Supplementary material for:

Chitosan-based magnetic/fluorescent nanocomposites for cell labelling and controlled drug release

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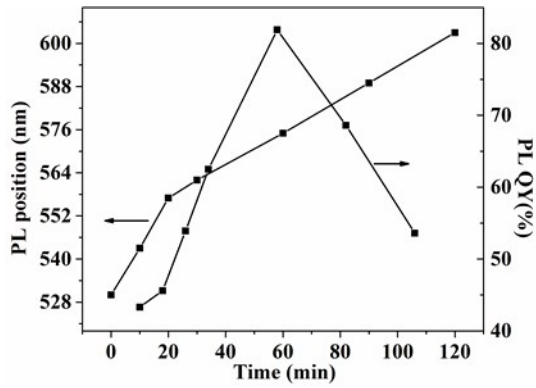

Fig. S1 Effect of refluxing time on the properties of CdTe@ZnS QDs. Refluxing the mixture of GSH, $Zn^{2+}$and core CdTe nanocrystals (NCs) resulted in a red shift of the maximum PL absorption, which implies that ZnS shell is slowly growing in situ on the CdTe core. Quantum yield (QYs) of CdTe@ZnS also increased with refluxing time till 60 min because the surface defects of core NCs were efficiently removed and confinement energy of excitons were lowered after capping core NCs with higher band gap ZnS shells[1-6]. Further increasing the refluxing time, QYs decreased sharply due to increased strain in the shell [7]. In this work, we use the refluxing time of 60min for synthesis of CdTe@ZnS QDs to achieve highest QYs (82%).

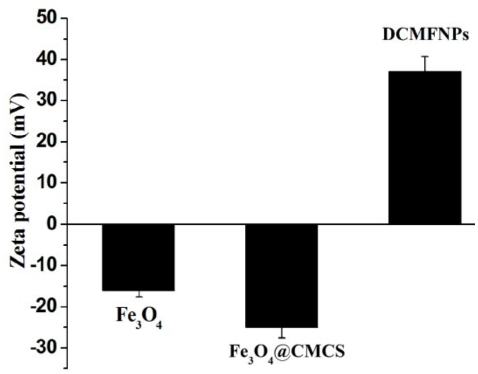

Fig. S2 Zeta potentials of as-synthesized nanoparticles at pH 7.4.

Table S1 Comparison of the best-fit fluorescence lifetime values for a triexponential fit of CdTe@ZnS QDs and DCMFNPs hybrids, and the PL properties of the prepared products.

Sample	B_1	τ_1	B_2	τ_2	B_3	τ_3	τ	PL peak (nm)	PLQYs (%)
CdTe@ZnS	21.76	12.61	61.98	33.34	16.26	100	142.37	578	81.6
DCMFNPS	29.77	6.81	54.12	20.74	16.11	63.37	75.93	586	71.2

Table S2 The physicochemical properties of DCMFNPs prepared at different CS/MNPs/DOX mass ratios. Data represented as mean ± S.D. (n= 3).

CS:MNPs:DOX[a]	Diameter (nm)[b]	PDI[c]	ζ (mV)[d]	LE (%)[e]	EE (%)[f]
1:0:2	161.0±5.0	0.27±0.04	25.3±2.3	14.5±2.3	78.9±1.3
1:1:2	168.0±2.0	0.17±0.03	18.2±2.7	15.1±2.0	81.3±1.7
2:1:2	177.0±3.0	0.29±0.03	30.6±2.6	16.5±1.6	88.6±1.3
4:1:2	185.0±5.0	0.32±0.03	39.1±1.8	27.5±3.0	92.0±0.9
4:3:2	177.0±2.0	0.24±0.04	28.5±3.5	25.4±1.8	93.7±1.3
4:1:5	183.0±4.0	0.30±0.04	35.2±2.3	45.3±2.0	95.5±1.1

[a]mass ratio. [b]mean±S.D, n=3. [c]polydispersity index. [d]zeta potential. [e]loading efficiency. [f]entrapment efficiency.

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