

Supplementary Material

Effect of single/mixed surfactant systems on orientations of liquid crystals and interaction of proteins with surfactants at fluid interfaces

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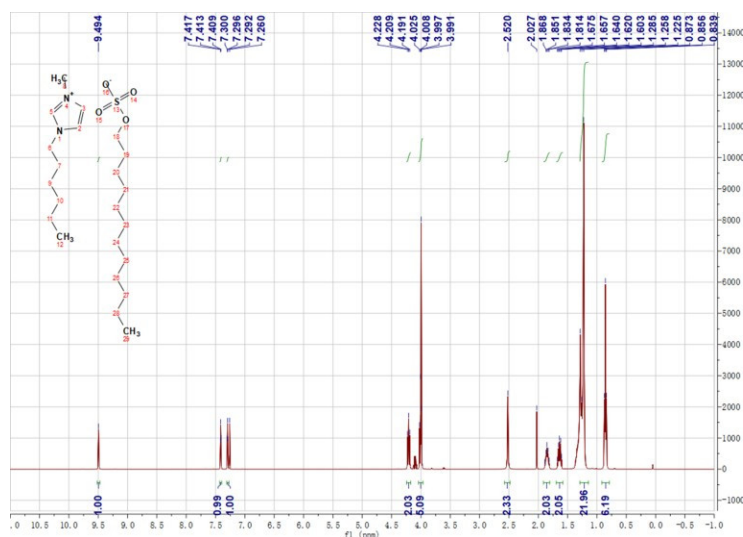


Fig. S1. ¹H NMR spectrum of [C₆mim][C₁₂H₂₅SO₄]: ¹H NMR (400 MHz, CDCl₃): δ 9.49 (s, 1H), 7.41 (t, *J* = 1.6 Hz, 1H), 7.30 (t, *J* = 1.6 Hz, 1H), 4.21 (t, *J* = 7.6 Hz, 2H), 4.00(t, *J* = 6.8 Hz, 2H), 3.99 (s, 3H), 2.52 (s, 2H), 1.89-1.81 (m, 2H), 1.68-1.60 (m, H), 1.23 (s, 22H), 0.86 (t, *J* = 6.8 Hz, 6H).

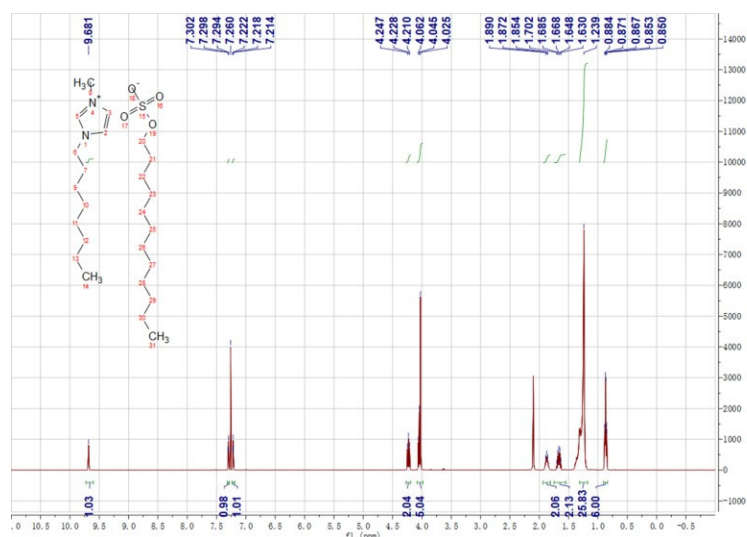


Fig. S2. ^1H NMR spectrum of $[\text{C}_8\text{mim}][\text{C}_{12}\text{H}_{25}\text{SO}_4]$: ^1H NMR (400 MHz, CDCl_3): δ 9.68 (s, 1H), 7.30 (t, $J = 1.6$ Hz, 1H), 7.22 (t, $J = 1.6$ Hz, 1H), 4.23 (t, $J = 7.6$ Hz, 2H), 4.05 (t, $J = 6.8$ Hz, 2H), 4.02 (s, 3H), 2.10 (s, 2H), 1.89-1.85 (m, 2H), 1.70-1.63 (m, 2H), 1.23 (s, 26H), 0.87 (t, $J = 6.8$ Hz, 3H), 0.86 (t, $J = 6.8$ Hz, 3H).

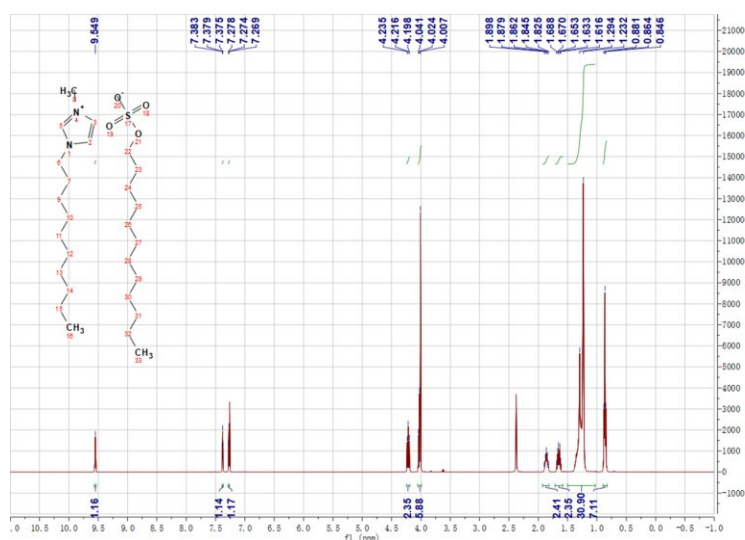


Fig. S3. ^1H NMR spectrum of $[\text{C}_{10}\text{mim}][\text{C}_{12}\text{H}_{25}\text{SO}_4]$: ^1H NMR (400 MHz, CDCl_3): δ 9.55 (s, 1H), 7.38 (t, $J = 1.6$ Hz, 1H), 7.27 (t, $J = 1.6$ Hz, 1H), 4.22 (t, $J = 7.6$ Hz, 2H), 4.02 (t, $J = 6.8$ Hz, 2H), 4.00 (s, 3H), 2.38 (s, 2H), 1.90-1.82 (m, 2H), 1.69-1.62 (m, 2H), 1.23 (s, 30H), 0.87 (t, $J = 6.8$ Hz, 6H).

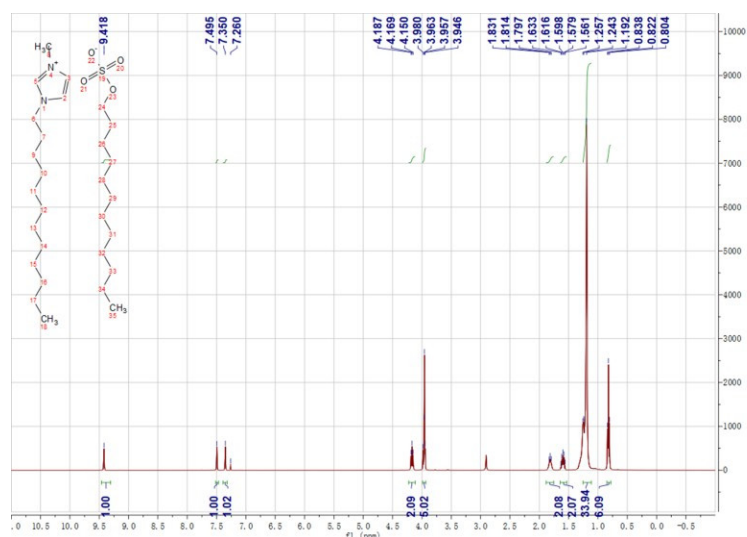


Fig. S4. ^1H NMR spectrum of $[\text{C}_{12}\text{mim}][\text{C}_{12}\text{H}_{25}\text{SO}_4]$: ^1H NMR (400 MHz, CDCl_3): δ 9.41 (s, 1H), 7.50 (t, $J = 1.6$ Hz, 1H), 7.35 (t, $J = 1.6$ Hz, 1H), 4.17 (t, $J = 7.6$ Hz, 2H), 3.96 (t, $J = 6.8$ Hz, 2H), 3.96 (s, 3H), 1.83-1.79 (m, 2H), 1.63-1.56 (m, 2H), 1.19 (s, 34H), 0.82 (t, $J = 6.4$ Hz, 6H).

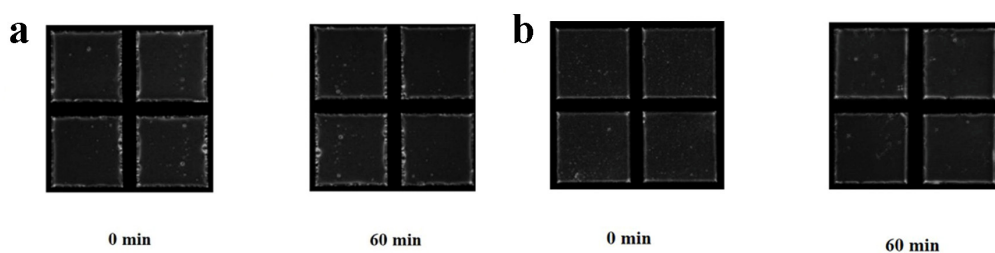


Fig. S5. Optical images of 5CB: the ALI was in contact with the 12-3-12/ $[\text{C}_{12}\text{mim}]\text{Br}$ (a) and 12-3-12/DTAB (b), respectively for 0 min and 60 min.

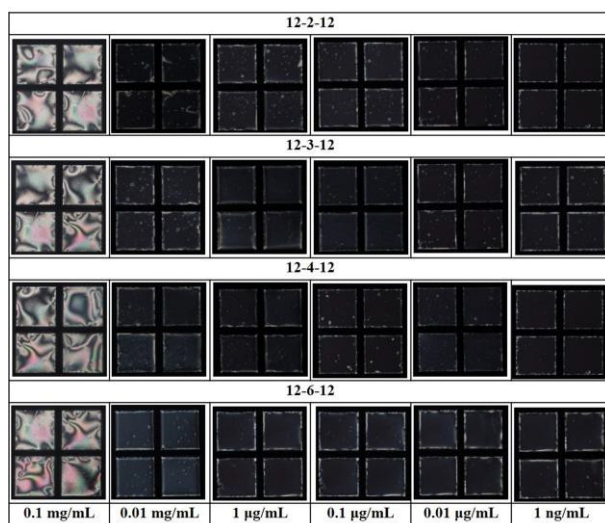


Fig. S6. Optical images of 5CB: after addition of aqueous solutions of BSA at various concentrations to the ALI decorated with gemini surfactants with different spacer lengths (12-n-12, n = 2, 3, 4, 6).

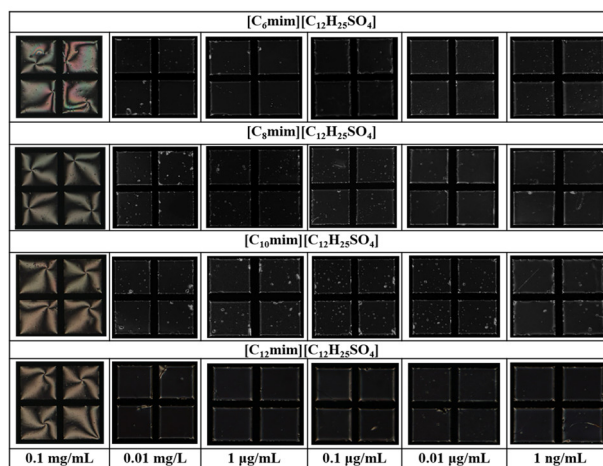


Fig. S7. Optical images of 5CB: after addition of aqueous solutions of BSA at various concentrations to the ALI decorated with HF-SAILs with different asymmetries $[C_n\text{mim}][C_{12}H_{25}SO_4]$, (n = 6, 8, 10, 12).

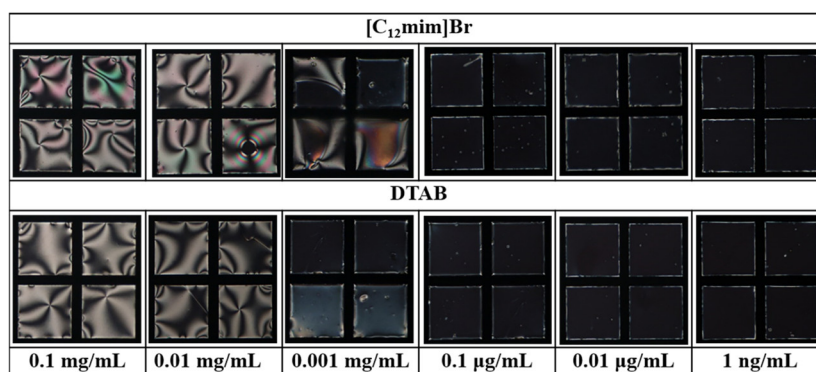


Fig. S8. Optical images of 5CB: after addition of aqueous solutions of BSA at various concentrations to the ALI decorated with single-chained cationic surfactants ($[C_{12}\text{mim}]\text{Br}$ and DTAB).

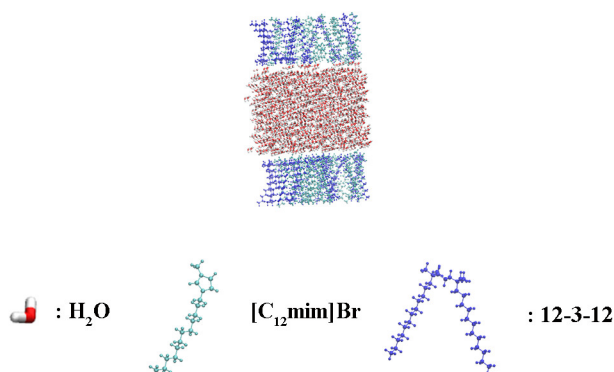


Fig. S9. The snapshot of initial configuration of 12-3-12/ $[C_{12}\text{mim}]\text{Br}$ at air-water interface.