

For Supporting Information

Dendritic Nanotubes Self-assembled from Stiff Polysaccharide as Drug and Probe Carriers

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Table S1. Experimental results of AF1 and its fractions from static and dynamic light scattering in water at 25°C.

Sample	$M_w \times 10^{-4}$ (g/mol)	R_h (nm)	R_g (nm)	$\rho = R_g/R_h$
AF1	216	87.5	215	2.45
AF1-1	173	67.3	167	2.48
AF1-2	142	59.3	131	2.21

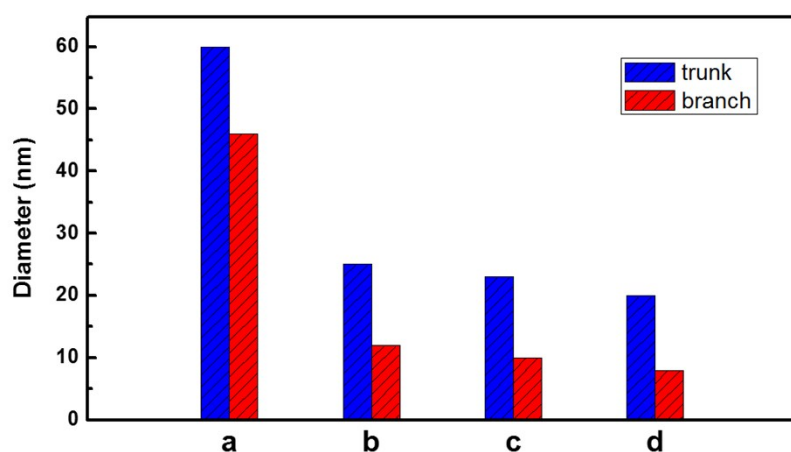


Figure S1. The mean diameters of “trunks” and “branches” of the dendritic nanotubes from Figure 2a, b, c, d.

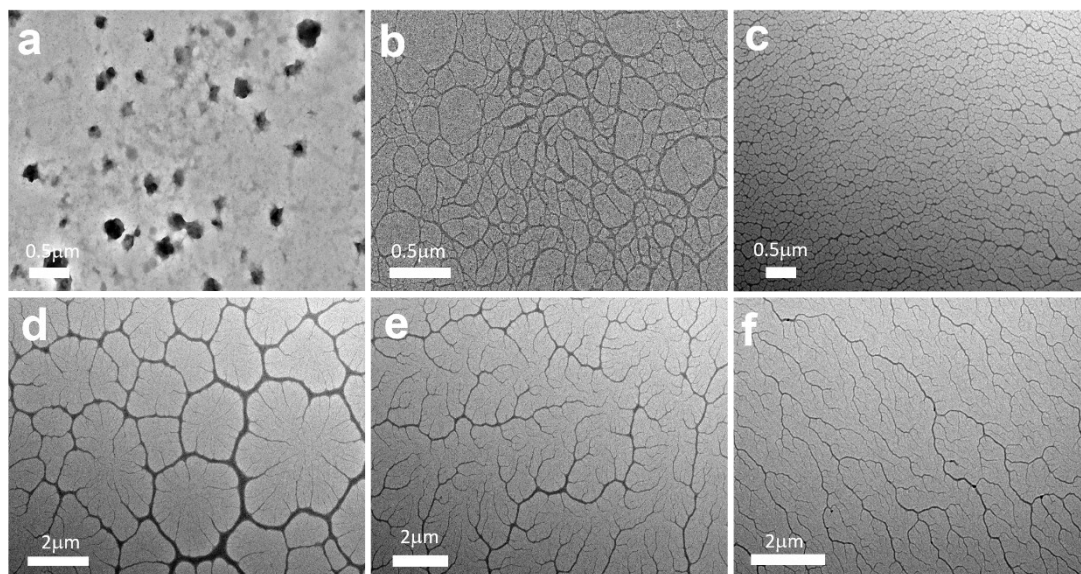


Figure S2. TEM images of AF1 in DMSO (1×10^{-3} g/mL) (a) and the dialyzed AF1 in water at different dialysis time points of 20 hours (content of DMSO was about 3%) (b), 30 hours (content of DMSO was about 1%) (c), 2 days (content of DMSO was about ~0%) (d), 3 days (content of DMSO was about 0%) (e), and 7 days (content of DMSO was about 0%) (f).

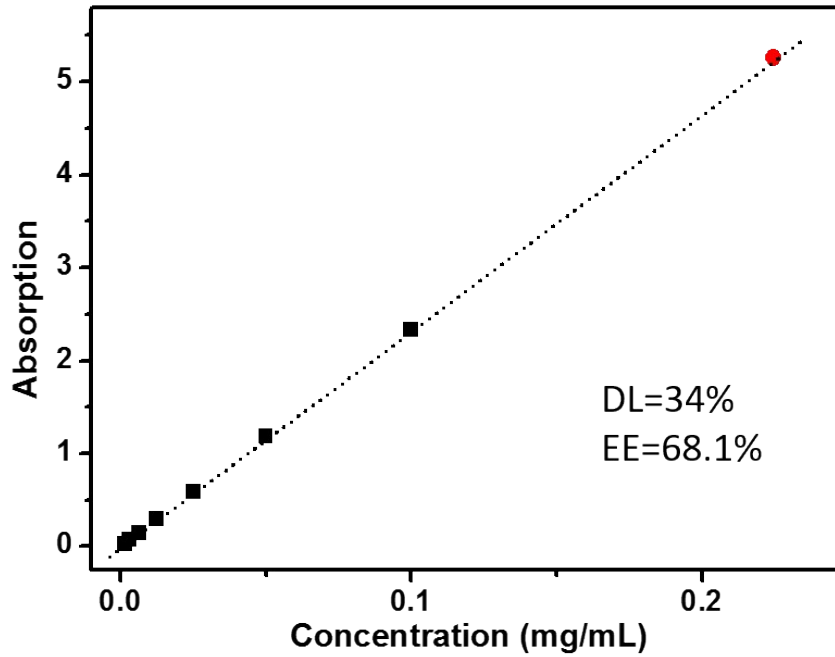


Figure S3. The standard absorption curve of DOX in DMSO solution ($y = 23.388x + 0.0007$), and the red point indicated the test solution.

Then 5 mL of AF1-DNTs/DOX solution was freeze-dried and the mass weight was 3.3mg, thus the real concentration of test AF1-DNTs/DOX was 0.66 mg/mL. The first feed ratio was (1:1)

$$DLC (wt \%) = \frac{DOX \text{ content in the DNTs}}{\text{The mass of DOX/DNTs}} = \frac{0.225}{0.66} = 34.0\%$$

$$DEE (\%) = \frac{DOX \text{ content in the DNTs}}{\text{Given content of DOX}} = \frac{0.225}{0.33} = 68.1\%$$

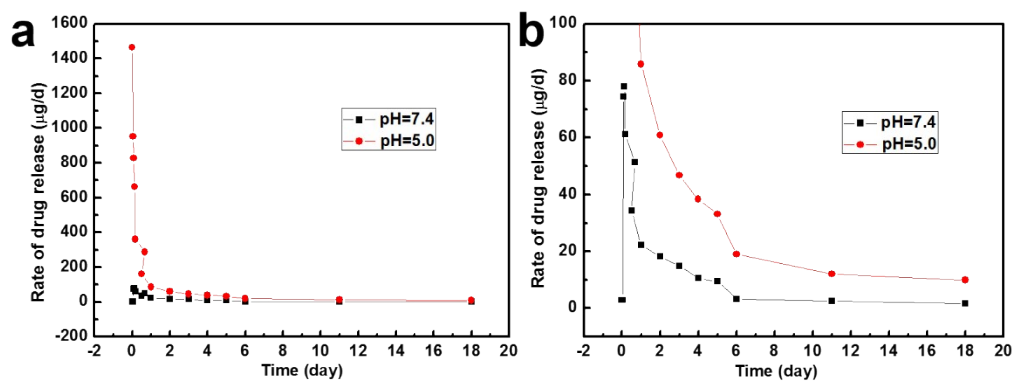


Figure S4. Rate of DOX release from AF1-DNTs/DOX at pH values of 5.0 and pH 7.4 (a), and the magnified image (b) of (a).

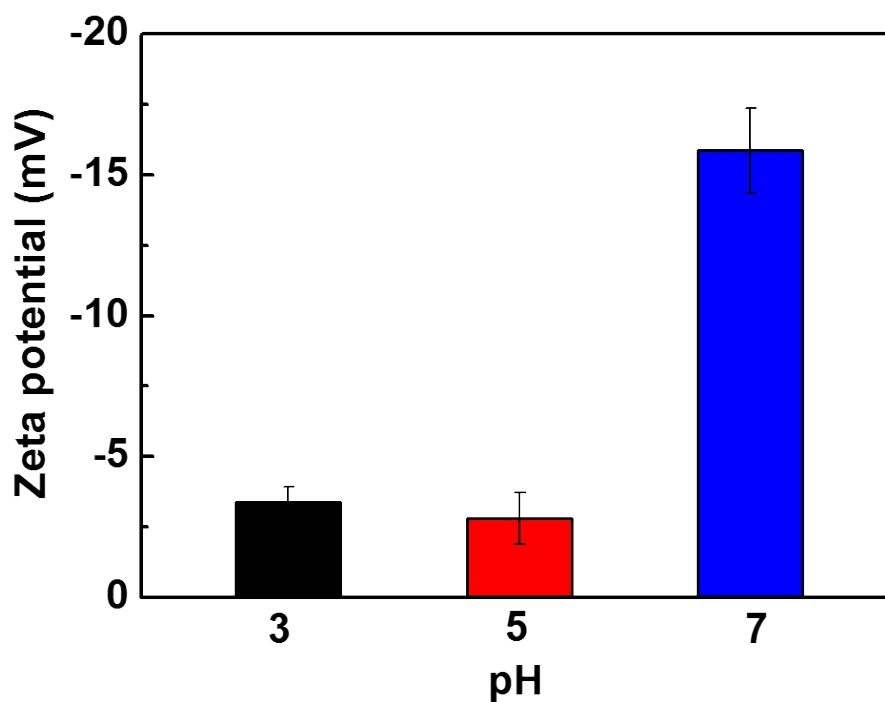


Figure S5. Values of the zeta potential of AF1-DNTs (0.5 mg/mL) as a function of pH at 25 °C. Data are represented as mean \pm standard deviation (n = 3).

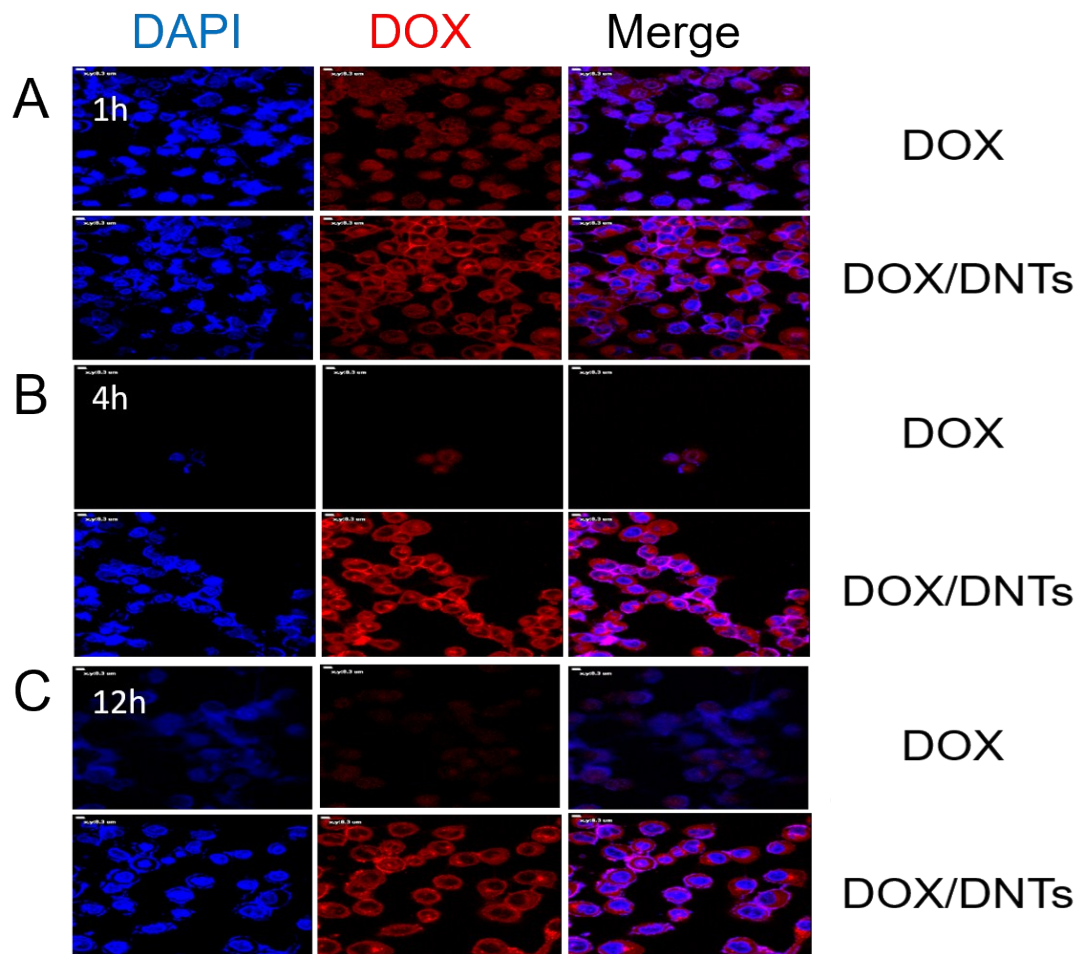


Figure S6. Confocal laser scanning microscopy (CLSM) images of MCF-7 cells treated with DOX and AF1-DNTs/DOX for 1 h (A), 4 h (B), and 12 h (C) with DOX concentration fixed at 1×10^{-6} g/ml. From left to right, the images show cell nuclei stained by DAPI (blue), DOX fluorescence (red), and the merging of the two images.

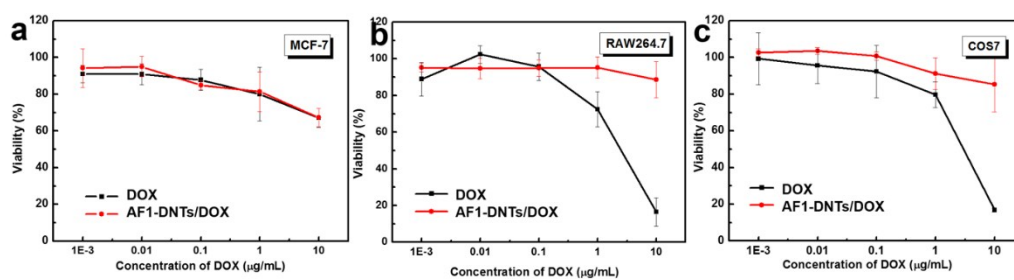


Figure S7. Effect of free DOX and AF1-DNTs/DOX on the cell viability of human MCF-7 breast cancer cells (a), mouse macrophage RAW264.7 cells (b), and COS7 cells (c) after incubation for 24 hours. Each value represents the mean \pm SD of three independent experiments.

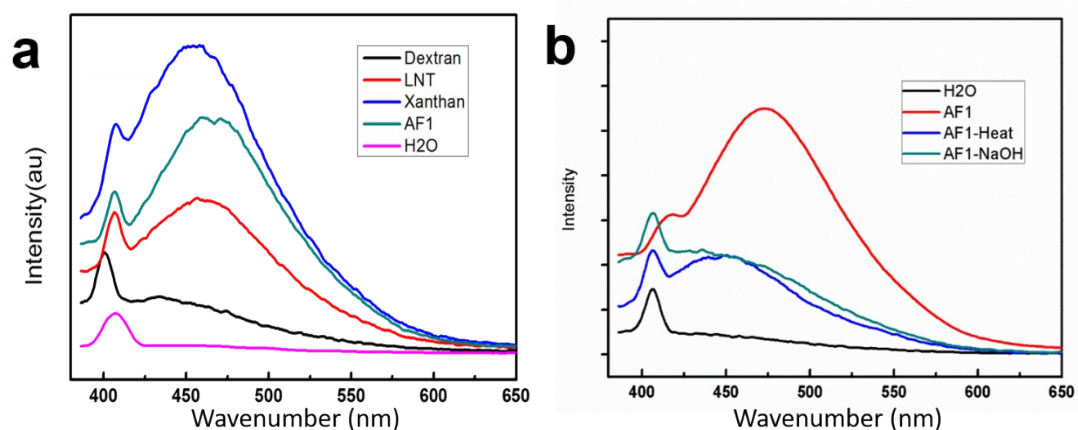


Figure S8. Changes in fluorescent spectrum of BSPOTPE (1×10^{-6} g/mL) in the presence of different polysaccharides (dextran, lentinan, xanthan and AF1) with concentrations of 10, 1, 1, 1 mg/mL, respectively (a). The fluorescent intensity of AF1-DNTs/ BSPOTPE under different conditions (b). AF1 solution was heated at 160°C or dissolved in NaOH to destroy the assemblies of AF1-DNTs.

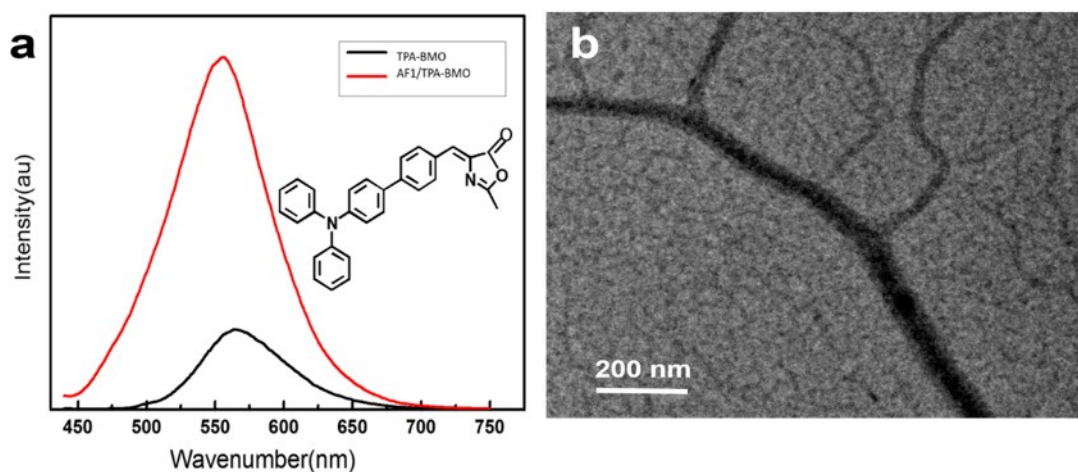


Figure S9. Fluorescent spectrum of TPA-BMO (1.0×10^{-6} g/mL) with and without AF1-DNTs (a) with the inset of the chemical structure for TPA-BMO, and the TEM image of AF1-DNTs/TPA-BMO.

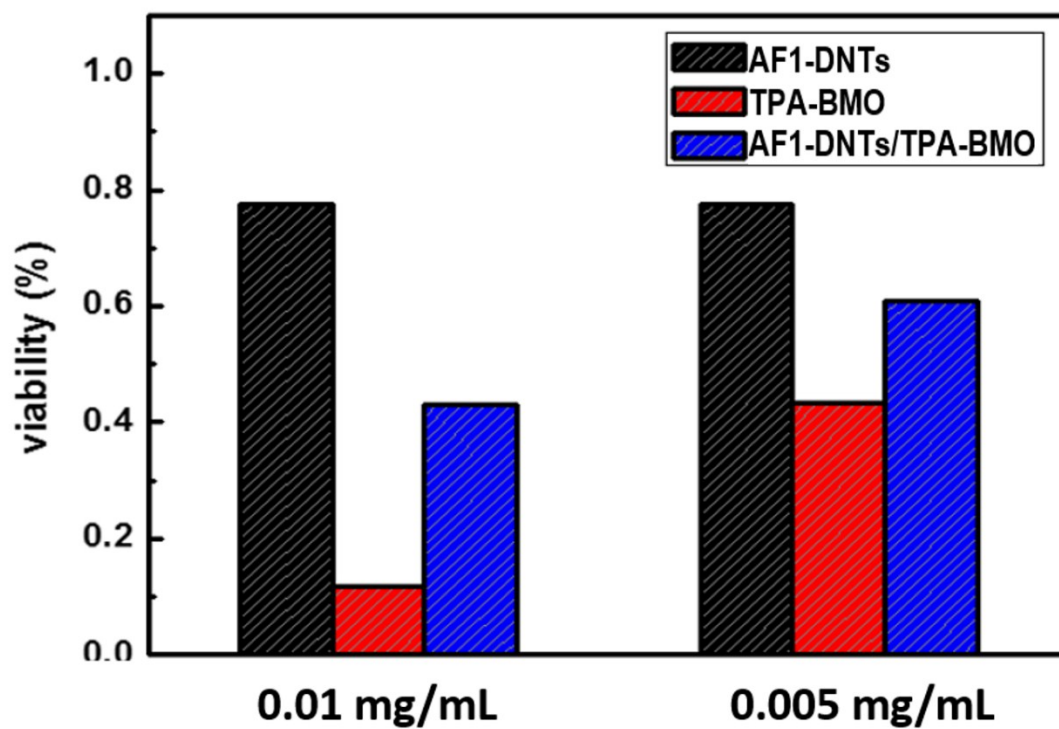


Figure S10. The effect of AF1-DNTs/TPA-BMO on the cell viability of HeLa cells.