

Supporting Information

Hydroxylated Mesoporous Nanosilica Coated by Polyethyleneimine
Coupled with Gadolinium and Folic Acid: A Tumor-Targeted T₁ Magnetic
Resonance Contrast Agent and Drug Delivery System

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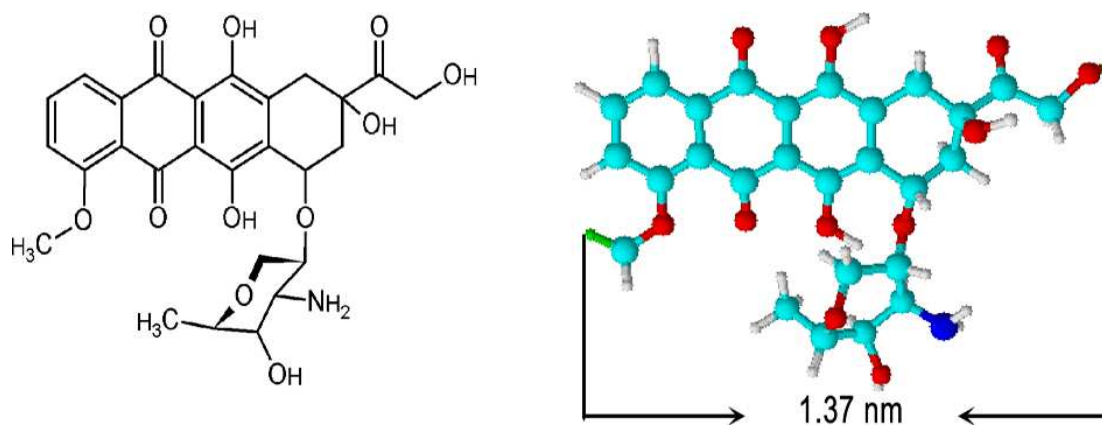


Figure S1. Molecular formula (left) and model (right) of DOX.

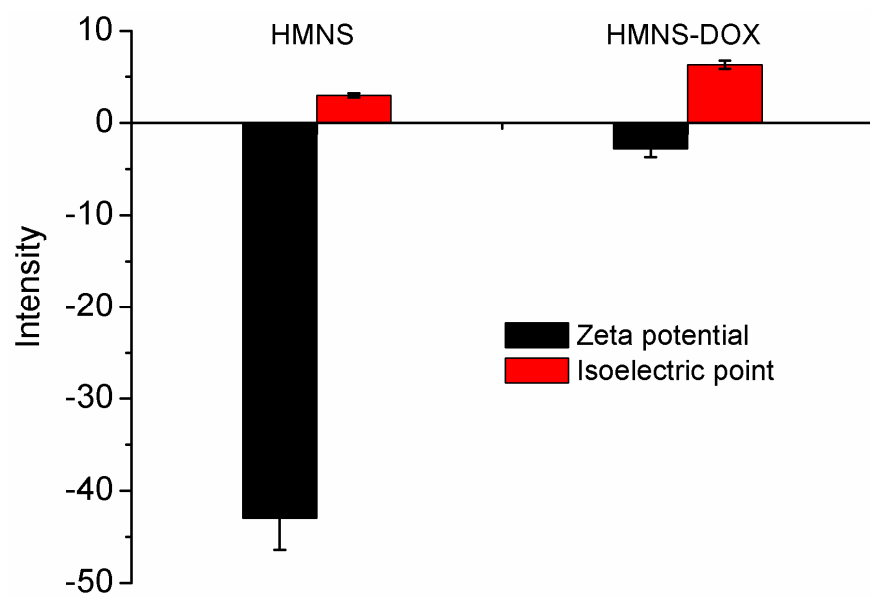


Figure S2. Zeta potentials and isoelectric points of HMNS and HMNS-DOX.

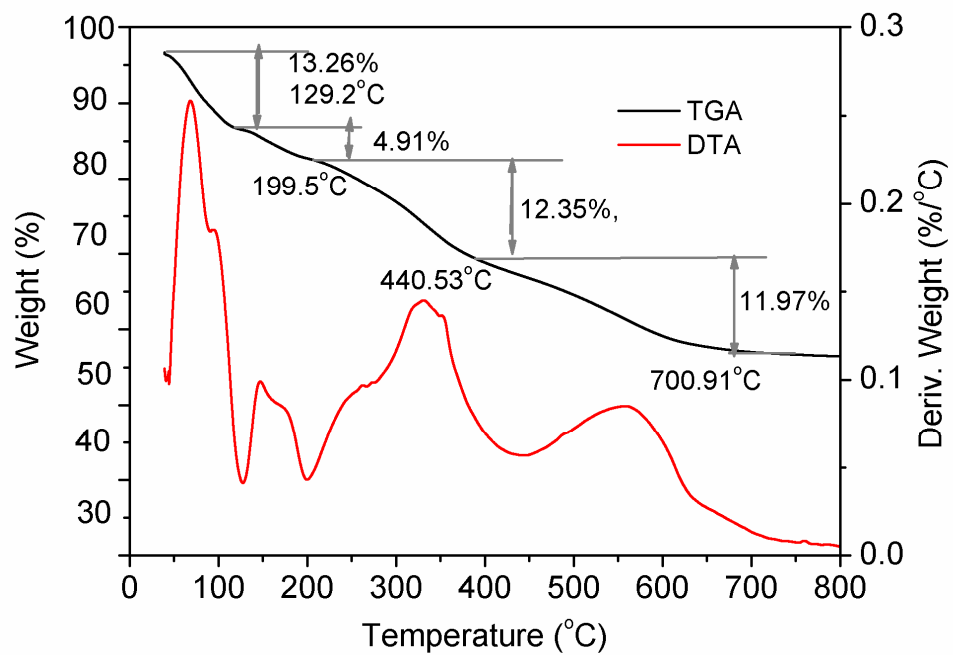


Figure S3. TGA (black line) and DTA (red line) curves of HMNS.

Mass% of PEI: 29.23% , molecular weight of PEI: 10000

Amount of amino group per PEI chain: 82

Mass% of silica NP: 70.07%, diameter of HMNS: 105 nm,

HMNS density: 0.21 g/mL

Amount of amino group:

$$\begin{aligned}n_{\text{NH}_2} &= (0.2923/10000) \times 6.02 \times 10^{23} \times 82 \\ &= 1.442 \times 10^{21}\end{aligned}$$

Mass of each silica NP:

$$\begin{aligned}m &= \rho V = 4/3 \times \rho \pi r^3 = 4/3 \times 0.21 \times 3.14 \times (5.25 \times 10^{-6})^3 \\ &= 1.27 \times 10^{-16} \text{ g/NP}\end{aligned}$$

Amount of silica NP:

$$n_{\text{si}} = 0.7007 / (1.27 \times 10^{-16}) = 5.51 \times 10^{15}$$

Therefore, amount of amino group per silica NP:

$$N = 1.442 \times 10^{21} / (5.51 \times 10^{15}) = 2.61 \times 10^5$$

Figure S4. Theoretical determinations of Gd-loadings on each PHMNS.