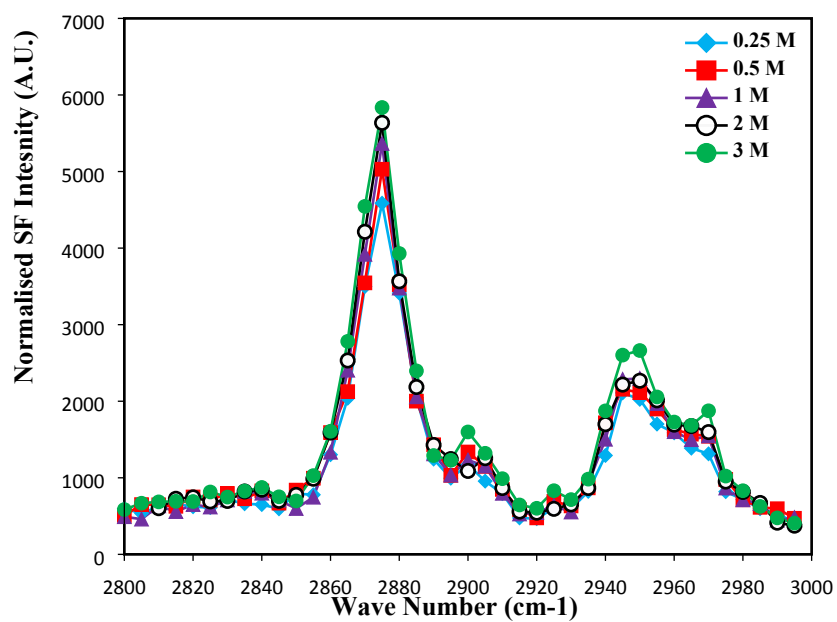
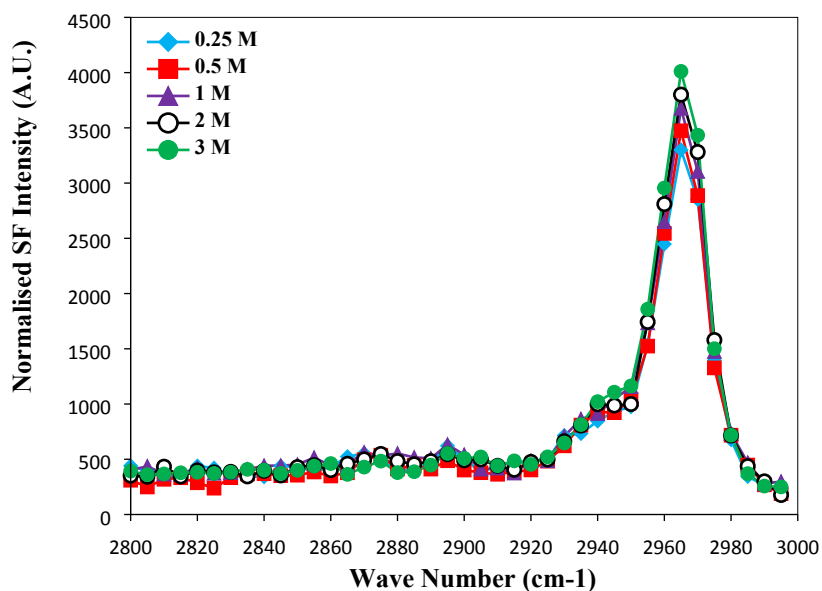


**Figure S1.** The SF spectra for various MIBC concentrations in the presence of 2 M NaCl.



**Figure S2.** The SF spectra for the solutions with 10 mM MIBC and various NaCl concentrations.

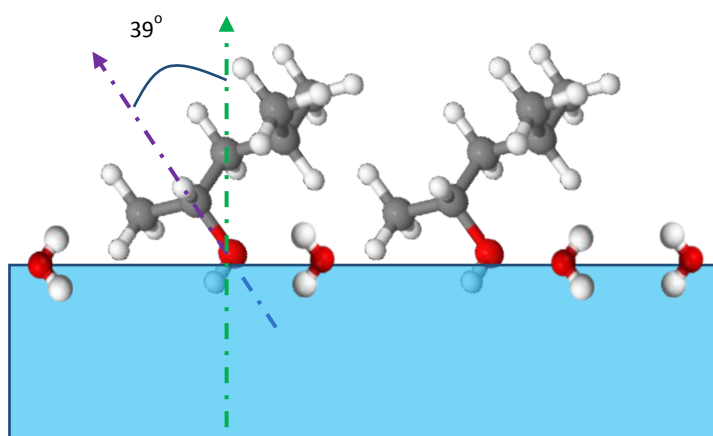


**Figure S3.** The SF spectra for the solutions with 20 mM MIBC and various NaCl concentrations.

**Table S1.** The peak features extracted from spectrum fitting MIBC solutions.

	Peak assignment	$\omega_q$ (cm <sup>-1</sup> )	ssp		ppp	
			A <sub>q</sub>	Γ <sub>q</sub>	A <sub>q</sub>	Γ <sub>q</sub>
<b>5 mM</b>	CH <sub>2</sub> $\nu_s$	2838	76.14	12.02	16.00	7.01
	CH <sub>3</sub> $\nu_s$	2875	406.72	8.13	26.19	4.02
	CH <sub>2</sub> $\nu_{as}$	2920	15.90	3.45	-	-
	CH <sub>3</sub> $\nu_{as}$	2966	122.42	9.11	369.62	8.81
	CH <sub>2</sub> $\nu_{FR}$	2906	-126.66	4.72	156.48	17.42
	CH <sub>3</sub> $\nu_{FR}$	2944	269.86	10.01	63.05	7.03
<b>7.5 mM</b>	CH <sub>2</sub> $\nu_s$	2838	74.41	10.11	-	-
	CH <sub>3</sub> $\nu_s$	2875	440.72	7.70	39.12	3.74
	CH <sub>2</sub> $\nu_{as}$	2920	-	-	27.00	5.01
	CH <sub>3</sub> $\nu_{as}$	2966	53.51	6.99	372.16	7.89
	CH <sub>2</sub> $\nu_{FR}$	2906	65.28	5.63	88.99	9.10
	CH <sub>3</sub> $\nu_{FR}$	2944	314.79	8.82	93.89	9.25
<b>10 mM</b>	CH <sub>2</sub> $\nu_s$	2838	89.47	10.26	-	-
	CH <sub>3</sub> $\nu_s$	2875	460.14	7.44	49.19	7.90
	CH <sub>2</sub> $\nu_{as}$	2920	-	-	-	-
	CH <sub>3</sub> $\nu_{as}$	2966	182.11	8.60	385.73	7.62
	CH <sub>2</sub> $\nu_{FR}$	2906	-169.49	5.08	94.02	8.72
	CH <sub>3</sub> $\nu_{FR}$	2944	281.66	7.94	109.56	10.87
<b>12.5 mM</b>	CH <sub>2</sub> $\nu_s$	2838	67.28	10.20	-	-
	CH <sub>3</sub> $\nu_s$	2875	509.83	7.70	37.68	6.89
	CH <sub>2</sub> $\nu_{as}$	2920	-	-	-	-
	CH <sub>3</sub> $\nu_{as}$	2966	95.83	7.00	407.73	7.60
	CH <sub>2</sub> $\nu_{FR}$	2906	-173.61	5.75	96.18	10.42
	CH <sub>3</sub> $\nu_{FR}$	2944	409.59	10.47	80.40	6.80
<b>15 mM</b>	CH <sub>2</sub> $\nu_s$	2838	163.80	16.43	-	-
	CH <sub>3</sub> $\nu_s$	2875	569.54	8.42	36.06	5.00
	CH <sub>2</sub> $\nu_{as}$	2920	12.69	5.01	15.97	7.08
	CH <sub>3</sub> $\nu_{as}$	2966	24.92	2.99	413.72	7.61
	CH <sub>2</sub> $\nu_{FR}$	2906	94.53	6.18	91.28	10.38
	CH <sub>3</sub> $\nu_{FR}$	2944	415.78	10.47	88.87	8.58
	CH <sub>2</sub> $\nu_s$	2838	-	-	-	-

<b>17.5 mM</b>	$\text{CH}_3 \nu_s$	2875	543.99	7.93	55.66	12.38
	$\text{CH}_2 \nu_{as}$	2920	8.30	2.28	-	-
	$\text{CH}_3 \nu_{as}$	2966	22.38	3.33	409.23	7.55
	$\text{CH}_2 \nu_{FR}$	2906	104.28	6.87	129.38	15.00
	$\text{CH}_3 \nu_{FR}$	2944	361.39	9.58	124.48	10.91
<b>20 mM</b>	$\text{CH}_2 \nu_s$	2838	72.31	10.38	-	-
	$\text{CH}_3 \nu_s$	2875	491.41	7.07	39.84	7.38
	$\text{CH}_2 \nu_{as}$	2920	-	-	-	-
	$\text{CH}_3 \nu_{as}$	2966	238.25	10.33	408.97	7.50
	$\text{CH}_2 \nu_{FR}$	2906	-168.53	4.53	118.51	11.60
	$\text{CH}_3 \nu_{FR}$	2944	333.66	9.12	129.37	10.99



**Figure S4.** Orientation of MIBC molecules at the interface