

# Lower Critical Solution Temperature in the Metastable Region

## of an Ionic Solution in a Non-Polar Solvent

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Table A1

Separation temperatures of solutions of N<sub>444</sub>Br in toluene at the mol fraction x of the salt.

Commercial toluene		Dried toluene	
x	T/°C	x	T/°C
0.078	23.75	0.105	34.5
0.0086	22.0	0.0125	29.3
0.0144	14.6	0.142	26.5
0.0203	14.6	0.0151	26.5
0.0267	16.4	0.0175	25.5
0.0341	17.8	0.0204	24.7
0.0408	20.1	0.0209	24.7
0.0483	23.7	0.0236	24.6
0.0546	27.3	0.0267	24.6
0.0620	33.4	0.0276	24.6
0.0078	66.5	0.0311	24.7
0.0086	77.5	0.0334	24.5
		0.0360	25.05
		0.0473	28.55
		0.0504	30. 3
		0.0610	38.4
		0.0718	54
		0.0086	57
		0.0105	83.5
		0.0718	75

Table A2

Separation temperatures of the solutions of N<sub>4444</sub>Br in Toluene with added Trifluoro toluene as function of the mol fraction of the salt

2.18 mass% trifluoro toluene		1.98 mass % trifluoro toluene	
x	T/°C	x	T/°C
0.0174	77.3	0.0163	85.5
0.0207	84.6	0.0179	89
0.0239	88	0.0211	94
0.0268	89	0.0245	96.5
0.0303	89.8	0.0426	98
0.0344	89.5	0.0455	96
0.0396	89	0.0486	92.6
0.0428	90	0.0541	82.5
0.0467	87	0.0163	34.3
0.0174	44.9	0.0179	33.9
0.0207	42.4	0.0211	33.3
0.0239	42.5	0.0245	34.5
0.0268	43.2	0.0309	34.2
0.0303	43.75	0.0376	35.5
0.0344	44.9	0.0426	38.8
0.0396	46.4	0.0426	38.3
0.0407	44.2	0.0455	41.5
0.0428	46.45	0.0486	46.5
0.0467	50.1	0.0541	56.5

Table A3

## List of Screening experiments

Salt	Solvent	Concentration Range [mass%]	T-range [°C]	Observation
N <sub>5555</sub> Cl	toluene	9-28	25-95	l
N <sub>4444</sub> Cl	toluene	6-28	75-95	l
	o-xylene	18-25	60-70	l-l, UCST
	m-xylene	25	75-95	l-l
	p-xylene	25	75-95	l-l
	Ethylbenzene	18-25	50-95	l-l, UCST
N <sub>3333</sub> Cl	1,4 dioxane	30	25-95	s-l
N <sub>8888</sub> Br	toluene	4-42	25-80	l
N <sub>7777</sub> Br	toluene	5-36	25-70	l
N <sub>5555</sub> Br	toluene	6-33	50-80	l
N <sub>5555</sub> Br	ethylbenzene	3-14	25-60	s-l
N <sub>4444</sub> Br	benzene	5-38	25-60	s-l
	o-xylene	52	70-90	l-l
	p-xylene	5-39	70-102	l-l
	ethylbenzene	5-40	70-90	l-l
N <sub>7777</sub> I	Toluene	3-44	50-75	l
	111trifluoro toluene	2.7-18.7	50-85	l
N <sub>4444</sub> I	Benzene	>15	25-60	s-l
	Toluene	5-25	85-95	l-l
	o-xylene	19	25-95	l-l
	ethylbenzene	>5	90-92	l

The table gives the salts, the solvents, the considered concentration range, the temperature range and the phases (solid-liquid, liquid, liquid-liquid) observed in this range. Below the lower temperature the salt was

not completely solved. The experiments are very crude screening experiments. No detailed measurements of concentrations transition temperatures etc. were carried out.