

supplementary data

^1H NMR spectrum showed the successful synthesis of TMC. The new peak at 3.198 ppm was the signal for $-\text{N}(\text{CH}_3^+)$, the characteristic peak of TMC. The peak at 2.330 ppm was assigned to the hydrogen protons of $-\text{N}(\text{CH}_3)_2$, indicating partial N-dimethylation (Figure S1)

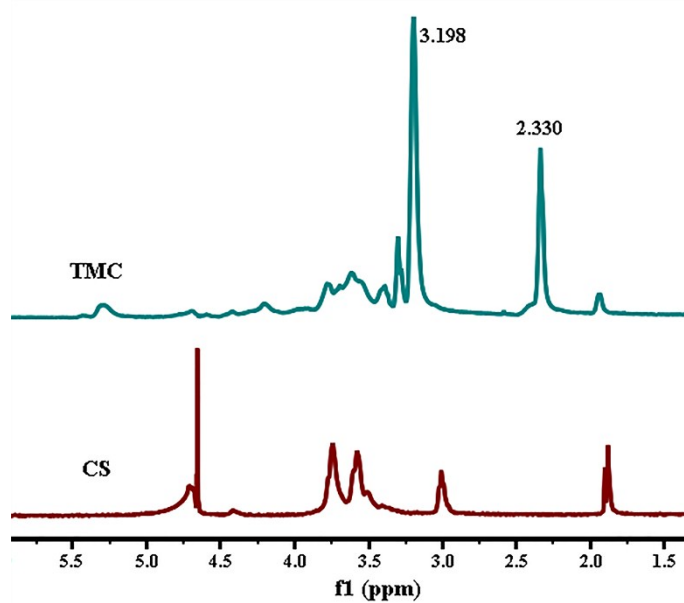


Figure S1. ^1H NMR spectrum of TMC and CS

Table S2. Dynamic light scattering analysis and zeta-potential measurements of nanoparticles with different components and pH. Data represented the mean \pm SD. (a) and (b) Diameters or zeta-potential of free liposome and free TMC at pH 7.2. (c) and (d) Nanoparticles diameters and zeta-potential of TMC-Lip at pH 7.2 and pH 4.5, respectively. (e) Diameters and zeta-potential of complex nanoparticles at pH 7.2 with DOX.

Sample	Liposomes	TMC (0.5 mg/mL)	Mean particle size (nm)	PDI	Zeta potential (mV)
a	1 mL	—	107.6 \pm 3.2	0.19 \pm 0.07	-20.23 \pm 1.02
b	—	1 mL	—	—	+17.53 \pm 2.02
c	1 mL	1 mL	129.7 \pm 3.5	0.29 \pm 0.12	-9.08 \pm 1.05
d	1 mL	1 mL	162.0 \pm 3.6	0.17 \pm 0.03	+8.92 \pm 0.73
e	1 mL	1 mL	176.0 \pm 3.6	0.23 \pm 0.08	+12.31 \pm 0.94

Table S3. Half-time of release with two types of nanoparticles at pH 4.5 and pH 6.8

pH	Copolymer	$t_{1/2}$
4.5	Lip NPs	2.5 h
6.8	Lip NPs	2 h
4.5	TMC-Lip NPs	0.75 h
6.8	TMC-Lip NPs	2.3 h

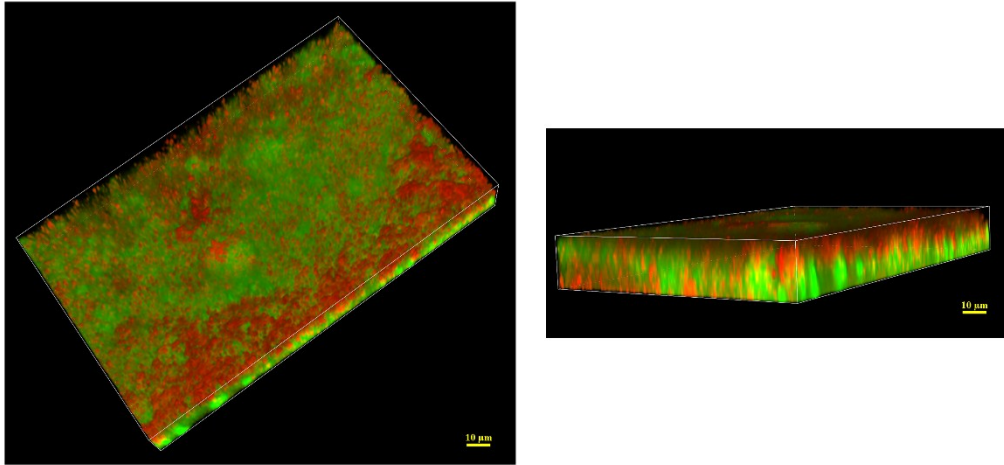


Figure S4. Representative three-dimensional images of adherence of the nanoparticles (red) to the biofilm (green).

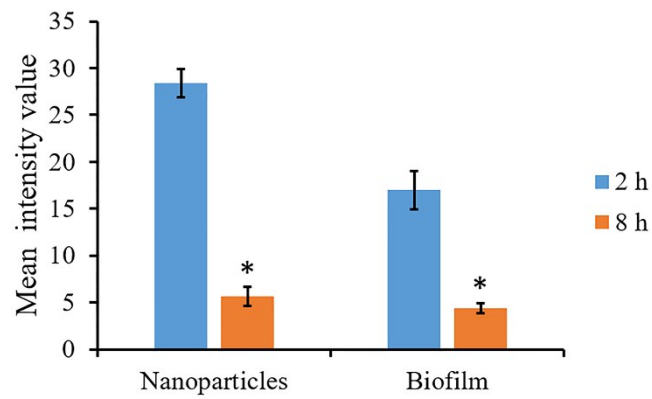


Figure S5. The fluorescent density of biofilm with TMC-Lip-DOX NPs managing for 2 and 8 h.

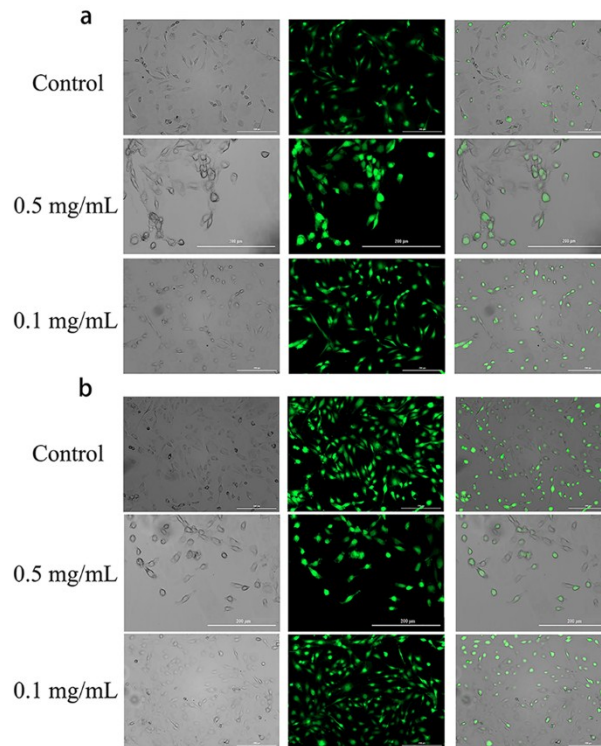


Figure S6. Cellular morphology of MC3T3-E1 treated with 1 mg/mL and 0.5 mg/mL of TMC-Lip-DOX NPs in 24 h (a) and 48 h (b) of incubation.