

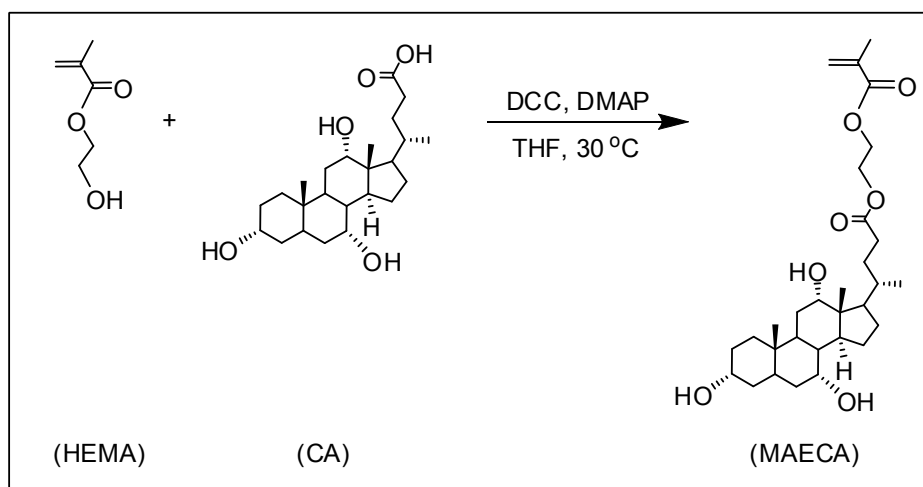
Supporting Information for

Synthesis *via* RAFT polymerization of thermo- and pH-responsive random copolymers containing cholic acid moieties and their self-assembly in water

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Scheme S1 Synthesis protocol for MAECA.

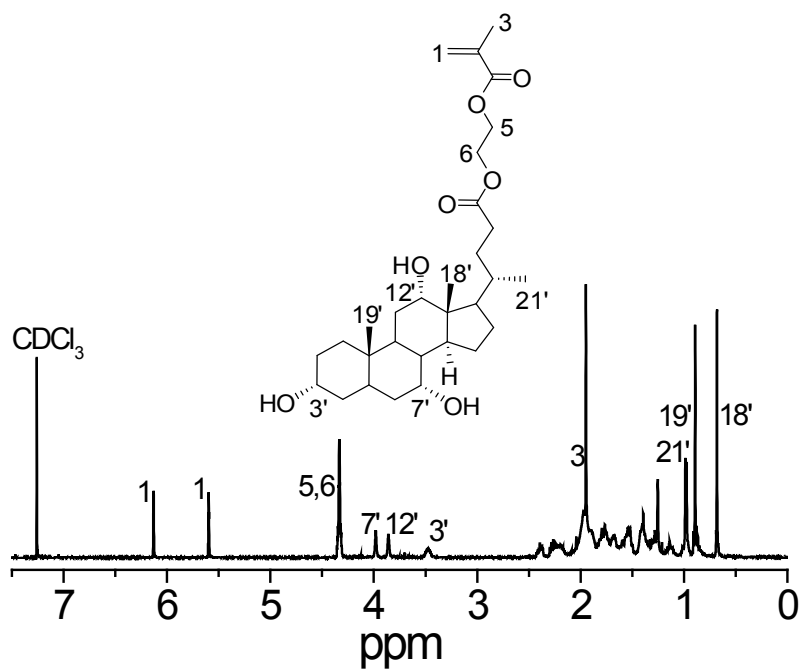


Fig. S1 ¹H NMR spectrum of MAECA.

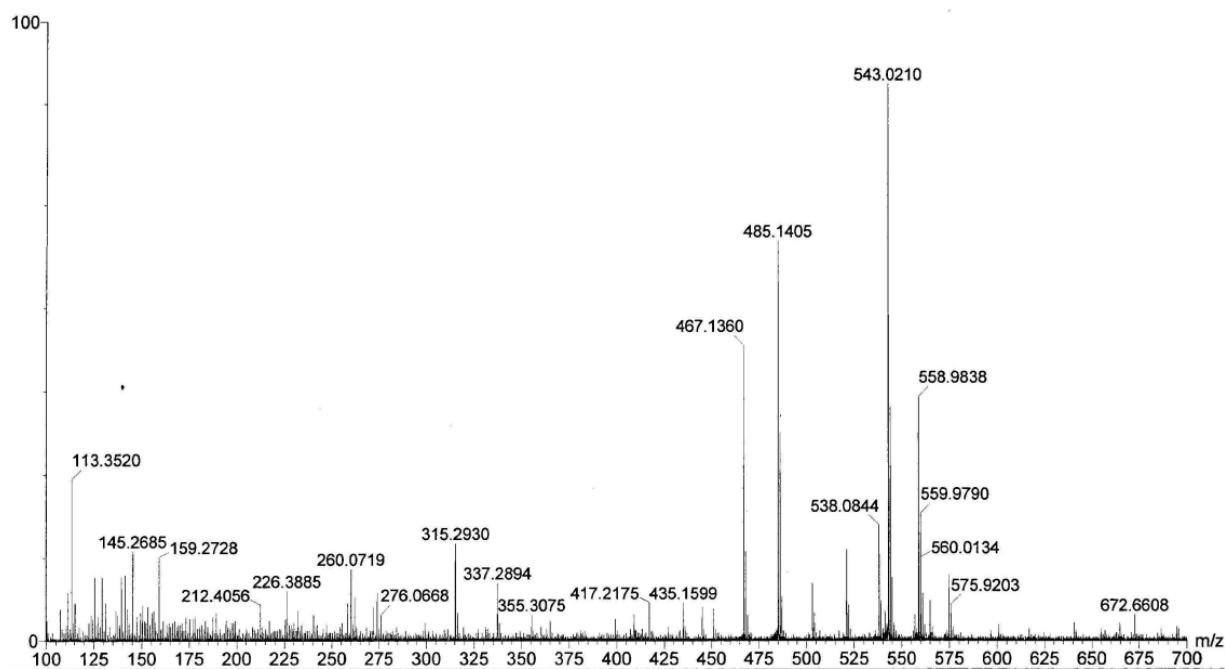


Fig. S2 The ESI-MS spectrum of MAECA. Observed m/z values for $[M + \text{NH}_4^+]$, $[M + \text{Na}^+]$ and $[M + \text{K}^+]$ are 538.08, 543.02 and 559.97, respectively. Calculated m/z values for $[M + \text{NH}_4^+]$, $[M + \text{Na}^+]$ and $[M + \text{K}^+]$ are 538.73, 543.69 and 559.80, respectively.

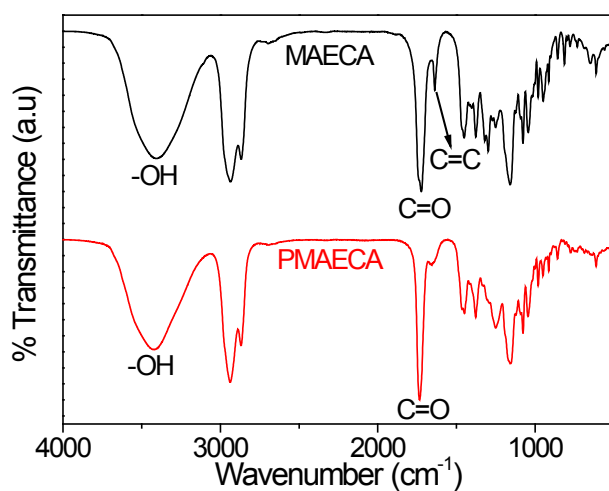


Fig. S3 FT-IR spectra of MAECA (top) and PMAECA (bottom).

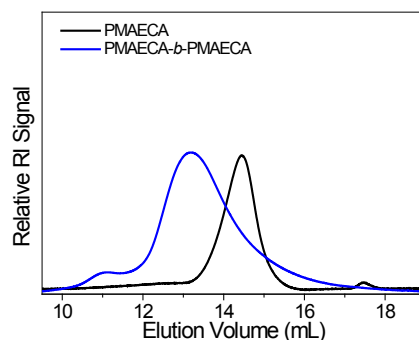


Fig. S4 GPC traces of PMAECA-macroCTA and chain extended PMAECA-*b*-PMAECA.

Table S1 Solubility of PMAECA, MAECA based copolymers with PEGMA and DMAEMA at different compositions.

Solvent	PMAECA	PPEGMA	PDMAEMA	CP1	CP3	CP4	CP5	CP6	CD1	CD3	CD4	CD6
Water	×	√	√	√	√	√	Δ	×	√	×	×	×
Acetone	×	√	√	√	√	√	√	Δ	√	×	×	×
CHCl ₃	×	√	√	√	√	√	√	√	√	√	×	×
CH ₂ Cl ₂	×	√	√	√	√	√	√	√	√	√	×	×
CCl ₄	×	√	√	√	√	×	×	×	√	×	×	×
Methanol	O	√	√	√	√	√	Δ	Δ	O	O	×	×
Ethanol	O	√	√	√	√	√	Δ	Δ	O	O	×	×
DMF	√	√	√	√	√	√	√	√	√	√	√	√
DMSO	√	√	√	√	√	√	√	√	√	√	√	√
THF	√	√	√	√	√	√	√	√	√	√	√	√
Pet ether	×	×	×	×	×	×	×	×	×	×	×	×
Diethyl ether	×	×	×	×	×	×	×	×	×	×	×	×
Ethyl acetate	×	√	√	√	√	√	×	×	√	×	×	×
Hexane	×	×	×	×	×	×	×	×	×	×	×	×
Benzene	×	√	√	√	√	√	O	×	√	×	×	×
Toluene	×	√	√	√	√	√	O	O	√	×	×	×
1,4-Dioxane	O	√	√	√	√	√	Δ	Δ	√	×	×	×
Acetonitrile	×	√	√	√	√	√	√	×	√	×	×	×
Cyclohexane	×	×	×	×	×	×	×	×	×	×	×	×

√ = Completely soluble, × = Insoluble, Δ = Sparingly soluble and O = Swelling

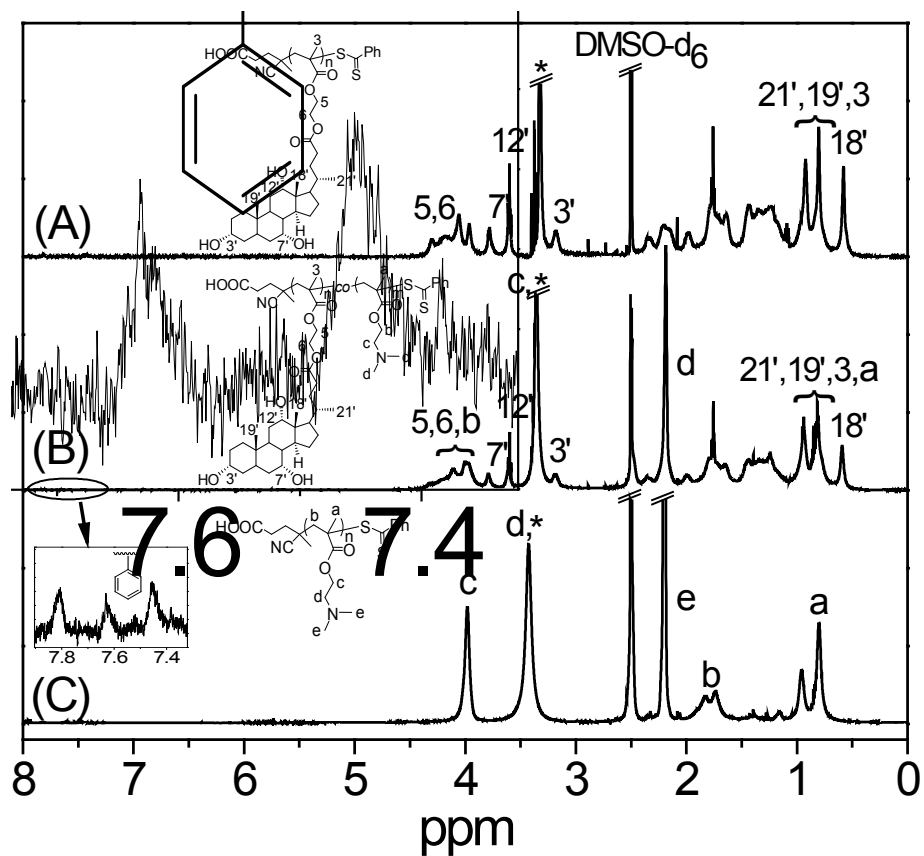


Fig. S5 ^1H NMR spectra of (A) PMAECA, (B) CD5, and (C) PDMAEMA in $\text{DMSO-}d_6$ at 25 $^\circ\text{C}$.

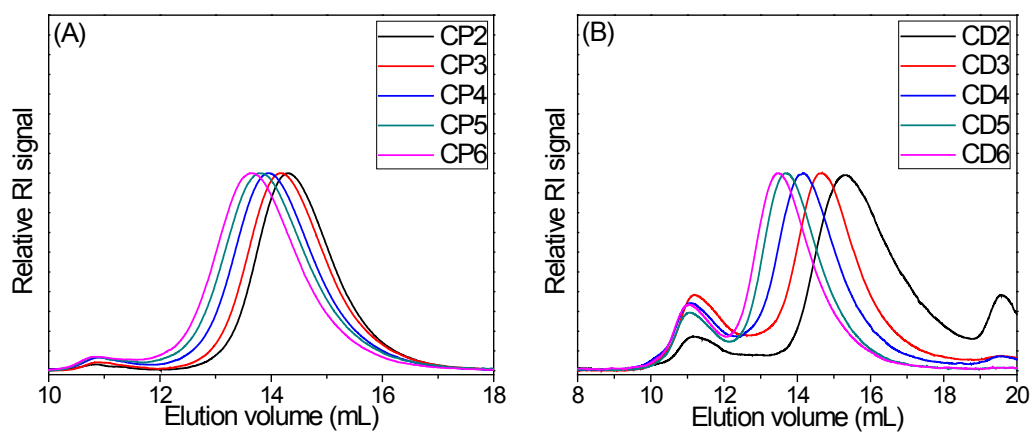


Fig. S6 GPC RI traces of (A) P(MAECA-*co*-PEGMA), and (B) P(MAECA-*co*-DMAEMA) copolymers.

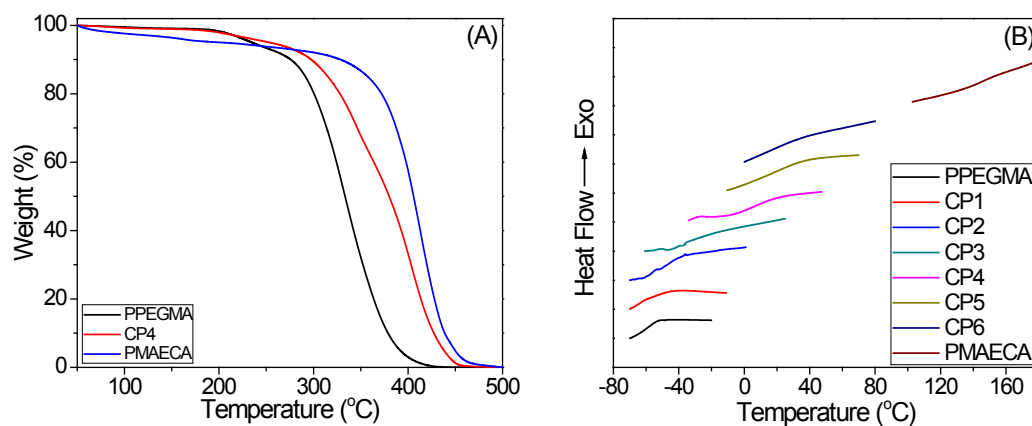


Fig. S7 (A) TGA thermograms and (B) DSC traces of P(MAECA-*co*-PEGMA) copolymers at different compositions.

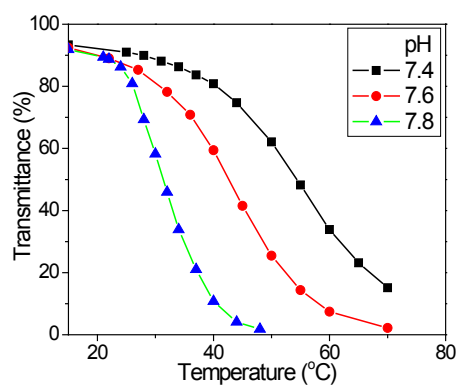


Fig. S8 Phase transitions of CD2 at different pH.

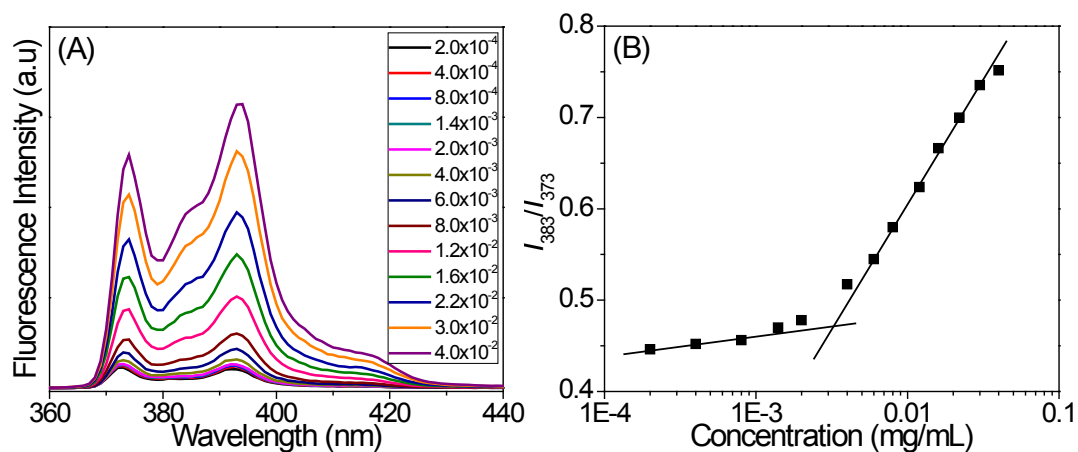


Fig. S9 (A) Emission spectra of pyrene at various concentrations of CP2 in water, and (B) plot of intensity ratio I_{383}/I_{373} versus concentrations of CP2.

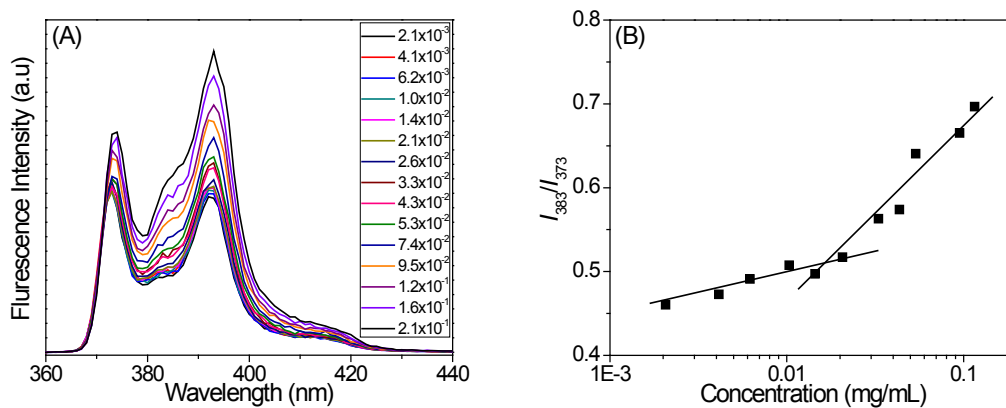


Fig. S10 (A) Emission spectra of pyrene at various concentrations of CD2 in water, and (B) plot of intensity ratio I_{383}/I_{373} versus concentrations of CD2.

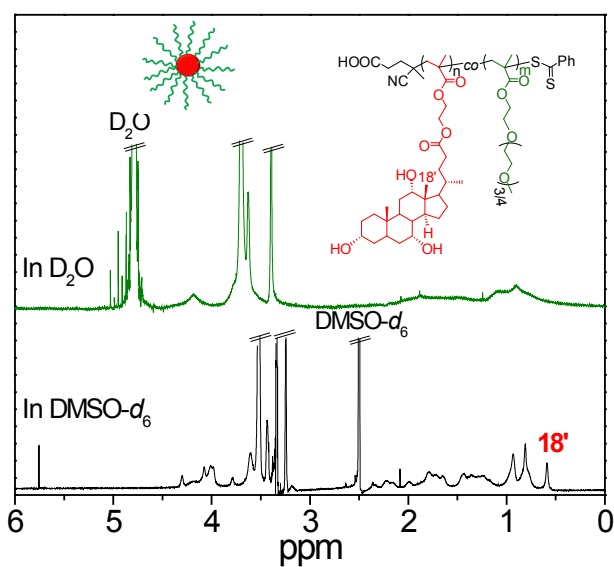


Fig. S11 ^1H NMR spectra of CP4 in DMSO- d_6 and D $_2$ O at 25 °C.

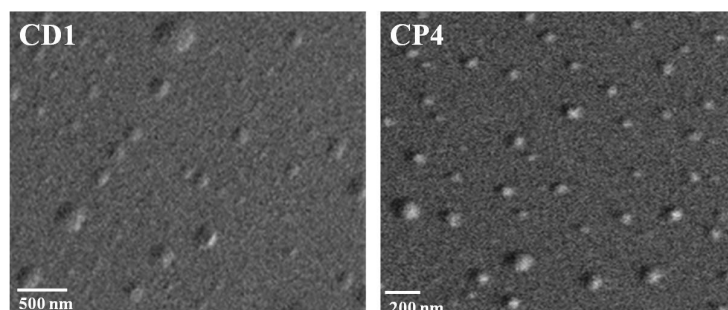


Fig. S12 SEM images of CD1 (left) and CP4 (right).