Supporting Information

Phase diagrams of ionic liquids-based aqueous biphasic systems as a platform for extraction processes

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Table S1. Masses of $C_6H_5K_3O_7.H_2O$ and $C_6H_8O_7.H_2O$ salts for the $C_6H_5K_3O_7/C_6H_8O_7$ formation at different pH values and (298 ± 1) K (values considered for a 50 g of total mass).

$C_6H_5K_3O_7/C_6H_8O_7$ (50 wt%)		
pH	$C_6H_5K_3O_7.H_2O$/g	$C_6H_8O_7.H_2O$/g
5	18.7167	8.0121
6	22.5751	4.0193
7	25.4545	1.0524
8	26.3423	0.1272

Table S2. Experimental data for the binodal mass fraction for the system $[N_{3,3,3,3}]Br$ (1) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 5 (2), at (298±1) K.

$[N_{3,3,3,3}]Br$			
100 w_1	100 w_2	100 w_1	100 w_2
69.50	0.93	46.81	9.38
65.27	2.04	44.73	10.57
61.24	3.03	42.84	11.66
58.71	4.08	40.47	13.23
56.44	4.95	38.54	14.50
54.32	5.77	36.21	16.31
52.33	6.58	32.63	19.40
50.54	7.29	28.41	23.30
48.97	7.99		

Table S3. Experimental data for the binodal mass fraction for the system $[N_{3,3,3,3}]Br$ (1) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 6 (2) at (298 ± 1) K.

$[N_{3,3,3,3}]Br$					
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
66.71	1.03	42.06	8.94	24.92	21.44
62.73	2.03	40.54	9.83	23.53	22.67
59.27	2.86	38.97	10.79	22.01	24.07
55.24	3.64	37.60	11.58	20.65	25.34
52.58	4.34	36.31	12.40	19.42	26.51
50.87	5.06	34.53	13.70	18.33	27.54
49.28	5.76	32.87	14.88	17.22	28.61
47.70	6.38	31.48	15.90	16.13	29.71
46.29	6.91	29.82	17.24	15.18	30.69
44.92	7.55	28.38	18.37	14.13	31.79
43.67	8.09	26.48	20.06	13.27	32.73

Table S4. Experimental data for the binodal mass fraction for the system $[N_{3,3,3,3}]Br$ (1) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 8 (2) at (298 ± 1) K.

$[N_{3,3,3,3}]Br$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
66.83	1.19	32.36	13.16	18.51	23.70	11.90	29.71
61.13	2.29	31.31	13.83	17.98	24.14	11.58	30.04
56.91	2.91	30.38	14.57	17.49	24.57	11.29	30.35
52.68	3.75	29.39	15.22	17.09	24.87	11.01	30.66
49.89	4.55	28.48	15.85	16.62	25.27	10.74	30.95
48.18	5.36	27.33	16.77	16.16	25.69	10.43	31.29
46.55	6.10	26.57	17.25	15.88	25.93	10.19	31.57
44.64	6.57	25.53	18.14	15.47	26.29	9.90	31.92
43.23	7.20	24.81	18.63	15.08	26.63	9.62	32.26
42.03	7.67	23.98	19.30	14.68	26.97	9.37	32.55
40.26	8.78	23.14	19.99	14.24	27.44	9.10	32.91
39.31	9.17	22.36	20.60	13.92	27.73	8.82	33.28
38.23	9.67	21.80	20.99	13.60	28.03		
36.85	10.59	21.06	21.61	13.27	28.31		
35.98	10.88	20.39	22.17	12.92	28.67		
34.70	11.68	19.71	22.71	12.57	29.04		
33.49	12.45	19.09	23.22	12.22	29.39		

Table S5. Experimental data for the binodal mass fraction for the system $[N_{3,3,3,3}]Br$ (1) + KH_2PO_4/K_2HPO_4 at pH 7 (2) at (298 ± 1) K.

$[N_{3,3,3,3}]Br$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
44.93	2.41	26.58	8.67	17.11	15.81	11.04	21.80
41.36	3.04	25.95	8.94	16.56	16.31	10.75	22.11
39.26	3.47	25.15	9.47	16.06	16.77	10.40	22.50
37.26	3.85	24.32	10.05	15.49	17.32	10.14	22.79
36.13	4.23	23.60	10.52	15.05	17.71	9.90	23.05
35.02	4.64	22.91	10.98	14.52	18.24	9.66	23.32
34.04	4.98	22.08	11.63	14.02	18.76	9.40	23.63
32.98	5.47	21.47	12.07	13.57	19.20	9.16	23.93
32.00	5.88	20.77	12.67	13.15	19.61	8.93	24.20
31.16	6.19	20.21	13.03	12.76	20.00	8.69	24.48
30.01	6.89	19.48	13.68	12.36	20.43	8.49	24.71
29.18	7.24	18.80	14.29	12.06	20.72	8.25	25.01
28.50	7.48	18.34	14.61	11.71	21.08	8.08	25.20
27.51	8.09	17.80	15.09	11.35	21.47	7.87	25.49

Table S6. Experimental data for the binodal mass fraction for the system $[N_{3,3,3,3}]Br$ (1) + K_2CO_3 (2) at (298 ± 1) K.

$[N_{3,3,3,3}]Br$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
47.59	2.45	21.75	10.29	15.25	13.78	11.59	15.99
43.81	2.94	21.37	10.42	15.12	13.86	11.48	16.00
41.01	3.49	21.13	10.60	14.93	13.91	11.39	16.07
39.06	4.04	20.79	10.73	14.80	14.03	11.30	16.16
37.20	4.48	20.56	10.94	14.62	14.09	11.22	16.24
33.78	5.45	20.27	10.97	14.50	14.20	11.12	16.33
32.61	5.83	20.02	11.15	14.37	14.28	11.03	16.32
31.60	6.02	19.83	11.25	14.19	14.33	10.94	16.40
30.87	6.31	19.61	11.41	14.06	14.45	10.87	16.44
30.26	6.54	19.31	11.49	13.93	14.59	10.79	16.52
29.63	6.83	19.13	11.58	13.74	14.64	10.73	16.52
28.98	7.11	18.95	11.72	13.60	14.75	10.64	16.58
28.40	7.32	18.66	11.83	13.47	14.87	10.56	16.66
27.82	7.54	18.45	11.99	13.34	14.96	10.49	16.73
27.25	7.82	18.19	12.08	13.17	15.02	10.41	16.80
26.62	7.99	17.92	12.16	13.06	15.14	10.32	16.88
26.13	8.15	17.73	12.26	12.91	15.14	10.20	16.90
25.78	8.39	17.53	12.43	12.81	15.19	10.12	16.96
25.34	8.56	17.27	12.54	12.73	15.29	10.04	17.02
24.82	8.81	17.08	12.72	12.62	15.38	9.97	17.07
24.36	9.00	16.81	12.81	12.48	15.43	9.90	17.13
24.13	9.14	16.61	12.97	12.37	15.54	9.80	17.17
23.70	9.36	16.45	13.12	12.26	15.58	9.74	17.24
23.30	9.52	16.21	13.24	12.12	15.61	9.68	17.30
22.91	9.69	16.01	13.35	12.02	15.71	9.60	17.32
22.65	9.83	15.80	13.49	11.93	15.80	9.54	17.38
22.37	10.04	15.62	13.60	11.83	15.87	9.49	17.44
22.04	10.09	15.43	13.71	11.69	15.89		

Table S7. Experimental data for the binodal mass fraction for the system $[N_{4,4,4,4}]Br$ (1) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 5 (2) at (298 ± 1) K.

$[N_{4,4,4,4}]Br$					
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
25.52	17.84	13.77	26.50	8.54	31.73
23.73	18.98	13.10	27.08	8.15	32.17
22.20	19.95	12.54	27.64	7.74	32.71
20.84	20.89	11.82	28.36	7.24	33.46
19.67	21.69	11.33	28.81	6.81	34.14
18.62	22.44	10.78	29.36	6.40	34.77
17.39	23.53	10.25	29.88	6.01	35.46
16.57	24.02	9.77	30.40	5.58	36.23
15.58	24.88	9.36	30.85	5.09	37.22
14.70	25.60	8.96	31.26	4.54	38.41

Table S8. Experimental data for the binodal mass fraction for the system $[N_{4,4,4,4}]Br$ (1) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 6 (2) at (298 ± 1) K.

$[N_{4,4,4,4}]Br$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
29.44	12.65	12.33	23.17	6.87	28.92	4.26	33.18
27.86	13.39	11.92	23.54	6.73	29.08	4.16	33.37
26.36	14.09	11.55	23.91	6.56	29.28	4.07	33.58
25.05	14.72	11.20	24.21	6.41	29.51	3.98	33.77
23.38	16.00	10.85	24.53	6.26	29.72	3.89	33.96
22.34	16.51	10.46	25.00	6.10	29.96	3.79	34.19
21.47	16.84	10.15	25.30	5.97	30.16	3.70	34.43
20.27	17.70	9.87	25.55	5.83	30.37	3.62	34.62
19.47	18.11	9.60	25.80	5.69	30.57	3.53	34.88
18.49	18.88	9.34	26.03	5.58	30.74	3.42	35.18
17.86	19.22	9.02	26.44	5.43	31.00	3.34	35.39
17.00	19.94	8.80	26.71	5.32	31.18	3.25	35.63
16.48	20.14	8.60	26.88	5.19	31.41	3.18	35.84
15.76	20.83	8.33	27.24	5.08	31.57	3.07	36.15
15.33	20.99	8.13	27.42	4.96	31.79	2.99	36.40
14.76	21.49	7.94	27.61	4.85	31.99	2.90	36.65
14.18	22.03	7.71	27.91	4.74	32.21	2.83	36.89
13.82	22.12	7.56	28.03	4.61	32.50	2.74	37.16
13.37	22.50	7.36	28.34	4.51	32.67	2.66	37.42
12.92	22.90	7.20	28.52	4.42	32.85	2.58	37.69
12.62	23.01	7.06	28.65	4.35	33.01	2.51	37.93

Table S9. Experimental data for the binodal mass fraction for the system $[N_{4,4,4,4}]Br$ (1) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 8 (2) at (298 ± 1) K.

$[N_{4,4,4,4}]Br$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
29.76	10.43	10.28	21.76	6.29	25.86	4.08	29.65
28.28	11.11	10.11	21.83	6.22	25.89	4.04	29.72
25.29	12.48	9.86	22.12	6.13	26.04	3.98	29.86
24.30	13.09	9.69	22.24	6.03	26.19	3.94	29.94
21.50	14.39	9.54	22.31	5.93	26.33	3.91	30.01
20.71	14.96	9.31	22.60	5.84	26.47	3.86	30.13
19.98	15.42	9.17	22.65	5.76	26.58	3.81	30.26
18.46	16.06	8.97	22.92	5.67	26.73	3.77	30.32
17.87	16.39	8.84	22.95	5.59	26.84	3.72	30.43
17.34	16.73	8.65	23.22	5.51	26.96	3.67	30.55
16.89	16.96	8.52	23.27	5.43	27.10	3.63	30.68
15.82	17.75	8.40	23.35	5.35	27.22	3.59	30.73
15.42	17.93	8.23	23.59	5.28	27.35	3.56	30.79
15.03	18.19	8.13	23.66	5.21	27.44	3.53	30.87
14.67	18.35	8.02	23.76	5.08	27.70	3.50	30.92
14.13	18.90	7.86	23.96	5.02	27.80	3.46	31.05
13.81	19.05	7.70	24.20	4.96	27.91	3.42	31.17
13.50	19.25	7.61	24.29	4.90	28.03	3.39	31.24
13.22	19.40	7.53	24.32	4.84	28.11	3.36	31.29
12.98	19.61	7.44	24.35	4.78	28.19	3.32	31.39
12.71	19.76	7.30	24.58	4.71	28.36	3.28	31.49
12.50	19.95	7.23	24.63	4.62	28.53	3.26	31.54
12.11	20.41	7.09	24.84	4.55	28.71	3.24	31.60
11.85	20.55	6.96	25.01	4.50	28.79	3.20	31.71
11.63	20.63	6.88	25.07	4.44	28.87	3.16	31.80
11.43	20.74	6.81	25.15	4.37	29.02	3.13	31.91
11.10	21.10	6.69	25.32	4.30	29.18	3.09	32.00
10.89	21.21	6.58	25.47	4.26	29.26		
10.70	21.33	6.51	25.52	4.20	29.40		
10.43	21.65	6.40	25.69	4.13	29.50		

Table S10. Experimental data for the binodal mass fraction for the system $[N_{4,4,4,4}]Br$ (1) + KH_2PO_4/K_2HPO_4 at pH 7 (2) at (298 ± 1) K.

$[N_{4,4,4,4}]Br$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
59.15	0.93	25.42	8.33	15.84	13.38	11.43	16.94
53.64	1.44	24.81	8.51	15.62	13.53	11.28	17.09
49.00	1.97	24.31	8.79	15.25	13.87	11.12	17.24
45.43	2.48	23.85	9.05	15.05	13.93	11.02	17.27
42.41	2.97	23.42	9.27	14.90	14.09	10.85	17.44
39.82	3.34	23.02	9.49	14.70	14.16	10.71	17.57
38.06	3.80	22.63	9.76	14.50	14.30	10.56	17.71
36.49	4.10	22.11	9.89	14.20	14.60	10.42	17.84
35.70	4.52	21.53	10.34	14.01	14.69	10.32	17.87
34.53	4.85	21.19	10.55	13.76	14.89	10.19	18.02
33.23	5.11	20.82	10.73	13.51	15.15	10.05	18.16
32.59	5.44	20.49	10.92	13.20	15.41	9.92	18.29
31.68	5.87	20.19	11.12	13.04	15.48	9.84	18.30
30.49	6.11	19.80	11.25	12.85	15.63	9.72	18.41
29.87	6.45	19.55	11.40	12.64	15.81	9.60	18.52
29.00	6.72	19.27	11.54	12.38	16.12	9.48	18.62
28.30	6.97	17.05	12.54	12.19	16.31	9.37	18.75
27.78	7.26	16.80	12.69	12.06	16.38	9.30	18.77
27.13	7.58	16.45	12.99	11.89	16.56	9.20	18.89
26.37	7.82	16.25	13.07	11.71	16.73	9.13	18.93
25.89	8.09	16.09	13.21	11.60	16.76	9.02	19.06

Table S11. Experimental data for the binodal mass fraction for the system $[N_{4,4,4,4}]Br$ (1) + K_2CO_3 (2) at (298 ± 1) K.

$[N_{4,4,4,4}]Br$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
57.48	1.81	17.88	9.61	11.69	12.24	8.71	13.87
52.28	2.36	17.38	9.94	11.48	12.33	8.59	13.94
42.80	3.50	16.80	10.11	11.28	12.51	8.47	14.03
34.67	4.63	16.40	10.29	11.06	12.54	8.36	14.12
32.90	5.05	16.00	10.44	10.87	12.65	8.22	14.16
29.03	6.10	15.59	10.71	10.68	12.76	8.11	14.26
27.51	6.42	15.12	10.80	10.52	12.91	8.00	14.30
26.48	6.80	14.78	10.94	10.37	12.94	7.91	14.38
25.22	7.14	14.47	11.06	10.19	13.05	7.82	14.41
24.14	7.52	14.13	11.10	10.04	13.17	7.73	14.50
23.07	7.83	13.83	11.30	9.88	13.28	7.66	14.53
22.26	8.07	13.57	11.41	9.67	13.33	7.57	14.59
21.44	8.27	13.28	11.67	9.53	13.43	7.49	14.60
20.85	8.49	12.93	11.70	9.39	13.55	7.43	14.70
20.26	8.71	12.68	11.77	9.20	13.62	7.34	14.75
19.71	8.97	12.43	11.91	9.07	13.65	7.25	14.82
19.18	9.17	12.21	12.08	8.94	13.70		
18.60	9.53	11.92	12.13	8.82	13.78		

Table S12. Experimental data for the binodal mass fraction for the system $[N_{2,2,2,2}]Cl$ (1) + KH_2PO_4/K_2HPO_4 at pH 7 (2) at (298 ± 1) K.

$[N_{2,2,2,2}]Cl$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
27.62	10.08	23.07	13.69	19.03	18.09	13.65	25.29
27.36	10.28	22.61	14.06	18.41	18.69	12.37	26.57
26.87	10.56	22.47	14.31	18.13	19.16	11.81	27.48
26.62	10.78	22.00	14.73	17.39	19.86	11.21	28.44
26.11	11.26	21.51	15.15	17.12	20.41	10.56	29.45
25.55	11.58	21.36	15.46	16.34	21.15	9.89	30.54
25.24	11.85	20.88	15.92	16.12	21.64	9.22	31.42
24.92	12.13	20.33	16.42	15.89	22.16	8.54	32.61
24.48	12.59	20.13	16.77	14.91	23.08	7.89	33.97
24.14	12.92	19.49	17.32	14.54	23.77	7.15	35.31
23.45	13.35	19.27	17.70	14.11	24.52	6.19	36.84

Table S13. Experimental data for the binodal mass fraction for the system $[N_{2,2,2,2}]Cl$ (1) + K_2CO_3 (2) at (298 ± 1) K.

$[N_{2,2,2,2}]Cl$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
57.59	1.49	21.15	15.34	13.68	21.51	9.85	25.00
51.49	2.85	20.62	15.74	13.44	21.67	9.67	25.22
43.52	4.20	20.14	16.11	13.09	22.04	9.56	25.27
39.72	5.35	19.66	16.45	12.88	22.18	9.39	25.48
36.44	6.36	19.20	16.78	12.68	22.30	9.23	25.68
34.21	7.33	18.75	17.11	12.38	22.66	9.13	25.74
32.89	8.22	18.08	17.84	12.18	22.78	8.97	25.94
31.19	8.90	17.68	18.14	12.00	22.91	8.88	26.01
30.00	9.67	17.31	18.37	11.74	23.25	8.73	26.20
28.60	10.23	16.96	18.60	11.58	23.36	8.64	26.23
27.67	10.92	16.39	19.23	11.41	23.47	8.49	26.41
26.79	11.52	16.14	19.44	11.16	23.80	8.36	26.59
26.00	12.01	15.82	19.64	11.01	23.90	8.28	26.62
25.19	12.59	15.35	20.17	10.86	23.98	8.14	26.81
24.19	13.00	15.07	20.36	10.63	24.29	8.06	26.84
23.39	13.62	14.81	20.56	10.50	24.37	7.89	27.15
22.81	14.17	14.55	20.74	10.36	24.45	7.77	27.31
22.22	14.58	14.30	20.90	10.16	24.70	7.70	27.34
21.69	14.94	13.91	21.35	9.97	24.92	7.58	27.49

Table S14. Experimental data for the binodal mass fraction for the system $[N_{3,3,3,3}]Cl$ (1) + KH_2PO_4/K_2HPO_4 at pH 7 (2) at (298 ± 1) K.

$[N_{3,3,3,3}]Cl$					
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
37.02	2.61	22.23	9.37	13.95	16.26
34.36	3.64	21.42	9.91	13.05	17.21
32.22	4.50	20.72	10.37	12.65	17.61
30.61	4.93	19.95	10.93	12.34	17.96
29.56	5.41	18.86	11.84	11.93	18.38
28.16	6.23	18.03	12.29	11.54	18.84
27.20	6.49	17.60	12.70	10.97	19.47
26.02	7.21	16.73	13.47	10.53	19.97
24.82	7.84	16.19	13.95	9.83	20.79
23.80	8.40	15.24	14.90	9.34	21.38
22.79	9.08	14.55	15.65	8.86	21.98

Table S15. Experimental data for the binodal mass fraction for the system $[N_{3,3,3,3}]Cl$ (1) + K_2CO_3 (2) at (298 ± 1) K.

$[N_{3,3,3,3}]Cl$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
32.63	6.45	12.13	17.76	8.17	20.94	6.22	22.81
29.68	7.78	11.87	18.07	8.05	21.08	6.17	22.87
26.82	8.66	11.54	18.19	7.93	21.25	6.09	23.00
25.31	9.32	11.32	18.39	7.78	21.33	6.03	23.07
23.71	10.32	11.04	18.58	7.65	21.47	5.97	23.14
22.26	11.09	10.81	18.77	7.53	21.60	5.91	23.18
20.88	11.85	10.62	18.86	7.41	21.75	5.84	23.25
19.75	12.41	10.36	19.14	7.29	21.76	5.78	23.29
19.00	13.08	10.21	19.21	7.21	21.83	5.70	23.34
18.06	13.54	10.01	19.48	7.12	21.89	5.64	23.43
17.40	14.02	9.80	19.61	7.04	21.93	5.59	23.46
16.82	14.50	9.59	19.70	6.97	22.02	5.53	23.50
16.17	14.90	9.42	19.85	6.89	22.17	5.47	23.60
15.55	15.31	9.29	20.02	6.80	22.26	5.42	23.66
14.90	15.69	9.11	20.17	6.73	22.34	5.36	23.74
14.45	16.13	8.98	20.21	6.66	22.43	5.30	23.79
13.90	16.45	8.81	20.40	6.58	22.55	5.24	23.87
13.42	16.78	8.72	20.38	6.48	22.58	5.20	23.93
13.07	17.10	8.59	20.55	6.42	22.68	5.15	23.97
12.73	17.47	8.44	20.70	6.34	22.72	5.10	24.06
12.40	17.54	8.33	20.85	6.27	22.81		

Table S16. Experimental data for the binodal mass fraction for the system $[N_{4,4,4,4}]Cl$ (1) + KH_2PO_4/K_2HPO_4 at pH 7 (2) at (298 ± 1) K.

$[N_{4,4,4,4}]Cl$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
40.84	2.28	16.36	12.40	9.58	18.39	6.42	21.83
37.52	2.87	15.96	12.67	9.39	18.59	6.32	21.94
34.87	3.39	15.60	12.96	9.27	18.72	6.24	22.03
32.93	3.91	15.33	13.17	9.16	18.84	6.13	22.17
31.77	4.42	15.01	13.45	9.05	18.95	6.05	22.27
30.68	4.92	14.66	13.74	8.88	19.12	5.95	22.39
29.24	5.22	14.35	14.00	8.72	19.29	5.86	22.50
28.33	5.66	14.05	14.25	8.64	19.37	5.78	22.62
27.71	5.76	13.77	14.49	8.52	19.49	5.70	22.70
26.90	6.17	13.47	14.73	8.42	19.59	5.65	22.77
26.12	6.53	13.13	15.04	8.28	19.74	5.57	22.87
25.36	6.87	12.86	15.29	8.17	19.87	5.51	22.95
24.80	7.04	12.57	15.55	8.04	20.01	5.43	23.05
24.20	7.40	12.32	15.77	7.95	20.10	5.35	23.16
23.65	7.66	12.09	15.96	7.83	20.25	5.23	23.31
23.08	7.96	11.89	16.16	7.72	20.38	5.16	23.41
22.63	8.19	11.69	16.36	7.63	20.46	5.06	23.54
22.17	8.47	11.42	16.62	7.52	20.60	4.99	23.63
21.73	8.71	11.25	16.78	7.44	20.67	4.88	23.79
20.94	9.23	11.11	16.90	7.34	20.78	4.81	23.88
20.24	9.69	10.93	17.09	7.23	20.91	4.74	23.98
19.63	10.07	10.74	17.25	7.14	21.00	4.67	24.09
19.22	10.28	10.54	17.46	7.03	21.11	4.61	24.17
18.82	10.56	10.39	17.60	6.94	21.22	4.52	24.29
18.29	10.93	10.24	17.75	6.86	21.31	4.43	24.42
17.82	11.25	10.10	17.86	6.73	21.46	4.33	24.58
17.32	11.64	9.92	18.05	6.64	21.57		
16.94	11.93	9.72	18.26	6.53	21.69		

Table S17. Experimental data for the binodal mass fraction for the system $[N_{4,4,4,4}]Cl$ (1) + K_2CO_3 (2) at (298 ± 1) K.

$[N_{4,4,4,4}]Cl$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
38.57	4.33	13.60	13.87	9.46	16.42	6.78	18.45
35.62	4.97	13.34	14.04	9.37	16.52	6.73	18.47
32.96	5.44	13.08	14.19	9.29	16.63	6.68	18.52
31.13	6.07	12.85	14.32	9.16	16.67	6.62	18.55
28.90	6.88	12.65	14.41	9.07	16.79	6.57	18.59
27.52	7.35	12.43	14.55	8.96	16.79	6.54	18.59
26.15	7.76	12.22	14.71	8.87	16.92	6.50	18.65
25.19	8.27	12.06	14.69	8.76	16.94	6.46	18.69
23.96	8.67	11.97	14.75	8.67	17.07	6.41	18.70
23.13	9.07	11.86	14.81	8.55	17.12	6.36	18.78
22.16	9.40	11.75	14.91	8.46	17.21	6.32	18.77
21.45	9.85	11.65	14.94	8.36	17.30	6.28	18.80
20.55	10.12	11.55	15.04	8.24	17.35	6.24	18.84
19.96	10.51	11.45	15.08	8.15	17.40	6.21	18.84
19.32	10.73	11.36	15.16	8.08	17.49	6.16	18.93
18.86	10.93	11.25	15.29	7.99	17.54	6.11	18.94
18.33	11.21	11.08	15.36	7.90	17.61	6.08	18.94
17.91	11.48	10.98	15.43	7.80	17.63	6.04	19.02
17.41	11.65	10.87	15.57	7.74	17.73	6.00	19.02
17.11	11.93	10.75	15.60	7.65	17.78	5.95	19.06
16.70	12.17	10.64	15.65	7.55	17.82	5.92	19.10
16.28	12.31	10.54	15.65	7.49	17.93	5.88	19.15
15.93	12.48	10.46	15.77	7.41	17.94	5.85	19.19
15.66	12.73	10.34	15.91	7.33	17.95	5.80	19.19
15.27	12.83	10.19	15.98	7.28	18.00	5.77	19.23
15.01	13.11	10.05	16.10	7.23	18.05	5.71	19.36
14.81	13.07	9.95	16.05	7.17	18.11	5.66	19.38
14.59	13.15	9.89	16.10	7.11	18.18	5.63	19.41
14.42	13.29	9.80	16.18	7.04	18.24	5.59	19.47
14.24	13.47	9.73	16.21	6.96	18.28	5.54	19.49
14.01	13.57	9.65	16.33	6.91	18.34		
13.84	13.72	9.55	16.44	6.83	18.36		

Table S18. Experimental data for the binodal mass fraction for the system $[P_{4,4,4,1}][CH_3SO_4]$ (1) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 7 (2) at (298 ± 1) K.

$[P_{4,4,4,1}][CH_3SO_4]$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
37.27	4.15	10.88	23.57	8.12	26.14	6.18	28.61
35.38	5.52	10.74	23.61	8.06	26.11	6.09	28.71
21.31	14.92	10.60	23.80	7.93	26.39	6.06	28.65
18.63	16.63	10.41	23.92	7.86	26.34	5.95	28.75
14.55	20.99	10.38	23.95	7.76	26.55	5.91	29.05
14.27	20.97	10.09	24.23	7.67	26.56	5.86	28.91
14.06	21.33	10.07	24.27	7.54	26.87	5.72	29.12
13.71	21.46	9.85	24.40	7.50	26.73	5.59	29.32
13.70	21.52	9.84	24.48	7.38	27.03	5.42	29.58
13.37	21.67	9.63	24.63	7.28	27.04	5.19	29.93
13.31	21.71	9.60	24.58	7.12	27.23	5.05	30.21
12.88	22.05	9.40	24.83	7.07	27.38	4.91	30.39
12.86	22.10	9.31	24.93	6.96	27.44	4.69	30.81
12.55	22.27	9.16	25.05	6.87	27.69	4.50	31.15
12.46	22.41	9.14	25.12	6.81	27.58	4.33	31.44
12.09	22.72	8.91	25.31	6.76	27.77	4.12	31.90
12.03	22.80	8.91	25.34	6.68	27.74	3.98	32.16
11.79	22.84	8.77	25.34	6.63	27.93	3.85	32.41
11.69	22.99	8.66	25.67	6.51	28.00	3.72	32.63
11.49	23.06	8.55	25.57	6.45	28.22	3.53	33.20
11.34	23.23	8.48	25.79	6.38	28.15	3.34	33.59
11.13	23.45	8.31	25.95	6.30	28.46	3.05	34.41
10.99	23.55	8.28	25.91	6.25	28.31	2.73	35.44

Table S19. Experimental data for the binodal mass fraction for the system $[P_{4,4,4,1}][CH_3SO_4]$ (1) + KH_2PO_4/K_2HPO_4 at pH 7 (2) at (298 ± 1) K.

$[P_{4,4,4,1}][CH_3SO_4]$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
57.79	1.02	18.70	14.57	14.75	17.15	11.97	19.16
49.36	1.71	18.68	14.60	14.69	17.06	11.93	18.93
44.01	2.97	18.43	14.69	14.58	17.24	11.81	18.96
29.76	8.85	18.30	14.87	14.43	17.25	11.76	19.35
26.05	10.52	18.05	14.96	14.34	17.42	11.65	19.10
25.55	10.77	17.99	15.04	14.27	17.32	11.61	19.44
25.07	11.00	17.80	15.06	14.12	17.38	11.55	19.15
24.58	11.23	17.69	15.22	14.04	17.68	11.45	19.56
24.11	11.45	17.42	15.34	13.89	17.57	11.39	19.28
23.48	11.88	17.33	15.46	13.88	17.74	11.32	19.63
23.05	12.10	17.20	15.44	13.68	17.85	11.24	19.40
22.66	12.29	17.07	15.62	13.67	17.74	11.16	19.76
22.26	12.45	16.85	15.70	13.52	17.80	11.14	19.44
21.75	12.84	16.80	15.77	13.49	17.98	10.98	19.57
21.69	12.86	16.65	15.80	13.31	17.97	10.84	19.69
21.34	13.06	16.48	15.99	13.27	18.13	10.70	19.80
21.34	13.02	16.44	15.91	13.17	18.03	10.55	19.92
20.95	13.19	16.20	16.18	13.06	18.28	10.47	19.93
20.85	13.39	16.14	16.15	12.95	18.22	10.35	20.03
20.50	13.50	15.96	16.35	12.85	18.45	10.21	20.15
20.47	13.60	15.94	16.23	12.82	18.25	10.09	20.27
20.11	13.72	15.70	16.50	12.69	18.57	9.96	20.39
20.09	13.79	15.65	16.44	12.61	18.44	9.88	20.42
19.78	13.87	15.48	16.66	12.49	18.48	9.77	20.52
19.72	14.00	15.45	16.52	12.47	18.74	9.69	20.54
19.37	14.16	15.22	16.84	12.31	18.63	9.58	20.63
19.35	14.22	15.14	16.77	12.30	18.93	9.47	20.73
19.08	14.30	14.97	17.02	12.12	19.07	9.37	20.80
18.99	14.42	14.96	16.83	12.12	18.79	9.27	20.90

Table S20. Experimental data for the binodal mass fraction for the system $[P_{4,4,4,1}][CH_3SO_4]$ (1) + K_2CO_3 (2) at (298 ± 1) K.

$[P_{4,4,4,1}][CH_3SO_4]$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
57.26	1.77	12.28	13.31	8.85	14.88	6.93	16.12
21.01	9.80	12.01	13.46	8.72	14.96	6.85	16.19
20.21	10.18	11.75	13.60	8.59	15.07	6.77	16.25
19.46	10.55	11.44	13.65	8.47	15.16	6.69	16.33
18.61	10.81	11.21	13.80	8.34	15.25	6.61	16.39
17.84	11.04	10.98	13.94	8.21	15.33	6.52	16.41
17.29	11.35	10.71	14.02	8.09	15.42	6.45	16.48
16.61	11.55	10.45	14.07	7.94	15.43	6.37	16.51
15.98	11.74	10.26	14.21	7.83	15.54	6.29	16.59
15.53	12.04	10.05	14.29	7.72	15.61	6.22	16.65
14.98	12.17	9.90	14.32	7.61	15.68	6.15	16.69
14.47	12.32	9.72	14.43	7.51	15.75	6.08	16.75
14.11	12.51	9.57	14.49	7.41	15.82	6.03	16.86
13.67	12.66	9.43	14.49	7.31	15.88	5.96	16.92
13.30	12.94	9.32	14.66	7.22	15.94	5.88	16.94
12.93	13.07	9.17	14.76	7.12	16.01	5.83	17.00
12.64	13.23	9.02	14.87	7.04	16.10		

Table S21. Experimental data for the binodal mass fraction for the system $[P_{i(4,4,4)1}][Tos]$ (1) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 7 (2) at (298 ± 1) K.

$[P_{i(4,4,4)1}][Tos]$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
29.02	12.74	10.17	18.64	6.10	21.09	4.17	23.03
26.87	13.23	9.97	18.83	5.99	21.09	4.10	23.09
25.01	13.76	9.70	18.86	5.93	21.09	4.03	23.17
23.32	14.11	9.42	18.88	5.86	21.17	3.97	23.24
21.86	14.50	9.28	18.90	5.78	21.28	3.89	23.39
20.59	14.86	9.10	19.10	5.71	21.36	3.83	23.45
16.05	16.47	8.95	19.26	5.63	21.37	3.76	23.54
15.35	16.66	8.72	19.26	5.55	21.39	3.70	23.69
14.32	16.99	8.56	19.43	5.44	21.51	3.64	23.76
13.84	17.11	8.40	19.61	5.31	21.63	3.57	23.87
13.49	17.32	8.20	19.64	5.20	21.77	3.51	24.03
13.04	17.42	8.03	19.67	5.09	21.90	3.44	24.19
12.73	17.65	7.90	19.77	4.98	22.02	3.37	24.22
12.30	17.72	7.78	19.91	4.88	22.11	3.29	24.42
12.02	17.94	7.61	19.91	4.79	22.23	3.19	24.66
11.64	17.99	7.49	20.03	4.69	22.34	3.11	24.81
11.39	18.20	7.37	20.16	4.60	22.44	3.03	24.89
11.05	18.25	6.49	20.92	4.51	22.54	2.96	25.03
10.81	18.49	6.37	20.89	4.43	22.65	2.88	25.25
10.49	18.53	6.29	21.01	4.35	22.75	2.83	25.34
10.34	18.54	6.17	20.97	4.25	22.92	2.73	25.60

Table S22. Experimental data for the binodal mass fraction for the system $[P_{i(4,4,4)1}][Tos]$ (1) + KH_2PO_4/K_2HPO_4 at pH 7 (2) at (298 ± 1) K.

$[P_{i(4,4,4)1}][Tos]$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
48.27	5.53	15.57	13.17	10.43	15.28	5.10	18.87
44.93	5.85	15.37	13.25	10.34	15.33	5.00	18.97
42.46	6.12	15.18	13.35	10.26	15.37	4.93	19.06
40.32	6.46	14.99	13.42	10.16	15.44	4.85	19.10
31.63	7.95	14.80	13.48	10.07	15.47	4.77	19.17
28.65	8.66	14.63	13.55	9.99	15.51	4.70	19.18
28.01	8.93	14.44	13.62	9.92	15.56	4.62	19.23
27.09	9.19	14.25	13.74	9.85	15.58	4.55	19.28
25.80	9.45	14.09	13.84	9.77	15.60	4.47	19.38
25.30	9.61	13.91	13.91	9.69	15.63	4.41	19.43
24.81	9.80	13.73	13.99	9.58	15.72	4.33	19.52
24.33	10.04	13.55	14.05	9.51	15.75	4.25	19.64
23.56	10.18	13.38	14.10	9.42	15.78	4.18	19.74
23.10	10.42	13.26	14.14	9.35	15.79	4.10	19.86
22.51	10.51	13.11	14.20	9.27	15.82	4.04	19.94
22.09	10.69	12.98	14.27	9.20	15.84	3.99	19.97
21.72	10.82	12.85	14.33	9.13	15.88	3.94	19.98
21.36	11.03	12.69	14.39	9.05	15.90	3.87	20.09
20.79	11.09	12.55	14.47	8.99	15.93	3.81	20.18
20.50	11.21	12.42	14.53	8.91	16.00	3.74	20.31
20.19	11.39	12.29	14.58	8.84	16.03	3.68	20.40
19.88	11.50	12.16	14.64	7.16	17.40	3.62	20.52
19.56	11.64	12.03	14.69	7.01	17.47	3.56	20.59
19.24	11.78	11.90	14.72	6.80	17.67	3.51	20.70
18.78	11.85	11.79	14.78	6.64	17.68	3.46	20.77
18.51	11.97	11.68	14.85	6.50	17.77	3.41	20.84
18.23	12.11	11.56	14.90	6.35	17.84	3.36	20.89
17.96	12.26	11.44	14.94	6.23	17.89	3.32	20.96
17.71	12.38	11.32	14.97	6.08	18.02	3.27	21.04
17.49	12.45	11.21	15.01	5.96	18.07	3.23	21.12
17.24	12.57	11.10	15.05	5.83	18.21	3.18	21.21
17.01	12.70	10.99	15.08	5.73	18.25	3.14	21.28
16.68	12.72	10.89	15.11	5.59	18.44	3.09	21.39
16.46	12.81	10.79	15.14	5.47	18.55	3.05	21.43
16.24	12.89	10.69	15.17	5.38	18.55	3.02	21.48
15.99	13.00	10.60	15.20	5.27	18.66		
15.78	13.10	10.51	15.25	5.21	18.73		

Table S23. Experimental data for the binodal mass fraction for the system $[P_{i(4,4,4)1}][Tos]$ (1) + K_2CO_3 (2) at (298 ± 1) K.

$[P_{i(4,4,4)1}][Tos]$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
55.54	3.29	15.65	9.80	9.69	11.20	7.17	12.00
46.06	4.57	14.91	9.88	9.43	11.29	7.03	12.01
40.82	5.57	14.34	10.02	9.16	11.33	6.91	12.00
35.25	6.27	13.76	10.14	8.96	11.39	6.82	12.09
31.42	6.79	13.24	10.27	8.75	11.48	6.72	12.15
28.69	7.31	12.76	10.41	8.54	11.54	6.62	12.22
26.12	7.77	12.32	10.48	8.35	11.56	6.51	12.24
23.93	8.02	11.92	10.61	8.24	11.63	6.40	12.27
22.22	8.37	11.58	10.63	8.09	11.70	6.31	12.32
20.86	8.74	11.23	10.74	7.91	11.73	6.22	12.38
19.50	8.98	10.90	10.80	7.75	11.79	6.14	12.43
18.25	9.24	10.56	10.92	7.59	11.83	6.05	12.49
17.27	9.44	10.28	11.04	7.44	11.89	5.96	12.48
16.43	9.64	10.01	11.16	7.29	11.94		

Table S24. Experimental data for the binodal mass fraction for the system $[P_{4,4,4,4}]Cl$ (1) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 7 (2) at (298 ± 1) K.

$[P_{4,4,4,4}]Cl$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
56.13	3.34	21.50	18.02	12.58	24.77	8.88	27.97
50.27	4.68	20.74	18.63	12.27	25.09	8.75	28.07
46.05	5.61	20.30	18.81	12.10	25.18	8.60	28.20
43.83	6.77	19.75	19.17	11.84	25.46	8.48	28.35
41.13	7.73	19.12	19.70	11.69	25.55	8.30	28.58
38.56	8.52	18.73	19.90	11.45	25.75	8.23	28.59
36.96	9.35	18.16	20.34	11.32	25.84	8.10	28.69
35.00	9.95	17.85	20.51	11.13	25.96	7.93	28.92
34.09	10.33	17.34	20.93	10.90	26.17	7.86	28.95
32.12	11.82	16.81	21.35	10.80	26.18	7.81	29.02
30.08	12.82	16.34	21.77	10.62	26.39	7.74	29.05
29.13	13.29	16.05	21.90	10.42	26.56	7.61	29.20
28.35	13.77	15.62	22.25	10.23	26.73	7.48	29.37
27.57	14.22	15.22	22.65	10.09	26.87	7.38	29.47
26.77	14.62	14.98	22.75	9.90	27.03	7.27	29.56
26.05	14.99	14.61	23.07	9.73	27.18	7.18	29.70
24.95	15.87	14.21	23.42	9.57	27.31	7.09	29.82
24.39	16.20	13.87	23.68	9.47	27.36	6.99	29.91
23.75	16.51	13.54	23.96	9.33	27.50	6.88	30.06
22.98	17.01	13.22	24.24	9.17	27.65	6.79	30.14
22.30	17.40	12.90	24.50	9.01	27.80		

Table S25. Experimental data for the binodal mass fraction for the system $[P_{4,4,4,4}]Cl$ (1) + KH_2PO_4/K_2HPO_4 at pH 7 (2) at (298 ± 1) K.

$[P_{4,4,4,4}]Cl$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
59.06	0.83	22.56	10.54	14.40	17.03	8.32	23.05
55.63	1.33	22.23	10.91	14.28	17.00	8.05	23.36
51.74	1.73	21.67	11.30	14.00	17.25	7.75	23.72
49.07	2.15	21.27	11.53	13.74	17.48	7.51	24.01
46.73	2.60	21.11	11.75	13.71	17.61	7.27	24.30
44.52	2.94	20.75	11.93	13.51	17.68	7.06	24.52
42.29	3.54	20.31	12.21	13.30	17.85	6.82	24.80
40.21	4.07	20.05	12.46	13.11	18.17	6.61	25.04
38.34	4.51	19.86	12.54	13.02	18.12	6.38	25.35
36.72	4.93	19.44	12.83	12.76	18.39	6.20	25.59
33.78	5.66	19.07	13.02	12.53	18.58	6.01	25.85
33.12	5.81	19.03	13.10	12.49	18.78	5.81	26.11
32.29	6.19	18.57	13.50	12.33	18.76	5.64	26.35
31.44	6.59	18.15	13.84	12.11	18.98	5.50	26.56
30.85	6.73	17.96	13.97	12.00	19.23	5.40	26.70
30.17	7.04	17.84	14.03	11.89	19.18	5.24	26.93
29.42	7.39	17.46	14.33	11.68	19.40	5.07	27.18
28.88	7.56	17.08	14.63	11.53	19.72	4.92	27.40
28.39	7.70	16.96	14.82	11.49	19.57	4.77	27.63
27.85	8.01	16.73	14.91	11.28	19.79	4.64	27.84
27.25	8.22	16.32	15.30	11.08	19.97	4.50	28.07
26.46	8.53	16.03	15.58	11.01	20.25	4.39	28.25
25.91	8.78	15.97	15.59	10.86	20.22	4.28	28.42
25.39	9.05	15.71	15.78	10.57	20.72	4.17	28.61
24.73	9.47	15.39	16.06	10.16	21.10	4.08	28.75
24.28	9.71	15.24	16.20	9.71	21.61	3.98	28.92
23.71	10.05	15.14	16.24	9.34	22.00	3.88	29.10
23.17	10.38	14.85	16.51	8.94	22.40	3.79	29.25
22.65	10.71	14.52	16.83	8.64	22.70		

Table S26. Experimental data for the binodal mass fraction for the system $[P_{4,4,4,4}]Cl$ (1) + K_2CO_3 (2) at (298 ± 1) K.

$[P_{4,4,4,4}]Cl$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
57.90	1.69	14.46	12.71	9.18	15.65	7.01	17.05
47.08	3.15	14.13	12.88	9.07	15.70	6.96	17.09
42.00	4.04	13.79	13.05	8.95	15.75	6.90	17.19
37.45	4.84	13.45	13.25	8.85	15.89	6.83	17.21
34.13	5.59	13.13	13.42	8.73	15.94	6.78	17.30
31.44	6.21	12.83	13.57	8.60	16.01	6.70	17.35
29.23	6.81	12.56	13.71	8.48	16.09	6.63	17.40
27.55	7.47	12.29	13.87	8.40	16.17	6.55	17.43
26.02	7.96	12.04	14.02	8.28	16.21	6.48	17.46
24.70	8.48	11.79	14.13	8.20	16.21	6.43	17.55
23.61	8.61	11.56	14.25	8.12	16.34	6.36	17.59
22.76	9.07	11.33	14.37	8.03	16.36	6.29	17.61
21.88	9.59	11.12	14.45	7.95	16.47	6.24	17.62
20.98	9.82	10.94	14.57	7.85	16.47	6.19	17.70
20.26	10.23	10.75	14.69	7.79	16.52	6.13	17.75
19.45	10.52	10.57	14.80	7.73	16.64	6.07	17.78
18.72	10.73	10.41	14.86	7.64	16.70	6.01	17.82
18.17	11.04	10.29	15.00	7.54	16.75	5.97	17.88
17.53	11.26	10.13	15.08	7.46	16.74	5.91	17.91
17.04	11.55	9.96	15.19	7.40	16.85	5.87	17.93
16.46	11.65	9.82	15.20	7.31	16.90	5.84	17.94
16.02	11.87	9.71	15.33	7.24	16.87	5.80	18.01
15.60	12.08	9.56	15.33	7.17	16.98	5.75	18.03
15.22	12.30	9.46	15.50	7.12	17.03		
14.81	12.51	9.33	15.58	7.05	17.02		

Table S27. Experimental data for the binodal mass fraction for the system $[P_{4,4,4,4}]Br$ (1) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 7 (2) at (298 ± 1) K.

$[P_{4,4,4,4}]Br$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
37.29	6.77	12.31	16.50	8.06	19.74	5.89	22.37
29.96	9.12	11.85	16.64	7.92	19.90	5.82	22.46
26.90	9.94	11.58	16.92	7.78	20.08	5.74	22.56
24.76	10.81	11.29	17.27	7.65	20.24	5.66	22.73
23.09	11.54	10.92	17.38	7.52	20.41	5.57	22.83
21.27	11.96	10.58	17.52	7.37	20.45	5.50	22.93
20.02	12.50	10.35	17.86	7.19	20.82	5.44	22.99
18.85	12.98	10.03	18.00	6.97	21.04	5.37	23.06
17.83	13.39	9.83	18.30	6.87	21.11	5.30	23.17
16.98	13.83	9.55	18.38	6.77	21.24	5.25	23.27
16.20	14.21	9.37	18.60	6.68	21.40	5.18	23.34
15.44	14.55	9.11	18.68	6.58	21.52	5.11	23.46
14.97	15.03	8.92	18.91	6.40	21.75	5.03	23.67
14.29	15.31	8.77	19.11	6.31	21.86	4.97	23.74
13.69	15.59	8.60	19.29	6.22	21.99	4.91	23.80
13.12	15.88	8.44	19.52	6.06	22.14	4.81	24.07
12.75	16.27	8.29	19.70	5.98	22.26	4.70	24.22

Table S28. Experimental data for the binodal mass fraction for the system $[P_{4,4,4,4}]Br$ (1) + KH_2PO_4/K_2HPO_4 at pH 7 (2) at (298 ± 1) K.

$[P_{4,4,4,4}]Br$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
39.45	3.84	16.10	11.95	10.69	14.78	7.92	16.98
32.10	5.67	15.17	12.33	10.45	15.04	7.83	17.01
30.52	6.39	14.70	12.40	10.28	15.13	7.74	17.05
28.77	6.81	14.36	12.60	10.12	15.23	7.61	17.22
27.64	7.34	14.06	12.80	9.97	15.30	7.49	17.39
26.14	7.66	13.78	12.97	9.82	15.36	7.34	17.44
25.20	8.17	13.49	13.12	9.62	15.63	7.23	17.61
23.94	8.42	13.22	13.27	9.49	15.71	7.12	17.75
23.19	8.82	12.95	13.42	9.35	15.79	7.04	17.78
22.39	9.20	12.70	13.56	9.22	15.86	6.93	17.95
21.63	9.55	12.47	13.69	9.10	15.91	6.86	17.98
20.61	9.72	12.24	13.83	8.93	16.15	6.77	18.12
19.98	10.05	12.01	13.96	8.81	16.19	6.71	18.13
19.38	10.34	11.79	14.07	8.65	16.37	6.61	18.25
18.81	10.65	11.59	14.22	8.54	16.42	6.52	18.38
18.23	10.99	11.39	14.33	8.41	16.52	6.46	18.39
17.48	11.13	11.22	14.45	8.30	16.56	6.37	18.52
17.01	11.44	11.04	14.57	8.16	16.76		
16.54	11.74	10.86	14.67	8.06	16.82		

Table S29. Experimental data for the binodal mass fraction for the system $[P_{4,4,4,4}]Br$ (1) + K_2CO_3 (2) at (298 ± 1) K.

$[P_{4,4,4,4}]Br$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
37.53	4.34	13.39	10.02	8.57	12.12	6.56	13.49
31.50	5.59	12.74	10.10	8.38	12.31	6.45	13.63
27.87	6.27	12.25	10.39	8.15	12.42	6.31	13.67
24.78	6.94	11.77	10.60	7.94	12.51	6.20	13.80
22.39	7.46	11.32	10.80	7.78	12.68	6.09	13.94
20.51	7.87	10.52	11.10	7.62	12.83	5.96	13.98
18.88	8.32	10.17	11.27	7.43	12.88	5.86	14.08
17.48	8.62	9.83	11.45	7.29	13.00	5.76	14.18
16.54	8.88	9.50	11.59	7.11	13.09	5.68	14.28
15.69	9.29	9.21	11.72	6.98	13.22		
14.73	9.45	9.00	11.85	6.84	13.34		
14.03	9.74	8.81	12.03	6.67	13.39		

Table S30. Experimental data for the binodal mass fraction for the system [Ch][Sal] (1) + $C_6H_5K_3O_7$/$C_6H_8O_7$ at pH 7 (2) at (298 ± 1) K.

[Ch][Sal]					
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
61.89	11.14	32.17	25.90	21.68	33.02
56.84	13.42	30.65	27.25	20.87	33.58
52.04	15.79	28.93	28.11	19.90	34.33
47.82	17.25	28.69	28.27	17.04	36.38
41.67	20.02	26.61	29.68	15.42	37.66
40.14	21.18	26.29	29.98	14.52	38.36
37.44	22.65	23.40	31.88	11.68	41.63
37.34	22.70	23.08	32.02	11.02	41.55
32.79	25.71	22.94	32.19	8.74	44.51

Table S31. Experimental data for the binodal mass fraction for the system [Ch][Sal] (1) + KH_2PO_4/K_2HPO_4 at pH 7 (2) at (298 ± 1) K.

[Ch][Sal]			
100 w_1	100 w_2	100 w_1	100 w_2
74.90	1.21	35.57	11.49
69.01	2.21	33.37	12.51
56.31	4.59	30.96	13.81
53.66	5.18	27.95	15.48
51.60	5.81	25.64	16.80
49.62	6.45	23.25	18.25
47.54	6.96	21.95	19.09
45.77	7.50	18.99	21.04
42.82	8.56	16.75	22.50
40.37	9.47	13.71	24.62
38.41	10.22		

Table S32. Experimental data for the binodal mass fraction for the system [Ch][Sal] (1) + K_2CO_3 (2) at (298 ± 1) K.

[Ch][Sal]							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
70.44	4.68	26.98	17.80	17.86	22.33	13.35	24.74
61.32	6.35	26.41	18.01	17.59	22.47	13.20	24.82
55.73	7.74	25.56	18.62	17.23	22.78	13.01	24.97
50.95	8.45	24.97	18.80	17.00	22.87	12.77	25.14
48.62	9.32	24.51	18.98	16.75	22.93	12.65	25.18
45.65	10.01	24.09	19.25	16.52	22.99	12.51	25.22
43.70	10.82	23.65	19.36	16.21	23.21	12.40	25.33
41.43	11.40	22.98	19.80	16.00	23.26	12.27	25.37
39.94	11.94	22.54	20.00	15.80	23.33	12.17	25.43
38.39	12.60	22.08	20.22	15.48	23.57	12.02	25.56
37.43	13.01	21.65	20.46	15.29	23.68	11.91	25.60
36.36	13.47	21.30	20.59	15.15	23.75	11.79	25.64
34.75	14.52	20.72	21.01	14.97	23.82	11.61	25.78
33.21	14.81	20.30	21.08	14.78	23.89	11.49	25.80
32.71	15.13	19.99	21.23	14.58	24.05	11.39	25.85
31.80	15.50	19.70	21.36	14.43	24.11	11.25	26.00
30.92	15.84	19.40	21.46	14.22	24.28	11.13	26.01
29.59	16.67	18.98	21.80	14.07	24.34	11.04	26.07
28.94	16.95	18.72	21.94	13.85	24.50	10.89	26.19
28.22	17.27	18.41	22.07	13.72	24.52		
27.52	17.58	18.13	22.20	13.49	24.69		

Table S33. Experimental data for the binodal mass fraction for the system [BCh]Cl (1) + $C_6H_5K_3O_7$/$C_6H_8O_7$ at pH 7 (2) at (298 ± 1) K.

[BCh]Cl							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
21.48	38.80	40.96	19.59	46.81	14.72	52.28	11.10
23.93	35.95	42.40	18.36	46.91	14.87	53.06	10.61
26.92	32.99	43.40	17.54	47.61	14.33	53.79	10.16
29.69	30.07	43.53	17.09	47.94	13.95	55.08	9.46
32.08	27.71	44.42	16.77	48.53	13.68	56.36	8.75
33.59	26.18	44.90	16.43	49.05	13.16	57.88	7.98
35.16	24.66	45.16	15.85	49.55	13.05	58.97	7.43
37.10	23.06	45.33	16.10	50.08	12.62	60.05	6.95
38.51	21.74	46.11	15.45	50.28	12.37	60.94	6.50
39.76	20.58	46.78	15.27	51.44	11.67	61.28	6.25

Table S34. Experimental data for the binodal mass fraction for the system [BCh]Cl (1) + KH_2PO_4/K_2HPO_4 at pH 7 (2) at (298 ± 1) K.

[BCh]Cl			
100 w_1	100 w_2	100 w_1	100 w_2
55.30	2.83	40.62	7.68
52.93	3.59	37.68	8.98
50.21	4.32	34.35	10.65
48.02	4.94	30.62	12.75
44.90	6.23	27.04	14.90
42.97	6.79		

Table S35. Experimental data for the binodal mass fraction for the system [BCh]Cl (1) + K_2CO_3 (2) at (298 ± 1) K.

[BCh]Cl							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
70.05	3.52	20.57	19.21	12.27	24.41	8.91	27.12
56.63	5.04	20.00	19.57	12.15	24.53	8.85	27.17
50.85	6.13	19.54	19.85	11.97	24.63	8.77	27.19
47.04	7.19	18.97	20.23	11.75	24.87	8.73	27.23
44.25	8.28	18.46	20.39	11.53	25.03	8.63	27.33
41.80	9.12	17.96	20.77	11.43	25.04	8.56	27.38
39.59	9.94	17.39	21.17	11.24	25.22	8.47	27.50
37.41	10.66	16.81	21.54	11.12	25.30	8.34	27.57
36.02	11.35	16.38	21.71	11.02	25.38	8.22	27.69
34.74	12.12	15.91	22.09	10.92	25.46	8.16	27.73
33.25	12.76	15.63	22.16	10.83	25.56	8.09	27.77
32.27	13.36	15.45	22.27	10.71	25.63	8.04	27.85
30.74	13.71	15.22	22.46	10.60	25.73	7.97	27.89
29.91	14.22	14.99	22.62	10.49	25.78	7.91	27.98
29.07	14.67	14.57	22.99	10.32	25.95	7.85	28.03
28.23	15.09	14.27	22.93	10.13	26.11	7.79	28.10
27.40	15.60	14.09	22.99	9.92	26.25	7.74	28.11
26.65	16.05	13.91	23.13	9.78	26.38	7.68	28.18
25.85	16.40	13.69	23.37	9.70	26.44	7.58	28.31
24.61	17.09	13.43	23.58	9.55	26.59	7.53	28.35
23.90	17.35	13.24	23.70	9.45	26.66	7.46	28.37
23.36	17.73	13.08	23.85	9.37	26.68	7.41	28.44
22.72	18.14	12.84	24.03	9.22	26.87		
22.02	18.39	12.56	24.28	9.13	26.93		
21.22	18.93	12.43	24.36	9.02	26.98		

Table S36. Experimental data for the binodal mass fraction for the system [C_4mpy]Cl (1) + $C_6H_5K_3O_7$/$C_6H_8O_7$ at pH 6 (2) at (298 ± 1) K.

[C_4mpy]Cl					
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
74.14	1.29	41.50	14.29	31.47	23.45
49.21	9.00	40.42	15.16	30.08	24.99
47.82	9.84	39.46	15.99	28.47	26.78
46.47	10.69	38.18	17.11	26.65	28.83
45.40	11.45	36.99	18.14	24.48	31.28
44.21	12.28	35.88	19.21	22.21	33.77
43.14	13.05	34.49	20.57		
42.48	13.53	33.11	21.93		

Table S37. Experimental data for the binodal mass fraction for the system [C_4mpy]Cl (1) + $C_6H_5K_3O_7$/$C_6H_8O_7$ at pH 7 (2) at (298 ± 1) K.

[C_4mpy]Cl					
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
72.48	1.35	45.80	10.50	33.09	20.05
71.40	1.77	45.53	10.64	32.00	21.49
66.28	2.63	41.35	13.37	31.08	21.92
53.65	6.37	41.32	13.61	29.08	23.90
53.40	6.18	40.87	14.01	26.76	26.25
51.50	7.26	38.67	15.42	24.25	28.86
50.98	7.40	37.49	16.65	21.58	31.74
48.36	9.03	36.56	17.32		
48.13	9.06	36.14	17.47		

Table S38. Experimental data for the binodal mass fraction for the system $[C_4mpy]Cl$ (1) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 8 (2) at (298 ± 1) K.

$[C_4mpy]Cl$					
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
75.36	0.93	38.98	14.84	30.17	21.98
56.63	4.68	38.97	14.78	29.18	22.91
54.79	5.50	38.05	15.28	28.09	23.93
53.05	6.30	37.22	15.93	26.94	25.05
51.24	7.14	36.49	16.51	25.72	26.23
49.66	7.86	35.66	17.16	24.94	27.24
47.27	9.28	34.89	17.82	22.92	29.02
45.24	10.41	34.01	18.58	21.39	30.62
42.62	12.07	33.00	19.44	20.24	32.05
40.07	13.99	32.24	20.18	18.27	34.03
39.46	14.49	31.41	20.93	16.93	35.64

Table S39. Experimental data for the binodal mass fraction for the system [C_4mim]Cl (1) + $C_6H_5K_3O_7$/$C_6H_8O_7$ at pH 6 (2) at (298 ± 1) K.

[C_4mim]Cl					
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
72.84	1.31	43.74	15.40	35.72	22.72
49.44	11.04	43.10	15.95	34.50	24.06
48.65	11.53	42.12	16.73	33.47	25.23
47.99	12.00	41.40	17.40	31.88	26.76
47.37	12.50	40.60	18.18	30.75	28.06
46.57	13.09	39.91	18.78	29.28	29.70
45.77	13.70	38.92	19.72	28.44	31.01
45.07	14.23	37.87	20.71	26.11	33.44
44.51	14.75	37.02	21.49		

Table S40. Experimental data for the binodal mass fraction for the system $[C_4mim]Cl$ (1) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 7 (2) at (298 ± 1) K.

$[C_4mim]Cl$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
69.47	1.62	46.26	11.77	38.63	17.72	26.92	29.24
50.37	9.10	45.74	12.14	37.62	18.56	25.40	30.83
50.00	9.33	45.10	12.58	36.44	19.51	23.64	32.60
49.60	9.59	44.55	12.98	35.76	20.22	22.46	34.09
49.15	9.79	43.76	13.54	34.65	21.19	20.50	36.34
49.08	9.91	43.15	14.01	33.83	22.01	18.29	38.72
48.50	10.24	42.35	14.62	32.94	22.92	16.72	40.81
47.98	10.59	41.65	15.18	31.58	24.18	14.95	43.08
47.62	10.81	41.03	15.71	30.50	25.22		
47.05	11.16	40.15	16.39	29.33	26.45		
46.57	11.48	39.46	16.99	28.12	27.83		

Table S41. Experimental data for the binodal mass fraction for the system $[C_4mim]Cl$ (1) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 8 (2) at (298 ± 1) K.

$[C_4mim]Cl$							
100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2	100 w_1	100 w_2
71.81	1.55	48.00	10.42	41.02	15.31	30.06	24.92
66.13	2.79	47.67	10.62	39.81	16.14	28.79	26.36
55.96	5.94	47.33	10.84	39.02	16.81	26.68	28.40
52.51	7.65	46.85	11.17	38.21	17.55	24.96	30.22
51.38	8.36	46.20	11.62	37.26	18.33	23.03	32.30
50.79	8.70	45.39	12.17	36.53	19.02	20.63	34.66
50.30	9.00	44.72	12.69	35.39	19.98	18.04	37.57
49.75	9.33	43.70	13.35	34.30	20.97	16.20	39.76
49.11	9.71	42.73	14.03	33.43	21.87		
48.62	10.02	41.90	14.63	31.97	23.23		

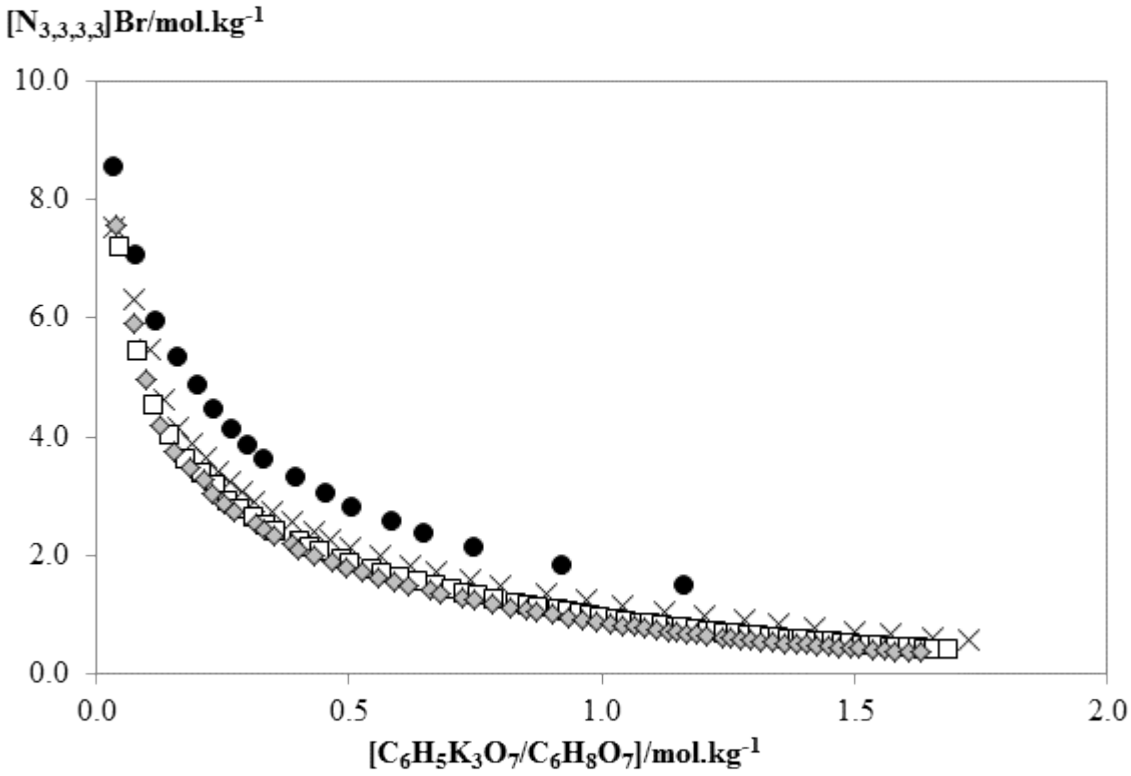


Figure S1. Phase diagrams for the systems $[N_{3,3,3,3}]Br + C_6H_5K_3O_7/C_6H_8O_7$ (pH 5, 6, 7 and 8) + H_2O at (298 ± 1) K, atmospheric pressure and different pH values: pH 5 (□), pH 6 (×), pH 7 (⁑) [53], pH 8 (□).

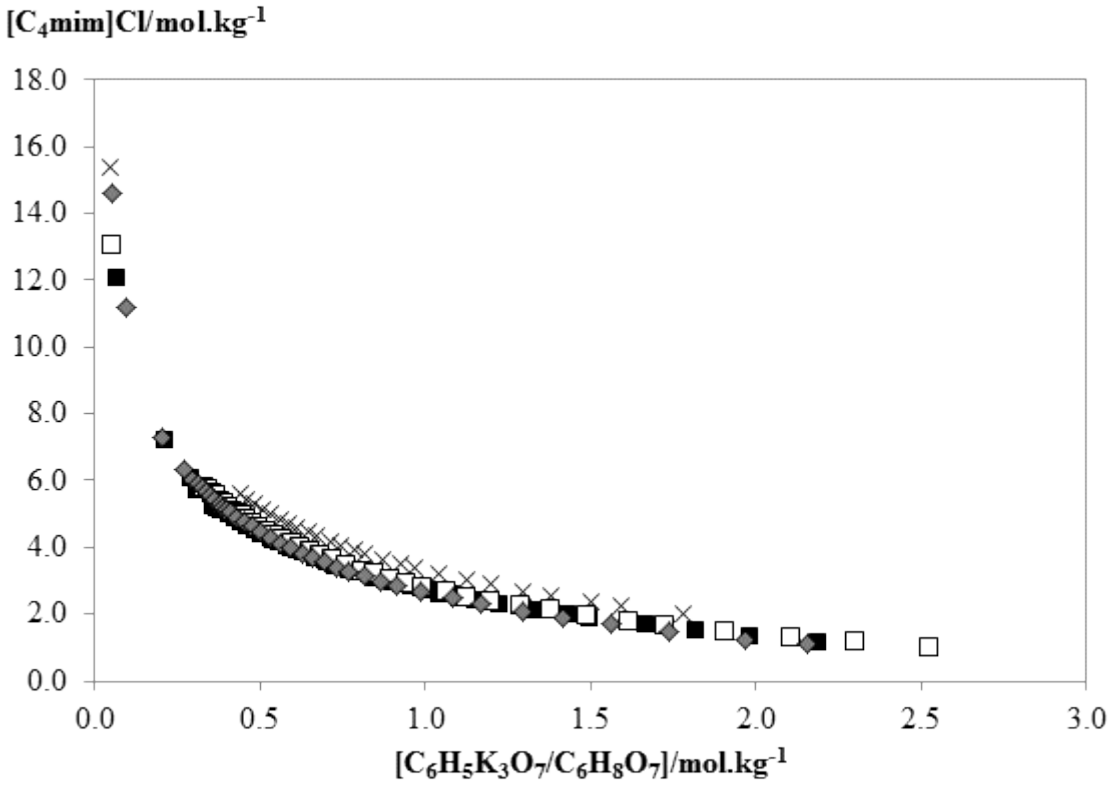


Figure S2. Phase diagrams for the systems [C_4mim]Cl + $C_6H_5K_3O_7$/$C_6H_8O_7$ (pH 6, 7 and 8) + H_2O at (298 ± 1) K, atmospheric pressure and different pH values: pH 6 (×), pH 7 (), pH 7 () [54], pH 8 ().

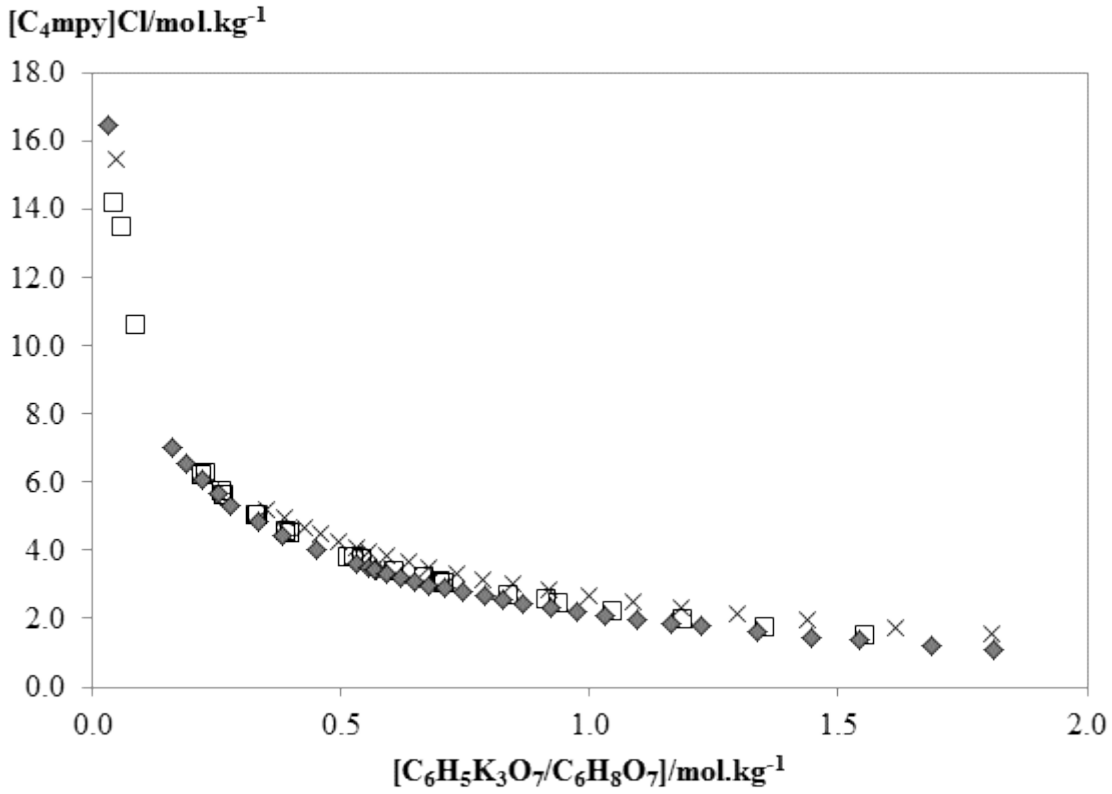


Figure S3. Phase diagrams for the systems $[C_4mpy]Cl + C_6H_5K_3O_7/C_6H_8O_7$ (pH 6, 7 and 8) + H_2O at (298 ± 1) K, atmospheric pressure and different pH values: pH 6 (×), pH 7 (◆), pH 8 (□).

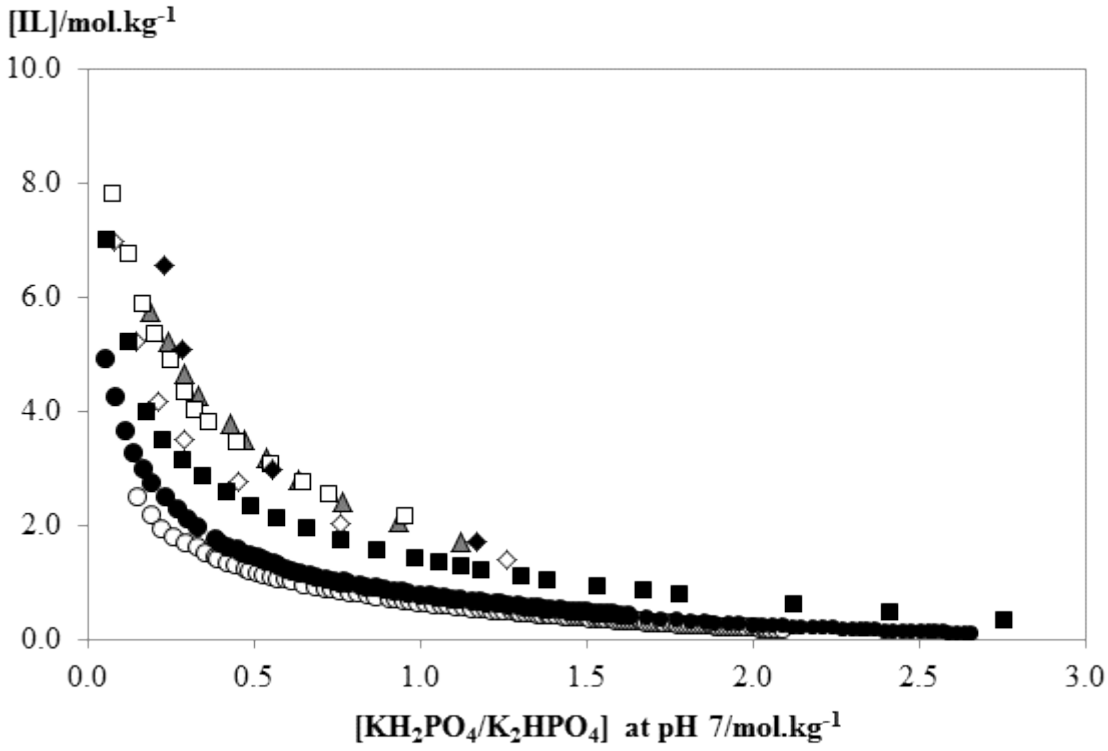


Figure S4. Phase diagrams for the systems chloride-based ILs + K_2HPO_4/KH_2PO_4 at pH 7 + H_2O at (298 ± 1) K and atmospheric pressure: [C_4mpyrr]Cl (□) [34], [BCh]Cl (⊗), [C_4mim]Cl (⊗) [34], [C_4mpip]Cl (◊) [34], [C_4mpy]Cl (⊗) [34], [$P_{4,4,4,4}$]Cl (□), [$N_{4,4,4,4}$]Cl (□).

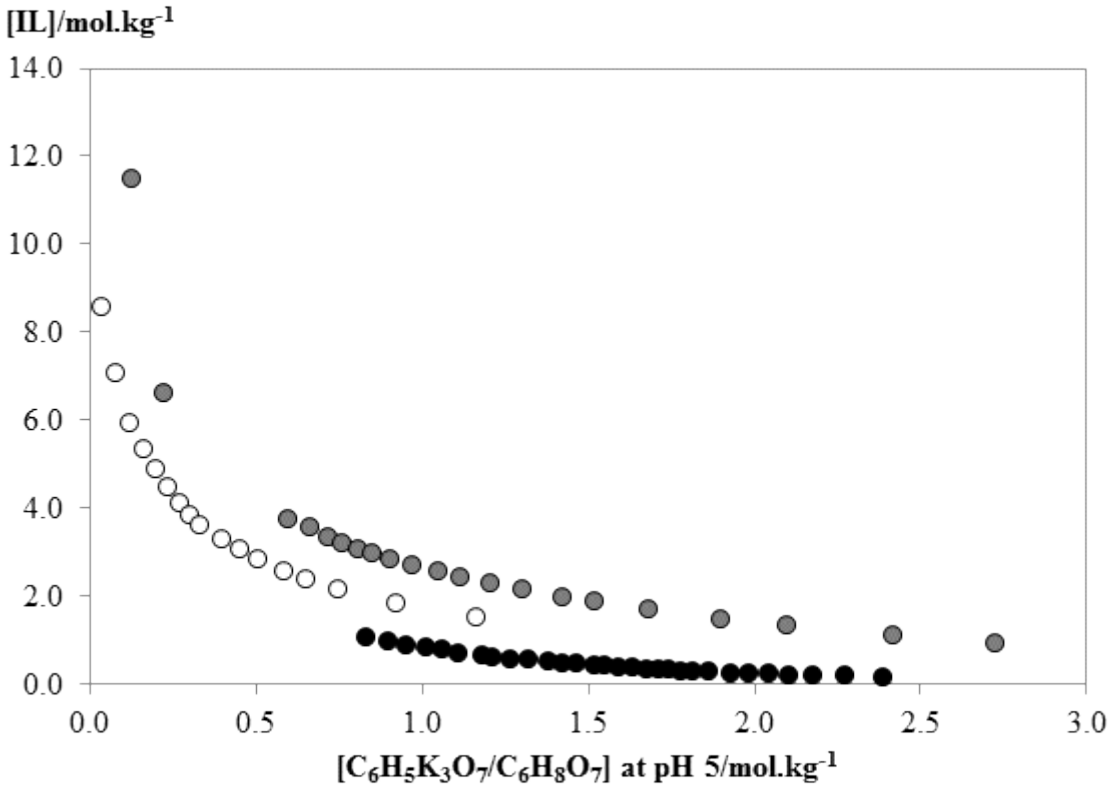


Figure S5. Phase diagrams for the systems $[N_{n,n,n,n}]$Br-based ILs (n = 2, 3 and 4) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 5 + H_2O at (298 ± 1) K and atmospheric pressure: $[N_{2,2,2,2}]$Br (□) [53], $[N_{3,3,3,3}]$Br (□), $[N_{4,4,4,4}]$Br (□).

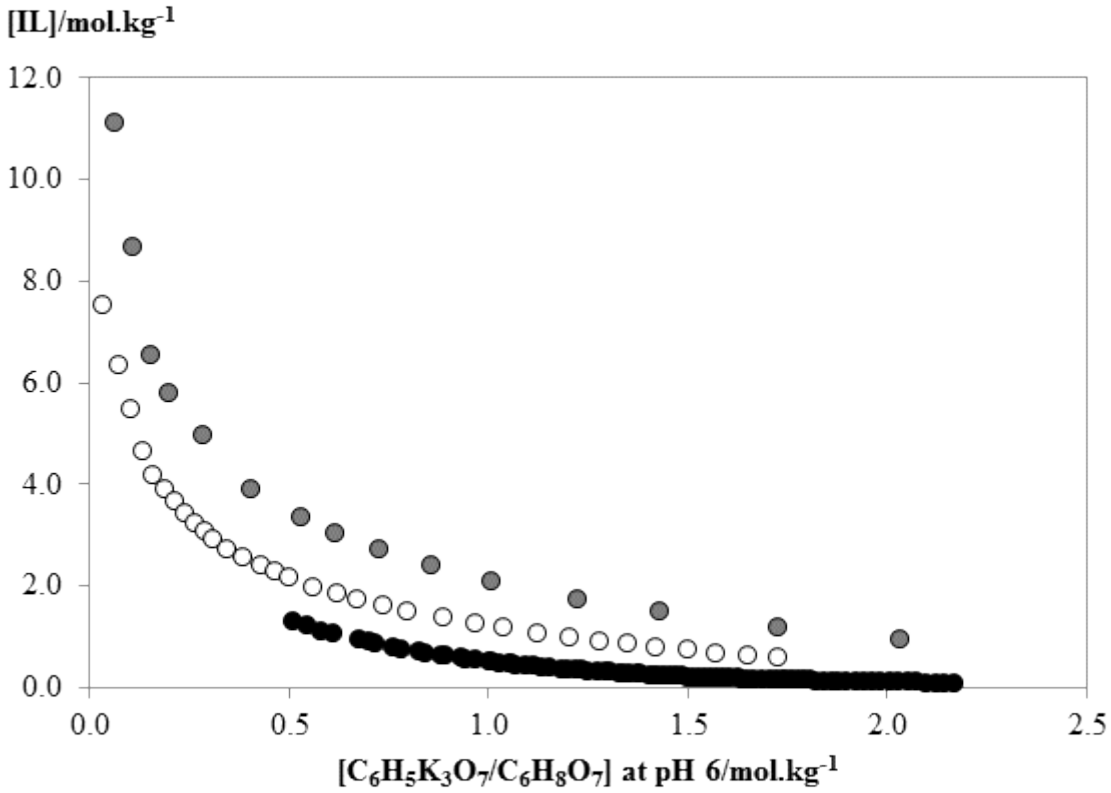


Figure S6. Phase diagrams for the systems $[N_{n,n,n,n}]$Br-based ILs (n = 2, 3 and 4) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 6 + H_2O at (298 ± 1) K and atmospheric pressure: $[N_{2,2,2,2}]$Br (□) [53], $[N_{3,3,3,3}]$Br (□), $[N_{4,4,4,4}]$Br (□).

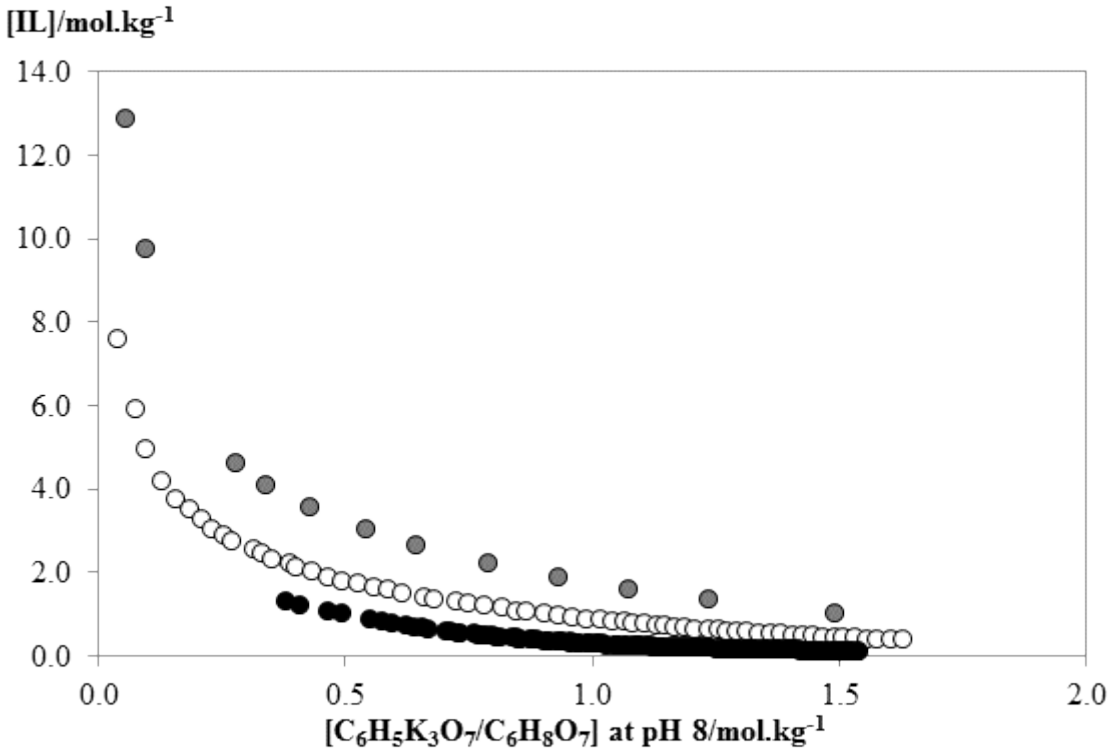


Figure S7. Phase diagrams for the systems $[N_{n,n,n,n}]$Br-based ILs (n = 2, 3 and 4) + $C_6H_5K_3O_7/C_6H_8O_7$ at pH 8 + H_2O at (298 ± 1) K and atmospheric pressure: $[N_{2,2,2,2}]$Br (□) [53], $[N_{3,3,3,3}]$Br (□), $[N_{4,4,4,4}]$Br (□).

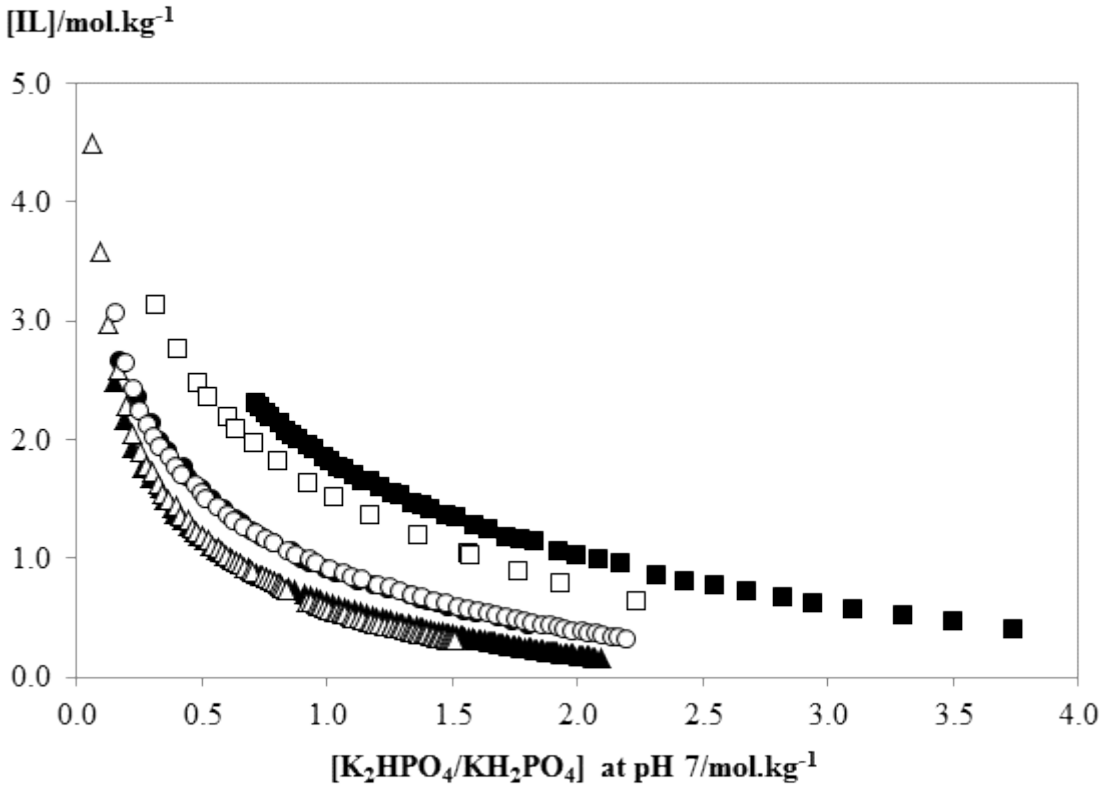


Figure S8. Phase diagrams for the systems $[N_{n,n,n,n}]X$ (n = 2, 3 and 4) + K_2HPO_4/KH_2PO_4 at pH 7 + H_2O at (298 ± 1) K and atmospheric pressure: $[N_{2,2,2,2}]Cl$ (), $[N_{3,3,3,3}]Cl$ (□), $[N_{4,4,4,4}]Cl$ (), $[N_{2,2,2,2}]Br$ () [53], $[N_{3,3,3,3}]Br$ (□), $[N_{4,4,4,4}]Br$ (□).

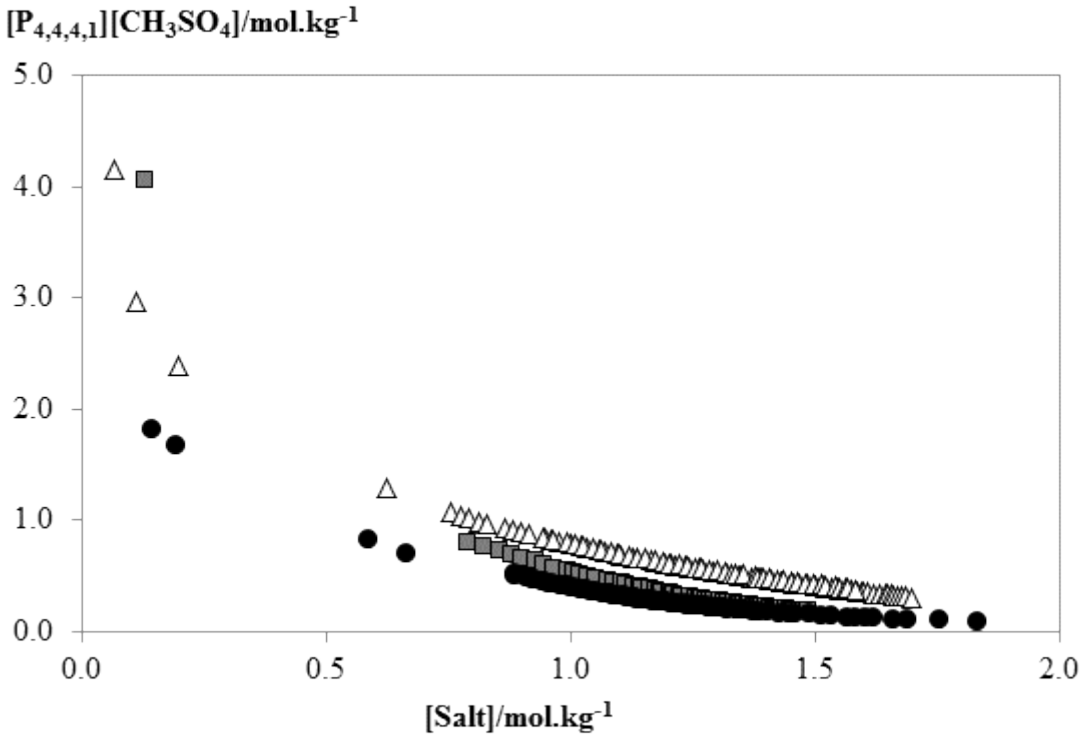


Figure S9. Phase diagrams for the systems $[P_{4,4,4,1}][CH_3SO_4]$ + salt + H_2O at (298 ± 1) K and atmospheric pressure: KH_2PO_4/K_2HPO_4 at pH 7 (□), K_2CO_3 (ี) and $C_6H_5K_3O_7/C_6H_8O_7$ at pH 7 (□).

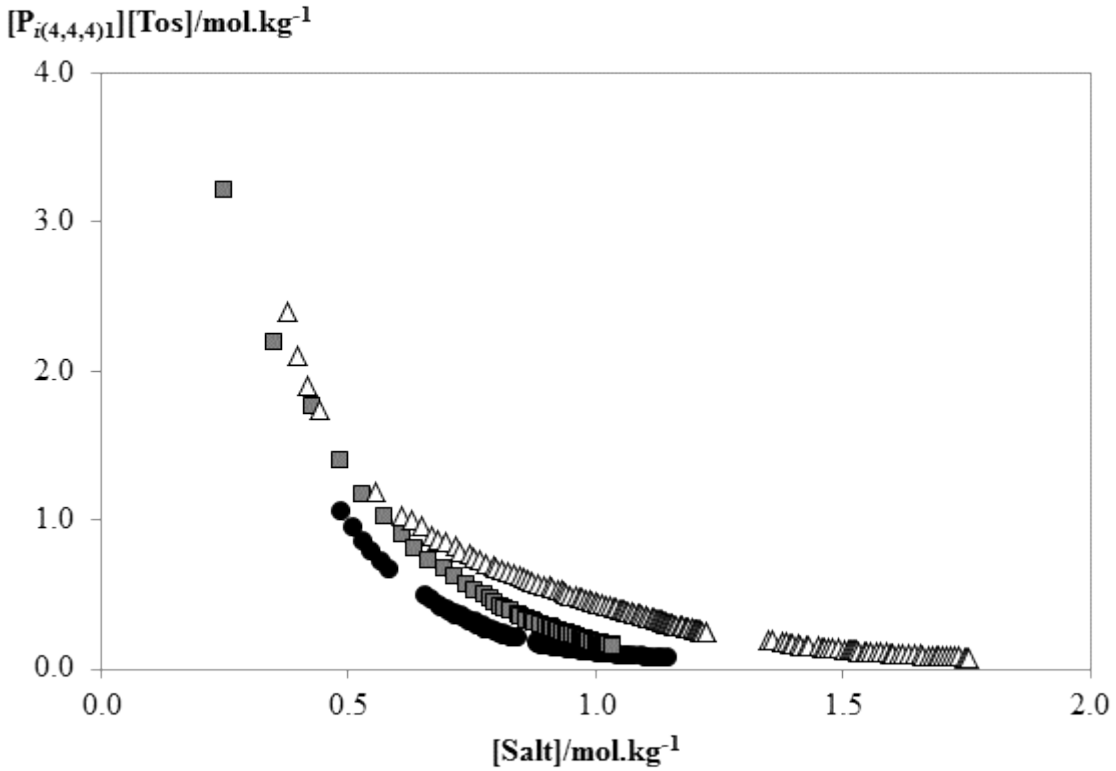


Figure S10. Phase diagrams for the systems [$P_{i(4,4,4)1}$][Tos] + salt + H_2O at (298 ± 1) K and atmospheric pressure: KH_2PO_4/K_2HPO_4 at pH 7 (□), K_2CO_3 (), $C_6H_5K_3O_7/C_6H_8O_7$ at pH 7 (□).

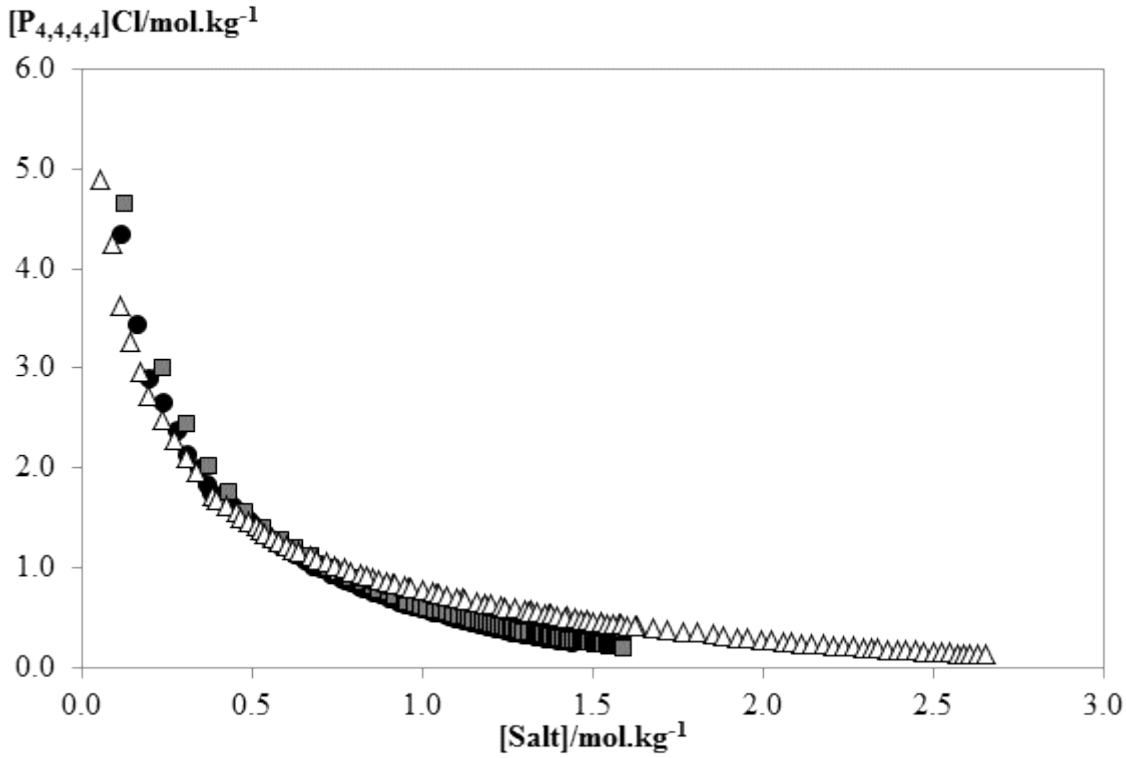


Figure S11. Phase diagrams for the systems $[P_{4,4,4,4}]Cl$ + salt + H_2O at (298 ± 1) K and atmospheric pressure: KH_2PO_4/K_2HPO_4 at pH 7 (□), K_2CO_3 (), $C_6H_5K_3O_7/C_6H_8O_7$ at pH 7 (□).

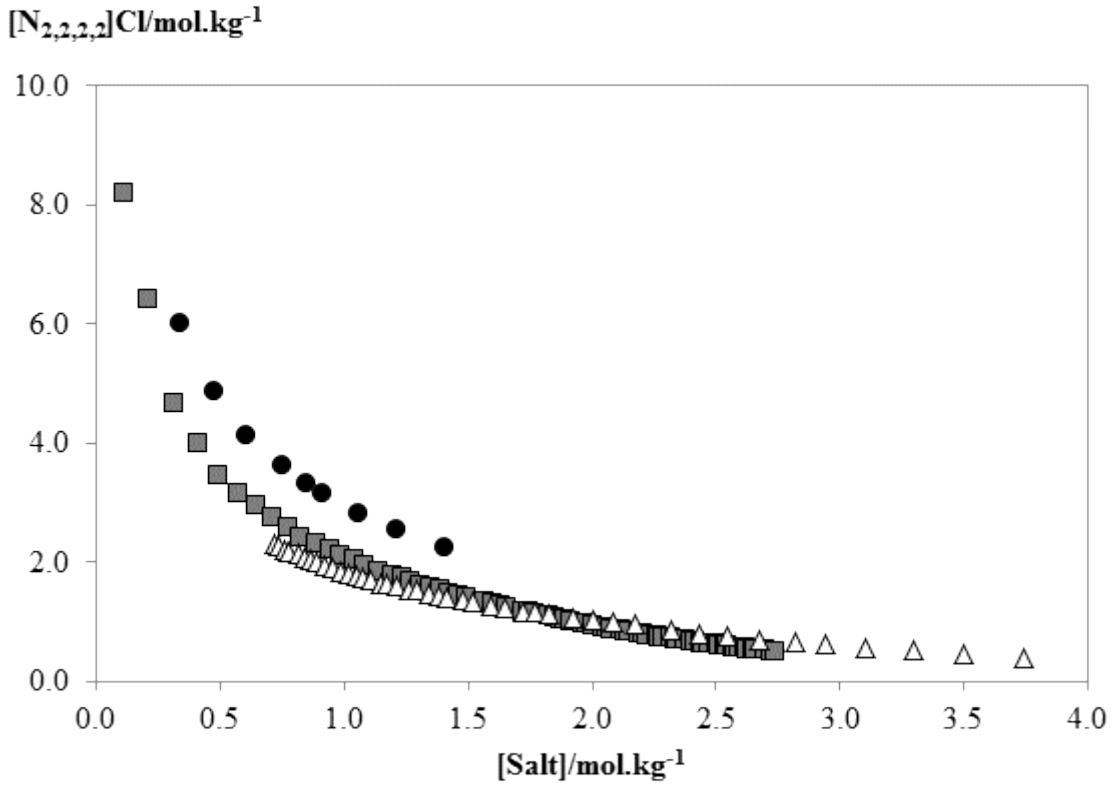


Figure S12. Phase diagrams for the systems $[N_{2,2,2,2}]Cl$ + salt + H_2O at (298 ± 1) K and atmospheric pressure: $C_6H_5K_3O_7/C_6H_8O_7$ at pH 7 (□) [53], K_2CO_3 (), KH_2PO_4/K_2HPO_4 at pH 7 (□).

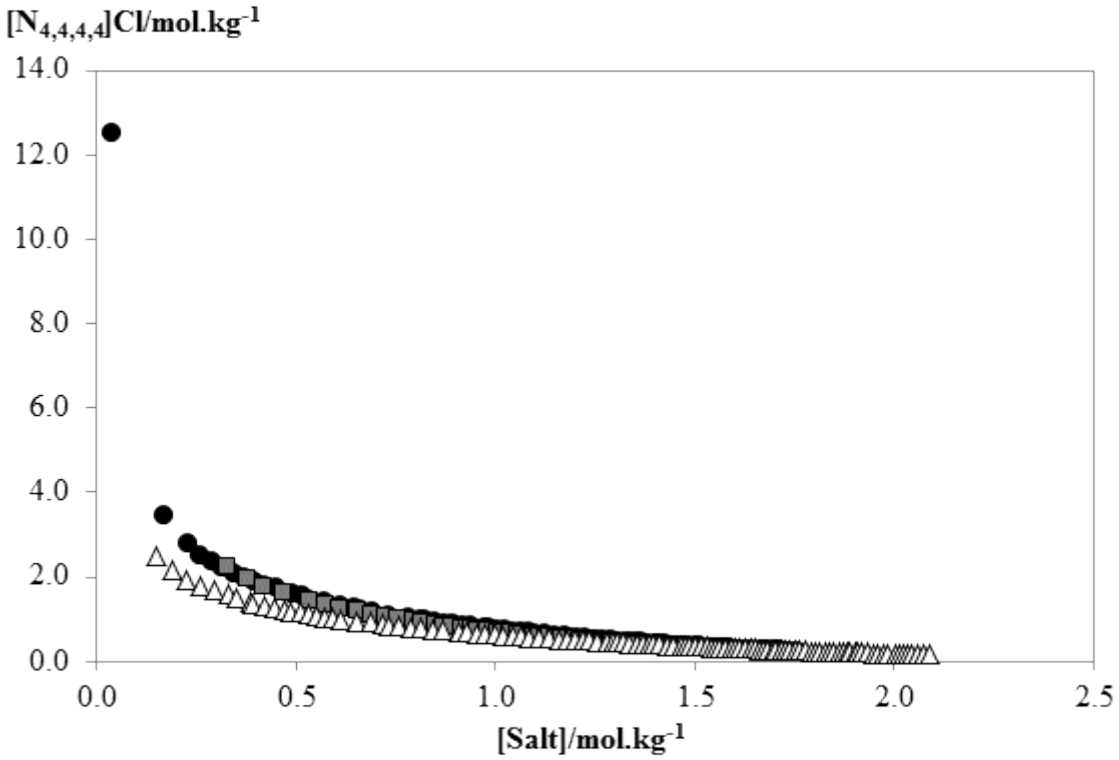


Figure S13. Phase diagrams for the systems $[N_{4,4,4,4}]Cl$ + salt + H_2O at (298 ± 1) K and atmospheric pressure: $C_6H_5K_3O_7/C_6H_8O_7$ at pH 7 (□) [53], K_2CO_3 (), KH_2PO_4/K_2HPO_4 at pH 7 (□).

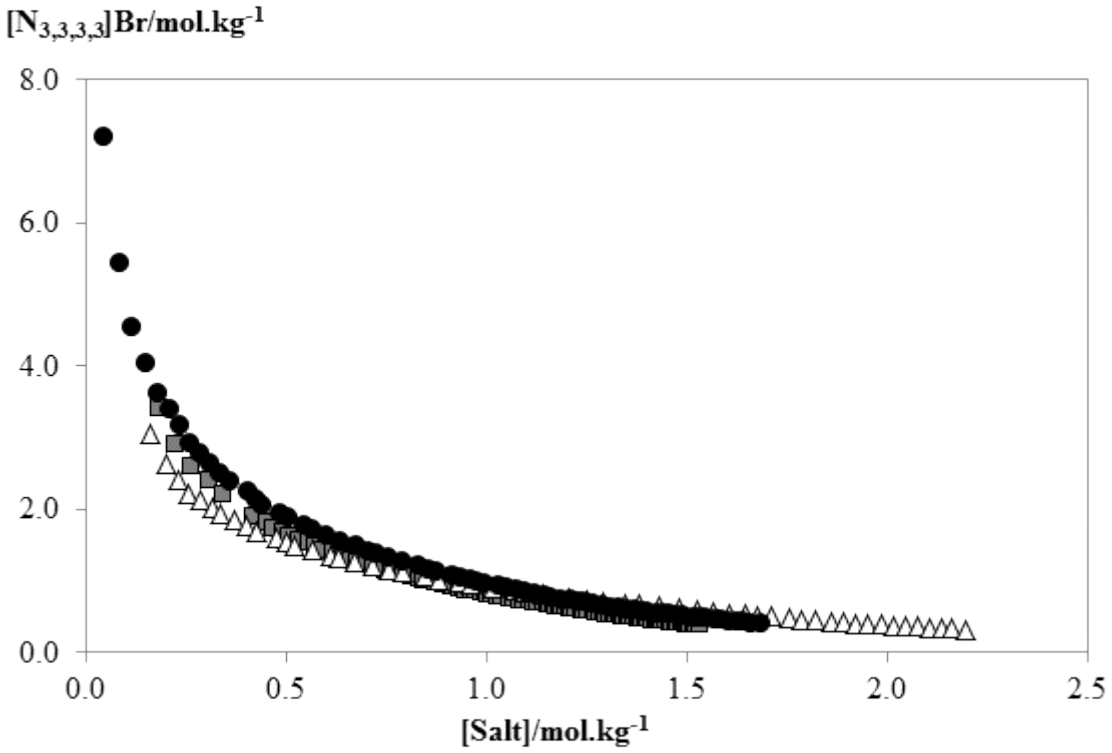


Figure S14. Phase diagrams for the systems $[N_{3,3,3,3}]Br$ + salt + H_2O at (298 ± 1) K and atmospheric pressure: $C_6H_5K_3O_7/C_6H_8O_7$ at pH 7 (□) [53], K_2CO_3 (), KH_2PO_4/K_2HPO_4 at pH 7 (□).

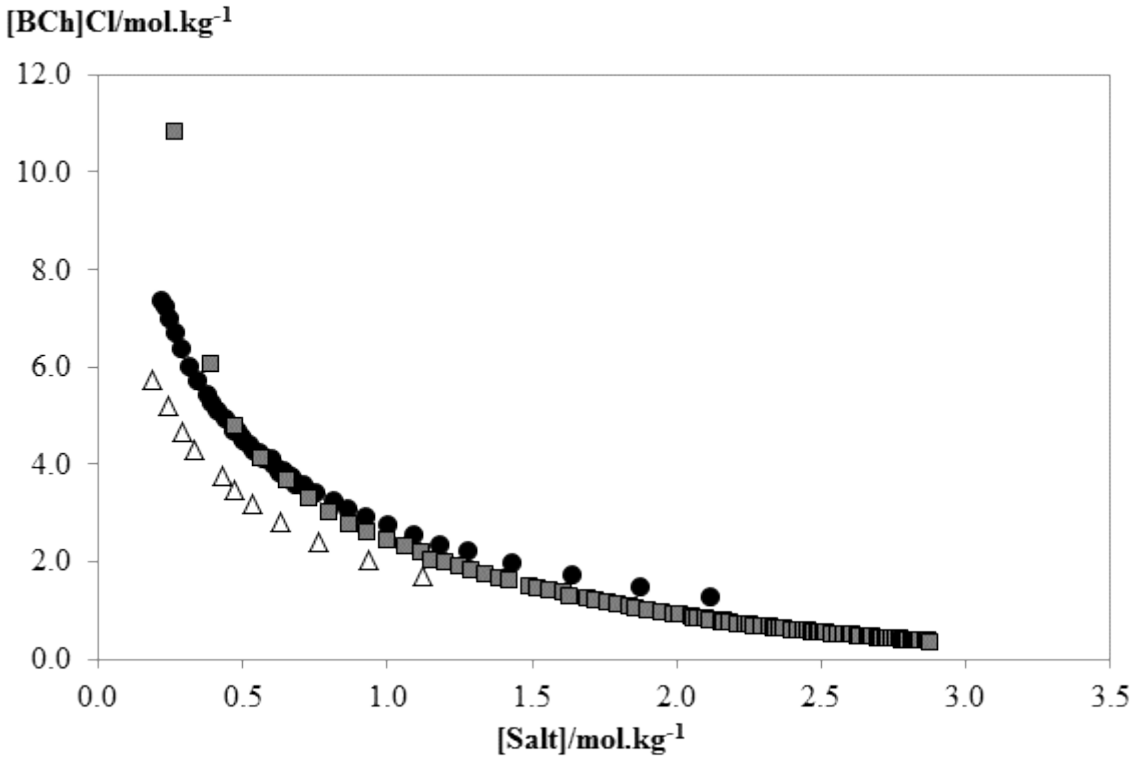
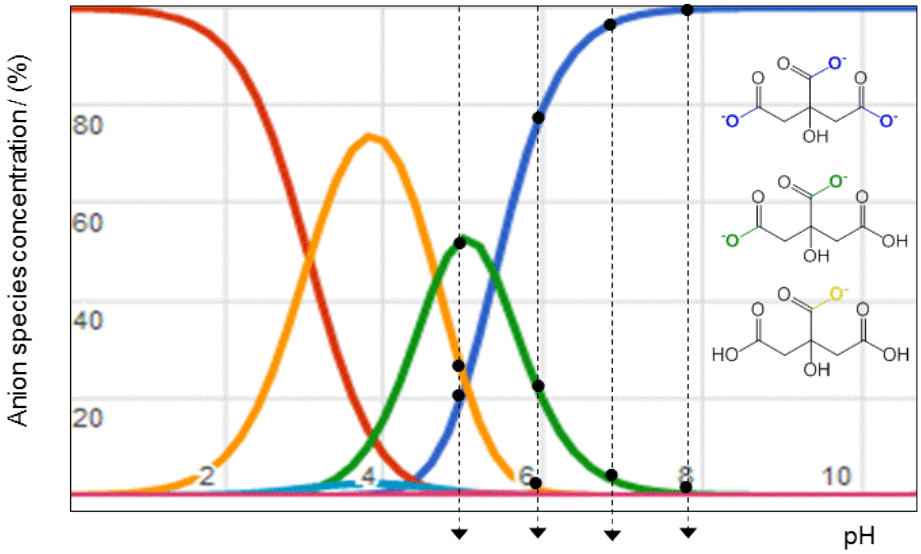


Figure S15. Phase diagrams for the systems [BCh]Cl + salt + H_2O at (298 ± 1) K and atmospheric pressure: $C_6H_5K_3O_7/C_6H_8O_7$ at pH 7 (□), K_2CO_3 (), KH_2PO_4/K_2HPO_4 at pH 7 (□).



	pH 5	pH 6	pH 7	pH 8
$C_6H_5O_7^{3-}$/%	21.42	79.37	97.57	99.75
$C_6H_6O_7^{2-}$/%	52.69	19.52	2.40	0.25
$C_6H_7O_7^{1-}$/%	24.31	0.90		

Figure S16. Salt anion species concentration (salt speciation) into the potassium citrate buffer at distinct pH values (from 5 to 8). This information was adapted from the Chemspider database (www.chemspider.com).

	pH 7
HPO_4^{2-}/%	52.78
$H_2PO_4^{-}$/%	47.22

Figure S17. Salt anion species concentration (salt speciation) into the potassium phosphate buffer at pH 7. This information was adapted from the Chemspider database (www.chemspider.com).