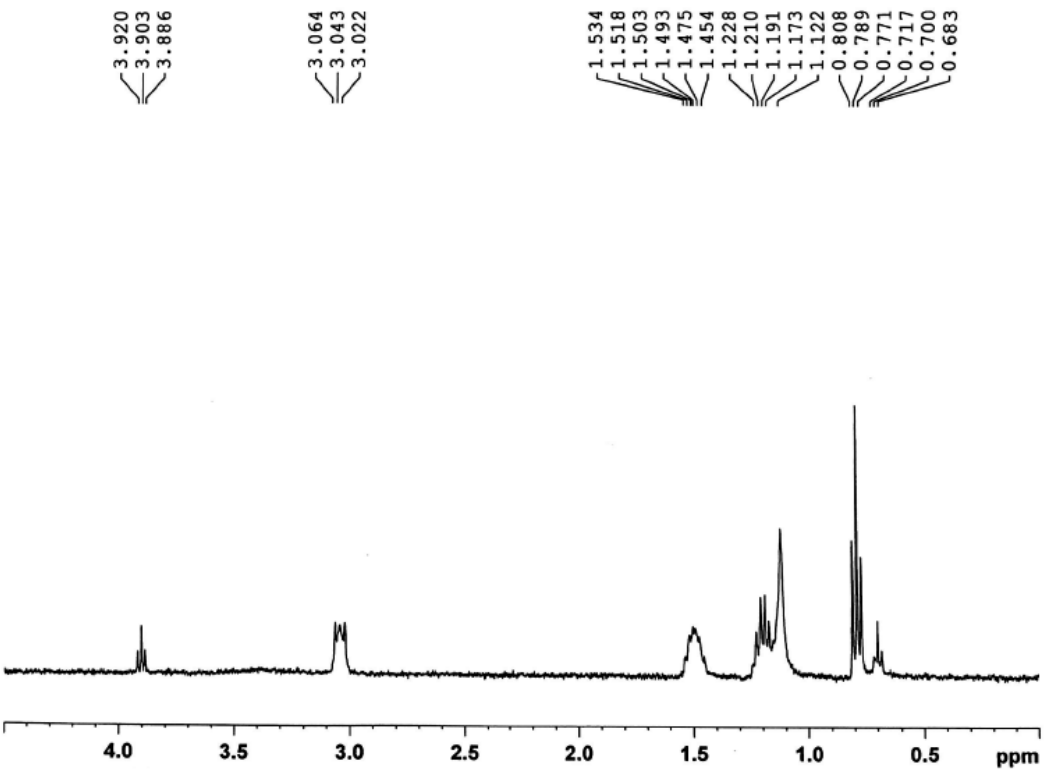
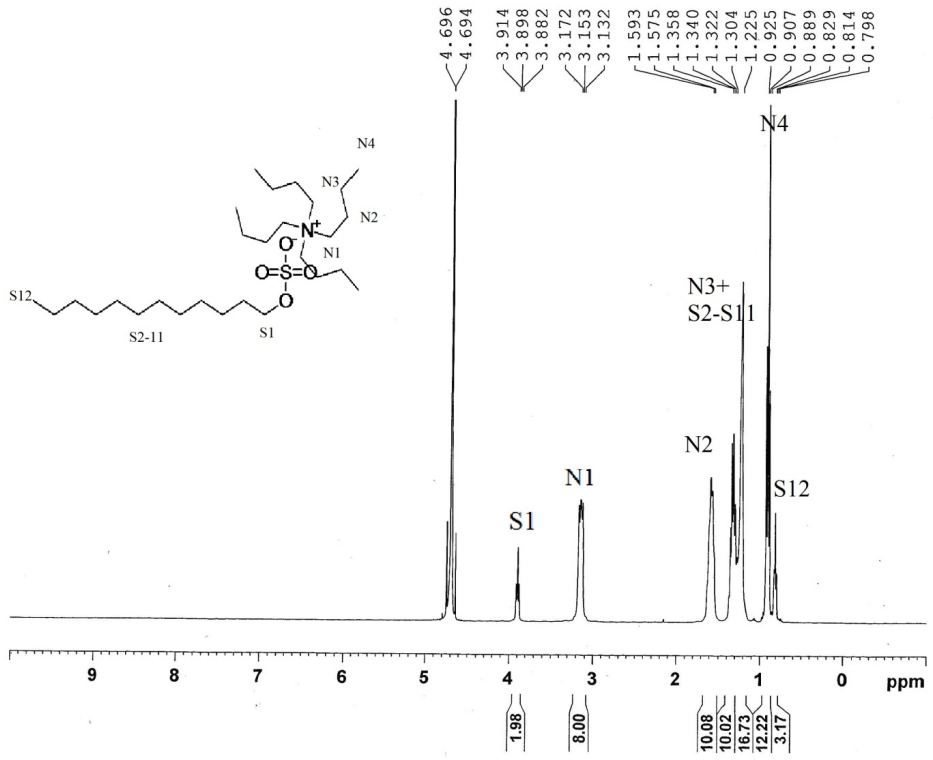
Electronic Supplementary Material (ESI) for RSC Advances.



(a)



(b)

Fig. S1 NMR spectra of TBADS a) 0.0005 M (below cmc) and b) 0.03M at room temperature.

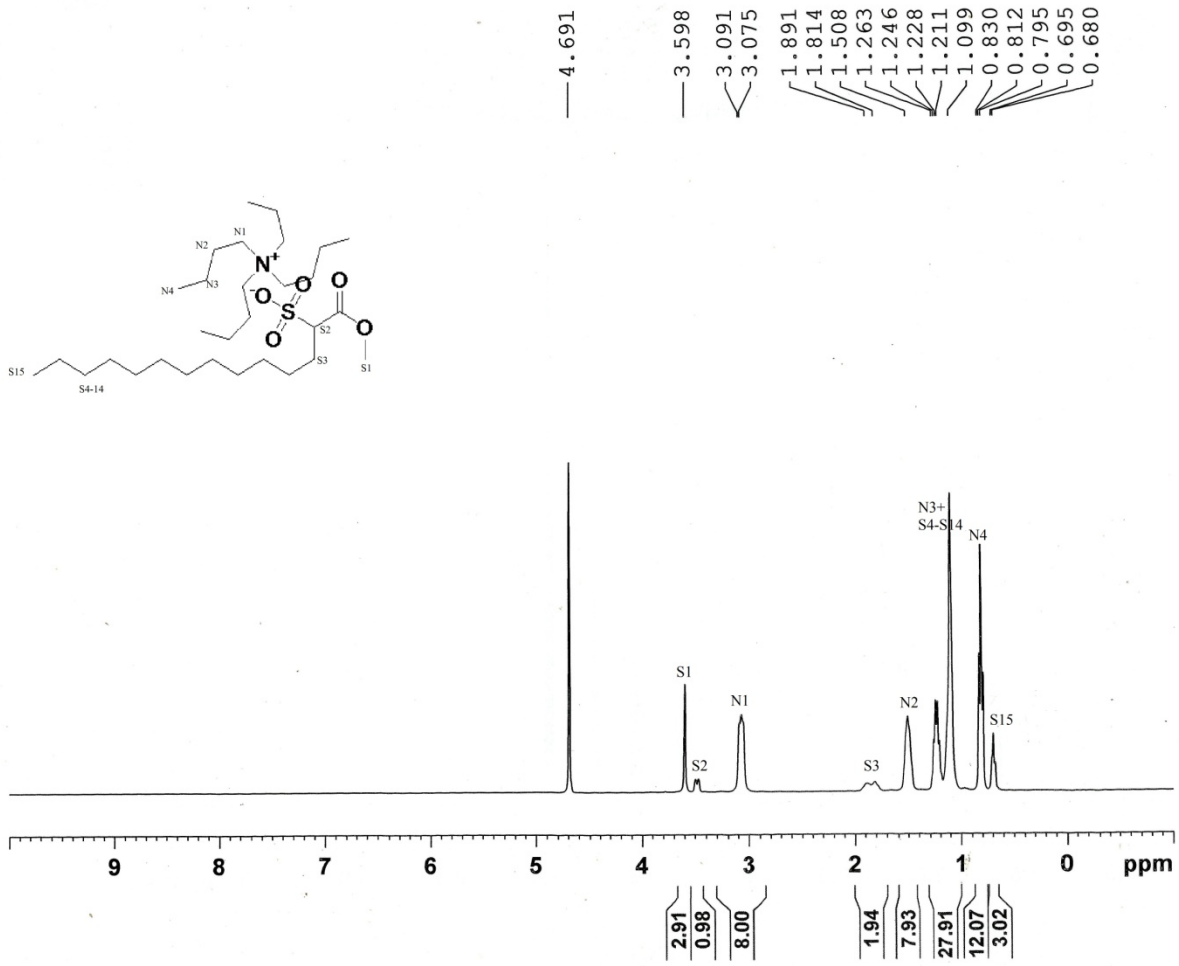


Fig. S2 NMR spectra of 0.25M TBAMES at room temperature.

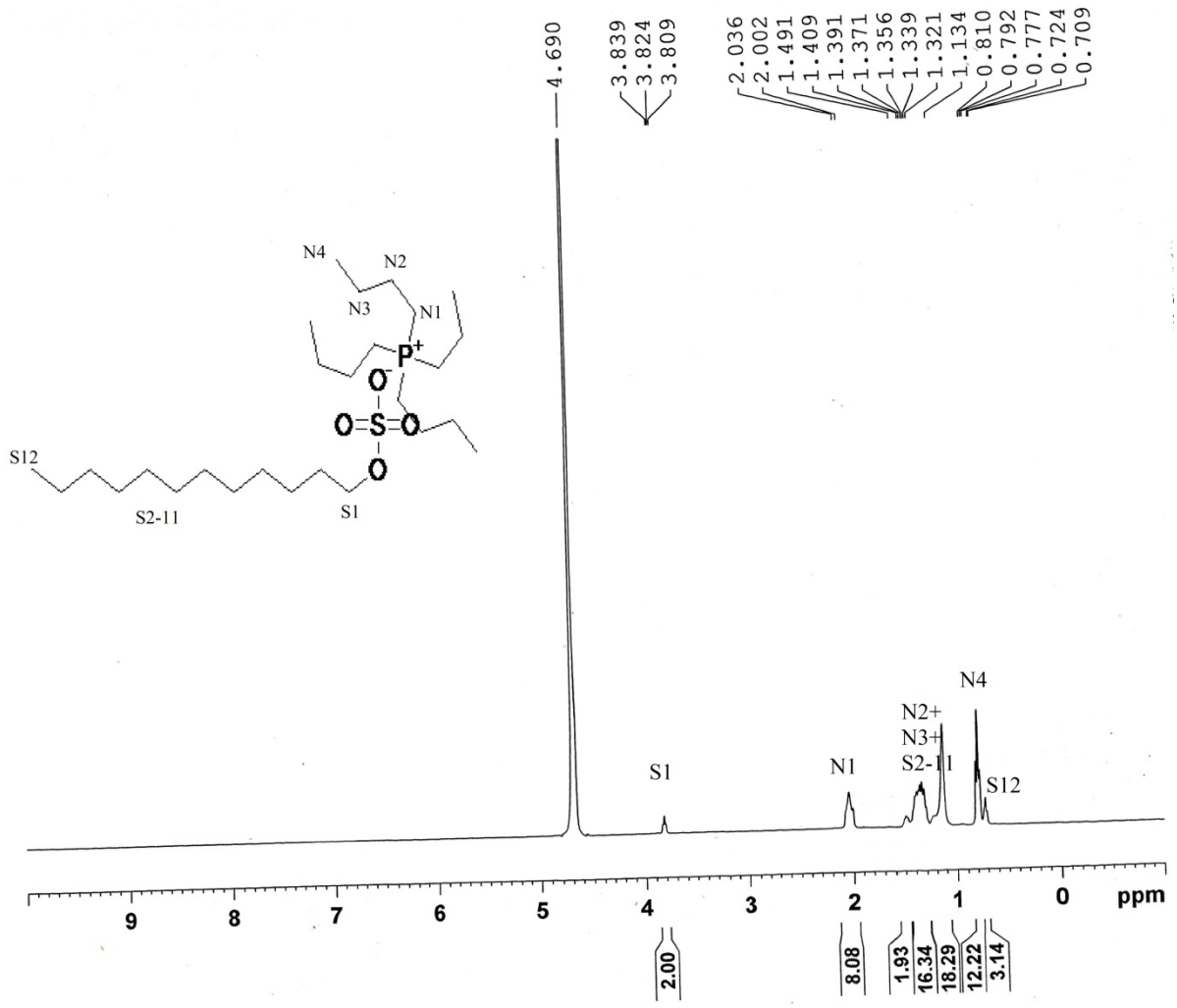


Fig. S3 NMR spectra of 0.005M TBPDS at room temperature.

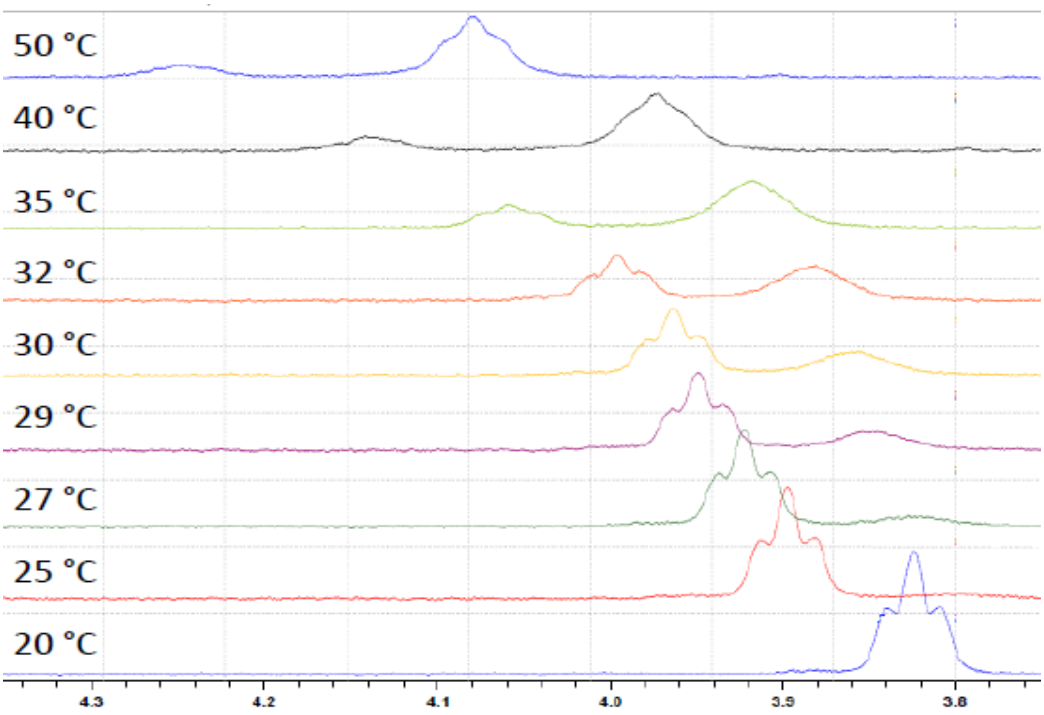


Fig. S4 Cropped ^{1}H NMR spectra for $–OCH_2$ peak of TBPDS (0.005M) at different temperatures below, at and after CP

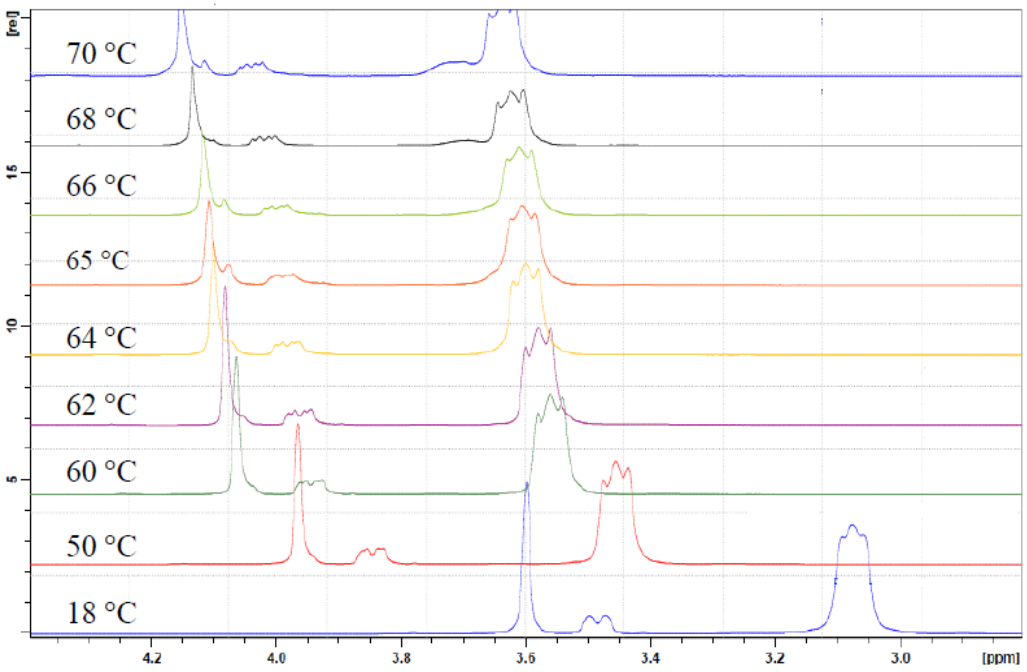


Fig S5 Cropped ^{1}H NMR spectra for 0.25M TBAMES at different temperatures below, at and after CP

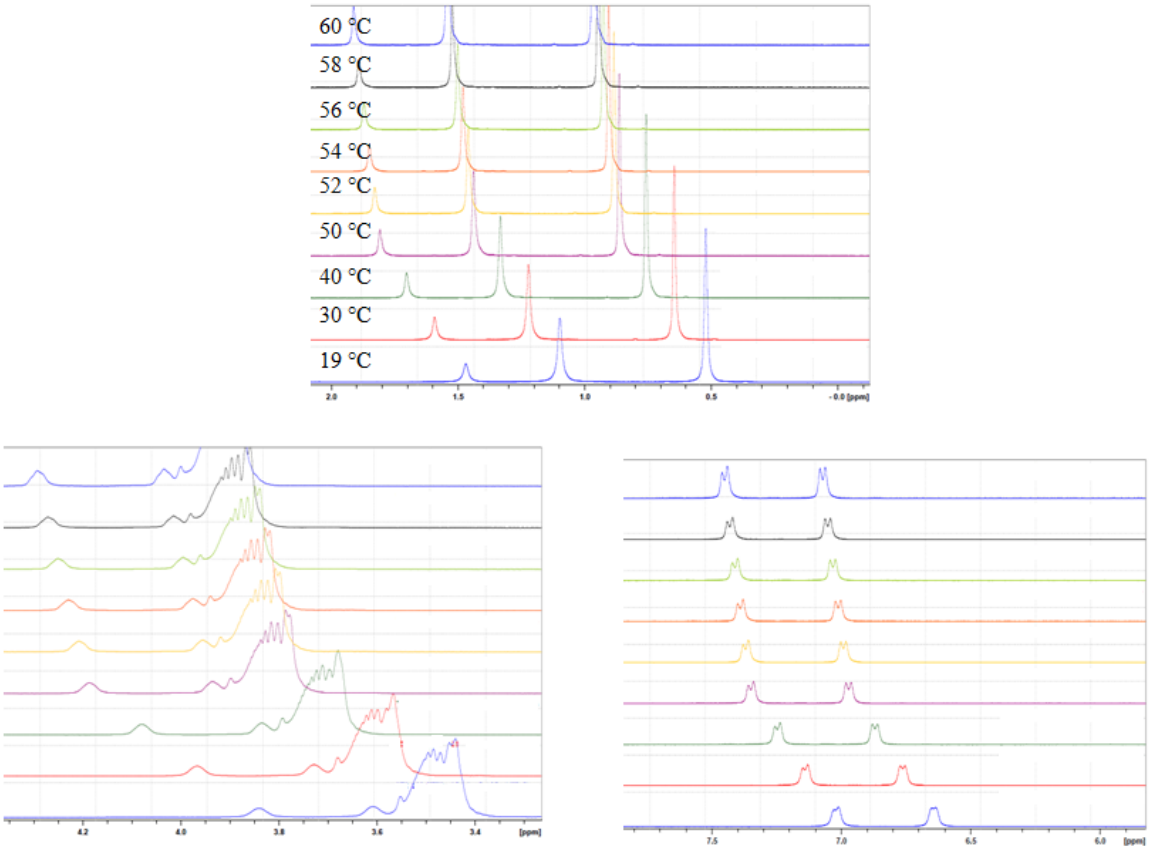


Fig. S6 Cropped ^{1}H NMR spectra for TX-100 at different temperatures below, at and after CP

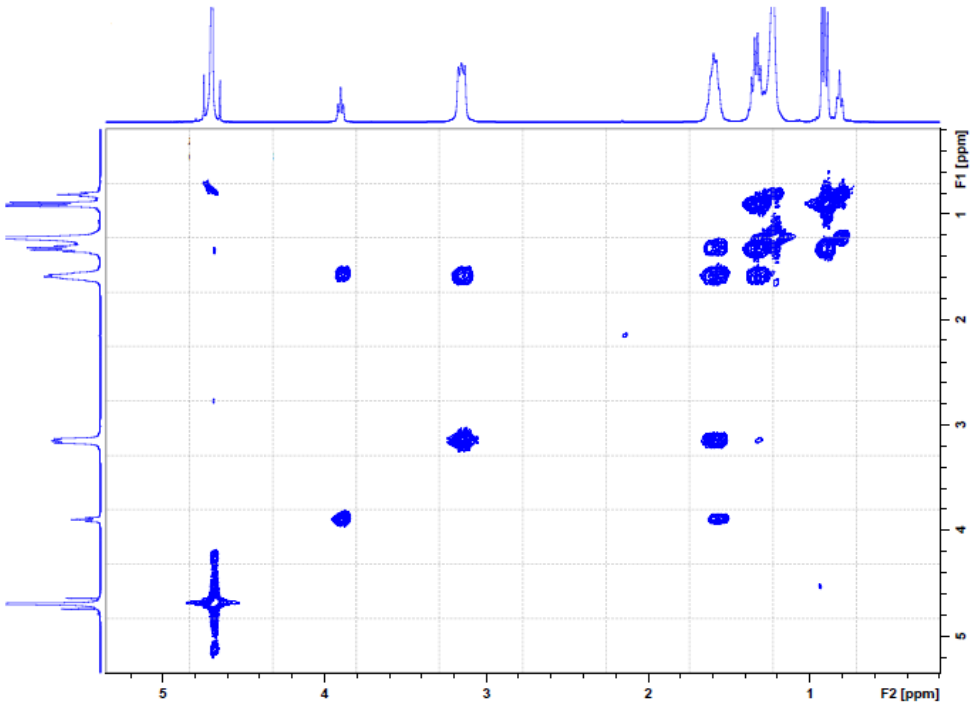
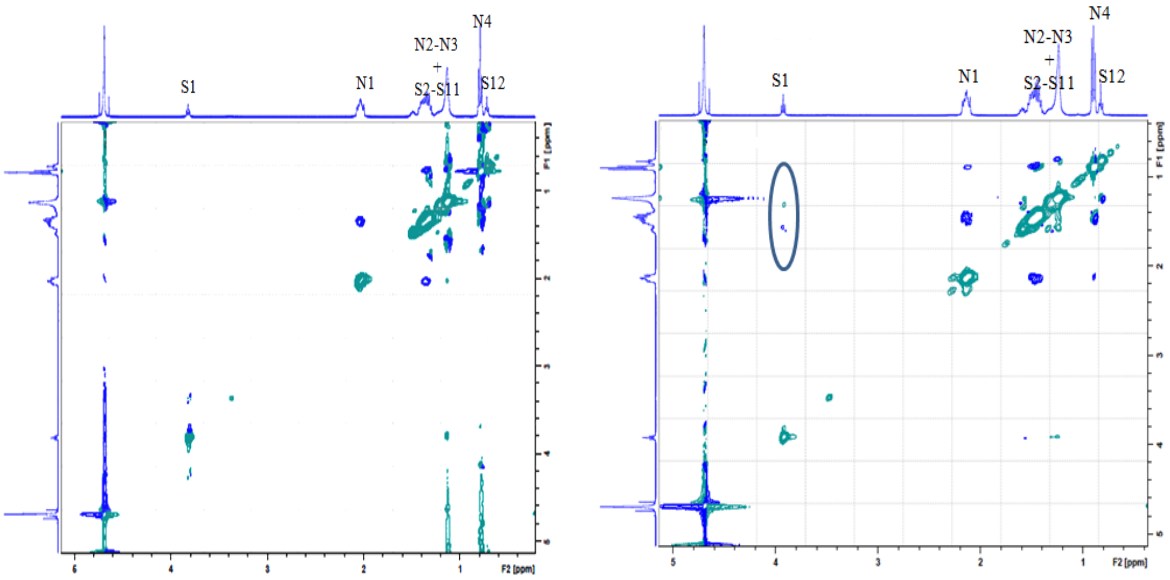
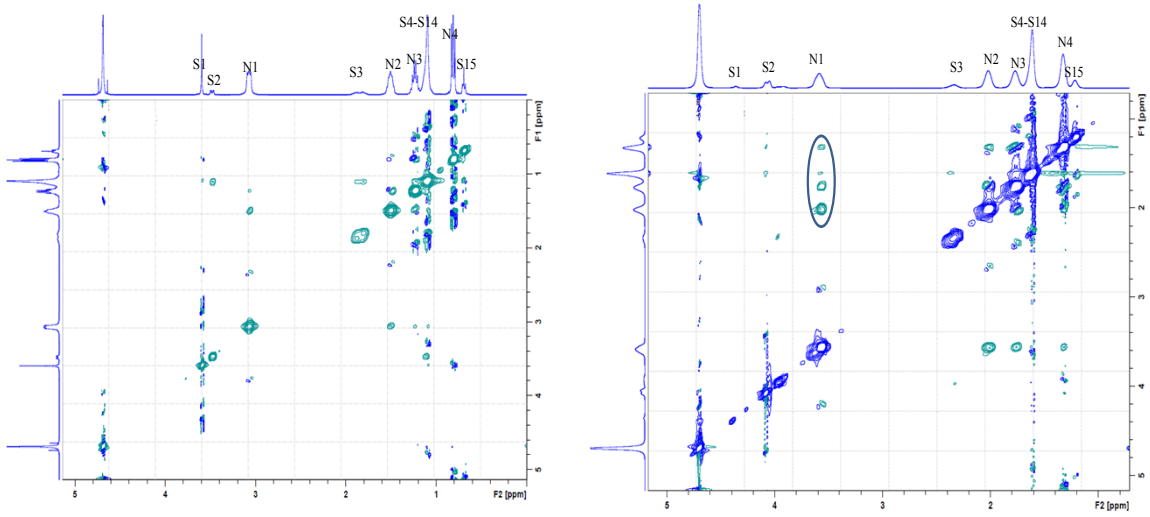


Fig. S7 2D COSY NMR spectra of TBADS at 18°C



(a) (b)

Fig. S8 2D NOESY NMR spectra of TBPDS at (a) 18°C and (b) near CP.



(a) (b)

Fig. S9 2D NOESY NMR spectra of TBAMES at (a) 18°C and (b) near CP.

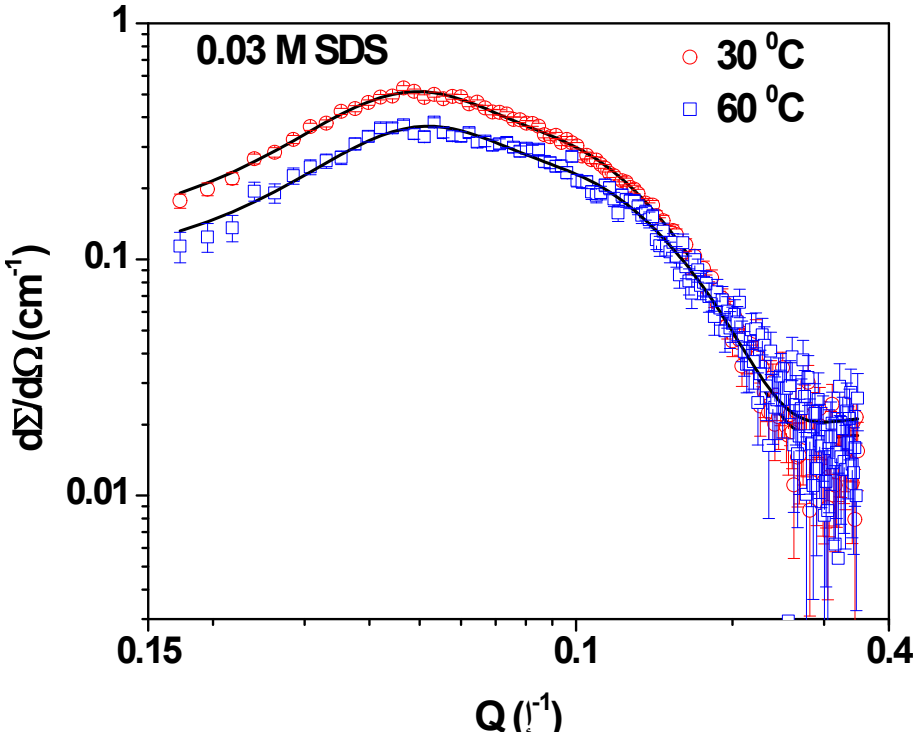


Fig. S10 SANS data of 0.03M SDS at two temperatures.

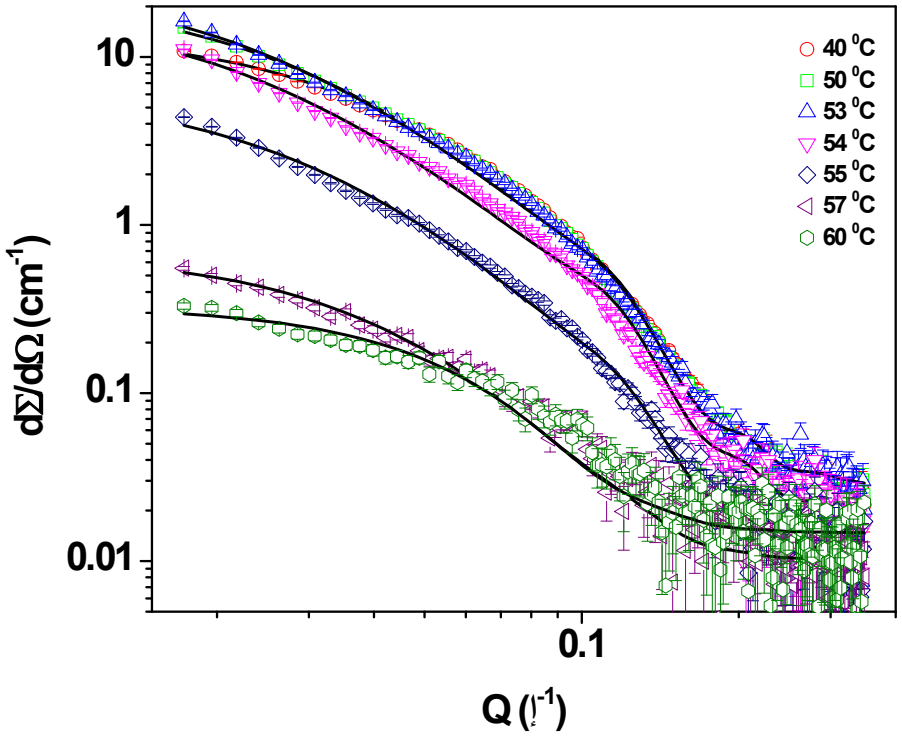


Fig. S11 SANS data of 2% TX100 systems at different temperatures below, at and after CP.

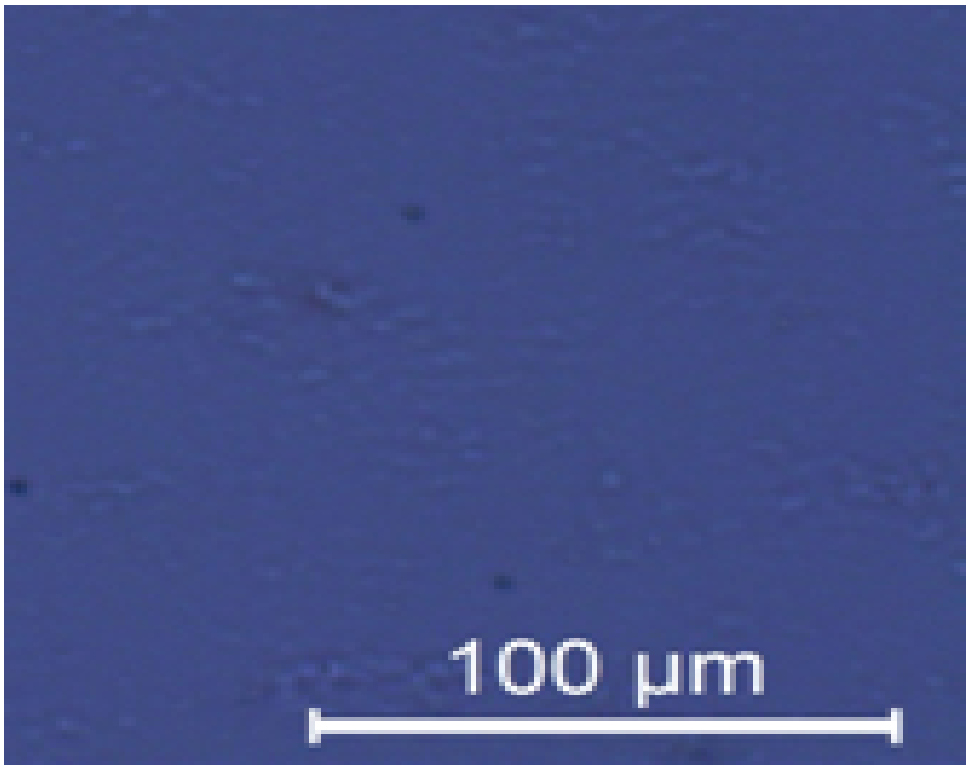


Fig. S12 Optical micrograph of the separated surfactant rich phase of 0.01M TBADS at 20°C.

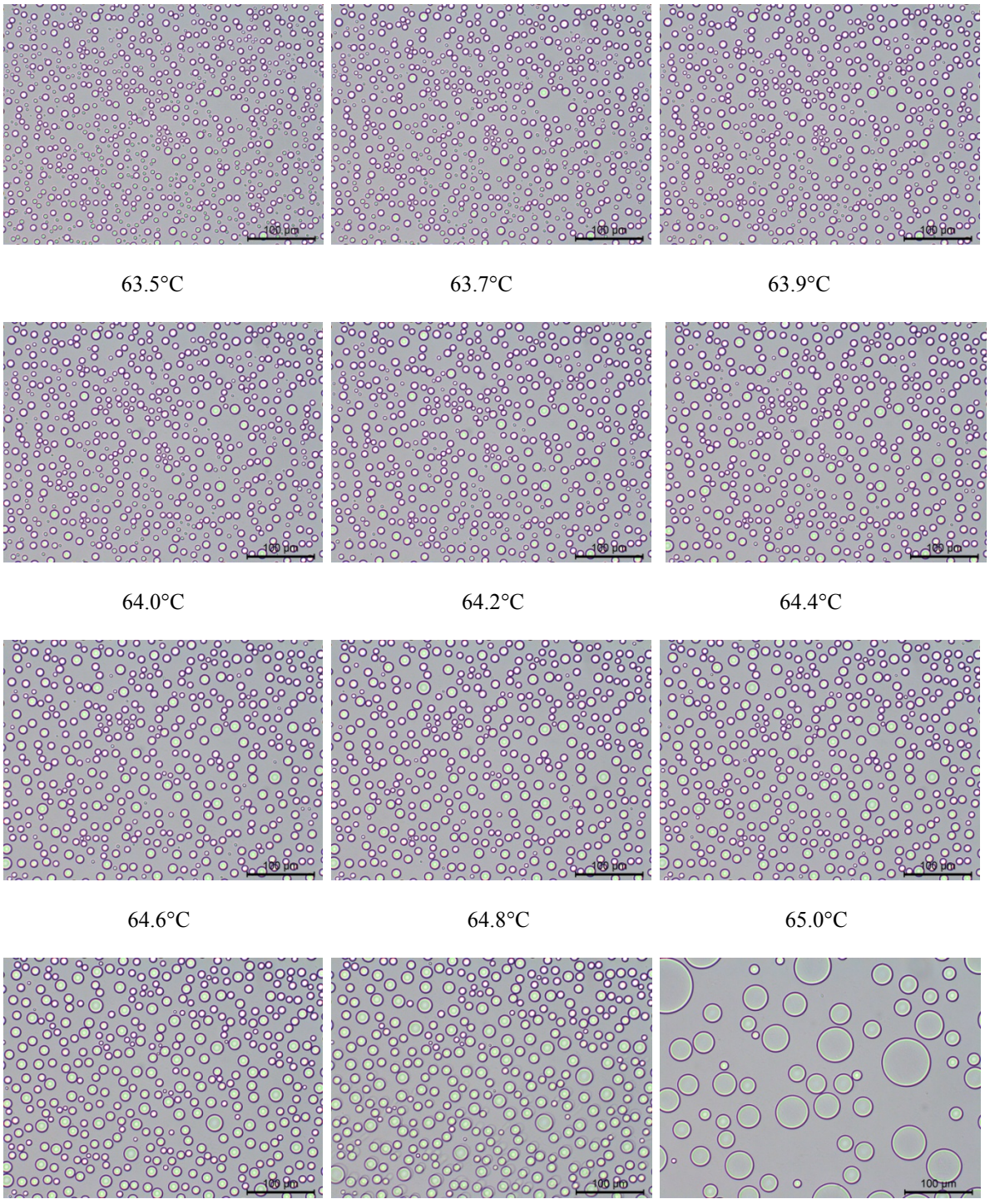


Figure S13. Optical micrographs for 0.25M TBAMES from 63.5°C to 67°C.

Table T1. cmc and α values for various anionic surfactants at 25°C.

Surfactant	cmc (mM)
SDS	8.10
MES	3.40
TBADS	1.22
TBAMES	0.85
TBPDS	1.38

Table T2. Micellar parameters of 0.0124 M TBADS at varying temperatures using model for prolate ellipsoidal.

Temperature (°C)	Semiminor axis b=c (Å)	Semimajor axis a (Å)	Aggregation number N	Fractional charge α	Micellar fraction (%)
30	14.6	47.8	73	0.11	100
40	14.5	50.0	75	0.11	100
45	14.4	51.3	75	0.11	100
50	14.3	46.5	67	0.10	87
55	13.8	41.9	55	0.06	70
60	13.8	36.1	46	0.02	40

Table T3. Fitted parameters for 0.03M SDS micelles at different temperatures using model for prolate ellipsoidal.

Temperature (°C)	Semi-major axis a (Å)	Semi-minor axis b=c (Å)	Fractional Charge α	Aggregation Number N
30	23.0	15	0.46	62
60	19.7	15	0.49	53

Table T4. Fitted parameters for TX100 micelles at different temperatures using model for oblate ellipsoidal model with structure factor calculated for sticky hard sphere.

Temperature (°C)	Semi-major axis b=c (Å)	Semi-minor axis a (Å)	Volume fraction ϕ	Fraction of free micelles	Stickiness ($1/\tau$)
40	46.8	17.2	0.13	1.0	5.55
50	47.2	17.3	0.13	1.0	7.1
53	46.7	17.2	0.13	1.0	7.7
54	46.1	17.8	0.13	0.77	7.7
55	46.8	17.0	0.1	0.3	7.7
57	46.7	17.1	0.05	0.15	7.7
60	46.7	17.2	0.01	0.07	7.7