Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Dual-pH-sensitivity and Tumour Targeting Core-Shell Particle for Intracellular Drug Delivery

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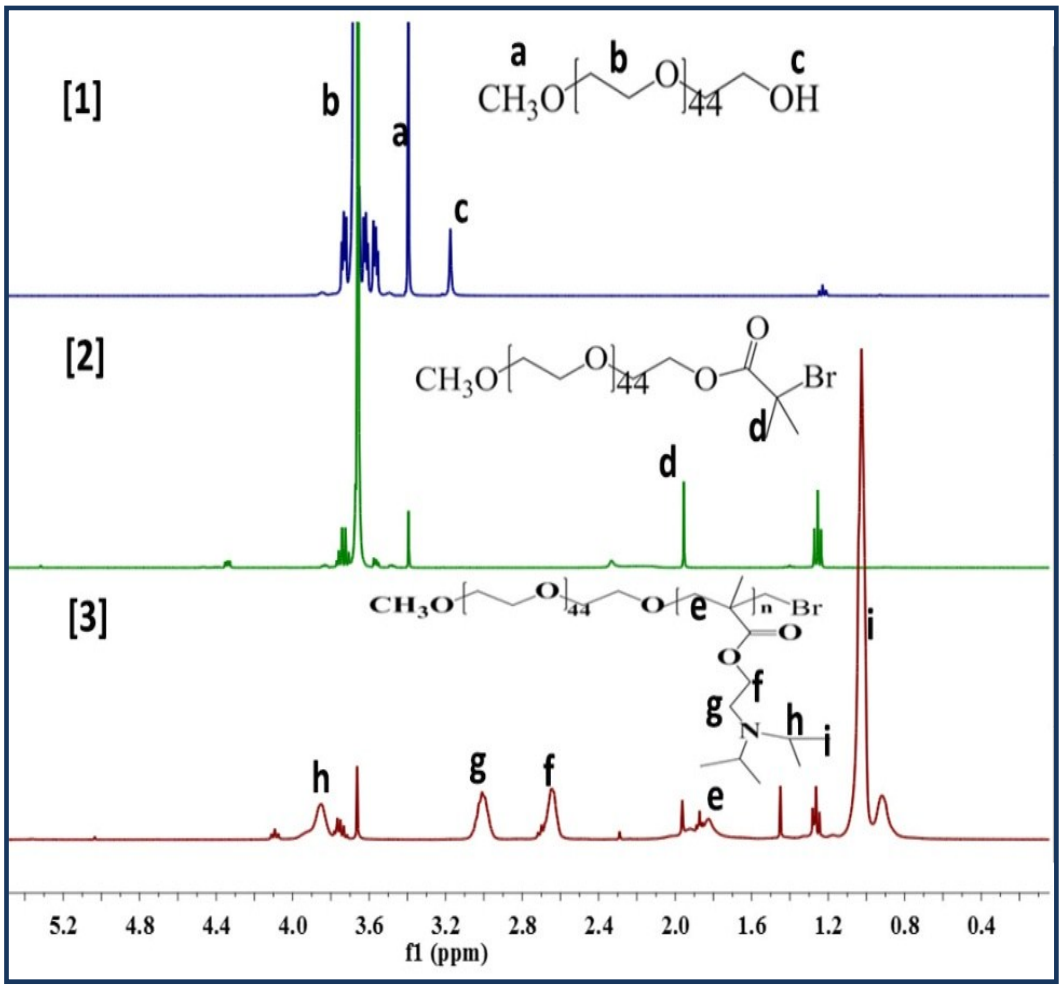

Figure S1. ^{1}HNMR spectra of the polymers: mPEG$_{45}$[**1**], mPEG$_{45}$-Br[**2**], mPEG$_{45}$-PDPA$_{100}$[**3**]. The solvent were CCl_3D. Comparing the spectra **1** with **2**, peak **c** disappeared when the terminal group (–OH) of PEG was modified by Br^-. The δ1.02, δ2.65 and δ3.01 were the special peak of PDPA, while the peaks at δ3.67 and δ3.28 ppm corresponded to -CH_2-CH_2- and -OCH_3 groups of the mPEG.

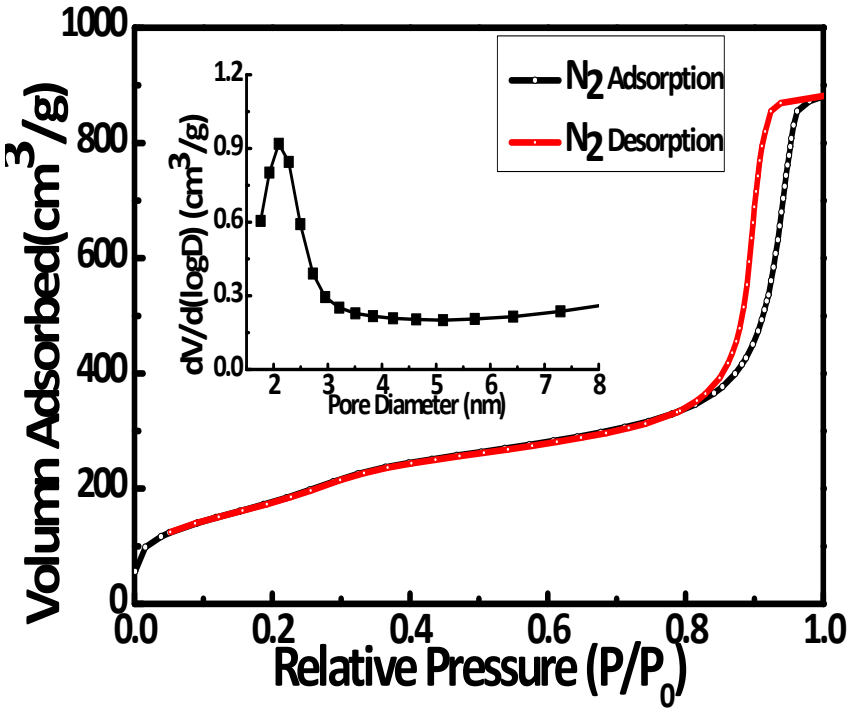

Figure S2. BET of nitrogen adsorption−desorption isotherms and (inset) pore size distribution of MSN.

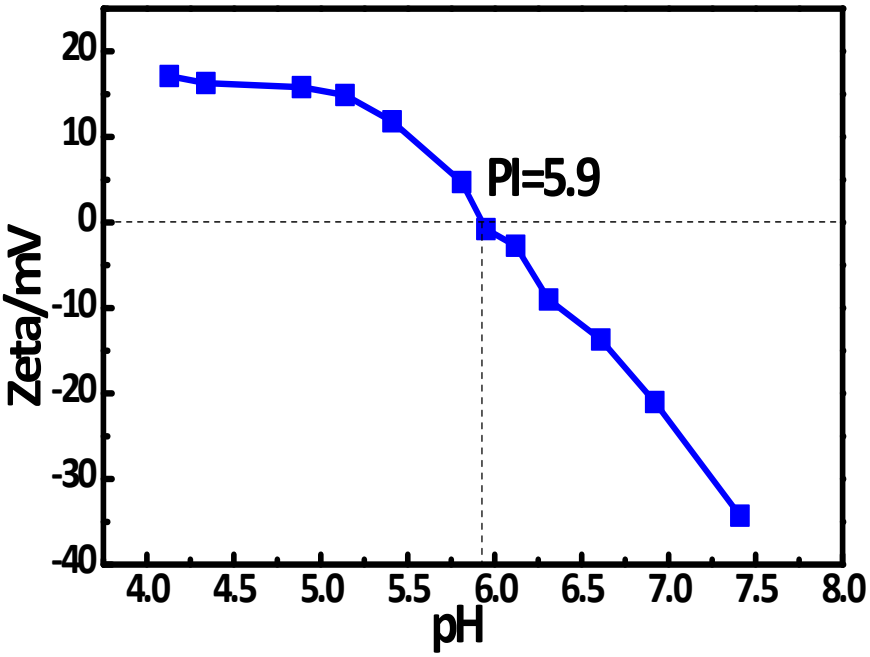

Figure S3. The isoelectric point of the Tf (0.1mg/mL).

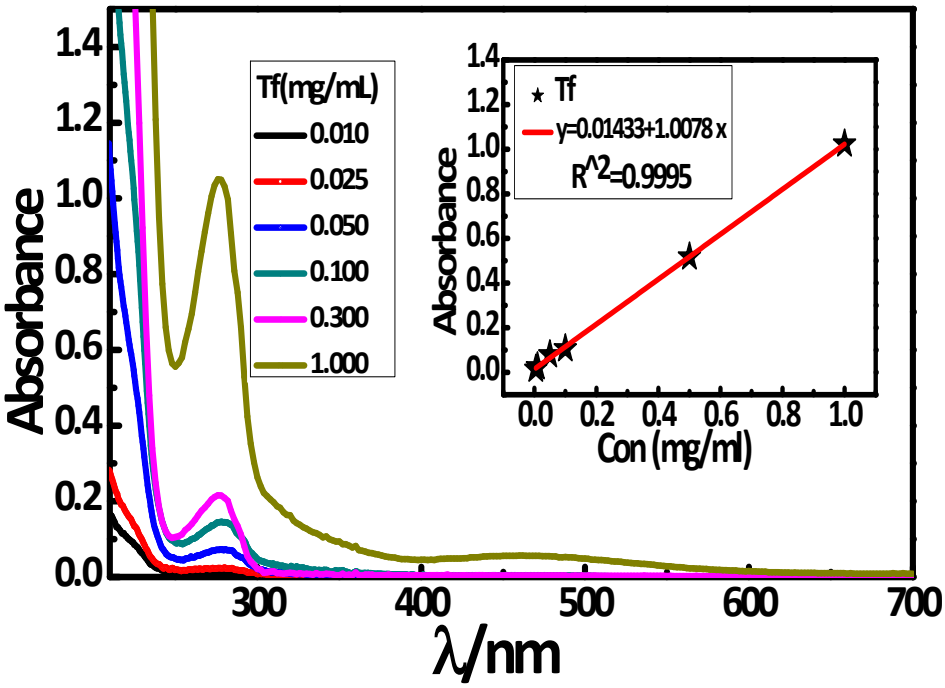

Figure S4. UV-vis adsorption spectra of Tf with different concentrations. The inset shows the relationship between the absorbance and the concentration of Tf at 280 nm.

Table S1. The adsorption ratios (*AR*) and adsorption amounts (*AA*) of Tf on MSN surface.(Concentration of MSN: 3mg/mL)

Component	Tf (mg/mL)	AR (%)	AA (mg/g)
MSN@Tf	0.01	75.3	2.5
	0.05	63.9	10.7
	0.1	44.1	14.7
	0.5	38.3	63.8
	1.0	29.6	98.7
	2.0	26.9	179.0
	3.0	17.5	175.0

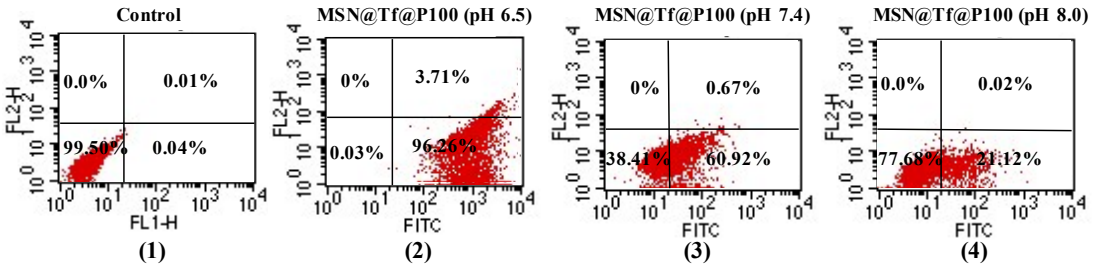

Figure S5: Flow cytometry analysis of uptake of Huh7 cells with the MSN@Tf@P100 under weakly acidic medium and weakly alkali medium (pH6.5, pH7.4 and pH8.0). ***Control*** was the cells cultured with DMEM only.

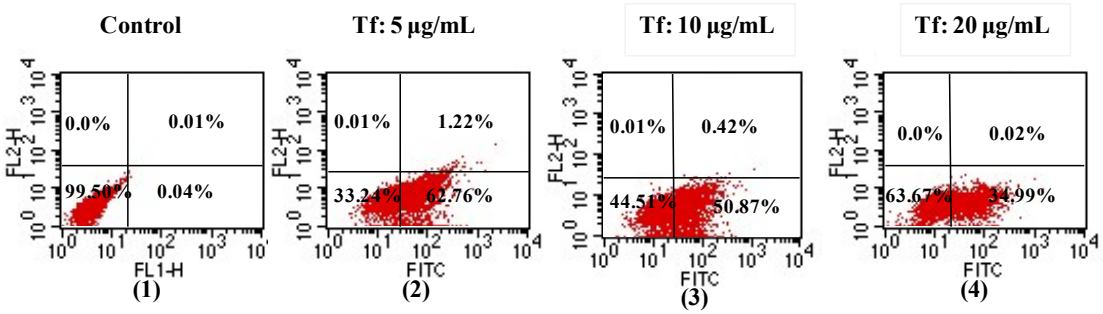

Figure S6: Huh7 cells were cultured with various concentrations of Tf (5 μg/mL, 10 μg/mL, 20 μg/mL) to saturate the Tf-receptors of Huh7 cells. ***Control*** was the cells cultured with DMEM only.