

Supplementary Information

Polymer hybrid magnetic nanocapsules encapsulating IR820 and PTX for external magnetic field-guided tumor targeting and multifunctional theranostics

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1. Supplementary Table

Table S1 Properties of the PCLA-PEG-PCLA copolymers synthesized in this study.

Triblock copolymer	[DLLA] /[CL]/[PEG] ^a	M_n^a	[LA] / [CL] / [PEG] ^b	M_n^b	M_n^c	M_w^c	M_w/M_n^c
PCLA-PEG-PCLA1	14400/21600/4000	40000	12120/20246/4000	36366	24654	38863	1.6
PCLA-PEG-PCLA2	21600/14400/4000	40000	18180/10124/4000	32304	20254	36672	1.8
PCLA-PEG-PCLA3	28800/7200/4000	40000	24258/4230/4000	32488	16244	31255	1.9

^a Calculated from in feed ratio

^b Calculated from ¹H-NMR

^c Obtained from GPC.

Table S2 Dynamic particle sizes of PCLA-PEG-PCLA copolymer nanocapsules.

Triblock copolymer	[DLLA] /[CL]/[PEG]^a	Dynamic Particle size (nm)	PDI
PCLA-PEG-PCLA1	12120/20246/4000	155.3±1.7	0.13±0.01
PCLA-PEG-PCLA2	18180/10124/4000	177.6±1.2	0.37±0.00
PCLA-PEG-PCLA3	24258/4230/4000	184.2±4.5	0.37±0.03

a Calculated from ¹H-NMR

2. Figures

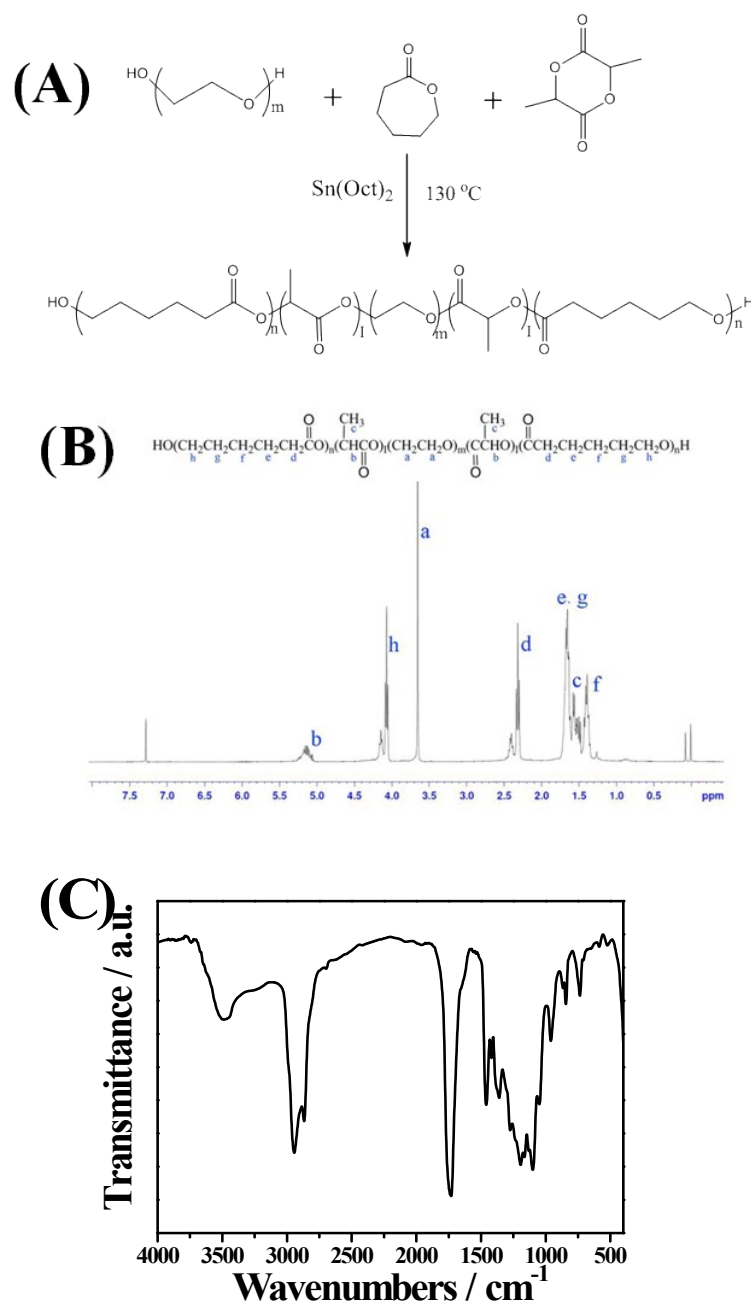


Figure S1. (A) Synthesis scheme of PCLA-PEG-PCLA copolymers. (B) Representative $^1\text{H-NMR}$ spectrum (400 MHz) of PCLA-PEG-PCLA copolymer in CDCl_3 . (C) FT-IR spectra of PCLA-PEG-PCLA copolymer.

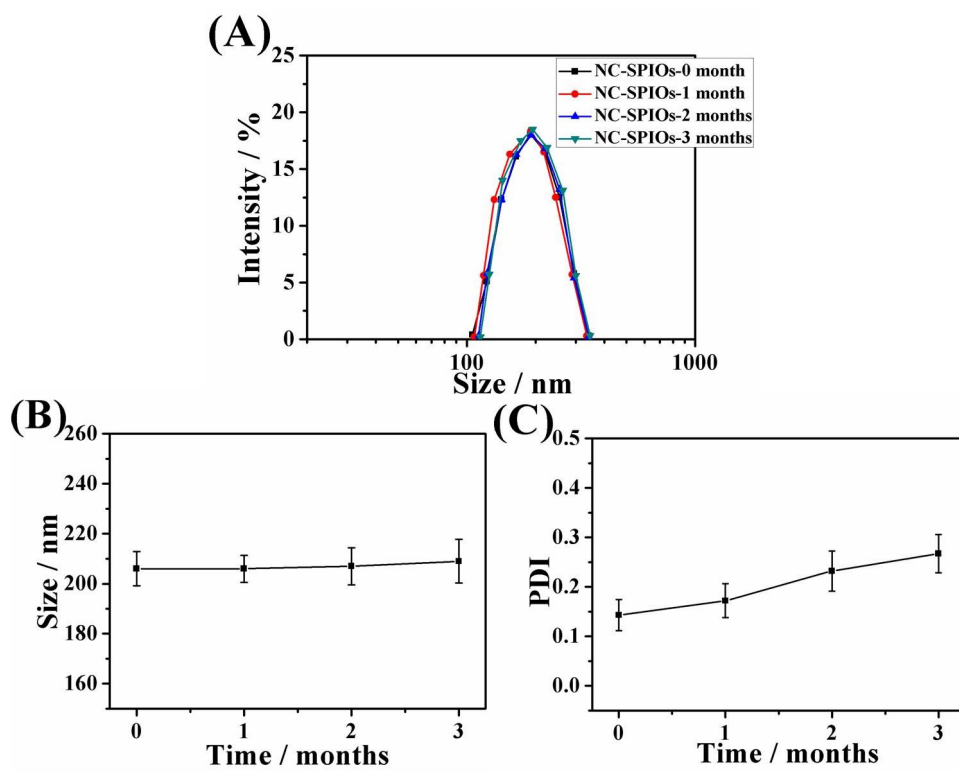


Figure S2. (A) Size distributions of NC-SPIOs within three months by DLS. (B) Size and (C) PDI changes of NC-SPIOs within three months.

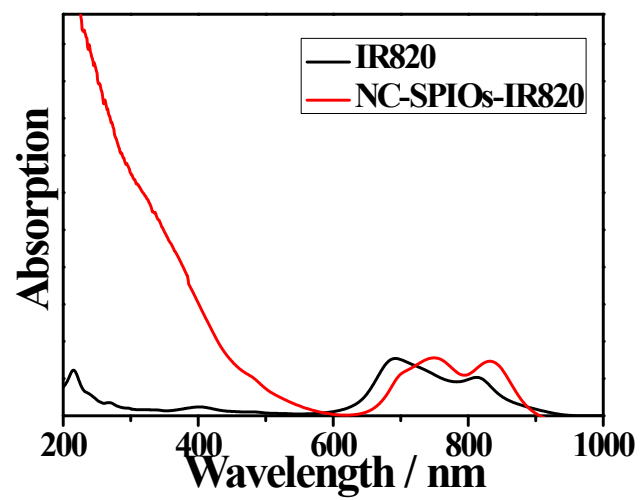


Figure S3. UV-vis adsorption spectra of IR820 and NC-SPIOs-IR820 in aqueous solution.

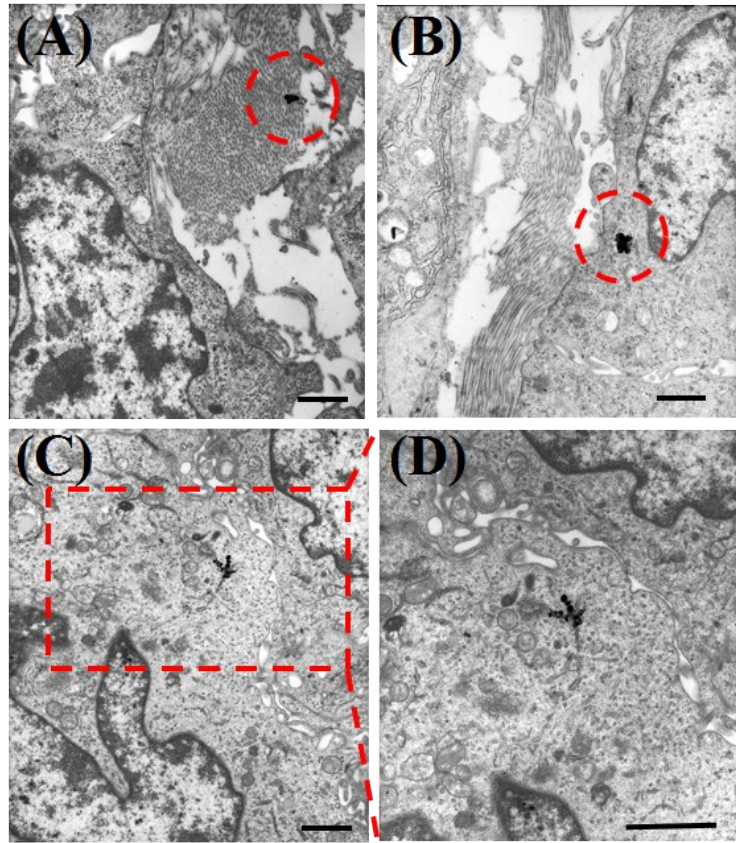


Figure S4. Bio-TEM of NC-SPIOs uptake by the tumor cells *in vivo*. (The scale bar is 200 nm.)

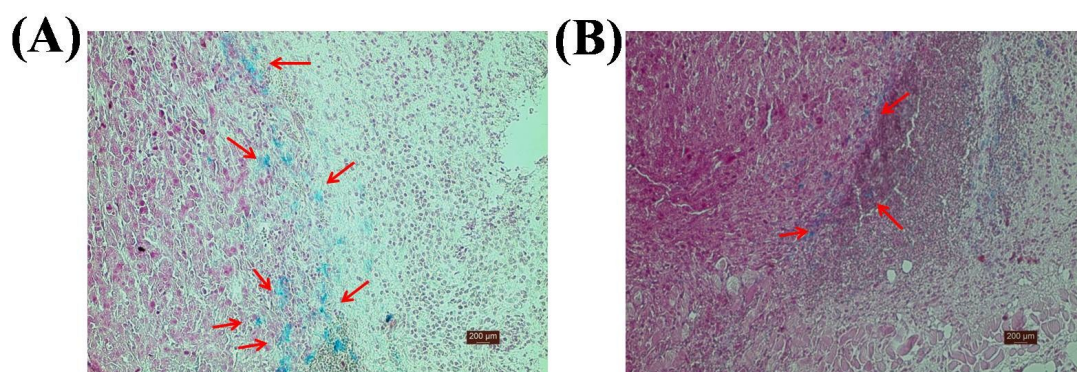


Figure S5. Tumor histological images of Prussian blue staining in group of (A) NC-SPIOs with extra-MF and (B) NC-SPIOs without extra-MF. (The red arrows indicated the location of the iron staining)

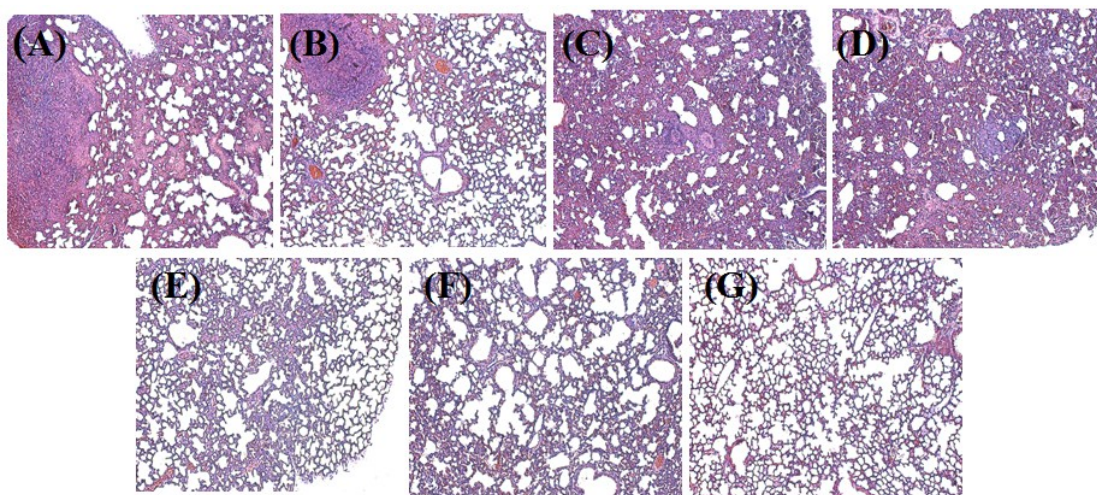


Figure S6. H&E staining of the lung samples in the 20 days after treatment. Images were acquired at 400× magnification. (A, Saline; B, PTX with one injection; C, NC-SPIOs-PTX with one injection; D, NC-SPIOs-PTX+MF with one injection; E, PTX with three injections; F, NC-SPIOs-PTX with three injections; G, NC-SPIOs-PTX+MF with three injections)