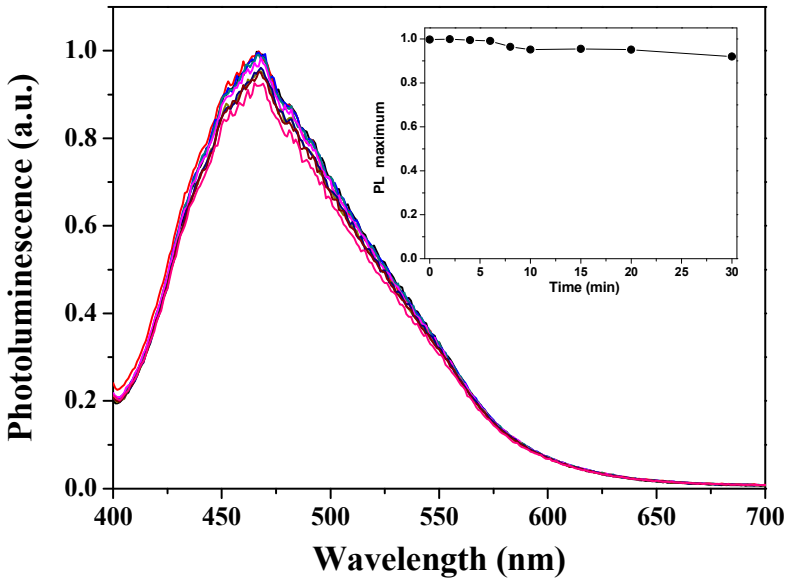

Fig. S9 Fluorescence emission spectra of CNPC-APAP system in the present of H_2O_2. Inset is a plot of PL maximum as a function of time.