Electronic Supplementary Material (ESI) for Dalton Transactions

Electronic Supplementary Information

Multifunctional magnetic calcium phosphate nanoparticles for targeted platin delivery

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Figure S1

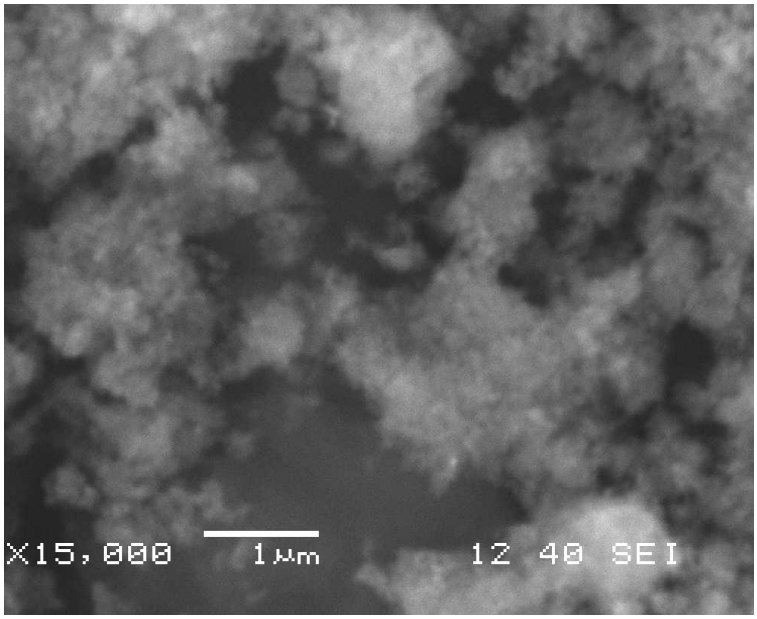


Figure S1 SEM image of $CoFe_2O4$@ACP-CDDP-FA-RITC nanoparticles

Figure S2

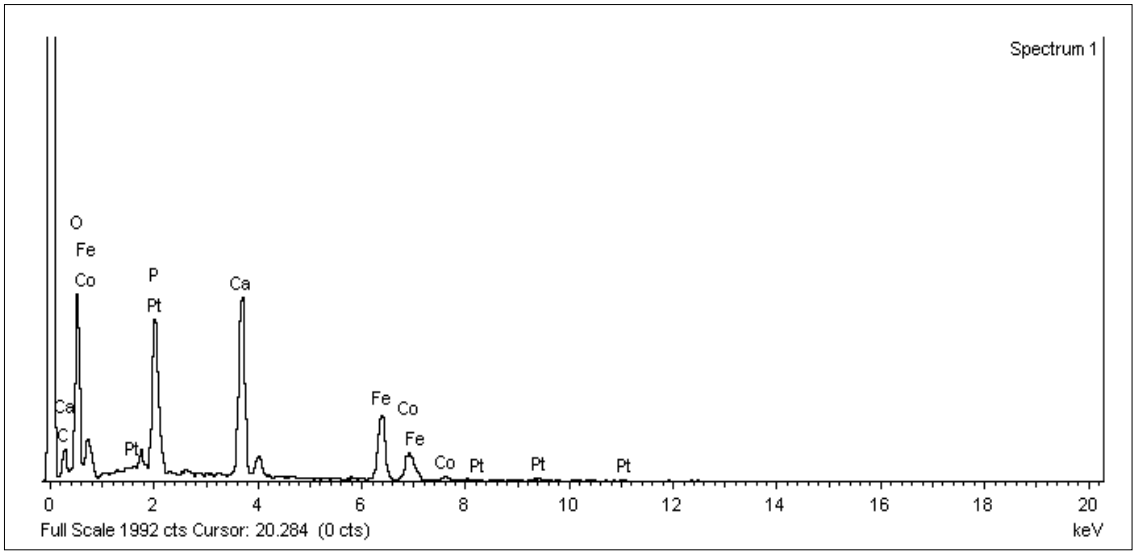


Figure S2 EDX spectrum of CoFe2O4@ACP-CDDP-FA-RITC nanoparticles

Figure S3

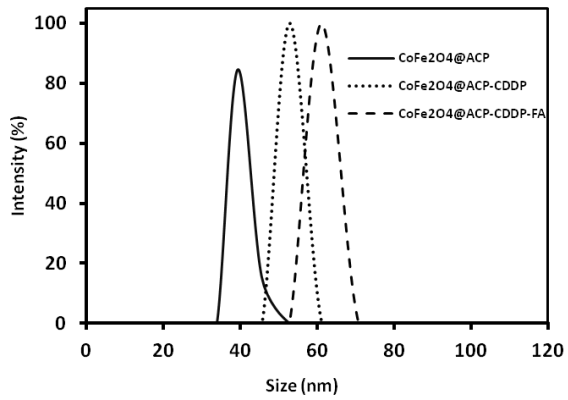


Figure S3 Variation of hydrodynamic size after each step of modification

Figure S4

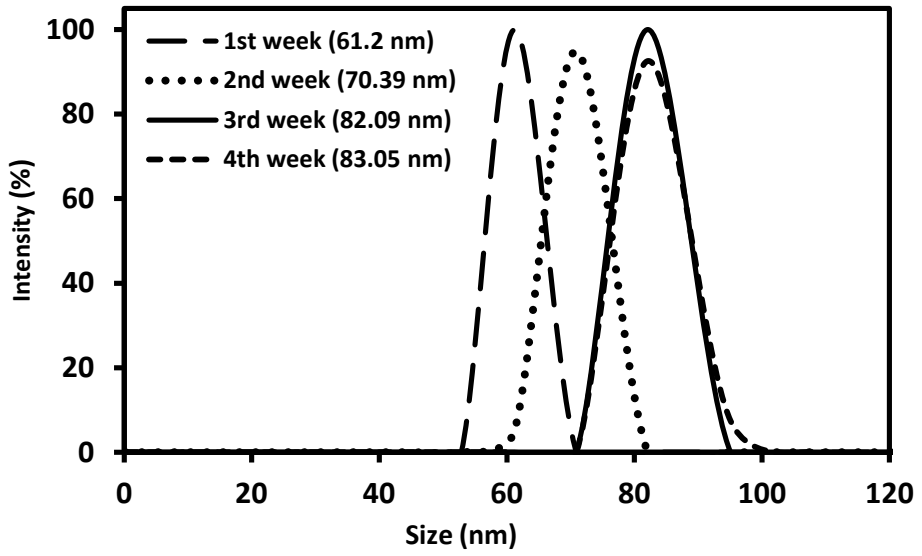


Figure S4 Change in hydrodynamic size of CoFe2O4@ACP-CDDP-FA-RITC with respect to time

Figure S5

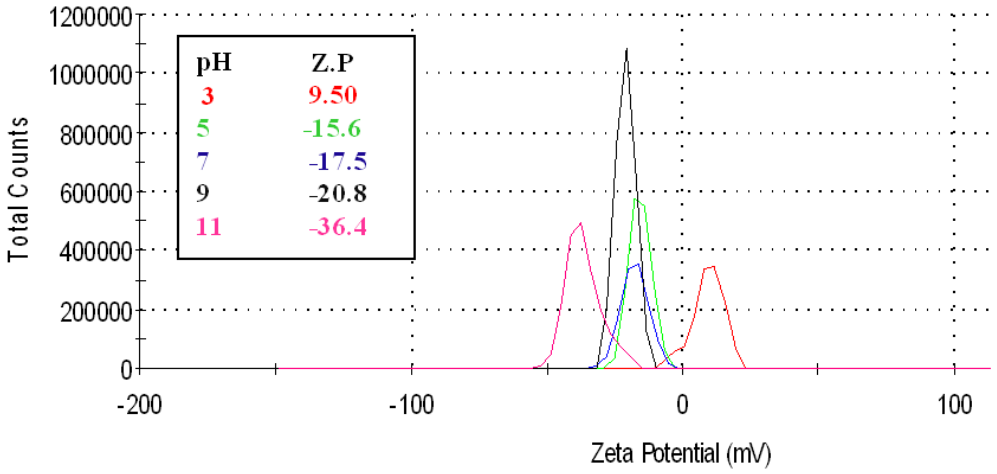


Figure S5 Zeta potential variation of $CoFe_2O4$@ACP-CDDP-FA with respect to pH

Figure S6

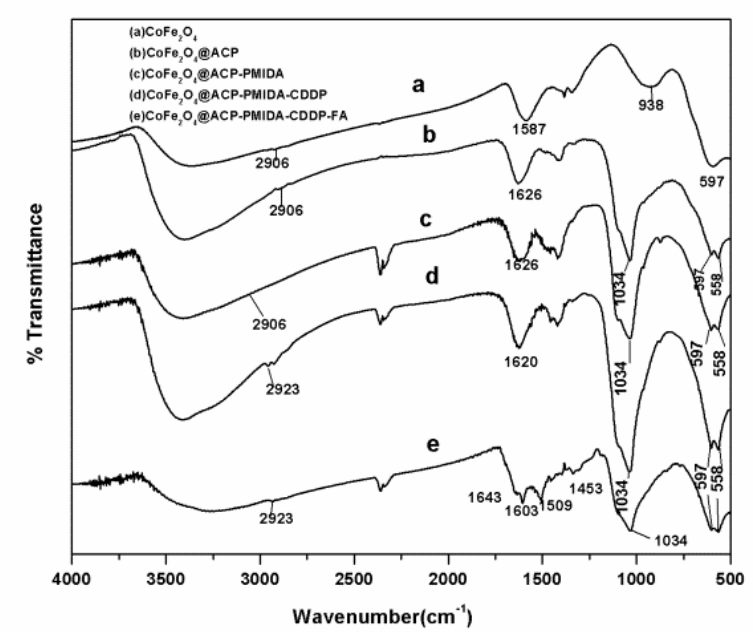
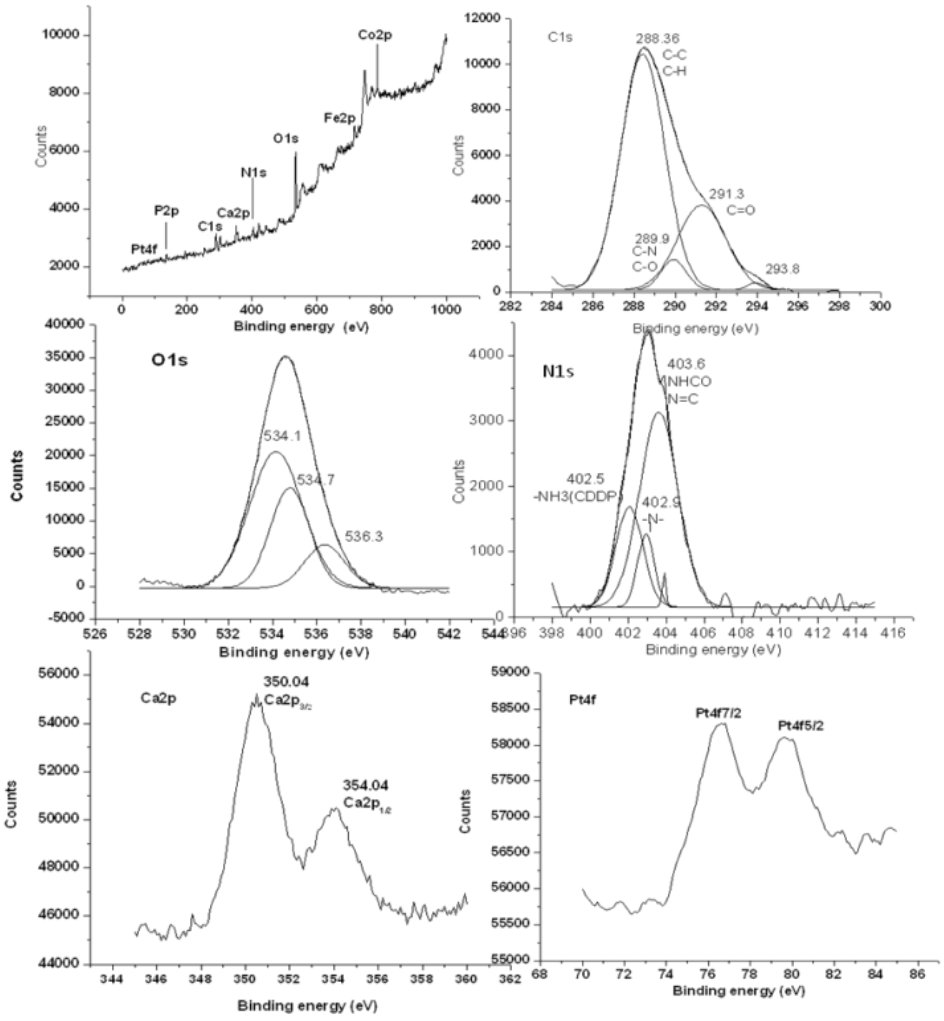


Figure S6 FTIR spectra after each step of conjugation

Figure S7



FigureS7 XPS survey spectrum of $CoFe_2O_4$@ACP-CDDP-FA. High resolution scans of (b) C1s, (c) O1s, (d) N1s, (e) Ca2p, (f) Pt4f

Figure S8

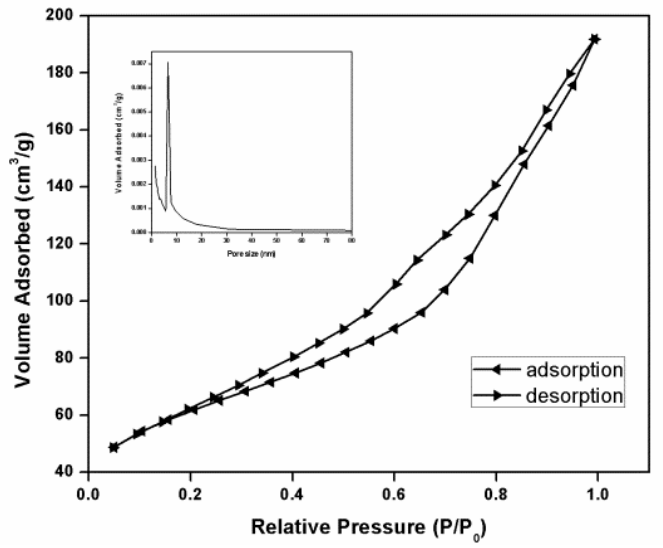


Figure S8 Nitrogen adsorption-desorption isotherm and the corresponding pore size distribution (inset) of as synthesized $CoFe_2O_4$ nanoparticles

Figure S9

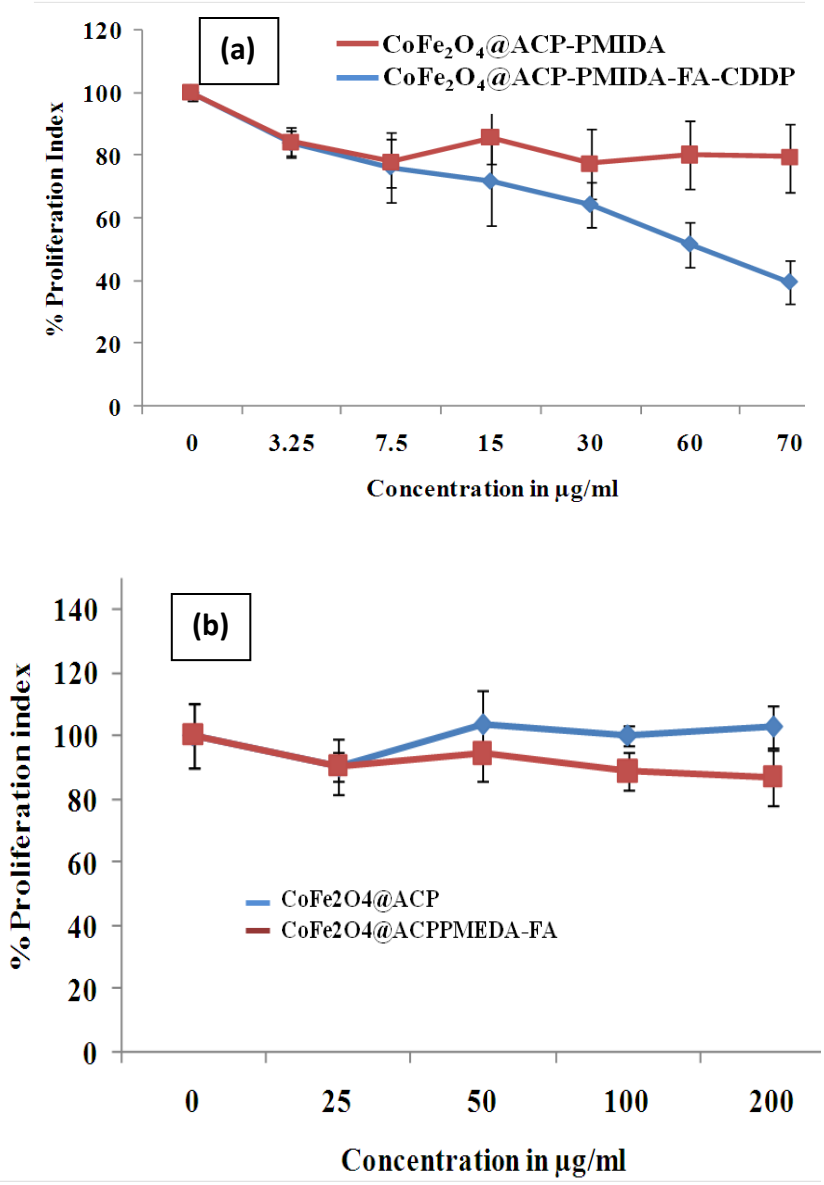


Figure S9 Cytotoxicity assay of nanoparticles on (a) HeLa and (b) L929 cells. Cells were treated with different concentrations of nanoparticles for 72 h and cell viability was measured by MTT assay

Figure S10

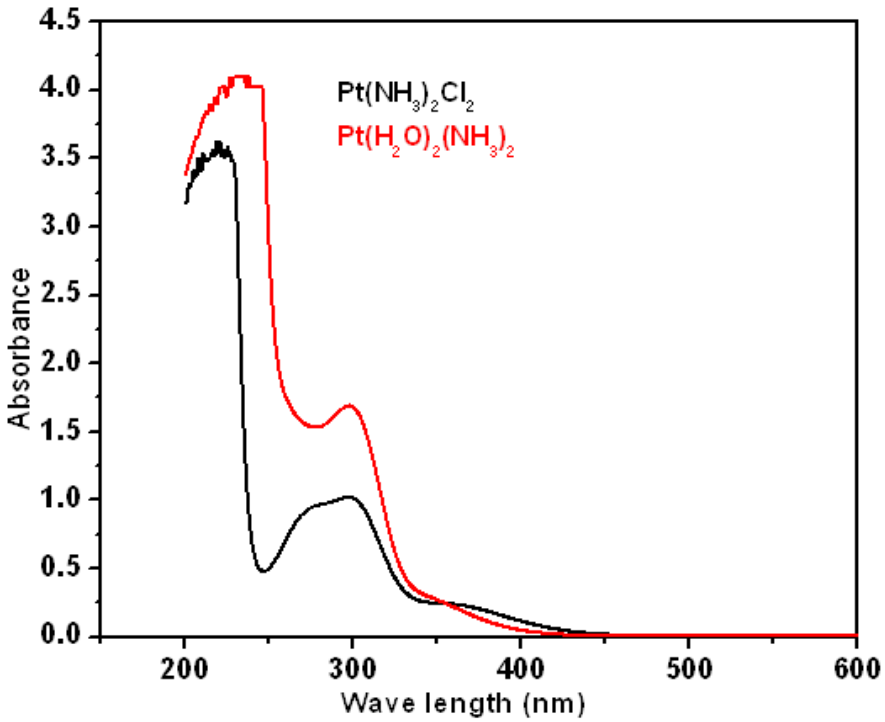


Figure S10 Change in UV-Visible spectrum of $Pt(NH_3)_2Cl_2$ after reacting with 2 equivalents of $AgNO_3$

Figure S11

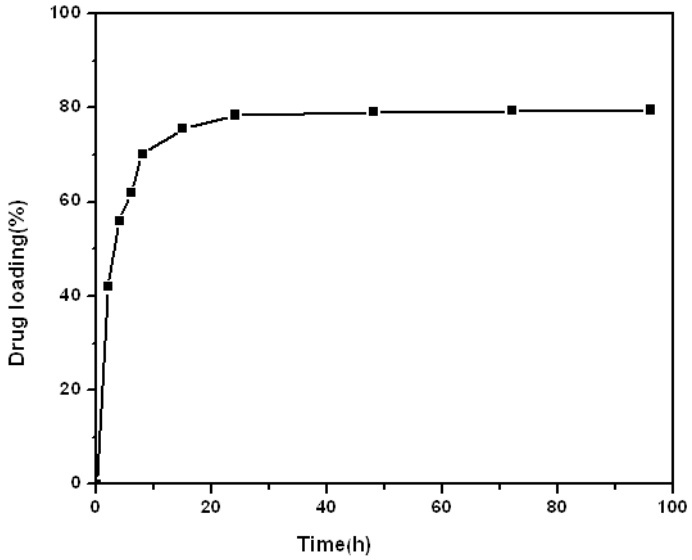


Figure S11 CDDP loading (%) on -COOH functionalized $CoFe_2O_4$ @ACP nanoparticles

Calculation of drug loading capacity

The drug loading capacity was calculated as per our previously reported paper [1]. First, COOH functionalized particles were conjugated with $Pt(H_2O)_2Cl_2$ as described in the experimental section and then particles were separated from the aqueous suspension using magnetic separator (Invitrogen). The obtained drug-loaded $CoFe_2O_4$@ACP nanoparticles were incubated at 60 °C in vacuum overnight and were weighted. Drug concentration in supernatant was analyzed by the ultraviolet absorption (λ_{max} = 295 nm), with reference to a calibration curve on a UV-Vis spectrophotometer. The measurements were performed in triplicate. Drug-loading content and encapsulation efficiency were obtained by eqs 1 and 2, respectively [2].

$$\text{Drug-loading content (\%)} = \frac{\text{Weight of the drug in nanoparticles}}{\text{weight of the nanoparticles}} \times 100$$

$$= \frac{0.013}{0.120} \times 100 = 10.8\%$$

$$\text{Encapsulation efficiency (\%)} = \frac{\text{Weight of the drug in nanoparticles}}{\text{Weight of the feeding drug}} \times 100$$

$$= \frac{0.013}{0.017} \times 100 = 76.4\%$$