Supplementary information

Multifunctional Magnetically Removable Nanogated Lids of Fe_3O_4 –Capped Mesoporous Silica Nanoparticles for Intracellular Controlled Release and MR Imaging

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Table S1. The Brunauer-Emmett-Teller (BET) analysis of MSN, CPT-loaded MSN and MSN@Fe_3O_4 nanocarriers.

Sample	Surface area (m^2/g)	Pore volume (cc/g)	Pore radius (nm)
MSN	1150.97	0.84	2.17
CPT-loaded MSN	885.86	0.64	1.57
MSN@Fe_3O_4	128.96	0.37	x

Both 667cm^{-1} and 542cm^{-1} bands are characteristics of Fe_3O_4 (magnetite), which is attributed to the vibration modes consisting of stretching of oxygen atom along Fe-O bonds. We also used the XPS spectrum to confirm the magnetite. Binding energy of Fe $2p_{3/2}$ is 711.3eV and $2p_{1/2}$ is 724.8eV which correspond to the XPS spectrum of Fe_3O_4. From these results, it can be confirmed that the iron oxide on the surface of mesoporous silica nanoparticles should belong to magnetite phase.

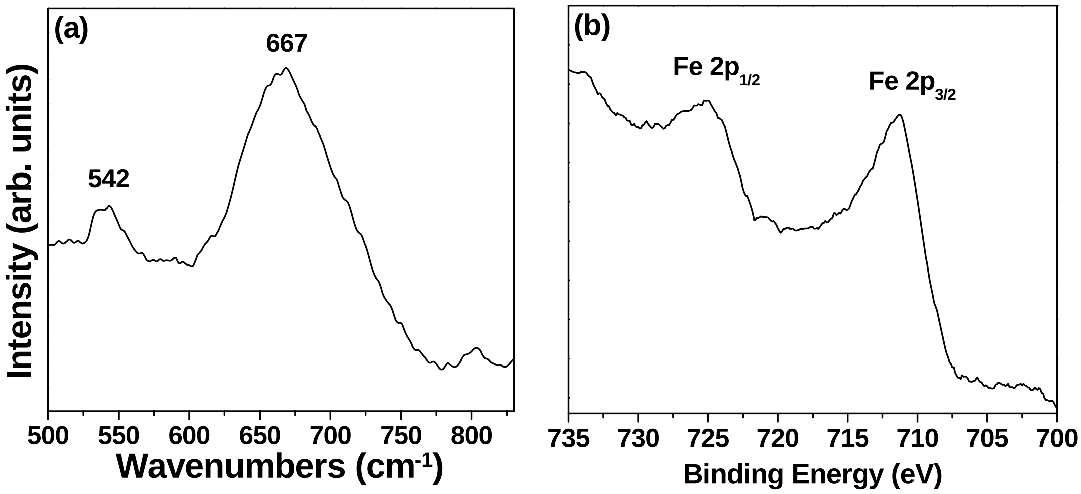

Figure S1. (a) The Raman spectroscopy analysis and (b) X-ray Photoelectron Spectrometer of the iron oxide nanoparticles.

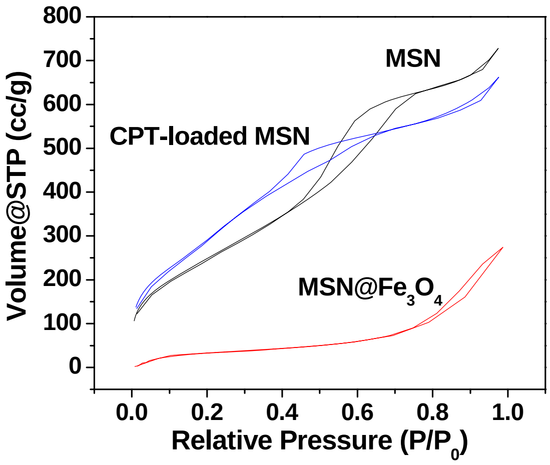

Figure S2. N_2 adsorption/desorption isotherms of MSN, CPT-loaded MSN and MSN@Fe_3O_4 nanocarriers.