

Supporting Information

Ionic Liquids as Adjuvants for the Tailored Extraction of Biomolecules in Aqueous Biphasic Systems

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Table S1 Experimental binodal curve mass fraction data for the system PEG 600 (1) +
Na₂SO₄ (2) + H₂O (3) + 5 wt % IL at 298 K

no IL		no IL		[im]Cl	
100 w ₁	100 w ₂	100 w ₁	100 w ₂	100 w ₁	100 w ₂
40.592	2.227	16.459	9.285	45.542	1.681
36.768	2.838	16.336	9.328	42.361	2.399
35.611	3.017	16.224	9.387	40.899	2.708
34.726	3.227	16.050	9.515	39.463	3.088
33.555	3.476	15.922	9.566	37.698	3.451
32.351	3.833	15.812	9.603	36.027	3.758
31.411	4.064	15.639	9.729	34.230	4.059
30.488	4.277	15.418	9.835	32.471	4.533
29.468	4.574	15.229	9.916	31.211	4.959
28.949	4.624	15.053	10.017	29.544	5.563
28.366	4.814	14.960	10.044	28.227	5.823
27.673	5.033	14.817	10.136	27.268	6.162
27.184	5.168	14.663	10.247	26.284	6.457
26.720	5.318	14.544	10.272	25.182	6.820
26.190	5.490	14.396	10.367	23.251	7.549
25.655	5.666	14.007	10.710	22.156	7.997
25.098	5.879	13.829	10.660	21.140	8.363
24.566	6.076	13.703	10.762	19.798	8.944
24.037	6.299	16.551	9.239	19.115	9.191
23.537	6.491	16.459	9.285	17.649	9.872
23.073	6.660	16.336	9.328	16.590	10.350
22.572	6.861	16.224	9.387	15.194	11.008
22.147	7.020	16.050	9.515	13.767	11.678
21.663	7.116	15.922	9.566	12.228	12.408
21.297	7.219	15.812	9.603	11.107	12.958
20.878	7.401	15.639	9.729	10.520	13.259
20.490	7.538	15.418	9.835	9.880	13.595
20.191	7.677	15.229	9.916	9.079	14.007
19.847	7.799	15.053	10.017	8.310	14.461
19.500	7.938	14.960	10.044	7.692	14.812
19.335	8.011	14.817	10.136		
19.083	8.167	14.663	10.247		
18.745	8.307	14.544	10.272		
18.577	8.379	14.396	10.367		
18.308	8.466	14.007	10.710		
18.180	8.522	13.829	10.660		
17.954	8.703	13.703	10.762		
17.764	8.692				
17.543	8.771				
17.329	8.912				
17.089	9.011				
16.978	9.047				
16.670	9.203				
16.551	9.239				

Table S2 Experimental binodal curve mass fraction data for the system PEG 600 (1) +
Na₂SO₄ (2) + H₂O (3) + 5 wt % IL at 298 K

[C _{1im}]Cl		[C _{1im}]Cl		[C _{2mim}]Cl	
100 w ₁	100 w ₂	100 w ₁	100 w ₂	100 w ₁	100 w ₂
46.741	1.239	7.880	14.181	47.655	0.841
44.375	1.727			45.434	1.355
41.770	2.263			43.329	1.843
39.577	2.635			40.476	2.544
38.416	2.924			38.071	3.112
36.566	3.320			35.304	3.451
34.897	3.613			33.379	3.705
33.952	3.843			32.073	4.122
32.918	4.135			31.085	4.361
32.254	4.254			29.565	4.732
31.290	4.490			28.138	5.244
30.231	4.770			27.340	5.429
29.459	4.957			26.125	5.839
28.571	5.215			24.436	6.529
27.613	5.502			23.310	6.971
26.554	5.945			22.062	7.484
25.895	6.128			20.583	8.117
24.765	6.576			19.419	8.640
24.104	6.789			18.272	9.157
23.152	7.162			17.628	9.448
22.396	7.435			16.620	9.926
21.774	7.667			15.427	10.508
20.865	8.049			14.355	11.031
19.378	8.638			12.767	11.862
18.518	9.023			12.184	12.149
17.686	9.395			11.114	12.709
16.757	9.832			10.128	13.246
15.972	10.198			8.477	14.188
15.364	10.488				
14.760	10.759				
14.154	11.052				
13.699	11.263				
13.074	11.569				
12.685	11.752				
12.136	12.023				
11.472	12.355				
10.984	12.592				
10.461	12.857				
9.998	13.096				
9.691	13.255				
9.360	13.422				
8.927	13.660				
8.577	13.850				
8.199	14.060				

Table S3 Experimental binodal curve mass fraction data for the system PEG 600 (1) +
Na₂SO₄ (2) + H₂O (3) + 5 wt % IL at 298 K

[C ₄ mim]Cl		[C ₄ mim]Cl		[C ₄ C ₁ mim]Cl	
100 w ₁	100 w ₂	100 w ₁	100 w ₂	100 w ₁	100 w ₂
46.807	1.238	13.820	10.076	38.707	1.892
44.357	1.586	13.027	10.516	37.776	2.016
41.813	1.867	12.631	10.730	36.797	2.346
39.905	2.232	12.218	10.974	35.480	2.631
37.828	2.476	11.851	11.178	33.993	2.817
36.338	2.655	11.482	11.390	32.722	3.073
34.825	2.811	11.123	11.602	31.450	3.426
33.473	3.152	10.782	11.801	30.396	3.727
32.638	3.354	10.470	11.950	29.324	3.939
31.958	3.543	10.059	12.198	28.269	4.242
31.043	3.714	9.749	12.377	27.441	4.406
30.669	3.833	9.303	12.646	26.440	4.742
30.287	3.891	8.905	12.898	24.934	5.364
29.851	3.957	8.647	13.056	24.003	5.687
29.174	4.181	8.361	13.234	23.064	6.154
28.624	4.328	7.972	13.495	22.707	6.336
27.886	4.559			22.108	6.544
27.160	4.689			21.146	7.025
26.340	5.009			19.570	7.755
25.874	5.135			18.958	8.073
25.387	5.292			17.991	8.584
24.957	5.407			17.113	9.068
24.323	5.578			15.728	9.866
23.821	5.780				
23.361	5.952				
22.824	6.107				
22.462	6.209				
21.956	6.394				
21.398	6.621				
20.582	6.912				
20.092	7.127				
19.526	7.387				
19.145	7.487				
18.659	7.702				
18.196	7.910				
17.751	8.114				
17.421	8.269				
17.086	8.425				
16.738	8.578				
16.276	8.808				
15.829	9.027				
15.311	9.304				
14.993	9.460				
14.497	9.719				

Table S4 Experimental binodal curve mass fraction data for the system PEG 600 (1) +
Na₂SO₄ (2) + H₂O (3) + 5 wt % IL at 298 K

[OHC ₂ mim]Cl		[C ₇ H ₇ mim]Cl		[C ₇ H ₇ mim]Cl	
100 w ₁	100 w ₂	100 w ₁	100 w ₂	100 w ₁	100 w ₂
38.646	4.469	48.358	0.574	16.432	8.668
35.800	5.157	46.218	0.969	15.867	8.948
33.389	5.724	44.842	1.189	15.698	9.040
31.752	5.846	43.129	1.464	15.579	9.094
30.488	6.044	41.489	1.763	15.206	9.286
29.237	6.395	39.669	1.964	14.807	9.493
27.932	6.751	38.332	2.216	14.333	9.750
26.922	6.910	37.241	2.303	13.924	9.966
25.997	7.073	36.290	2.504	13.718	10.069
25.281	7.287	35.441	2.639	13.396	10.245
24.607	7.426	34.570	2.717	12.965	10.489
23.908	7.600	33.932	2.839	12.552	10.728
22.989	7.890	32.865	3.026	12.249	10.902
22.399	8.080	32.307	3.139	12.053	11.018
21.461	8.408	31.581	3.358	11.738	11.203
20.607	8.764	31.081	3.513	11.445	11.376
20.025	8.936	30.257	3.692	10.976	11.670
19.135	9.269	29.617	3.882	10.644	11.868
17.930	9.738	29.011	4.067	10.240	12.125
17.356	9.943	28.286	4.208	9.894	12.345
16.417	10.348	27.692	4.378	9.596	12.526
15.467	10.740	27.306	4.474	9.239	12.759
14.727	11.048	26.799	4.642	8.881	12.990
13.418	11.621	26.288	4.773	8.520	13.227
13.030	11.788	25.755	4.943	8.115	13.500
12.416	12.066	25.112	5.129	7.869	13.668
11.910	12.286	24.638	5.326		
11.357	12.549	24.069	5.535		
10.972	12.714	23.809	5.653		
10.322	13.017	23.269	5.844		
9.845	13.247	22.444	6.135		
9.559	13.383	21.949	6.329		
9.078	13.635	21.607	6.441		
8.268	14.065	21.102	6.636		
7.924	14.242	20.746	6.772		
		20.301	6.951		
		19.945	7.084		
		19.441	7.308		
		19.206	7.397		
		18.781	7.573		
		18.401	7.731		
		17.828	8.018		
		17.456	8.185		
		16.937	8.420		

Table S5 Experimental binodal curve mass fraction data for the system PEG 600 (1) +
Na₂SO₄ (2) + H₂O (3) + 5 wt % IL at 298 K

[amim]Cl		[C ₄ mim][MeSO ₄]		[C ₄ mim][MeSO ₄]	
100 w ₁	100 w ₂	100 w ₁	100 w ₂	100 w ₁	100 w ₂
36.511	3.014	46.968	1.015	10.158	11.939
35.338	3.284	44.026	1.417	9.741	12.202
33.822	3.480	41.366	1.837	9.473	12.353
33.079	3.653	39.412	2.019	9.143	12.546
31.691	3.990	37.911	2.232	8.844	12.703
30.799	4.157	36.438	2.521	8.589	12.849
29.758	4.511	35.165	2.624	8.328	13.002
28.862	4.686	34.479	2.752	8.119	13.127
27.895	4.988	33.513	3.007	7.899	13.259
26.795	5.357	32.619	3.240	7.640	13.418
25.226	5.906	31.773	3.325	7.431	13.540
24.548	6.136	31.091	3.503	7.237	13.660
23.853	6.369	30.287	3.764		
23.063	6.703	29.474	4.025		
22.448	6.903	28.795	4.245		
21.485	7.296	28.165	4.441		
20.232	7.900	26.995	4.551		
19.527	8.223	25.988	4.943		
18.566	8.648	25.202	5.174		
17.379	9.206	24.466	5.444		
16.189	9.819	23.929	5.602		
14.413	10.741	23.524	5.750		
13.481	11.250	23.078	5.879		
12.493	11.807	22.407	6.143		
11.816	12.186	21.760	6.391		
10.935	12.716	21.336	6.508		
9.593	13.512	20.702	6.774		
		19.960	7.116		
		19.313	7.392		
		18.387	7.765		
		17.876	7.977		
		17.320	8.220		
		16.760	8.486		
		16.192	8.773		
		15.424	9.135		
		14.414	9.661		
		13.920	9.908		
		12.780	10.511		
		12.366	10.740		
		12.000	10.918		
		11.586	11.141		
		11.196	11.357		
		10.873	11.529		
		10.445	11.775		

Table S6 Experimental binodal curve mass fraction data for the system PEG 600 (1) +
Na₂SO₄ (2) + H₂O (3) + 5 wt % IL at 298 K

[C ₄ mim][CH ₃ CO ₂]		[C ₄ mim][HSO ₄]		[C ₄ mim][HSO ₄]	
100 w ₁	100 w ₂	100 w ₁	100 w ₂	100 w ₁	100 w ₂
39.931	2.213	35.720	3.572	10.108	12.869
38.445	2.289	35.149	3.712	9.415	13.303
37.298	2.517	34.384	3.846	8.964	13.577
36.048	2.663	33.657	3.911	8.382	13.958
35.011	2.819	32.871	4.018	7.762	14.369
34.414	2.925	32.089	4.134		
32.663	3.420	31.325	4.337		
31.947	3.615	30.538	4.519		
31.223	3.838	29.754	4.676		
30.822	3.922	29.070	4.862		
30.440	3.982	28.474	4.958		
29.896	4.131	27.884	5.127		
29.384	4.258	27.390	5.302		
28.609	4.548	26.718	5.405		
28.036	4.701	26.208	5.584		
27.566	4.835	25.802	5.732		
27.087	4.976	25.106	5.928		
26.492	5.166	24.724	6.046		
25.845	5.392	24.371	6.153		
25.413	5.502	23.917	6.333		
24.810	5.754	23.382	6.546		
24.250	5.945	23.053	6.647		
23.742	6.118	22.272	6.928		
23.123	6.352	21.524	7.193		
22.534	6.585	21.232	7.293		
21.994	6.800	20.783	7.480		
21.371	7.055	20.429	7.627		
20.923	7.236	20.088	7.764		
20.364	7.481	19.664	7.944		
19.744	7.725	18.786	8.256		
19.218	7.966	18.127	8.561		
18.567	8.272	17.451	8.889		
18.041	8.527	17.067	9.060		
18.335	8.217	16.520	9.335		
15.938	8.746	15.968	9.617		
15.279	9.130	15.431	9.894		
14.530	9.587	14.966	10.143		
13.743	10.076	14.438	10.430		
12.932	10.584	13.759	10.809		
11.692	11.396	13.076	11.190		
10.426	12.254	12.398	11.566		
9.431	12.936	11.738	11.944		
		11.196	12.253		
		10.426	12.696		

