Electronic Supplementary Information

Stimuli-Responsive Methionine-Based Zwitterionic Methacryloyl Sulfonium Sulfonate Monomer and Corresponding Antifouling Polymer with Tunable Thermosensitivity

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Table S1. Effect of anions and its concentrations on the phase behaviour of aqueous $PMETMASPS_{50}$ solution (1 wt%) at different pHs.

pH	Anions	CSC ([M])		Concentration ([M])	Cloud point (T_{cp}) (°C)
		Transmittance Study	DLS Study		
3.5	SO_4^{2-}	0.45	0.45	0.45 0.50 0.55 0.65 0.72	13.0 25.4 35.0 53.4 66.6
	H_2PO_4	0.50	0.50	0.50 0.65 0.80	13.5 37.0 61.5
8.0	Ct^{3-}	0.27	0.27	0.27 0.30 0.34 0.37	18.8 35.8 50.7 66.6
	Ac^-	2.3	2.25	2.30 2.55 2.80	17.2 40.1 64.4
	SO_4^{2-}	0.38	0.36	0.38 0.45 0.48 0.53	16.7 43.4 55.1 68.2

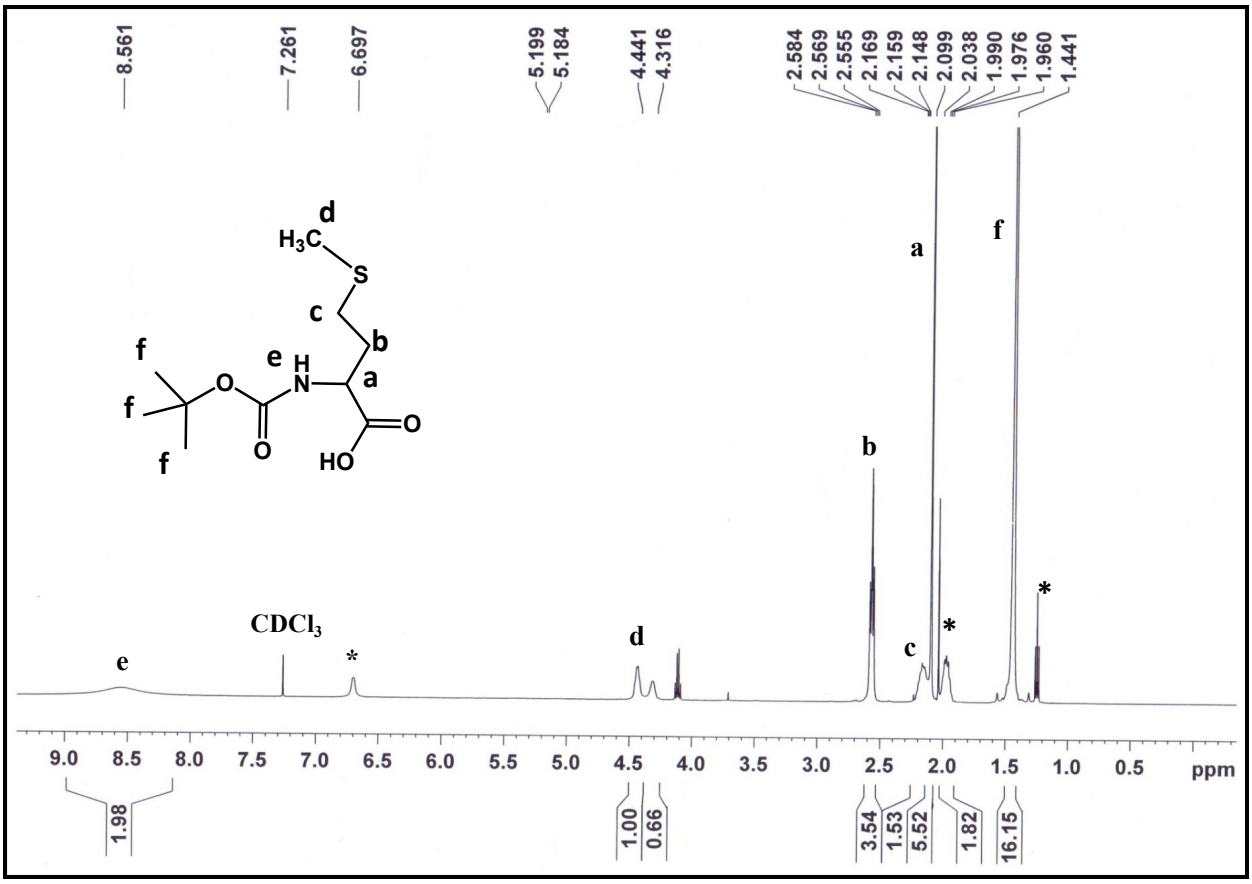

Figure S1. ^{1}H NMR spectrum of Boc-L-Methionine (Signal at δ 7.2 ppm corresponds to $CHCl_3$ present in $CDCl_3$).

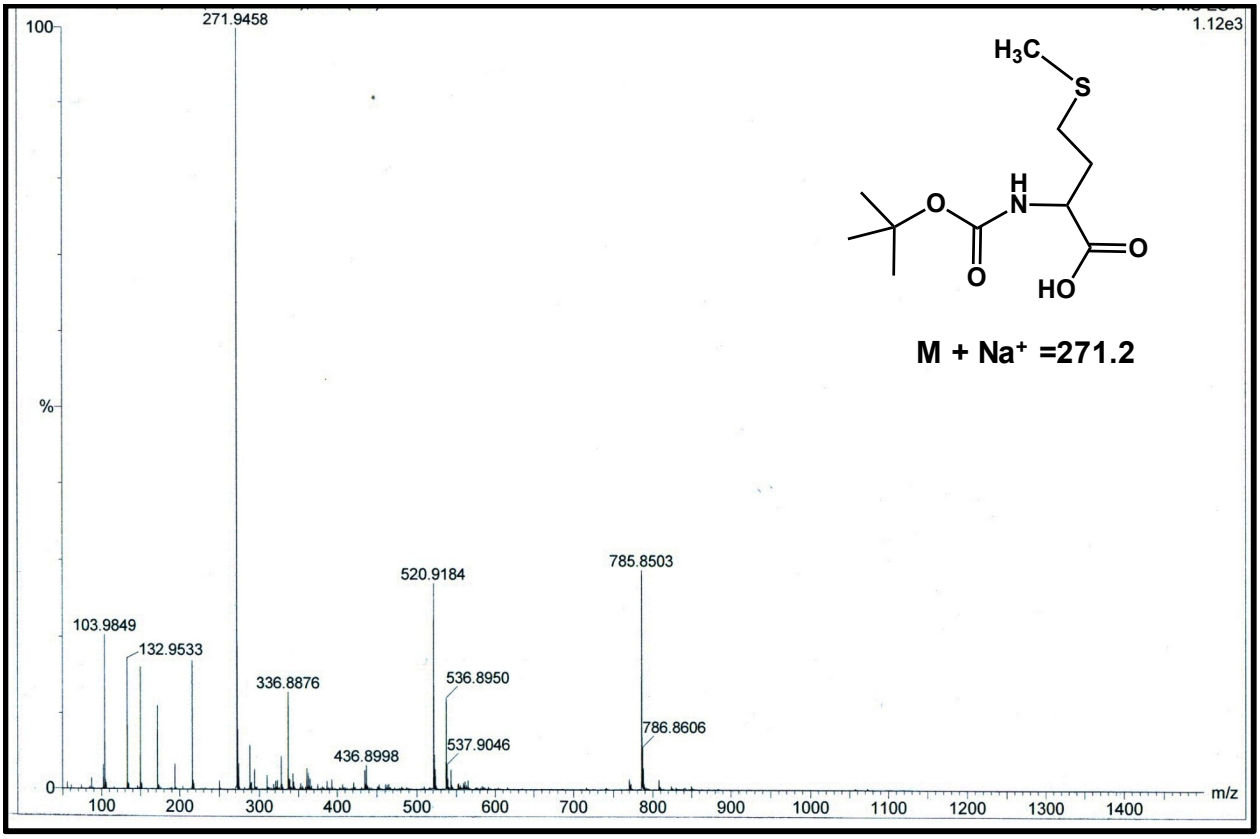

Figure S2. ESI-MS spectrum of Boc-Meth-OH (M/z + H^+ = 271.2).

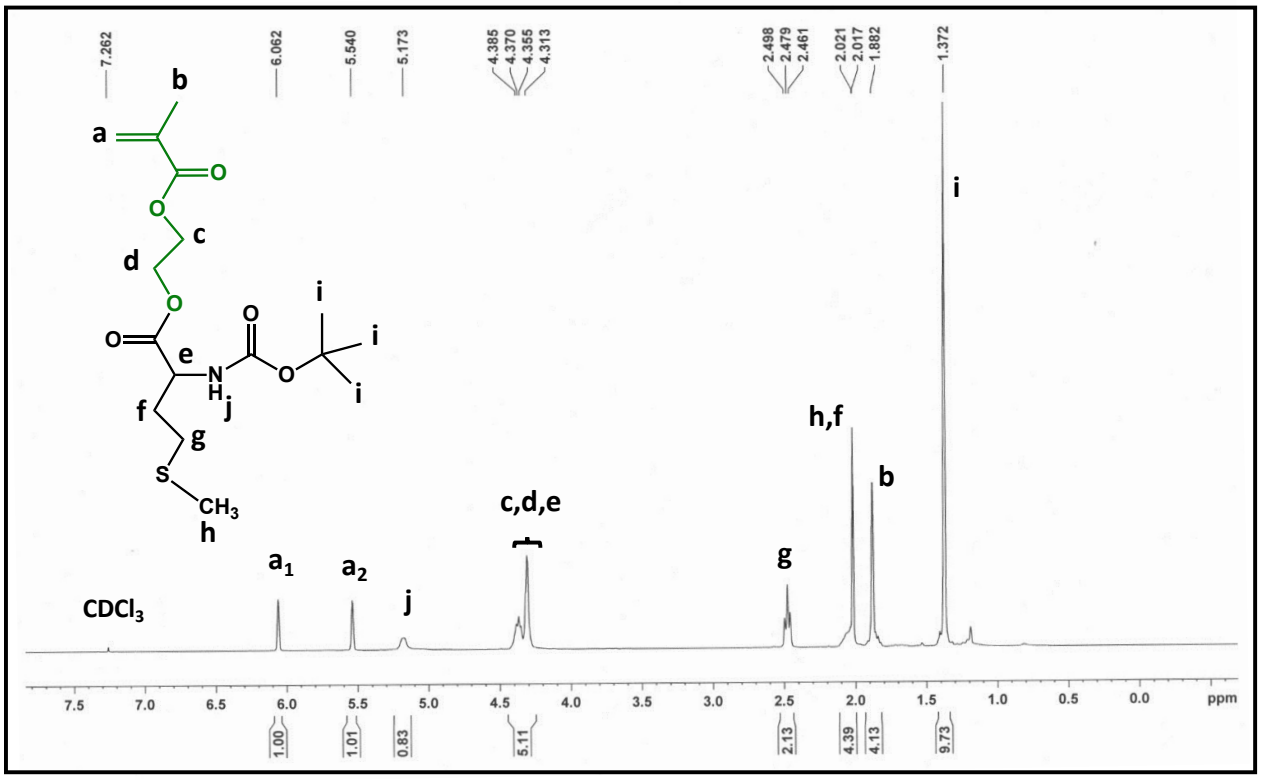

Figure S3. ^{1}H NMR spectrum of Boc-L-methionine-(2-methacryloylethyl)ester (Signal at δ 7.2 ppm corresponds to $CHCl_3$ present in $CDCl_3$).

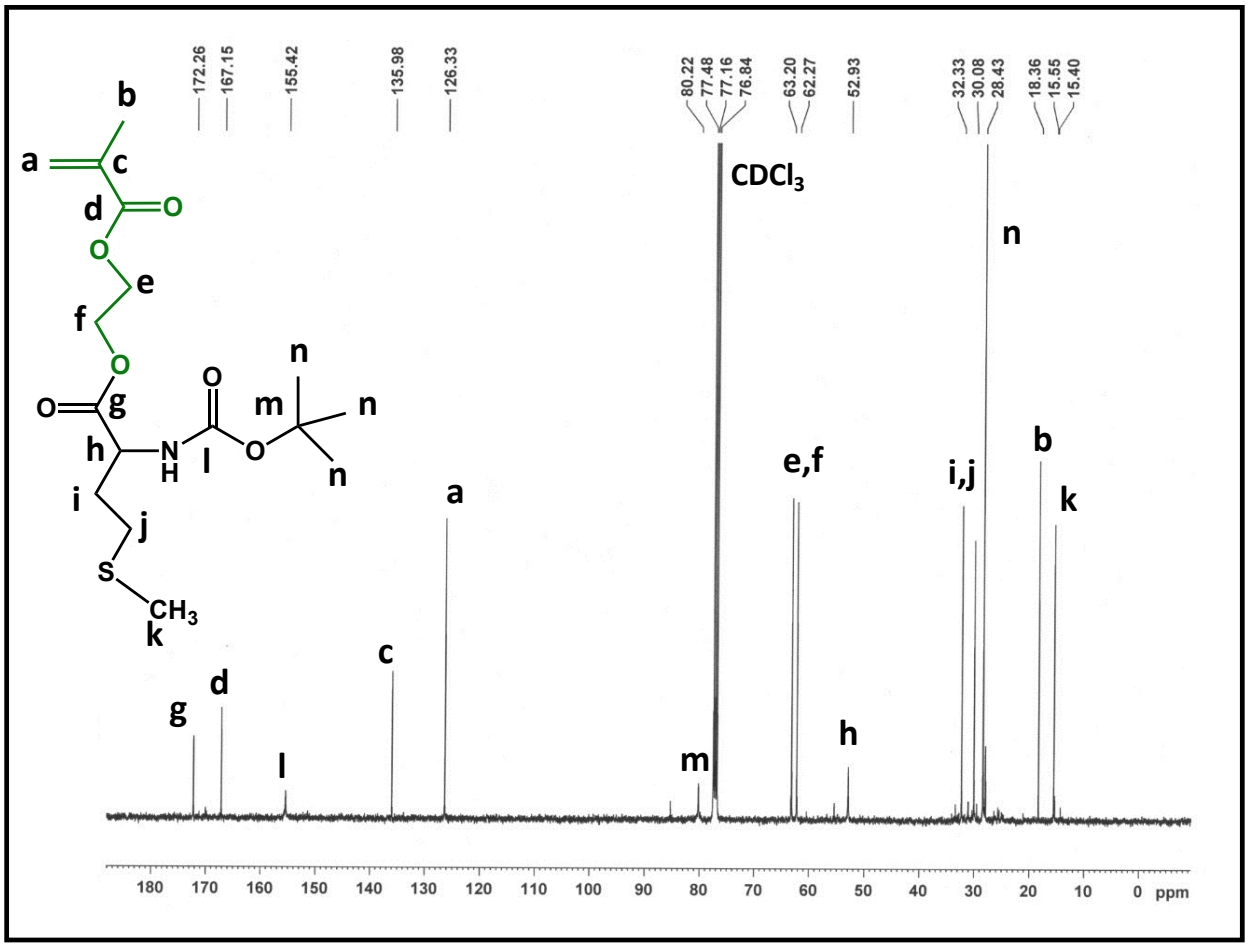

Figure S4. ^{13}C NMR spectrum of Boc-L-methionine-(2-methacryloylethyl)ester

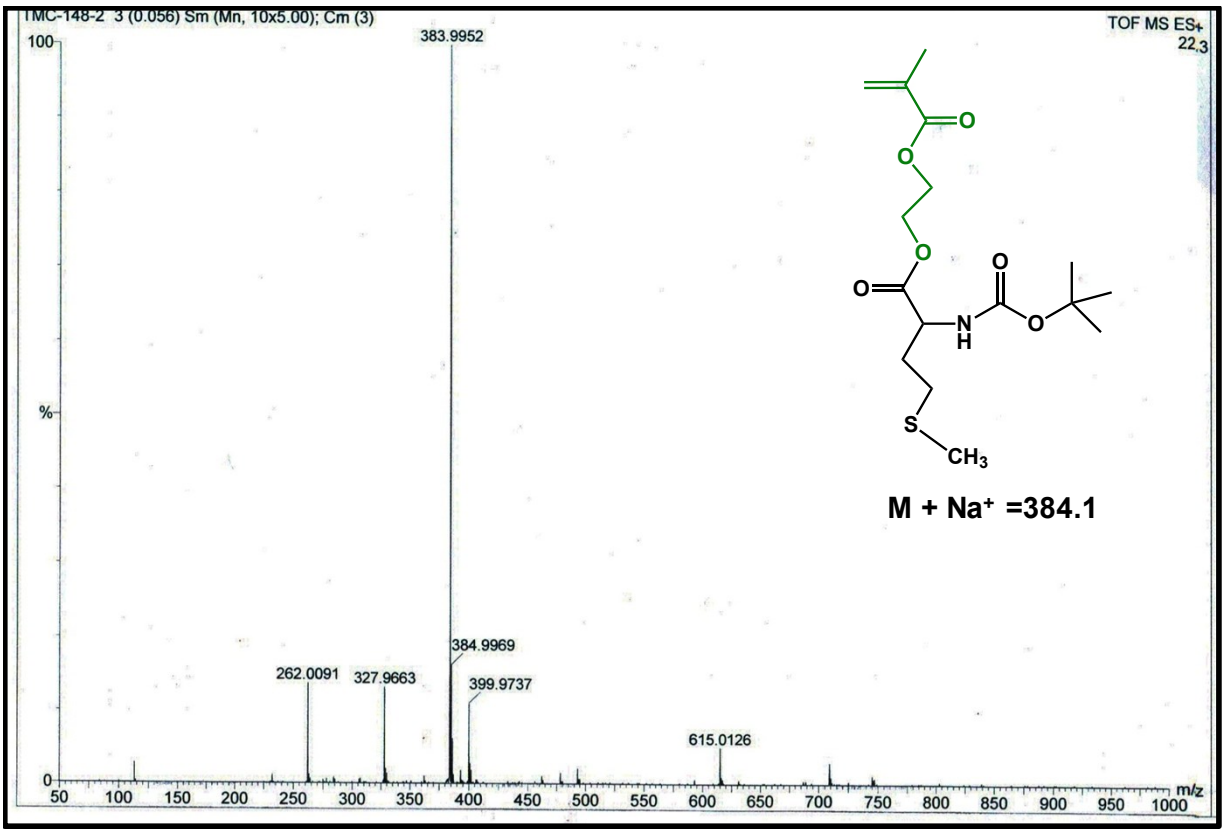

Figure S5. ESI-MS spectrum of Boc-L-methionine-(2-methacryloylethyl)ester (M/z + Na^+ = 384.1).

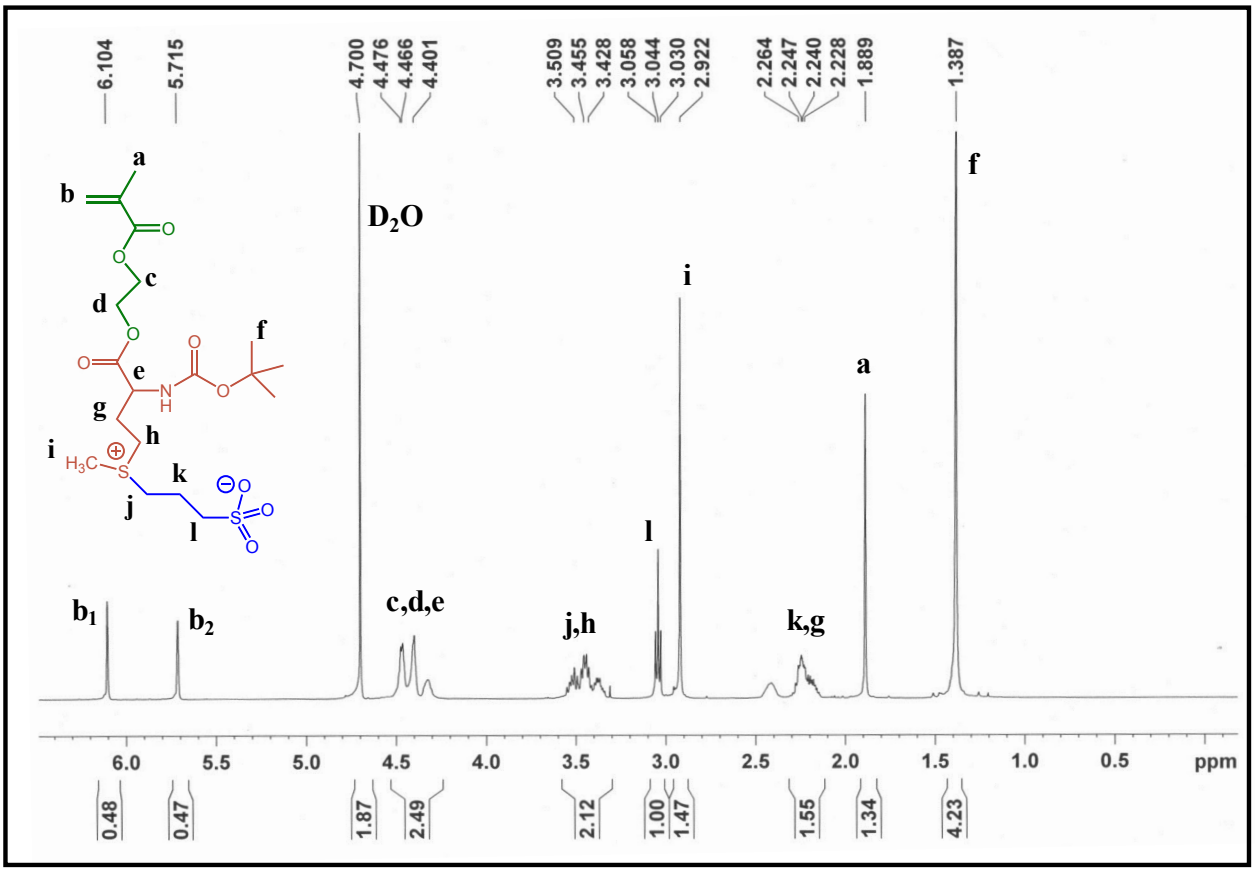

Figure S6. [1]HNMR spectrum of METMASPS (The [1]H NMR 500 MHz, D_2O, signal at δ 4.7 ppm corresponds to water present in D_2O).

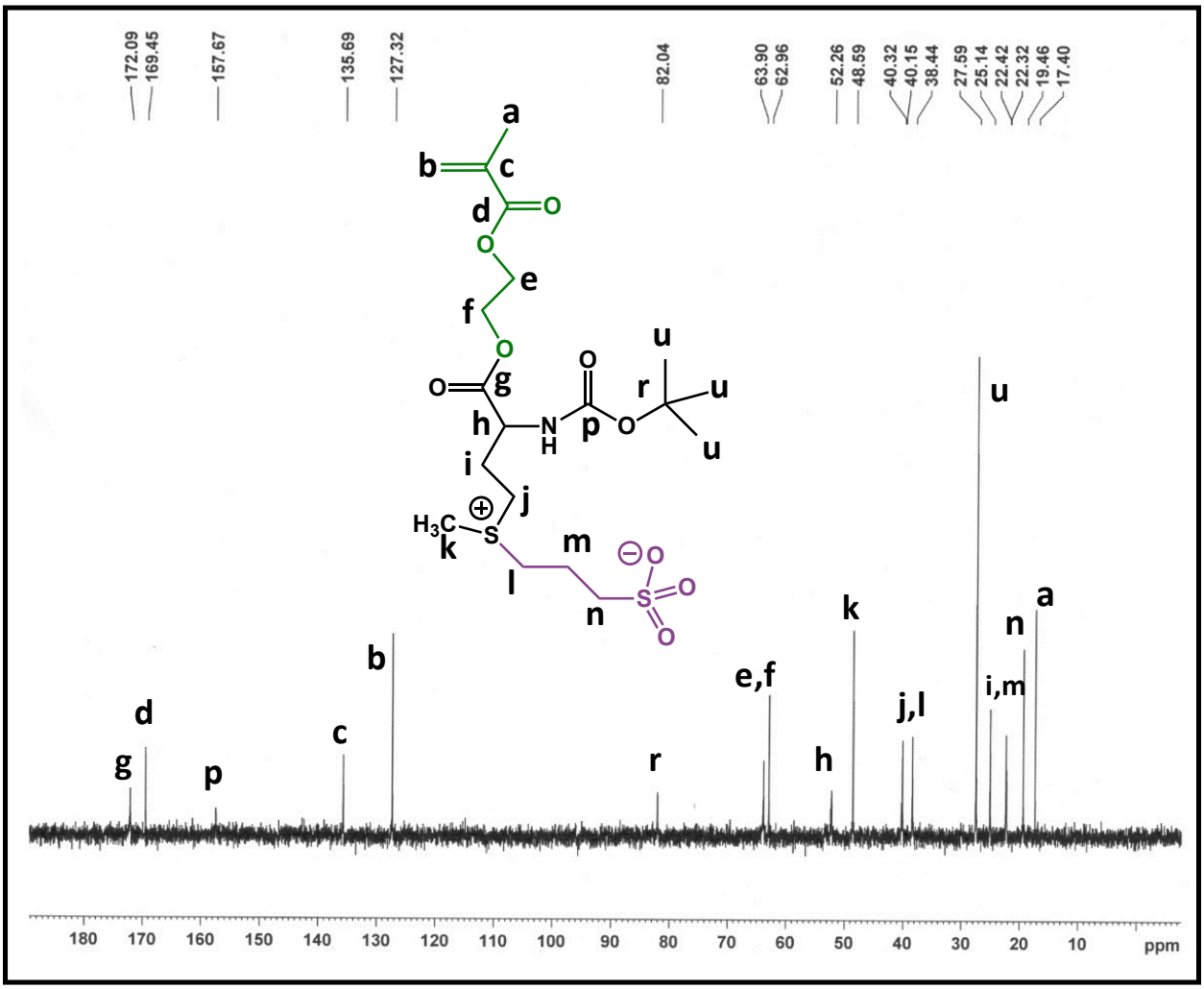

Figure S7. ^{13}C NMR spectrum of METMASPS (^{13}C NMR 500 MHz, D_2O).

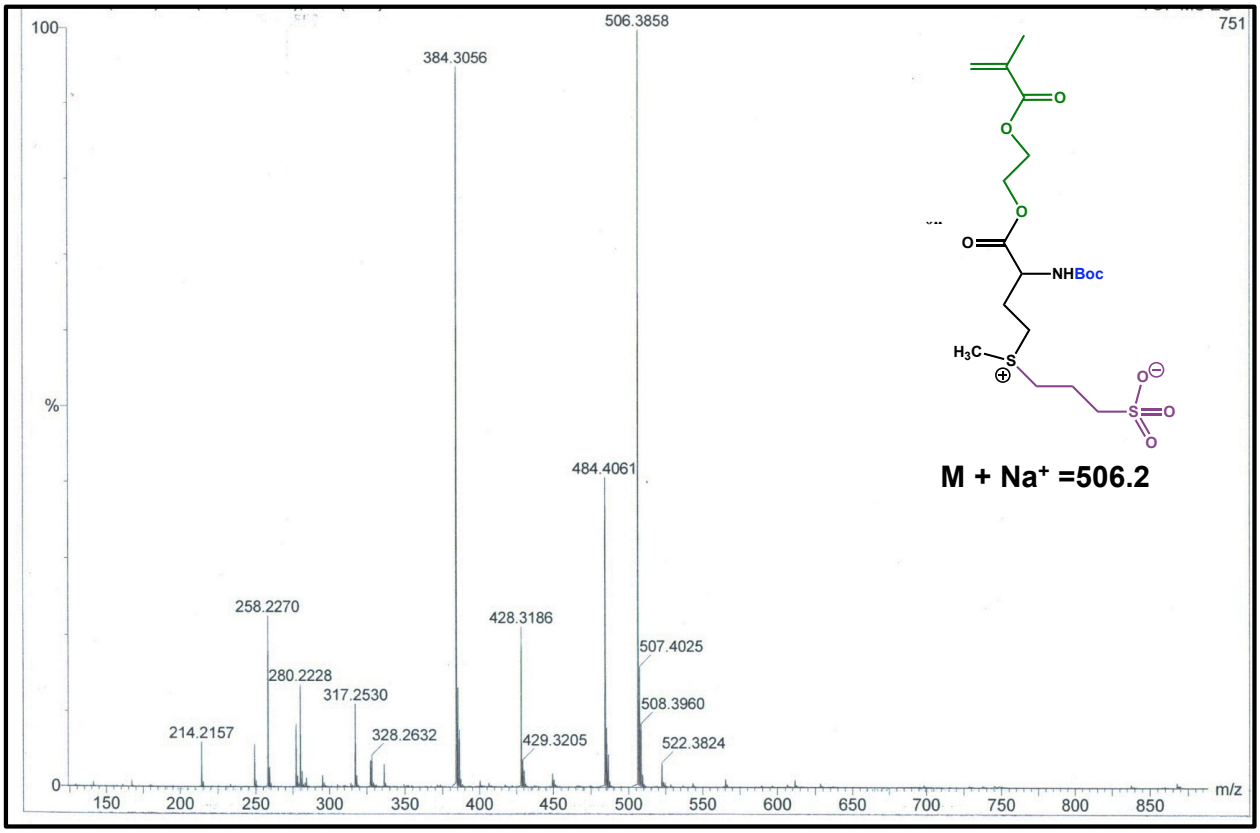

Figure S8. ESI-MS spectrum of METMASPS (M/z + Na^+ = 506.2).

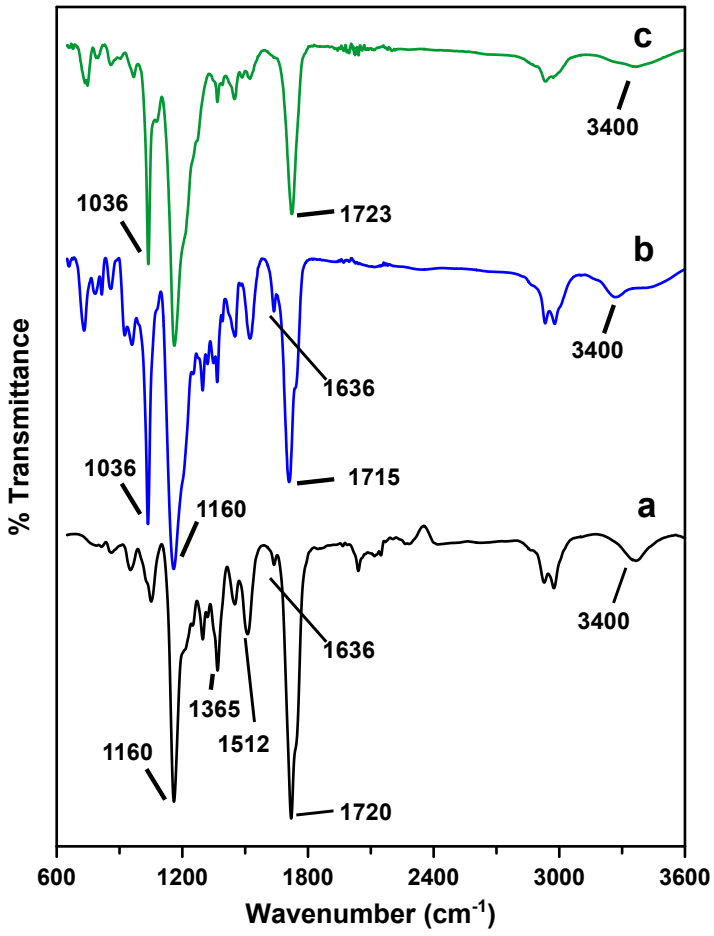

Figure S9. FTIR spectra of (a) METMA (b) METMASPS and (c) PMETMASPS acquired in ATR mood.

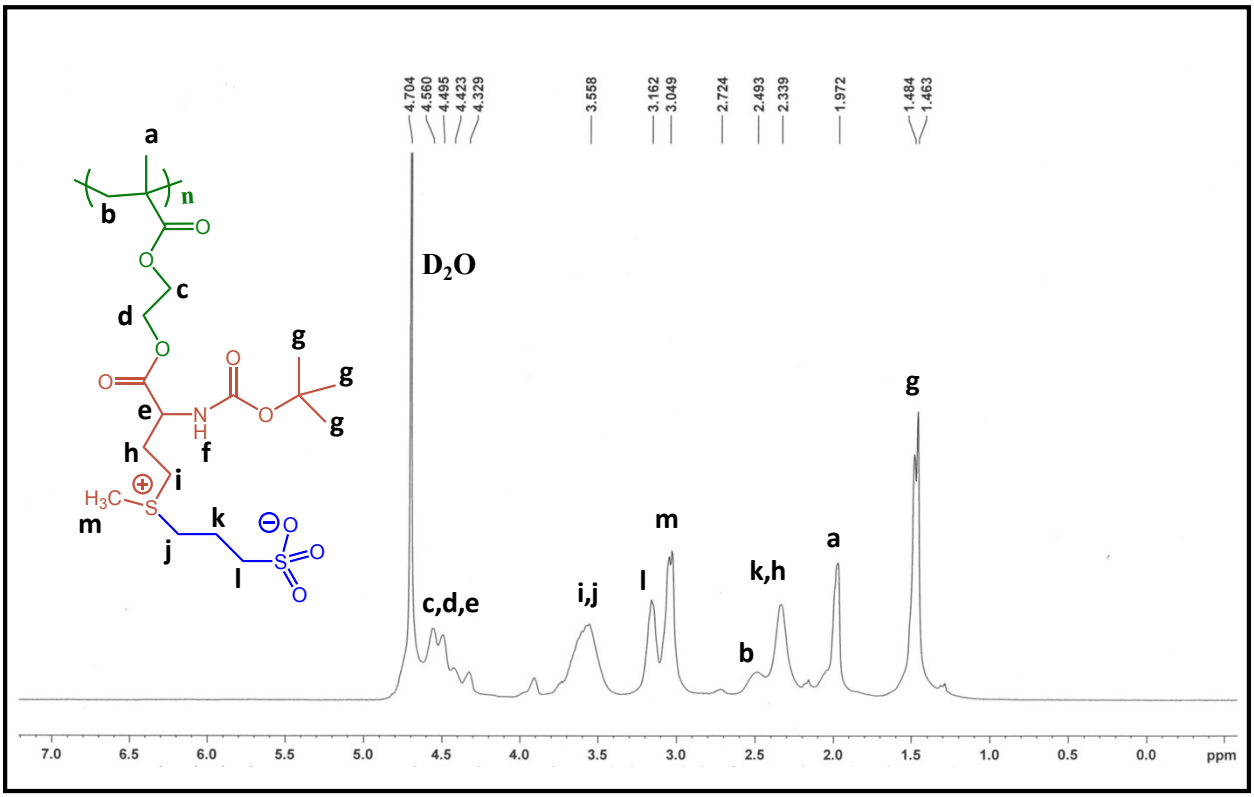

Figure S10. ^{1}H NMR spectrum of PMETMASPS (The ^{1}H NMR 500 MHz, D_2O, signal at δ 4.7 ppm corresponds to water present in D_2O).

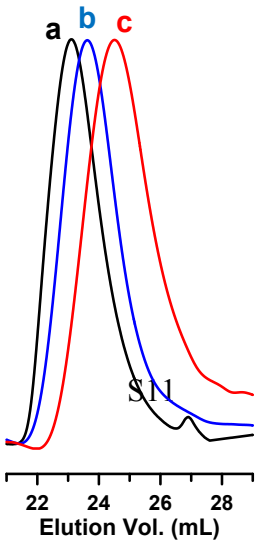

Figure S11. SEC traces of (a) $PMETMASPS_{100}$, (b) $PMETMASPS_{75}$, and (c) $PMETMASPS_{50}$ samples (Table 1). Eluent for SEC was water with 0.1 M LiBr.

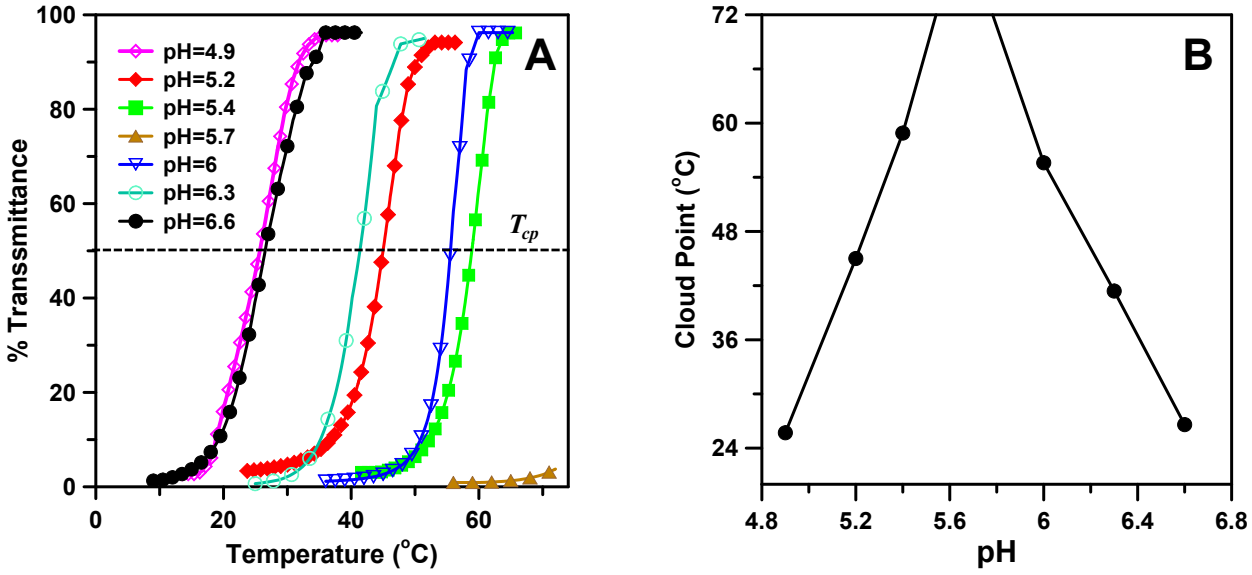

Figure S12. (A) Turbidity curves for the aqueous METMASPS monomer solution (1 wt%) at different pHs. (B) The plot of cloud point of the aqueous METMASPS solution (1 wt%) against pH of the solution.

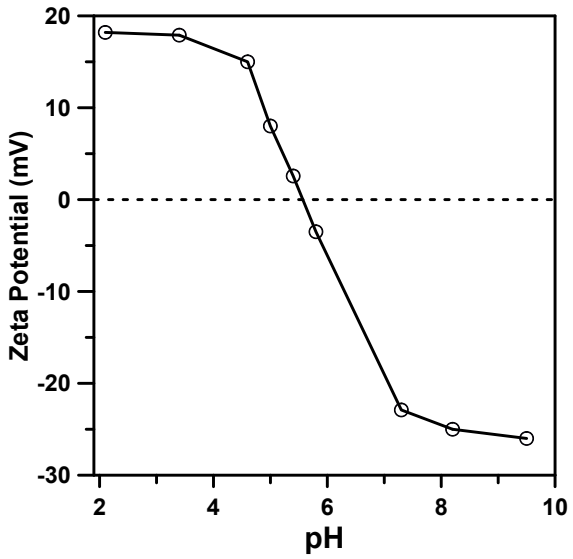

Figure S13. Zeta potentials of of 1.0 wt % aqueous solution of PMETMASPS at different pHs at 25 °C.

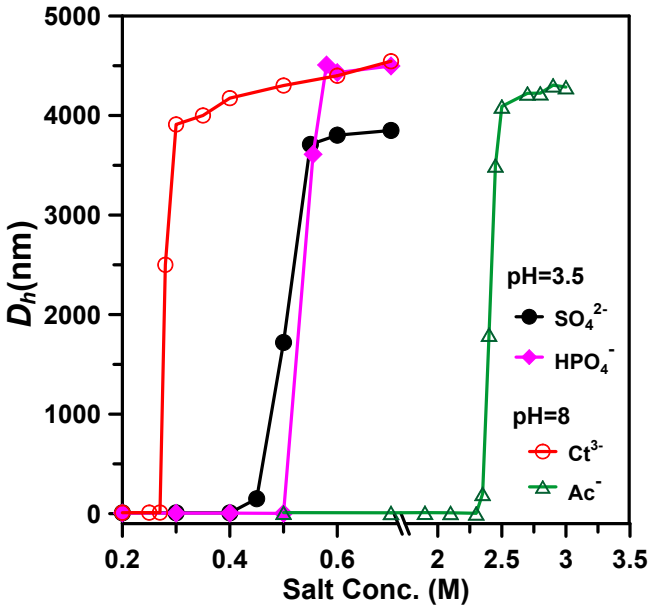

Figure S14. Variation of hydrodynamic diameters (measured by DLS) of 1.0 wt % aqueous solution of $PMETMASPS_{50}$ with increasing different anions concentration at 25 °C.

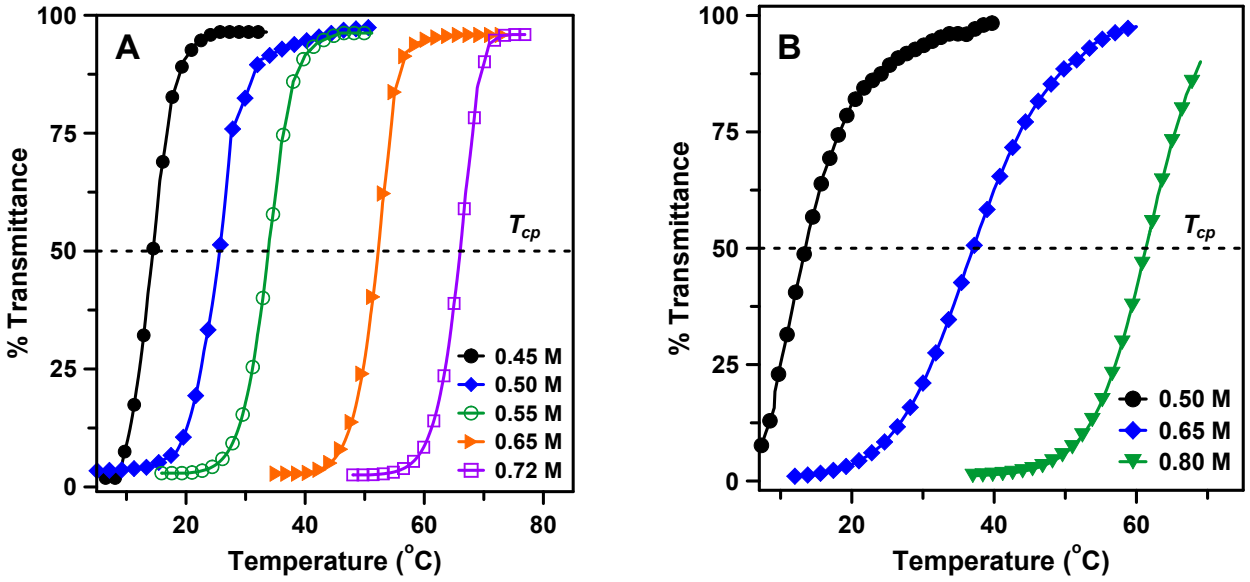

Figure S15. Turbidity curves (at λ = 600 nm) of zwitterionic $PMETMASPS_{50}$ (0.1 wt %) in water in presence of different concentration of (A) SO_4^{2-} and (B) $H_2PO_4^-$ anions.

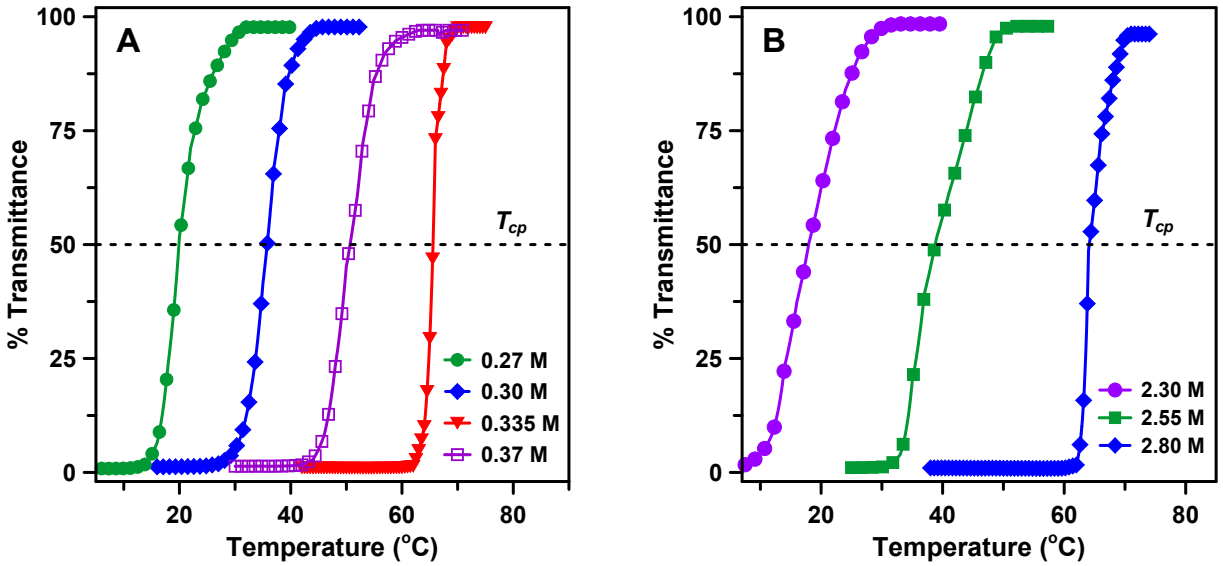

Figure S16. Turbidity curves (at λ = 600 nm) of zwitterionic $PMETMASPS_{50}$ (0.1 wt %) in water in presence of different concentration of (A) Ct^{3-} and (B) Ac^{-} anions.

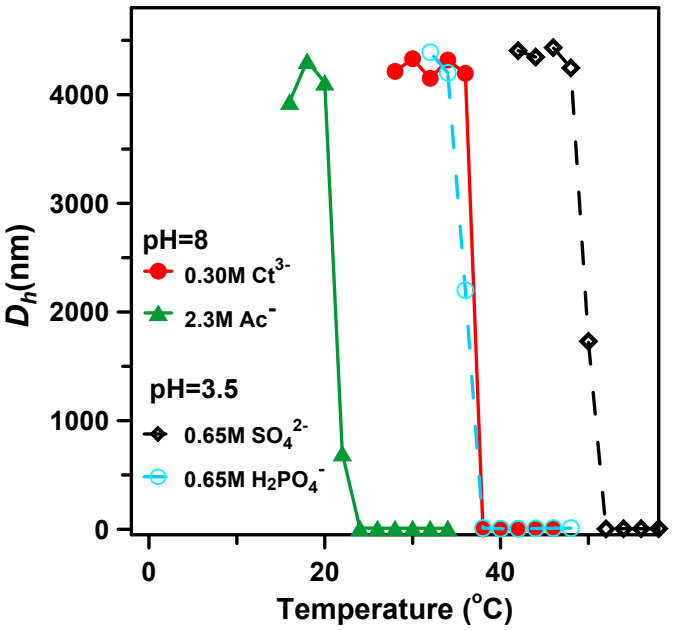

Figure S17. Variation of hydrodynamic diameters (measured by DLS) of 1.0 wt % aqueous solution of $PMETMASPS_{50}$ with increasing temperature in presence of different kosmotropic anions.

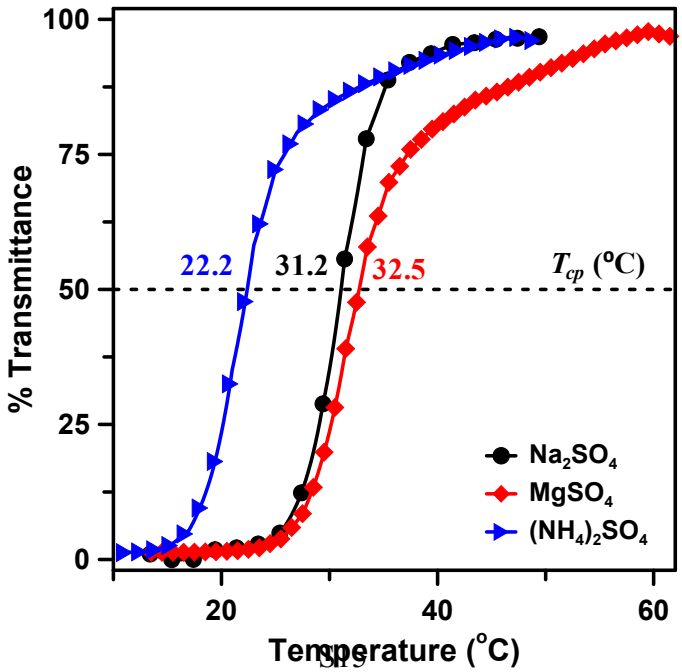

Figure S18. Turbidity curves (at λ = 600 nm) of aqueous 1 wt % zwitterionic $PMETMASPS_{75}$ in presence of 0.5M SO_4^{2-} ion from various salts at pH 3.5.

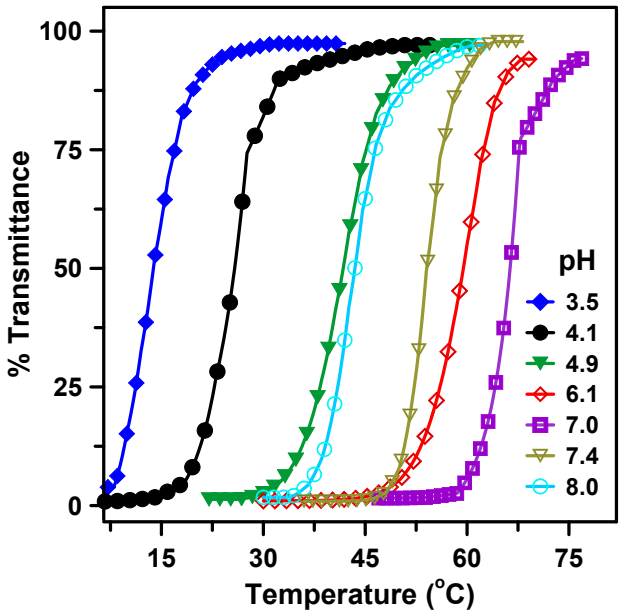

Figure S19. Turbidity curves (at λ = 600 nm) of zwitterionic $PMETMASPS_{50}$ (0.1 wt %) in water in presence of 0.45 M SO_4^{2-} at different pHs.

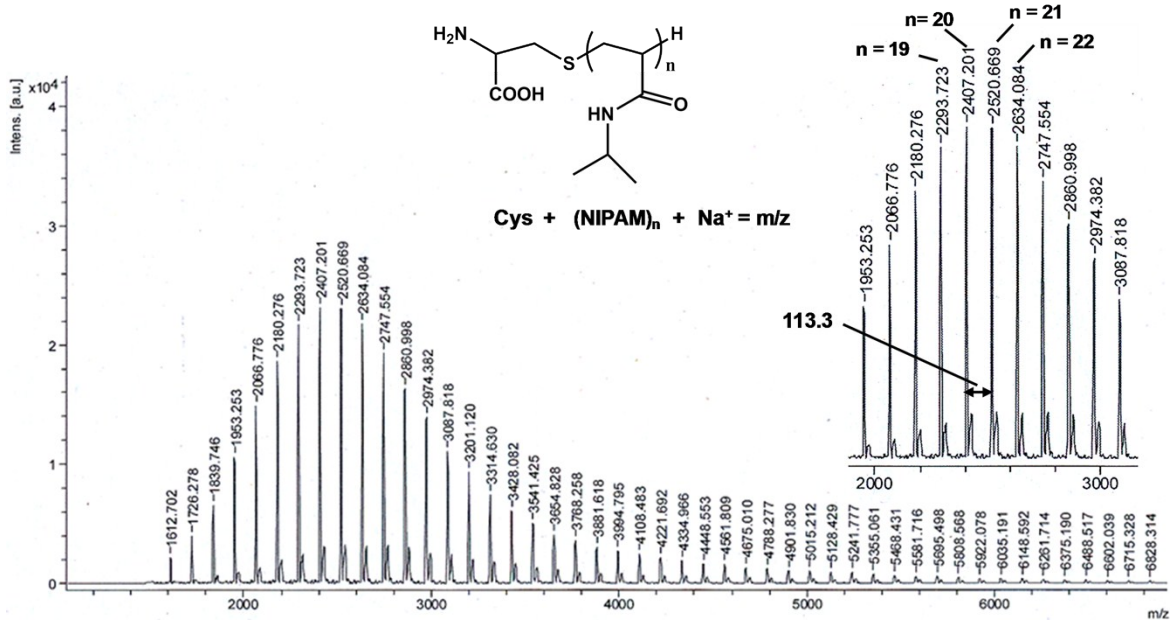

Figure S20. MALDI-TOF-MS spectrum of PNIPAM.