

1. Supplementary material. ^{13}C chemical shifts of a D_2O solution 0.10 M in CTAX at $T = 25.0^\circ\text{C}$ in the absence of benzene.

surfactant	<u>1'</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	CH_3SO_3
CTAB	55.79	69.06	25.62	28.95	32.06	32.40	34.80	25.42	16.58	
CTAN	55.40	69.17	25.46	28.92	31.99	32.38	34.80	25.41	16.53	
CTAC	55.63	69.17	25.46	28.84	31.91	32.27	34.73	25.37	16.57	
CTAS	55.59	69.17	25.39	28.80	31.88	32.23	34.71	25.36	16.55	
CTAMs	55.55	69.14	25.37	28.80	31.84	32.22	34.69	25.36	16.57	41.34

2. Supplementary material. T_1 relaxation times (ms) of CTAX ^{13}C signals in a D_2O solution 0.10 M in CTAX at $T = 25.0^\circ\text{C}$ in the absence of benzene

surfactant	<u>1'</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	CH_3SO_3
CTAB	482	423	567	481	471	721	1008	1447	2619	
CTAN	548	726	728	543	534	743	1006	1262	2781	
CTAC	602	617	620	647	516	770	1018	1409	2731	
CTAS	683	625	640	564	584	767	1029	1383	2740	
CTAMs	614	777	654	552	559	787	1050	1415	2992	2879

3. Supplementary material. ^{13}C chemical shifts of a D_2O solution 0.10 M in CTAX at $T = 25.0^\circ\text{C}$ in the presence of $[\text{benzene}] = 0.080\text{ M}$.

surfactant	<u>1'</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	CH_3SO_3
CTAB	55.72	68.88	25.52	28.86	a	a	34.74	25.39	16.55	
CTAN	55.30	68.99	a	a	a	a	34.72	25.36	16.52	
CTAC	55.52	68.97	25.34	28.75	31.90	32.25	34.70	25.36	16.56	
CTAS	55.49	69.02	25.29	28.73	31.88	32.23	34.69	25.38	16.55	
CTAMs	55.45	69.02	25.28	28.74	31.84	32.22	34.68	25.35	16.55	41.34

Signal broad

4. Supplementary material. T_1 relaxation times (ms) of CTAX ^{13}C signals in a D_2O solution 0.10 M in CTAX at $T = 25.0^\circ\text{C}$ in the presence of $[\text{benzene}] = 0.080\text{ M}$.

surfactant	<u>1'</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>	CH_3SO_3
CTAB	469	420	a	a	a	a	a	1775	3383	
CTAN	542	577	a	a	a	a	a	1896	3245	
CTAC	616	735	650	585	612	983	1333	1389	2858	
CTAS	658	610	800	604	633	974	1330	1837	3358	
CTAMs	671	590	673	639	627	973	1335	1811	3210	3166

Signal broad

S5. Supplementary material. ^{14}N linewidth (Hz) and ^1H NMR chemical shifts (ppm) of benzene and CTAS of a D_2O solution 0.10 M in CTAS at various [benzene] at 25 $^\circ\text{C}$.

$[\text{C}_6\text{H}_6], \text{M}$	$\text{Lw } ^{14}\text{N}$	C_6H_6	<u>1'</u>	<u>1</u>	<u>2</u>	<u>3 + 4</u>	<u>n</u>	<u>16</u>
0.0000	16		3.137	3.308	1.756	1.360	1.303	0.884
0.0038	16	7.376	3.132	3.299	1.745	1.351	1.302	0.884
0.0073	16	7.372	3.127	3.291	1.736	1.344	1.300	0.884
0.0105	16	7.368	3.120	3.280	1.726	1.332	1.299	0.884
0.0133	16	7.365	3.116	3.273	1.719	a	1.298	0.885
0.0142	17	7.364	3.115	3.271	1.715	a	1.297	0.884
0.0190	16	7.360	3.109	3.260	1.704	a	1.295	0.884
0.0233	16	7.355	3.102	3.248	1.691	a	1.293	0.884
0.0283	16	7.351	3.097	3.238	1.681	a	1.292	0.883
0.0312	17	7.346	3.091	3.228	1.672	a	1.292	0.883
0.0317	16	7.346	3.092	3.230	1.672	a	1.292	0.883
0.0355	17	7.339	3.082	3.214	1.654	a	1.291	0.882
0.0402	17	7.337	3.080	3.209	1.652	a	1.291	0.881
0.0432	17	7.333	3.076	3.202	1.642	a	1.290	0.881
0.0483	17	7.327	3.070	3.191	1.634	a	1.290	0.880
0.0565	17	7.318	3.062	3.177	1.616	1.257	1.288	0.878
0.0570	17	7.316	3.060	3.173	1.612	1.255	1.288	0.878
0.0572	17	7.317	3.061	3.176	1.614	1.256	1.289	0.878
0.0650	18	7.307	3.052	3.159	1.597	1.245	1.287	0.875
0.0732	17	7.297	3.045	3.146	1.583	1.235	1.285	0.873
0.0737	18	7.297	3.045	3.146	1.583	1.235	1.285	0.873
0.0742	17	7.296	3.044	3.145	1.583	1.235	1.285	0.872
0.0800	17	7.288	3.038	3.134	1.569	1.226	1.284	0.872
0.0803	17	7.288	3.039	3.136	1.571	1.228	1.284	0.871
0.0815	17	7.287	3.038	3.134	1.570	1.226	1.283	0.870
0.0925	17	7.272	3.028	3.115	1.550	1.211	1.279	0.865
0.1050	17	7.256	3.019	3.098	1.530	1.197	1.275	0.860
0.1230	18	7.236	3.008	3.078	1.507	1.180	1.270	0.853
0.1240	18	7.234	3.007	3.077	1.507	1.179	1.269	0.852
0.1480	19	7.207	2.995	3.052	1.480	1.159	1.258	0.841
0.1650	18	7.188	2.988	3.038	1.463	1.146	1.251	0.833
0.1670	19	7.183	2.987	3.037	1.463	1.143	1.249	0.831
0.1680	19	7.185	2.987	3.036	1.463	1.143	1.249	0.831
0.1870	19	7.164	2.981	3.025	1.449	1.133	1.241	0.822
0.1920	19	7.157	2.979	3.021	1.443	1.127	1.238	0.818
0.2130	20	7.140	2.975	3.013	1.434	1.120	1.230	0.810
0.2720	23	7.089	2.967	2.992	1.409	1.098	1.208	0.785
0.3330	25	7.046	2.963	b	1.394	1.084	1.190	0.765
0.3390	25	7.046	2.963	b	1.396	1.086	1.190	0.766

a Signal covered by n signal.

b Signal covered by 1' signal.

S 6. Supplementary material. ^{14}N linewidth (Hz) and ^1H NMR chemical shifts (ppm) of benzene and CTAN of a D_2O solution 0.10 M in CTAN at various [benzene] at 25 $^\circ\text{C}$.

$[\text{C}_6\text{H}_6]$, M	Lw N^+	Lw NO_3^-	C_6H_6	<u>1'</u>	<u>1</u>	<u>2</u>	<u>3+4</u>	<u>n</u>	<u>16</u>
0.0000	26	25		3.122	3.323	1.750	1.356	1.304	0.881
0.0002	29	30	7.378	3.123	3.325	1.749	b	1.305	0.882
0.0035	24	25	7.372	3.117	3.312	1.741	b	1.304	0.881
0.0067	27	25	7.368	3.111	3.303	1.729	b	1.301	0.881
0.0115	32	25	7.364	3.103	3.291	1.715	b	1.298	0.882
0.0134	35	25	7.362	3.101	3.286	1.711	b	1.297	0.882
0.0201	51	24	7.352	3.091	3.268	1.692	b	1.292	0.881
0.0224	41	25	7.353	3.089	3.260	1.687	b	1.291	0.881
0.0229	73	25	7.352	3.088	3.253	1.685	b	1.290	0.881
0.0233	78	25	7.353	3.087	3.258	1.683	b	1.289	0.882
0.0269	112	26	7.348	3.082	3.249	1.671	b	1.287	0.881
0.0302	164	29	7.348	3.081	3.243	1.668	b	1.286	0.882
0.0340	220	28	7.343	3.074	3.236	1.658	b	1.284	0.881
0.0353	199	28	7.343	3.074	3.234	1.661	b	1.285	0.881
0.0514	484	30	7.331	3.059	a	1.608	b	1.280	0.878
0.0738	a	30	7.313	3.039	a	a	b	1.270	0.870
0.0760	a	29	7.314	3.038	a	a	b	1.270	0.871

a Signal too broad to be detected.

b Signal covered by the n signal.