

Supplementary Information

Formation and Properties of Wormlike Micelles in Cationic Surfactant Solutions with a 2-Hydroxypropoxy Insertion Group

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1. Surface active parameters of R₁₆HTAB and CTAB in aqueous solution at different temperature

	<i>T</i> / °C	<i>cmc</i> <i>mmol·L⁻¹</i>	γ_{cmc} <i>mN·m⁻¹</i>	$\Gamma_m \times 10^{10}$ <i>mol·cm⁻²</i>	Kroff Point °C
R ₁₆ HTAB	25	0.525	33.5	3.93	19.0
	30	0.417	33.0	3.83	
	35	0.385	32.8	3.83	
	50	0.263	32.5	3.79	
CTAB	25	0.92	37.8	3.10	22.0
	30	0.94	36.8	2.92	
	35	1.13	37.0	2.81	
	50	1.50	37.6	2.74	

2. ¹H NMR spectral data and elemental analysis dates of R₁₆HTAX

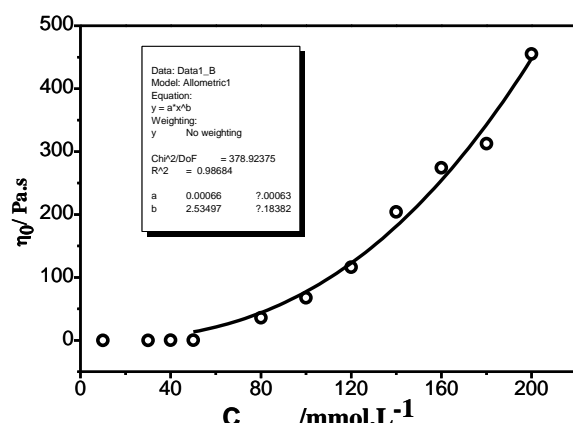
¹H NMR:

R₁₆HTAX: ¹H NMR: δ 0.86 (3 H, t, CH₃ aliphatic chain); 1.22 (26 H, m, CH₂ aliphatic chain); 1.51 (2 H, m, CH₂ aliphatic chain); 3.41 (4 H, t, 2 O-CH₂); 3.48 (9 H, s, 3 CH₃); 3.53 (1 H, m, N-CH₂-CH); 3.61 (2 H, d, N-CH₂); 4.52 (1 H, br s, OH).

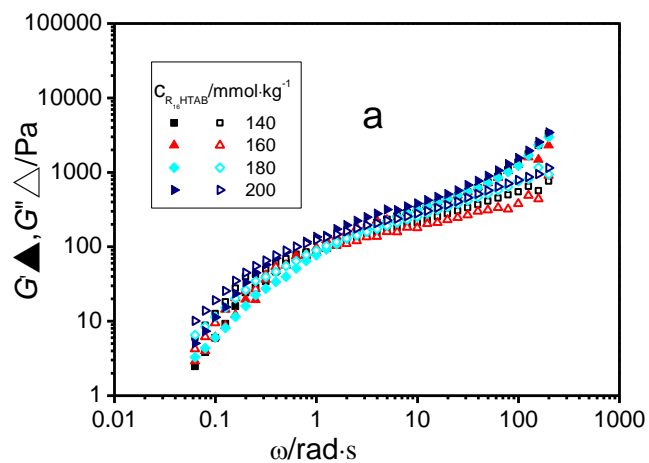
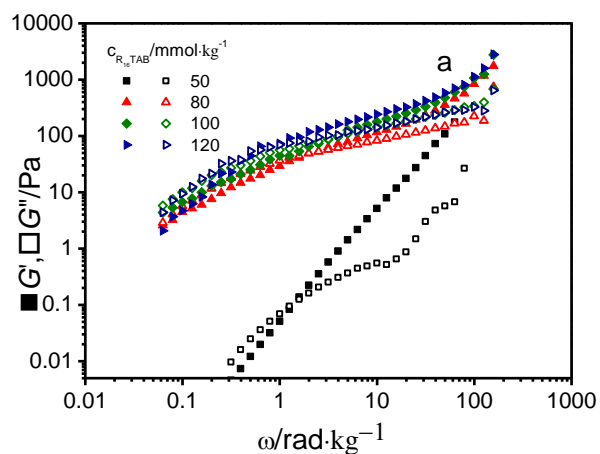
Elemental analysis: Calc. (%) for C₂₂H₄₈NO₂Br: C, 60.26; H, 11.03; N, 3.19. Found (%): C, 60.17; H, 10.97; N, 3.29.

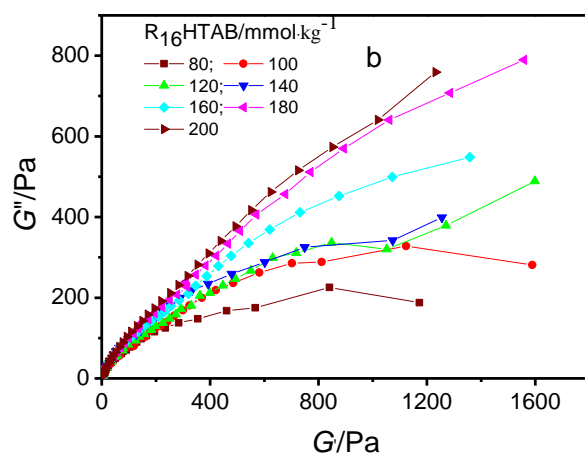
3. Zero-shear apparent viscosity of the surfactant system as a function of R₁₆HTAB concentration at 30.0 °C

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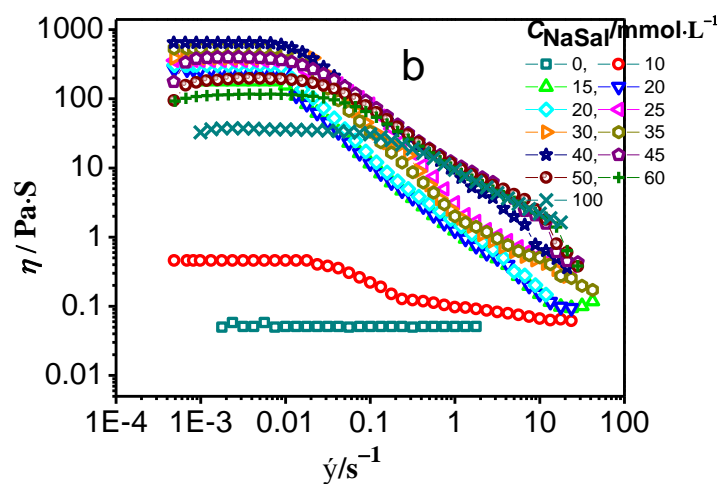
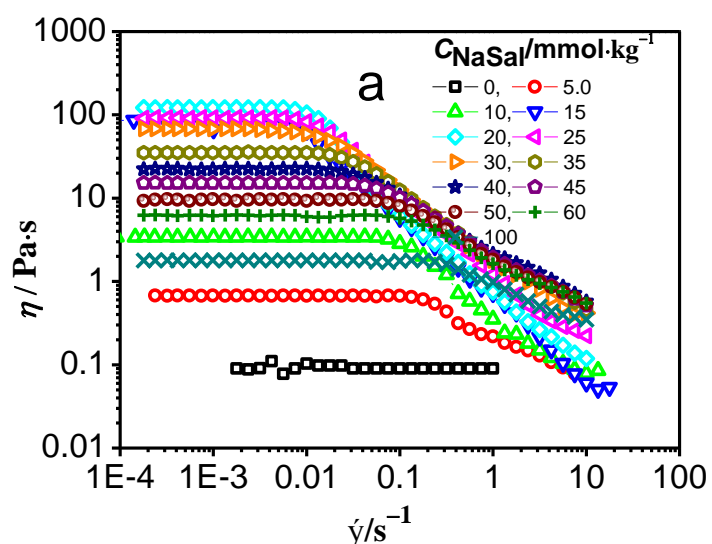


4. The Storage modulus (closed symbol) and loss modulus (open symbol) as a function of angular frequency (a) and the corresponding Cole–Cole plots (b) for solutions at different R_{16} HTAB concentrations which are illustrated in the figures at 30.0 °C.

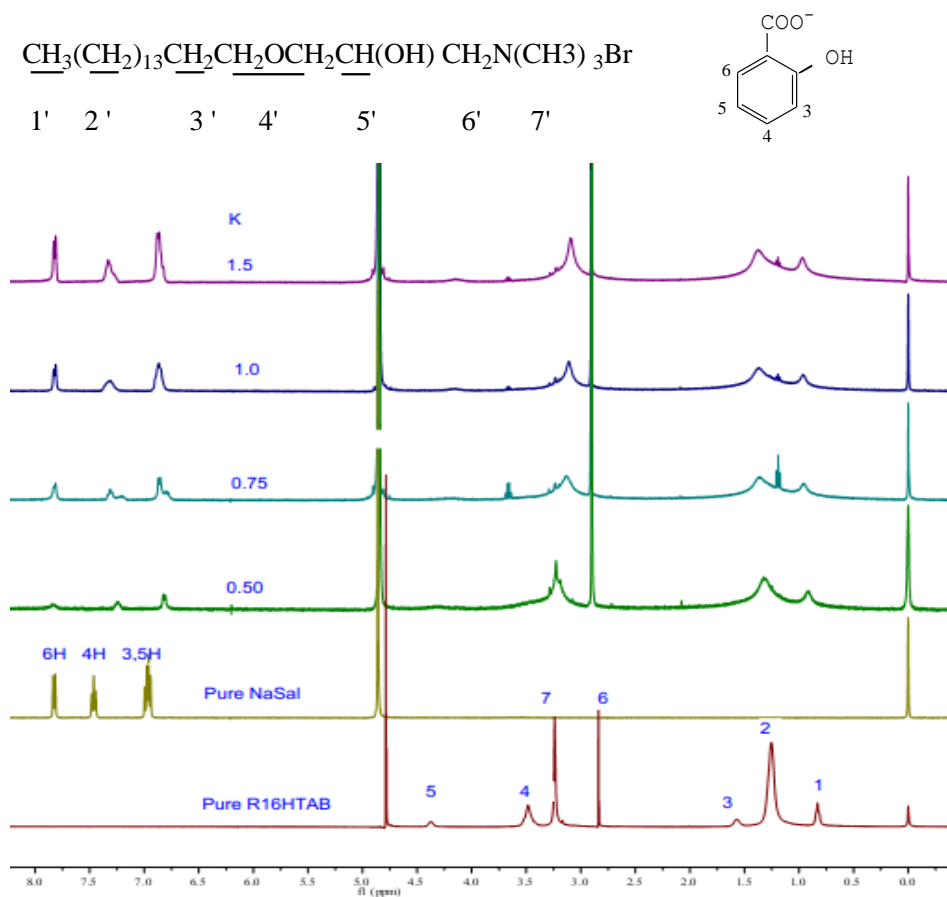




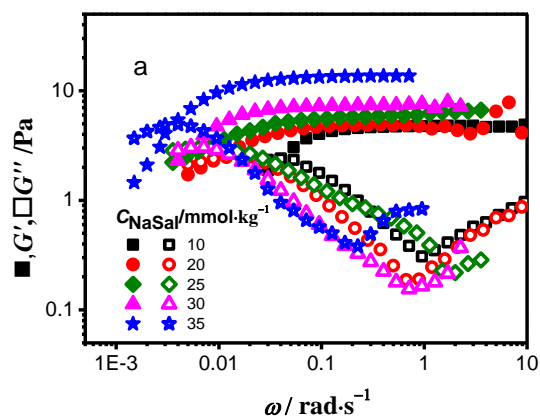
5. Curves of apparent viscosity (η) versus shear rate ($\dot{\gamma}$) for aqueous solutions of $R_{16}HTAB$ at different concentrations of NaSal. $R_{16}HTAB$ concentration: (a) 20.0 $mmol \cdot L^{-1}$; (b) 40.0 $mmol \cdot L^{-1}$

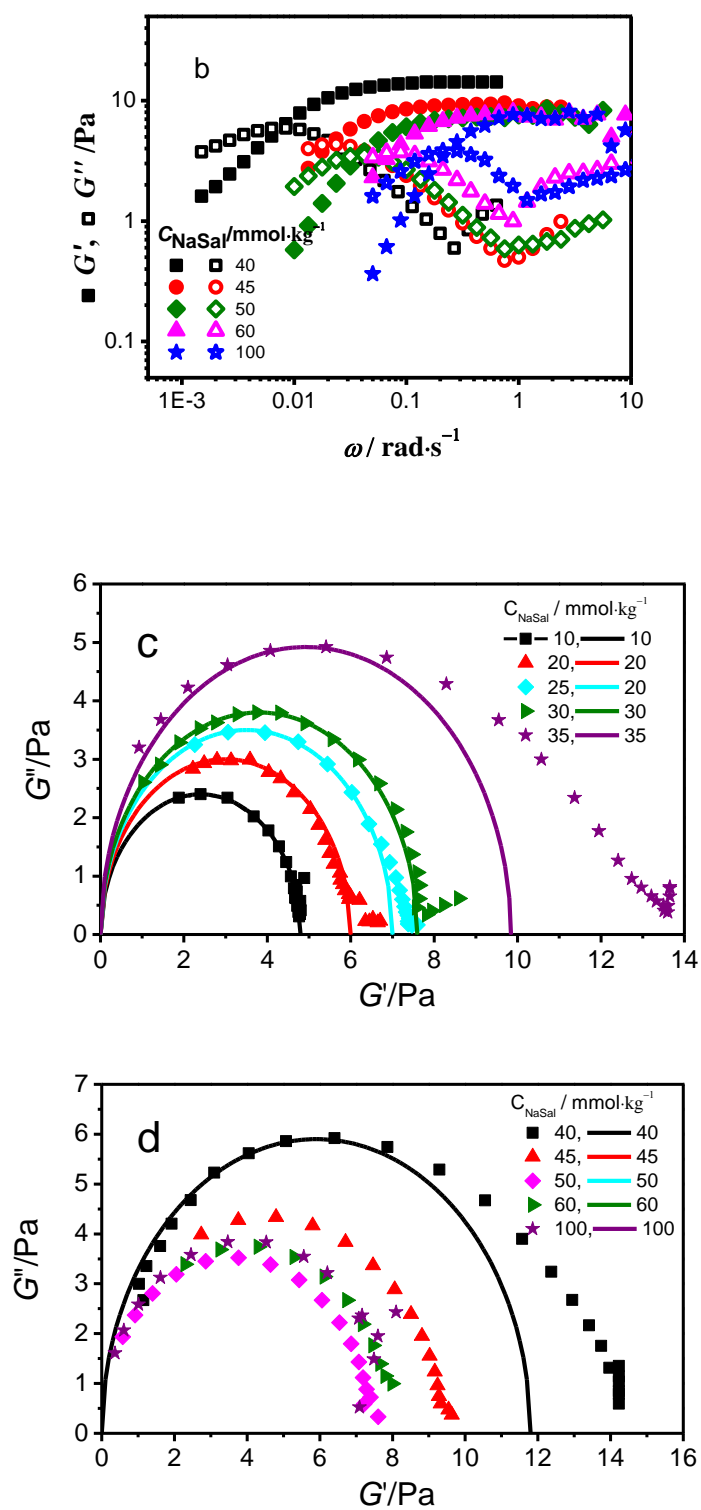


6. ^1H NMR spectra for $\text{R}_{16}\text{HTAB}/\text{NaSal}$ systems; K denotes molar ratio of counterion to surfactant. The bottom spectrum is R_{16}HTAB and the second bottom one is NaSal in D_2O . Then from down to up, 20, 30, 40 and 60 $\text{mmol}\cdot\text{kg}^{-1}$ NaSal was added into $40\text{ mmol}\cdot\text{kg}^{-1}$ R_{16}HTAB solutions



7. Variations of G' (filled symbols) and G'' (open symbols) with the shear frequency ω for aqueous solutions of R_{16}HTAB ($40\text{ mmol}\cdot\text{kg}^{-1}$) (a, b) and the corresponding Cole–Cole plots (c, d), the solid lines represent the best fit to the Maxwell model at 298K. The NaSal concentrations are expressed in the Figures.





8. Curves of apparent viscosity (η) versus shear rate ($\dot{\gamma}$) at different temperatures and at a fixed $R_{16}\text{HTAB}/\text{NaSal}$ molar rate of $20/40 \text{ mmol}\cdot\text{kg}^{-1}$

