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光交联固化的聚合物囊泡用于降温触发的药物释放

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Photocrosslinking-Immobilized Polymer Vesicles for Lowering Temperature Triggered Drug Release

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Supplementary Experimental Section

Proton Nuclear Magnetic Resonance (^{1}H NMR). The NMR spectra were recorded using a Bruker AV 400 MHz spectrometer with TMS as standard at room temperature. Samples were dissolved in DMSO-d_6 or $CDCl_3$. In some cases, a drop of 200 μL CF_3COOD was added to break the hydrogen bonding in polypeptides.

Dynamic Light Scattering (DLS). The DLS studies of aqueous polymer vesicles were performed using Nano-ZS 90 Nanosizer (Malvern Instruments Ltd., Worcestershire, UK) at a fixed scattering angle of 90°. The data were processed by cumulative analysis of the experimental correlation function. The hydrodynamic diameters (D_hs) were calculated from the computed diffusion coefficients using the Stokes-Einstein equation. Each reported measurement was conducted three times.

Transmission Electron Microscopy (TEM). 10 μL of diluted vesicle solution was laid on the carbon-coated copper grid. The samples were dried at ambient environment overnight, and then stained by phosphotungstic acid (1.0%, pH 7) solution for 1 min. The excess phosphotungstic acid was drained off carefully by filter paper. After that, the grids were dried under ambient environment. TEM images of polymer vesicles were taken with a JEOL JEM-2100F instrument at 200 kV equipped with a Gatan 894 Ultrascan 1 k CCD camera.

SEC. The molecular weights and polydispersities were evaluated by a size exclusion chromatography (SEC) performed at 40 °C with two linear Styragel columns and an Agilent differential refractive index (RI) detector. HPLC grade DMF was utilized as eluent with flow rate of 0.8 mL·min^{-1}. PEO was used as standard.

UV-Vis Spectroscopy. UV-Vis studies were performed by a UV-vis spectrophotometer (UV-759S, Q/YXL270, Shanghai Precision & Scientific Instrument Co., Ltd.).

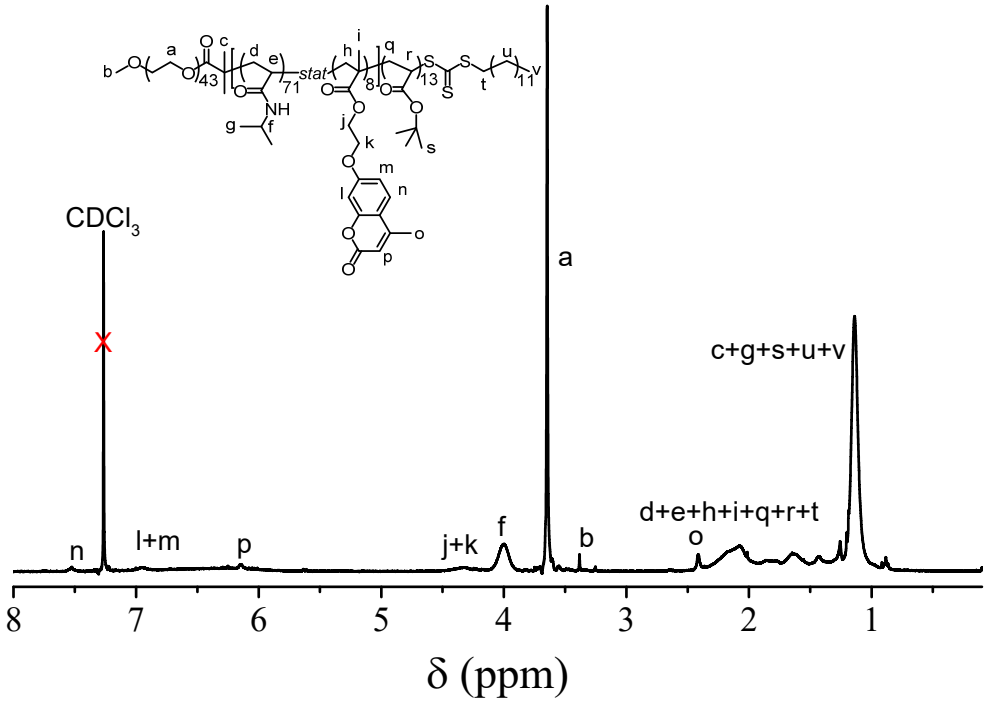

Fig. S1 ^{1}H NMR spectrum of PEO_{43}-*b*-P(NIPAM$_{71}$-*stat*-CMA$_8$)-*b*-P*t*BA$_{13}$ copolymer in $CDCl_3$.

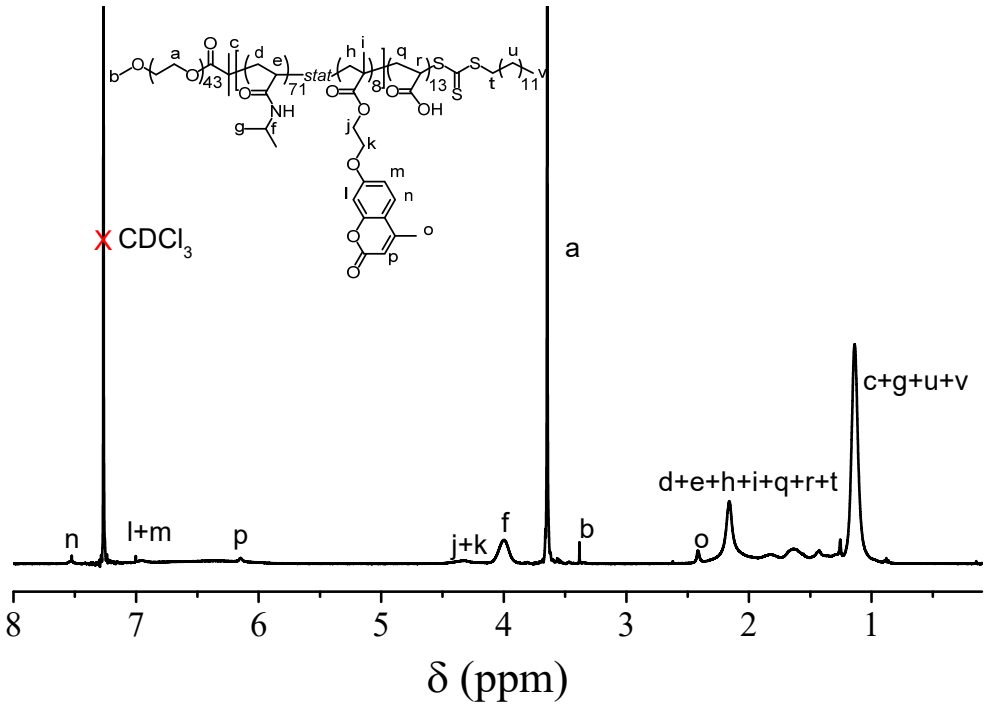

Fig. S2 ^{1}H NMR spectrum of PEO_{43}-*b*-P($NIPAM_{71}$-*stat*-CMA_{8})-*b*-PAA_{13} copolymer in $CDCl_3$.

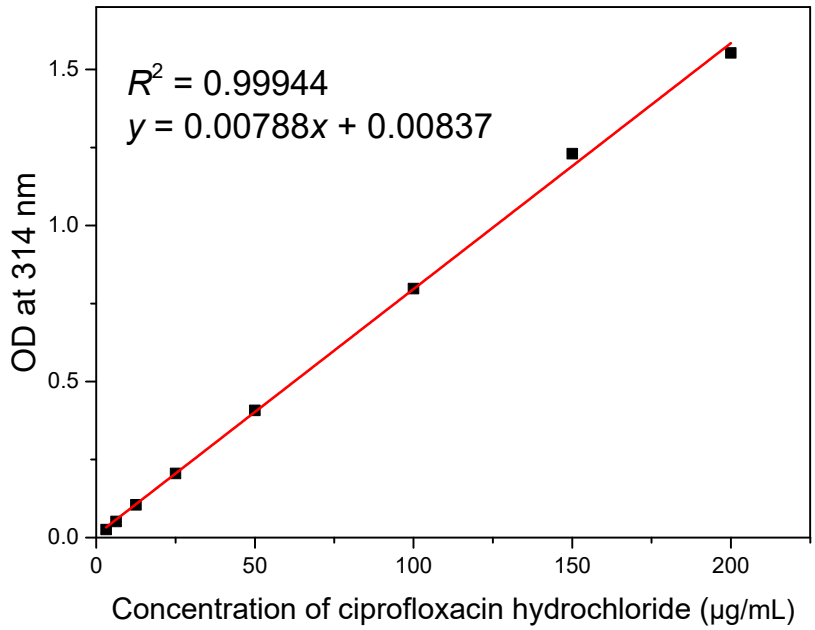

Fig. S3 Calibration curve of aqueous CIP solutions.

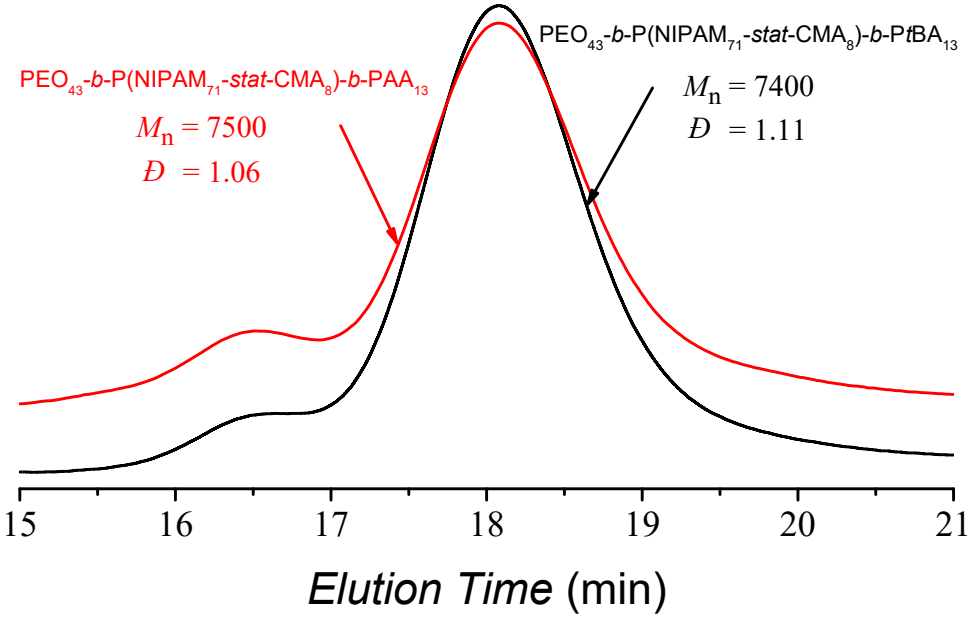

Fig. S4 SEC traces of PEO_{43}-*b*-P(NIPAM$_{71}$-*stat*-CMA_8)-*b*-P*t*BA_{13} and PEO_{43}-*b*-P(NIPAM$_{71}$-*stat*-CMA_8)-*b*-PAA_{13} in DMF.

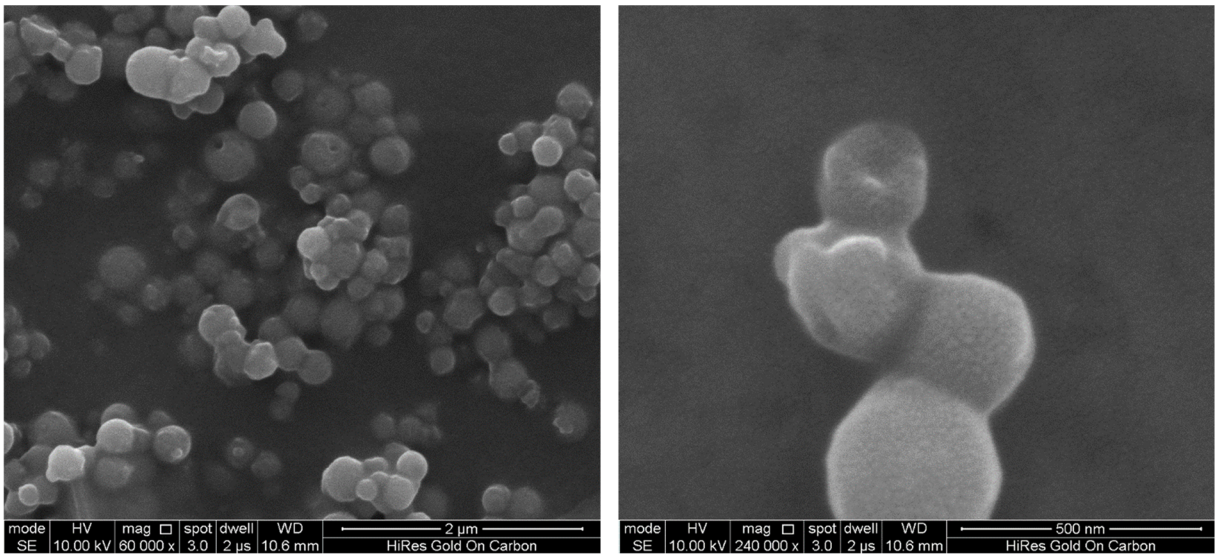

Fig. S5 SEM images of photocrosslinked polymer vesicles at 40 °C.