

# Supporting Information

## (Extraction of Biomolecules using) Aqueous Biphasic Systems formed by Ionic Liquids and Aminoacids

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**Table S1** - Experimental binodal curve mass fraction data for the system [C<sub>4</sub>mim][BF<sub>4</sub>](1) + aminoacid (2) + H<sub>2</sub>O (3) at 298 K

[C <sub>4</sub> mim][BF <sub>4</sub> ] + Pro + H <sub>2</sub> O		[C <sub>4</sub> mim][BF <sub>4</sub> ] + Lys·HCl + H <sub>2</sub> O		[C <sub>4</sub> mim][BF <sub>4</sub> ] + Lys + H <sub>2</sub> O	
100 w <sub>1</sub>	100 w <sub>2</sub>	100 w <sub>1</sub>	100 w <sub>2</sub>	100 w <sub>1</sub>	100 w <sub>2</sub>
77.771	4.186	86.150	1.492	83.182	1.681
69.962	5.310	71.484	2.517	71.046	2.035
60.120	6.607	47.571	4.384	47.410	2.968
57.019	7.872	43.695	4.863	41.353	3.346
54.208	8.976	40.331	5.414	37.917	4.062
50.052	9.724	34.367	7.003	34.450	4.353
47.686	10.595	32.273	7.165	32.098	4.975
45.606	11.303	30.883	7.442	29.875	5.442
43.662	12.079	29.962	8.130	27.625	5.903
41.975	12.722	28.343	8.410	26.048	6.220
39.606	12.994	26.879	9.423	24.939	6.517
38.129	13.544	25.315	10.074	24.362	7.010
36.792	14.150	23.616	10.671	23.054	7.720
35.594	14.626	22.282	11.469	21.688	8.311
33.967	15.602			20.274	9.325
31.900	16.415			18.856	10.262
31.003	16.808			17.788	11.067
29.540	17.723			16.957	11.851
27.969	19.037			16.137	12.657
25.549	21.047			15.305	13.655
				14.620	14.464
				13.852	15.552
				13.058	16.777
				12.329	17.983
				11.594	19.278

**Table S2** - Experimental binodal curve mass fraction data for the system [C<sub>4</sub>mim][CF<sub>3</sub>SO<sub>3</sub>] (1) + aminoacid (2) + H<sub>2</sub>O (3) at 298 K

[C <sub>4</sub> mim][CF <sub>3</sub> SO <sub>3</sub> ] + Pro + H <sub>2</sub> O		[C <sub>4</sub> mim][CF <sub>3</sub> SO <sub>3</sub> ] + Lys·HCl + H <sub>2</sub> O		[C <sub>4</sub> mim][CF <sub>3</sub> SO <sub>3</sub> ] + Lys + H <sub>2</sub> O	
100 w <sub>1</sub>	100 w <sub>2</sub>	100 w <sub>1</sub>	100 w <sub>2</sub>	100 w <sub>1</sub>	100 w <sub>2</sub>
73.999	9.956	70.430	4.464	84.035	2.701
65.536	12.336	57.655	5.550	57.266	4.397
58.220	14.148	53.136	6.623	54.843	4.033
55.139	14.881	48.934	7.568	50.082	4.738
51.396	16.691	45.560	8.411	45.927	5.325
47.972	18.147	42.611	9.025	42.339	5.747
44.708	19.568	40.033	9.508	40.200	6.226
42.245	20.605	37.732	10.139	38.050	6.715
39.561	21.764	35.613	10.633	35.482	7.083
37.455	22.676	34.327	11.258	33.914	7.524
34.954	24.145	32.671	11.541	32.227	7.881
32.800	25.660	31.184	11.897	30.738	8.247
31.856	25.667	29.953	12.078	29.474	8.567
30.119	26.960	28.696	12.395	28.194	8.769
28.120	28.299	27.770	12.895	27.174	9.057
23.609	32.751	26.622	13.199	26.216	9.274
		25.904	13.602	25.477	9.564
		24.508	14.329	24.783	9.824
		23.197	15.064	23.948	10.051
		22.142	15.506	23.438	10.351
		21.150	16.000	22.670	10.542
		20.189	16.498	22.184	10.825
		19.132	17.305	21.289	11.357
		18.346	17.712	20.493	11.882
		17.854	18.153	19.592	12.274
		17.147	18.488	18.692	12.945
		16.544	19.192	18.068	13.349
		15.269	20.073	17.348	14.011
		13.599	20.984	16.702	14.624
		12.562	21.629	15.615	15.547
		12.082	21.820	14.543	16.757
		10.420	22.820	13.423	18.306
				12.561	19.533
				11.925	20.487
				11.150	21.857
				10.147	23.935

**Table S3** - Experimental binodal curve mass fraction data for the system [C<sub>4</sub>mim]

[N(CN)<sub>2</sub>] (1) + aminoacid (2) + H<sub>2</sub>O (3) at 298 K

<b>[C<sub>4</sub>mim][N(CN)<sub>2</sub>] + Lys + H<sub>2</sub>O</b>	
<b>100 w<sub>1</sub></b>	<b>100 w<sub>2</sub></b>
84.512	2.306
72.366	5.934
53.197	8.059
48.202	10.830
44.120	13.126
38.975	16.428
34.334	19.675
30.594	22.307
25.277	26.439

**Table S4** - Correlation parameters used in eq 1 to describe the (IL + aa + water) binodals, and respective standard deviations ( $\sigma$ ), at 298 K.

IL + Pro + water	$A \pm \sigma$	$B \pm \sigma$	$C \pm \sigma$	$R^2$
[C <sub>4</sub> mim][BF <sub>4</sub> ]	175 ± 7	-0.40 ± 0.02	(1.6 ± 0.6) × 10 <sup>-5</sup>	0.9977
[C <sub>4</sub> mim][CF <sub>3</sub> SO <sub>3</sub> ]	249 ± 11	-0.38 ± 0.01	(6 ± 1) × 10 <sup>-6</sup>	0.9992
IL + Lys + water	$A \pm \sigma$	$B \pm \sigma$	$C \pm \sigma$	
[C <sub>4</sub> mim][BF <sub>4</sub> ]	258 ± 19	-0.93 ± 0.04	(-1.1 ± 0.2) × 10 <sup>-4</sup>	0.9871
[C <sub>4</sub> mim][CF <sub>3</sub> SO <sub>3</sub> ]	311 ± 11	-0.82 ± 0.02	(-5.4 ± 0.7) × 10 <sup>-5</sup>	0.9967
[C <sub>4</sub> mim][N(CN) <sub>2</sub> ]	137 ± 12	-0.31 ± 0.04	(6 ± 1) × 10 <sup>-6</sup>	0.9872
IL + Lys·HCl + water	$A \pm \sigma$	$B \pm \sigma$	$C \pm \sigma$	
[C <sub>4</sub> mim][BF <sub>4</sub> ]	206 ± 8	-0.70 ± 0.02	(-1.0 ± 0.5) × 10 <sup>-4</sup>	0.9979
[C <sub>4</sub> mim][CF <sub>3</sub> SO <sub>3</sub> ]	227 ± 9	-0.56 ± 0.01	(3.0 ± 0.5) × 10 <sup>-5</sup>	0.9982