Supporting Information

Mesoporous Carbon Nanospheres as a Multifunctional Carrier for Cancer Theranostics

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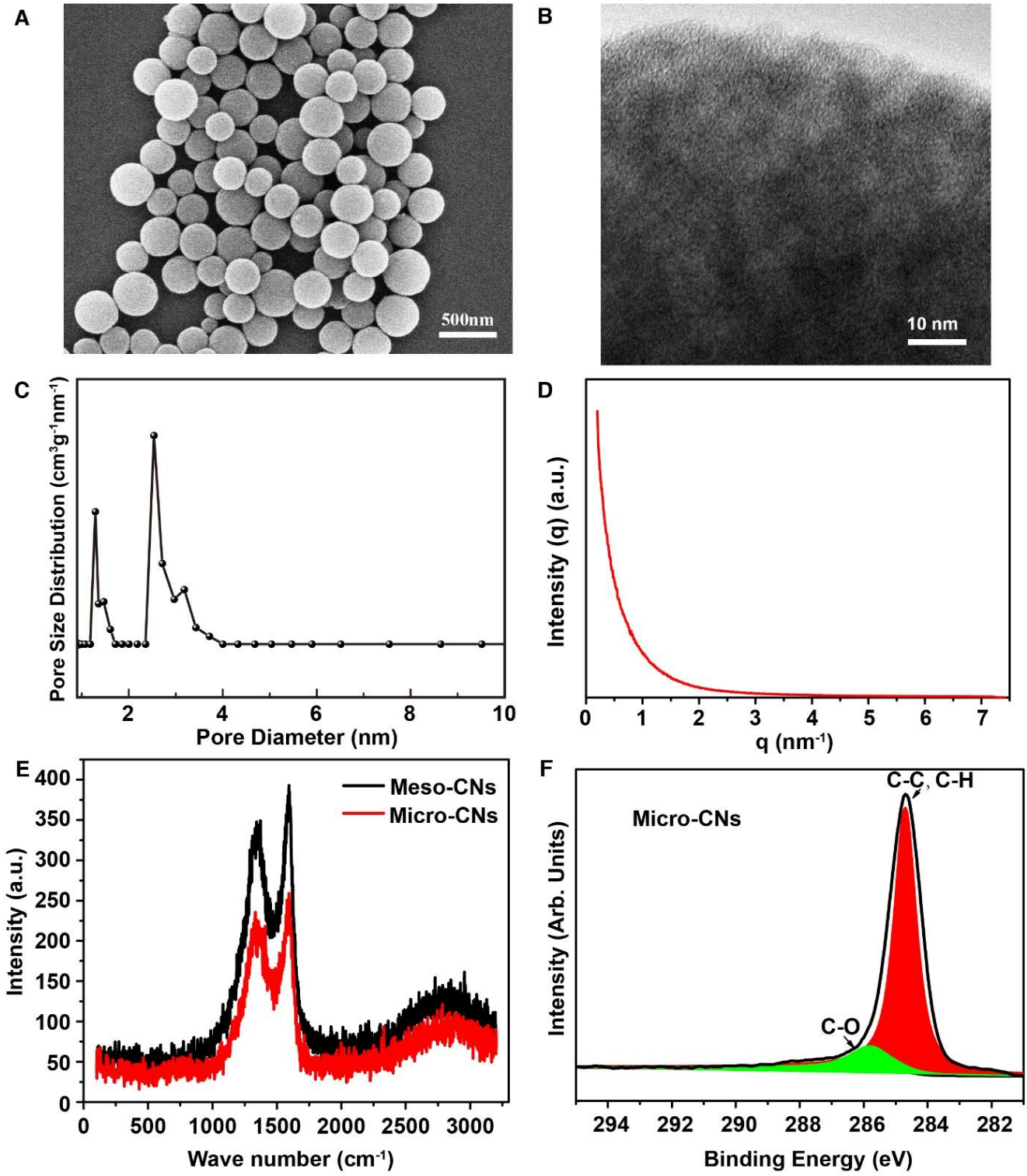

Figure S1. (A). A typical SEM image of Meso-CNs. **(B)**. A typical HRTEM image of Meso-CN. **(C)**. Pore size distribution of the Meso-CNs. **(D)**. Small-angle X-ray scattering (SAXS) measurement of the Meso-CNs. (**E)**. Raman spectra of the Meso-CNs and Micro-CNs. **(F).** XPS patterns of the Micro-CNs.

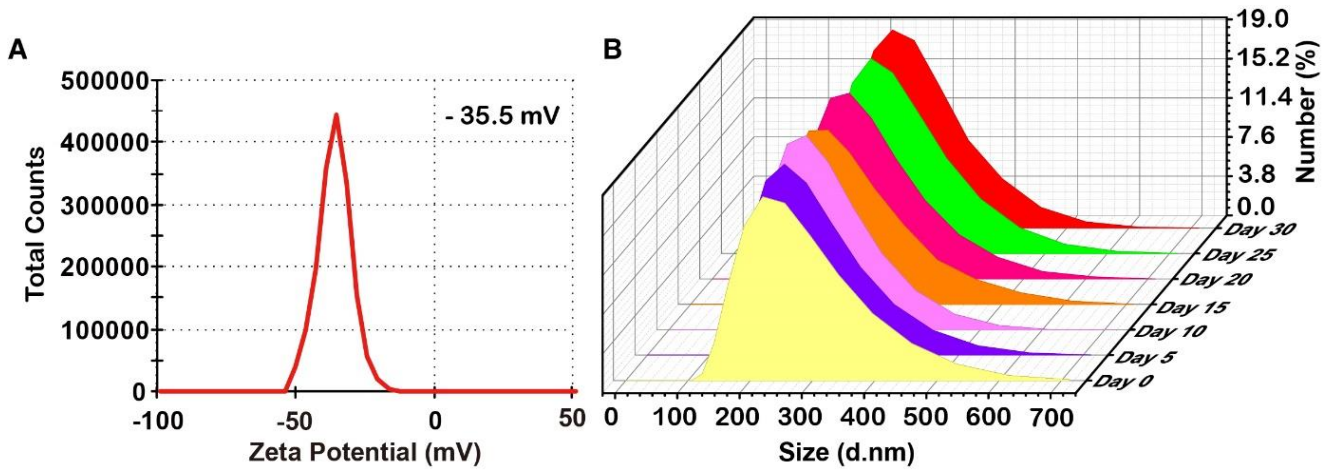

Figure S2. (A). Zeta potential of the Meso-CNs. **(B)**. Hydrodynamic diameter of the Meso-CNs in aqueous suspension over 30 days.

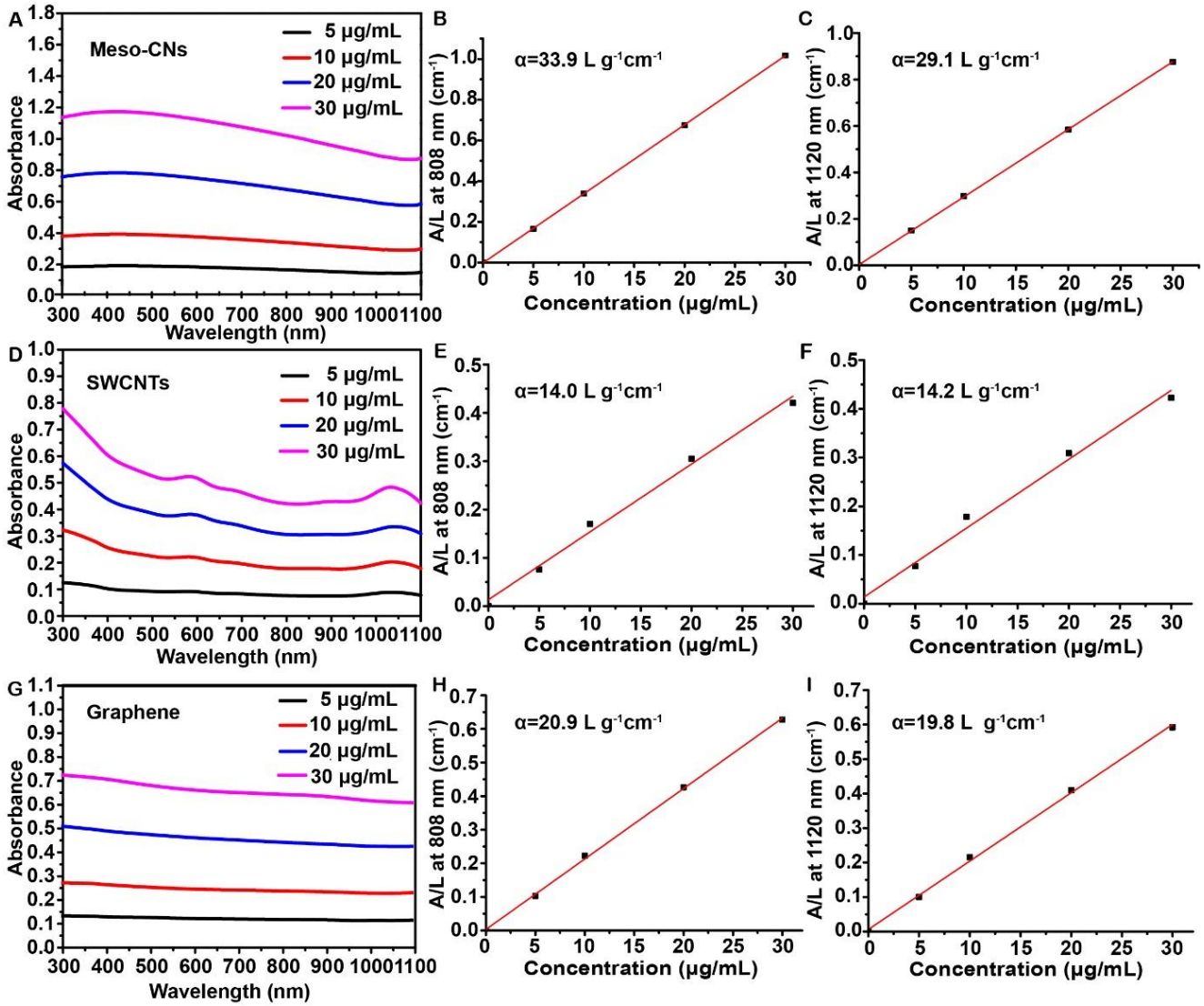

Figure S3. (A). Absorption spectra of Meso-CNs dispersed in water at different concentrations. Normalized absorbance intensity of Meso-CNs divided by the characteristic length of the cell (A/L) at different concentrations for λ=808 nm **(B)** and λ=1120 **(C)**. **(D)**. Absorption spectra of SWCNTs dispersed in water at different concentrations. Normalized absorbance intensity of SWCNTs divided by the characteristic length of the cell (A/L) at different concentrations for λ=808 nm **(E)** and λ=1120 **(F)**. **(G)**. Absorption spectra of graphene dispersed in water at different concentrations. Normalized absorbance intensity of graphene divided by the characteristic length of the cell (A/L) at different concentrations for λ=808 nm **(H)** and λ=1120 **(I)**.

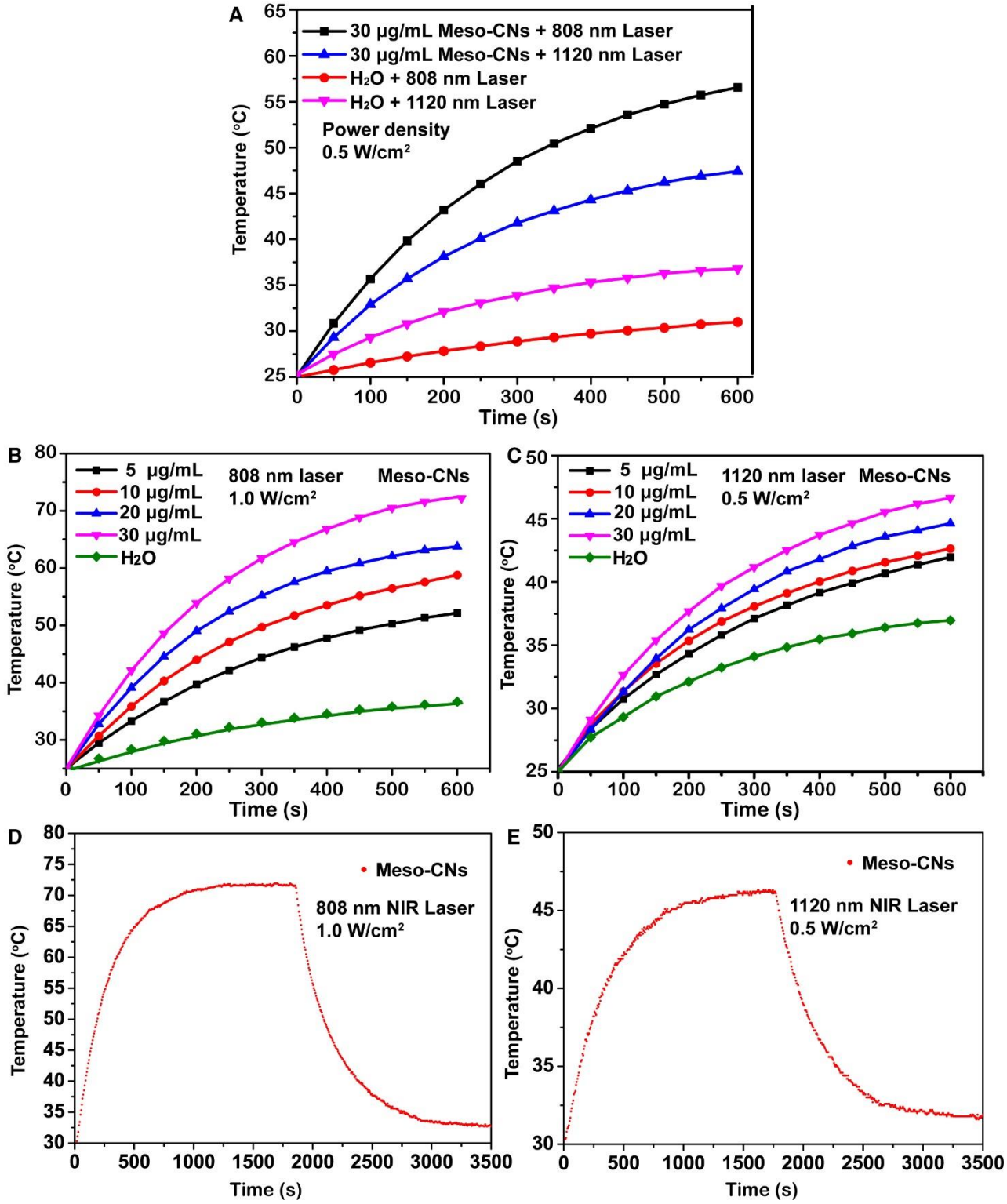

Figure S4. (A). Photothermal conversion curves of Meso-CNs and pure water under irradiation with 808 nm or 1120 nm laser (0.5 W/cm^2). Photothermal conversion curves of pure water and Meso-CNs dispersed in water at different concentrations under irradiation with **(B)** an 808 nm laser (1.0 W/cm^2) and **(C)** a 1120 nm laser (0.5 W/cm^2). **(D)**. Photothermal response of a Meso-CNs aqueous dispersion

(30 μg/mL, 5 mL) under 808 nm laser irradiation. The laser was shut off once their temperatures reached a steady-state value. **(E)**. Photothermal response of a Meso-CNs aqueous dispersion (30 μg/mL, 5 mL) under 1120 nm laser irradiation. The laser was shut off once their temperatures reached a steady-state value.

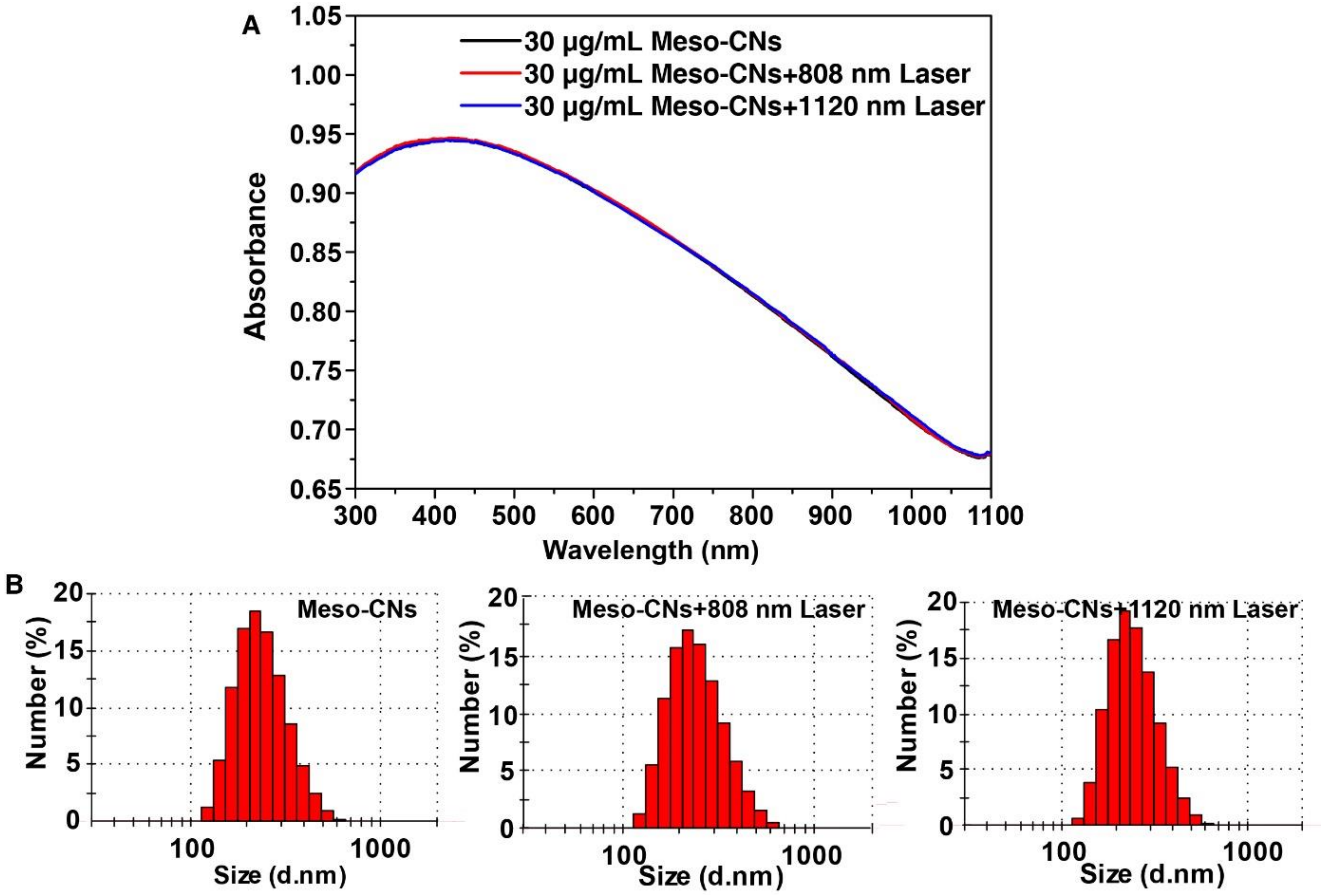

Figure S5. (A). Absorption spectra of Meso-CNs in water before and after laser irradiation at 808 nm (1.0 W/cm^2, 30 min) and 1120 nm (0.5 W/cm^2, 30 min). **(B)**. Size distribution of Meso-CNs in water before and after laser irradiation at 808 nm (1.0 W/cm^2, 30 min) and 1120 nm (0.5 W/cm^2, 30 min).

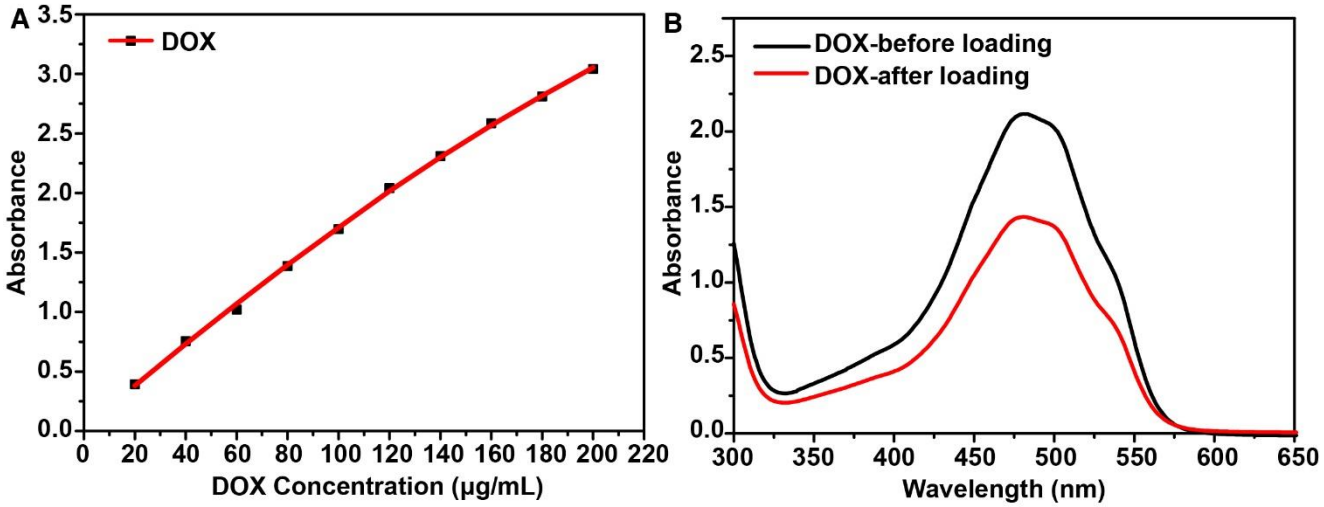

Figure S6. (A). Calibration curve for DOX release study. **(B)**. UV–Vis spectra of DOX solution before and after loading in Meso-CNs.

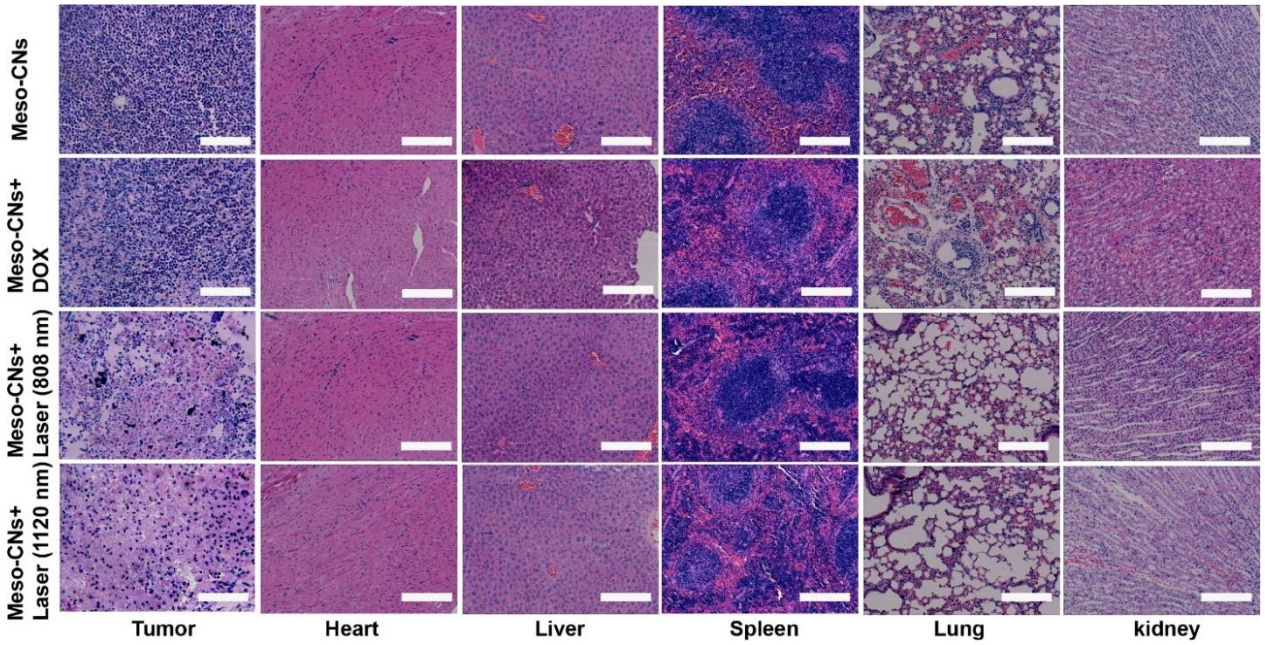

Figure S7. H&E-stained tumors and major organs tissues slices collected from mice post various treatments indicated. Scale bar: 200 μm

Table S1 Extinction coefficients of photothermal agents

	Meso-CNs ($L\ g^{-1}\ cm^{-1}$)	Graphene ($L\ g^{-1}\ cm^{-1}$)	SWCNTs ($L\ g^{-1}\ cm^{-1}$)	GNR808 ($L\ g^{-1}\ cm^{-1}$)	GNR1120 ($L\ g^{-1}\ cm^{-1}$)
808 nm	33.9	20.9	14.0	28.5	
1120 nm	29.1	19.8	14.2		28.5

Meso-CNs, SWCNTs and graphene were dispersed in water at different concentrations (5–30 μg/mL). UV–Vis–NIR absorption spectra were recorded with SHIMADZU UV-2500 spectrophotometer. The optical absorbance per cell length (A/L) was determined from the optical absorbance intensity at 808 nm and 1120 nm. Using Beer's law ($A/L = \alpha C$), extinction coefficients of Meso-CNs, SWCNTs and graphene were extracted from the slope of a plot of A/L versus concentration. GNR808 and GNR1120 were bought from NanoSeedz Ltd. The extinction coefficients of GNR808 at 808 nm and GNR1120 at 1120 nm were calculated according product specifications.

Table S2 Loading capacity of DOX in Meso-CNs

DOX-loading weight (mg)	Meso-CNs (mg)	LC_{DOX} (w/w %)
1.4	4.0	35.0

Table S3 Release percentages of DOX from Meso-CNs

	DOX-release weight (μg)	DOX-initial weight (μg)	RP_{DOX} (W/W%)
pH: 7.3	21.7	150.0	14.5
pH: 5.2	39.0	150.0	26.0
pH: 5.2 808 nm Laser	47.6	150.0	31.7
pH: 5.2 1120 nm Laser	47.6	150.0	31.7