Fabrication of Mesoporous Silica-coated CNTs and Application of Protein Separation in Size-Selective

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Figure S1. TEM images of SiO$_2$ coated CNTs obtained by varying the amount of TEOS in the solution: (a) 0.2ml, (b) 0.5ml, (c) 1ml.

Figure S2. TEM images of SiO$_2$-coated CNTs obtained by using anionic surfactant (SDS) and TEOS (a,b) ; TEOS and APTES (c,d).
Figure S3 TGA curve of the CNTs and CNTs@CTAB@SiO₂
**Figure S4** UV-vis spectra of BSA in phosphate buffer solution at pH = 4.8 (c), after mixing with the mesoporous CNTs@SiO$_2$ (d), UV-vis spectra of Lyz in carbonate buffer solution at pH = 11.2 (e), after mixing with the mesoporous CNTs@SiO$_2$ (f),
Figure S5. (A) UV-vis spectrum of carbonate buffer solution containing concentration of 0.4 mg ml$^{-1}$ Cyt c and Lyz respectively (a), UV-vis spectrum of supernatant after binary protein solution of Cyt c and Lyz contacted with mesoporous CNTs@SiO$_2$ (b), and UV-vis spectrum of desorption solution of the adsorbed Cyt c and Lyz by the mesoporous CNTs@SiO$_2$ in the higher ionic strength (1.0M KCl) buffer (pH 9.6) (c). (B) The photos of bottle a-c in inset are corresponding to the solution of curve a-c respectively.
Figure S6. (A) UV-vis spectrum of carbonate buffer solution containing concentration of 0.4 mg ml\(^{-1}\) Cyt c, Lyz and BSA respectively (a), UV-vis spectrum of supernatant after binary protein solution of Cyt c, Lyz and BSA contacted with mesoporous CNTs@SiO\(_2\) (b), and UV-vis spectrum of desorption solution of the adsorbed Cyt c, Lyz and BSA by the mesoporous CNTs@SiO\(_2\) in the higher ionic strength (1.0M KCl) buffer (pH 9.6) (c). (B) The photos of bottle a-c in inset are corresponding to the solution of curve a-c respectively.