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Figure S1. Synthetic route of CPP44-FF-TPP.



Figure S2. HPLC chromatogram of CPP44-FF-TPP.



Figure S3. MALDI-TOF-MS spectrum of CPP44-FF-TPP.



Figure S4. TEM image of CFTNFs partial enlarged detail at the concentration of 3 mg mL<sup>-1</sup>.



Figure S5. TEM image of CFTNFs at the concentration of 30 mg mL<sup>-1</sup>.



Figure S6. CFTNFs (3 × 10<sup>-6</sup> M) distribution in HepG2 cells examined by laser scanning confocal microscopy. Blue: DAPI; red: CFTNFs.



Figure S7. CFTNFs (1 × 10<sup>-6</sup> M) distribution in various cancer cells and noncancer cells examined by laser scanning confocal microscopy. Blue: DAPI; red: CFTNFs.



Figure S8. The cytotoxicity of CFTNFs at several time intervals.



Figure S9. Images of HepG2 tumor-bearing mice in 12 days observation.