

Supplementary information

Probing the influence of Zn and water on solvation and dynamics in ethaline and reline deep eutectic solvents by ^1H nuclear magnetic resonance.

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Table S1: Proton peak linewidths for ^1H NMR spectra for dry (a) ethaline and (b) reline as a function of ZnCl_2 concentration, at 293 K. The associated ^1H NMR spectra are shown in Figure 2.

a) Dry ethaline						
$[\text{ZnCl}_2] / \text{M}$	Linewidths of proton peaks / Hz					
	H_a	H_b	H_c	H_d	H_e	H_f
0	4.8	14.6	-	11.3	8.5	8.9
0.1	4.3	13.25	-	24.5	4.6	10
0.2	4.6	13.3	-	44.4	4.1	12.2
0.3	4.8	13.35	-	56.3	3.8	14.8
b) Dry reline						
$[\text{ZnCl}_2] / \text{M}$	Linewidths of proton peaks / Hz					
	H_a	H_b	H_c	H_d	H_g	
0	17.2	20.3	19.7	20.7	42.3	
0.3	17.2	19.2	18.2	18	39.3	

Table S2: Proton peak linewidths for ^1H NMR spectra for ethaline in (a) the absence and (b) presence of 0.3 M ZnCl_2 as a function of water content, at 293 K. The associated ^1H NMR spectra are shown in Figure 3.

a) Ethaline							
Water wt.%	Linewidths of proton peaks / Hz						
	H_a	H_b	H_c	H_d	H_e	H_f	H_w
0	4.8	14.6	-	11.3	8.5	8.9	-
2.7	4.5	15.2	-	11.6	8.5	9.3	4
5.5	4.3	14.4	-	11.9	8.4	8.8	4.05
8.3	3.14	12.8	-	17.6	5.05	9.3	5.03
16	2.85	12.6	-	18.8	3.85	10.4	5.5
29.2	2.2	11.8	12.6	56.8	2.35	20.86	9.8
b) Ethaline + 0.3 M ZnCl_2							
Water wt.%	Linewidths of proton peaks / Hz						
	H_a	H_b	H_c	H_d	H_e	H_f	H_w
0	4.8	13.35	-	56.3	3.8	14.8	-
2.7	4.5	13	-	-	4.2	22.5	29.5
5.5	4.5	12.7	-	-	4.2	24.5	31.7
8.3	2.8	12.2	-	-	2.4	28	28.9
16	2.5	11.6	-	-	1.9	40	32.8
29.2	2.4	11.3	11.4	-	1.6	80	34.1

Table S.3: Proton peak linewidths for ^1H NMR spectra for reline in (a) the absence and (b) presence of 0.3 M ZnCl_2 as a function of water content, at 293 K. The associated ^1H NMR spectra are shown in Figure 4.

a) Reline						
Water wt.%	Linewidths of proton peaks / Hz					
	H_a	H_b	H_c	H_d	H_g	H_w
0	17.2	20.3	19.7	20.7	42.3	-
5.5	5.5	13.5	12.8	20.7	8.77	15.4
8.3	4.5	13.4	12.6	33.3	6.5	15.5
26.2	3.1	12.2	12.1	merged	5.5	31.7
b) Reline + 0.3 M ZnCl_2						
Water wt.%	Linewidths of proton peaks / Hz					
	H_a	H_b	H_c	H_d	H_g	H_w
0	17.2	19.2	18.2	18	39.3	-
5.5	6.2	15	13	15.1	8.5	8.6
8.3	6.85	14.2	12.7	17.5	8.3	9.05
26.2	3.1	11.7	12.3	61.5	5.9	9.8