Supporting Information

PEGylation of protein-imprinted nanocomposites sandwiching CdTe quantum dots with enhanced fluorescent sensing selectivity

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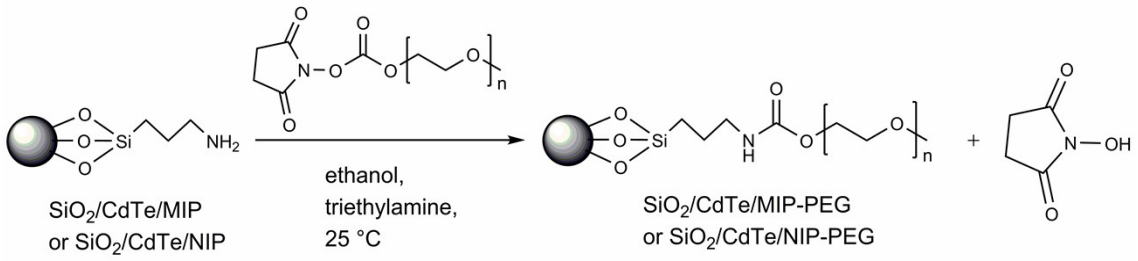
Synthesis of PEG-NHS

Polyethylene glycol monomethylether with an average molecular weight of 1900 (1.9 g, 1 mmol) was dissolved in dry dioxane (5 mL) by heating in a water bath of 40 °C, and then the clear solution was cooled to room temperature. To this solution, DSC (0.77g, 3 mmol) and DMAP (0.37g, 3 mmol) dissolved in dry acetone (10 mL) were added. This reaction mixture was magnetically stirred at 25 °C in argon atmosphere for 24 h, and then filtered to remove any solid. The crude product (denoted as PEG-NHS) was precipitated from the supernatant by diethyl ether, and then further purified by three cycles of re-dissolution in acetone and precipitation in diethyl ether. The yield was about 80%.



Scheme S1. The reaction mechanism for PEGylation of the SiO_2/CdTe/MIP and SiO_2/CdTe/NIP nanocomposites.

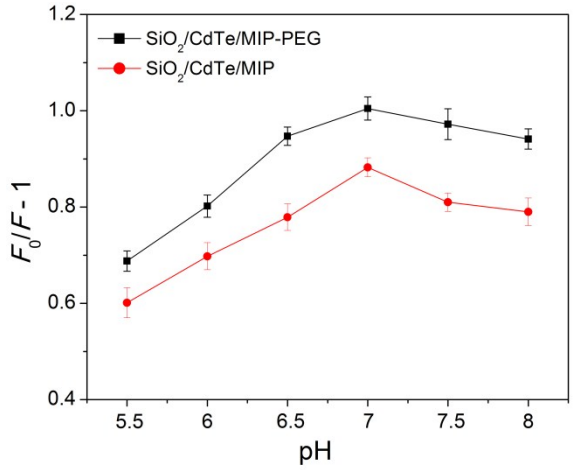


Fig. S1. The effect of pH value on quenching efficiency of the SiO_2/CdTe/MIP-PEG and SiO_2/CdTe/MIP nanocomposites in the presence of BHb at a concentration of 1.8 μM.

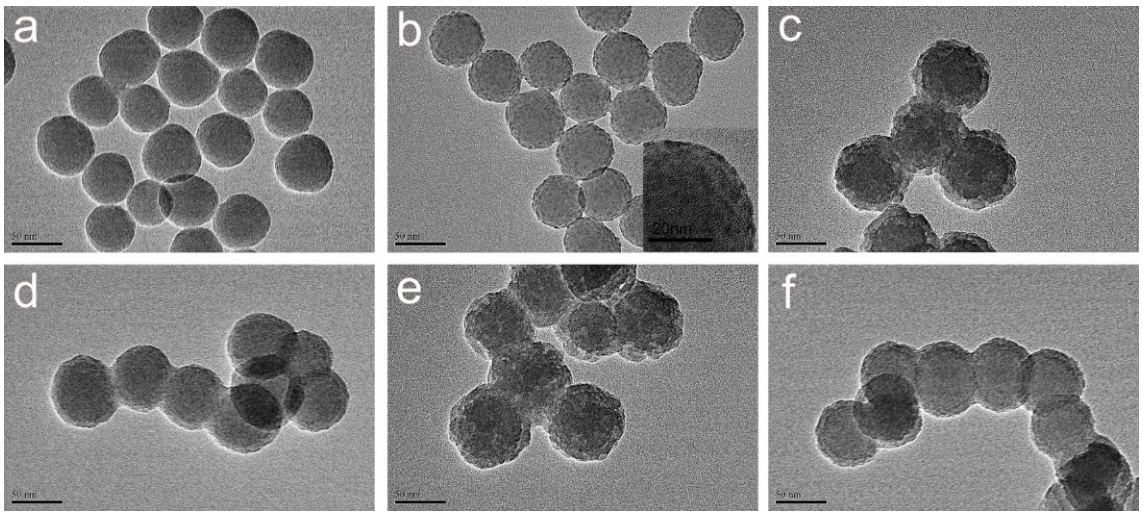


Fig. S2. TEM iamges of (a) SiO_2-NH_2, (b) SiO_2/CdTe, (c) SiO_2/CdTe/MIP, (d) SiO_2/CdTe/NIP, (e) SiO_2/CdTe/MIP-PEG, (f) SiO_2/CdTe/NIP-PEG nanoparticles. All bars in (a)-(f) represent 50 nm, and that in the inset in (b) represents 20 nm.

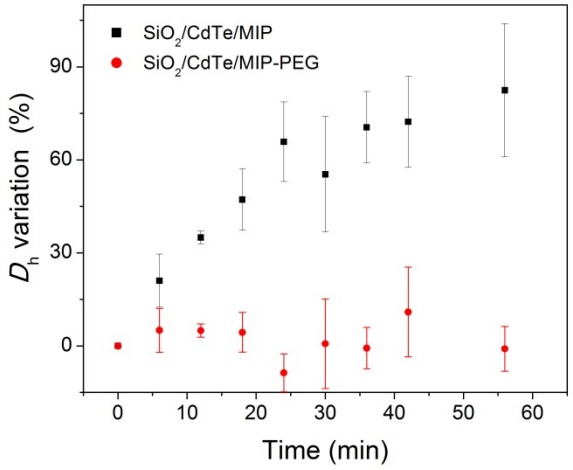


Fig. S3. Hydrodynamic diameters (D_h) variation of the SiO_2/CdTe/MIP and SiO_2/CdTe/MIP-PEG nanoparticles dispersed in phosphate buffer (pH 7.0, 10 mM) as a function of time.

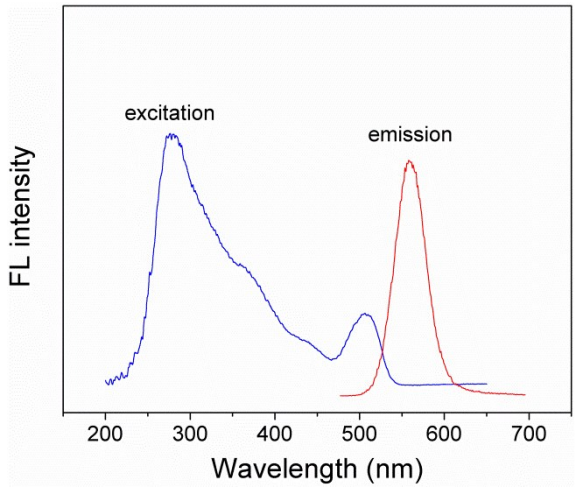


Fig. S4. Fluorescent excitation and emission spectra of the prepared CdTe QDs.

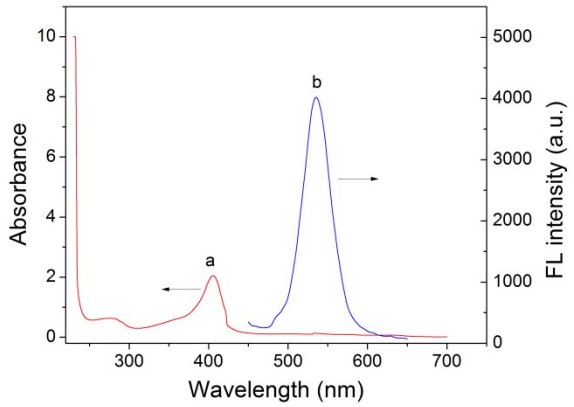


Fig. S5. (a) Absorption spectrum of BHb, and (b) fluorescence emission spectrum of the SiO_2/CdTe/MIP-PEG nanocomposites.