

Supporting information

The chameleonic behavior of ionic liquids and its impact on the solubility parameters estimation

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Figures

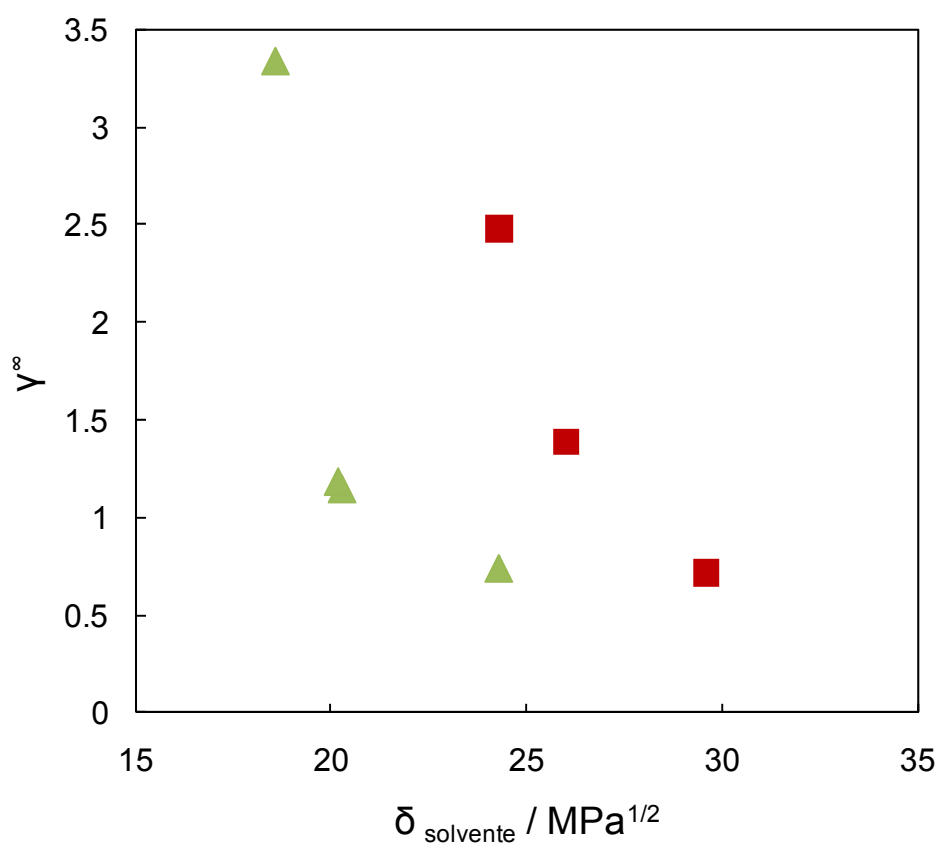


Figure S1 – Activity coefficients at infinite dilution for $[\text{C}_4\text{MIM}][\text{BF}_4]$ in a series of solvents expressed as function of the solvents solubility parameters.^[25, 71]

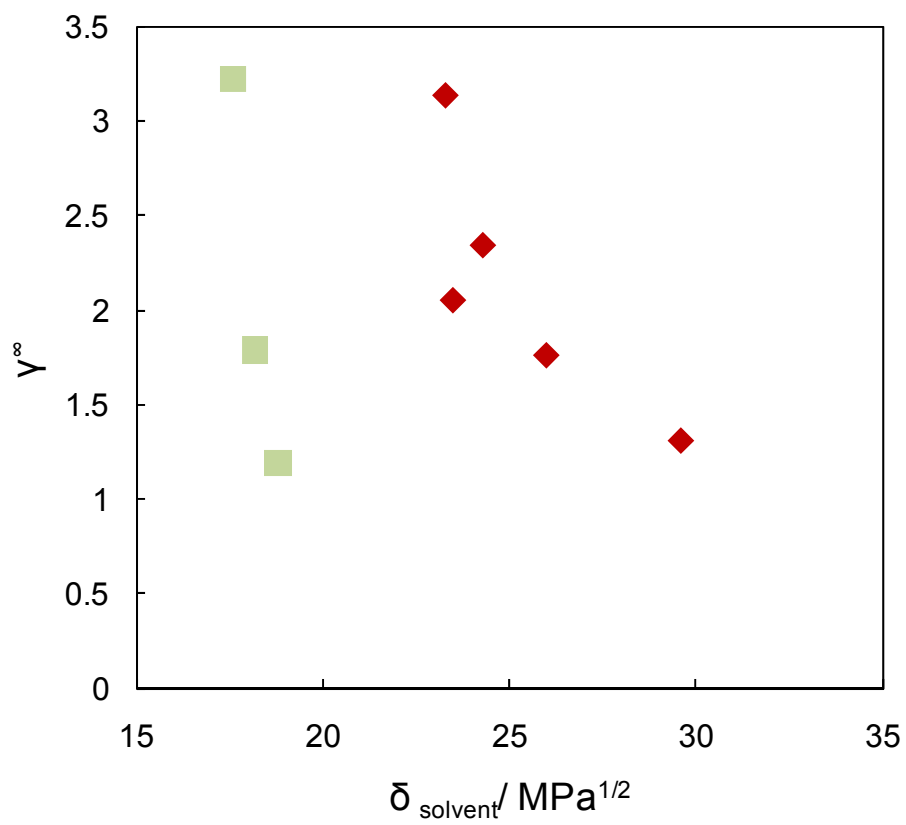


Figure S2 - Activity coefficients at infinite dilution for $[\text{C}_2\text{MIM}][\text{NTf}_2]$ in a series of solvents expressed as function of the solvents solubility parameters.^[25, 39]

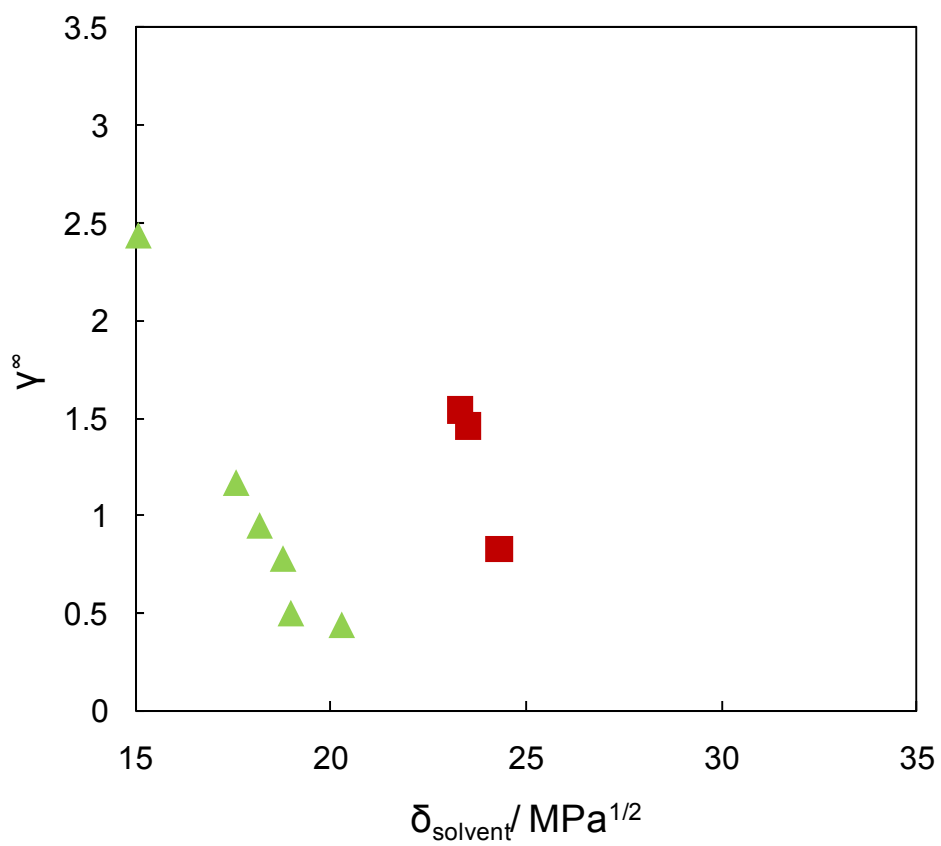


Figure S3 - Activity coefficients at infinite dilution for $[\text{C}_{16}\text{MIM}][\text{BF}_4]$ in a series of solvents expressed as function of the solvents solubility parameters.^[25, 90]

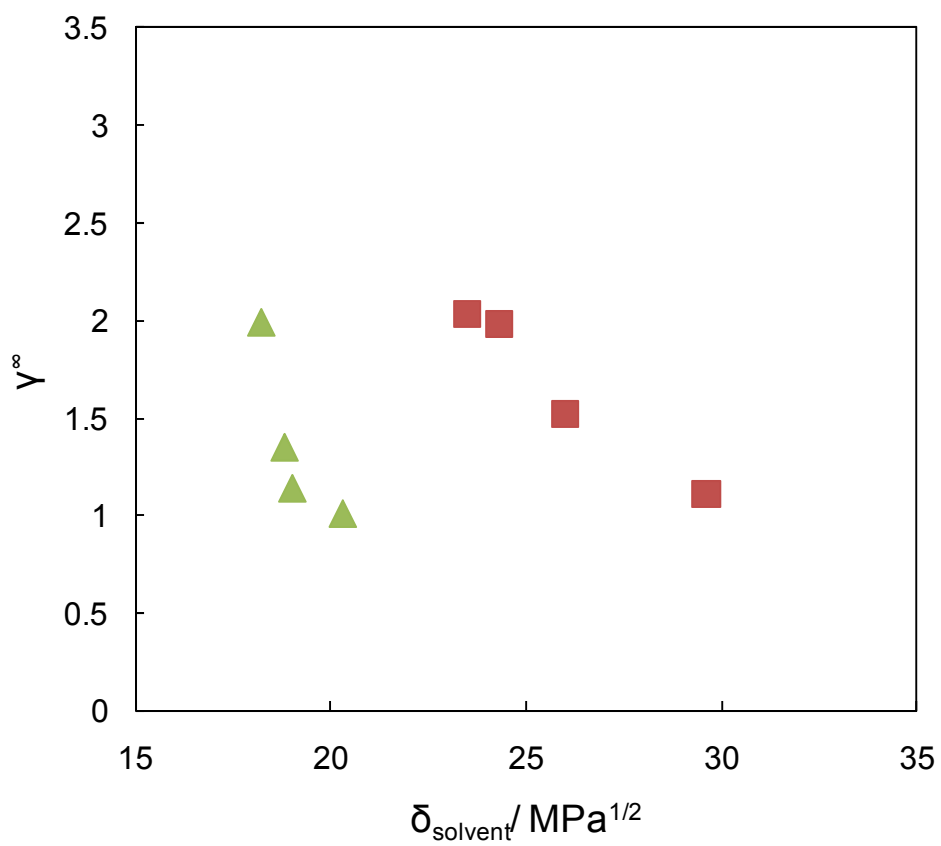


Figure S4 - Activity coefficients at infinite dilution for [Epy][NTf₂] in a series of solvents expressed as function of the solvents solubility parameters.^[25, 92]

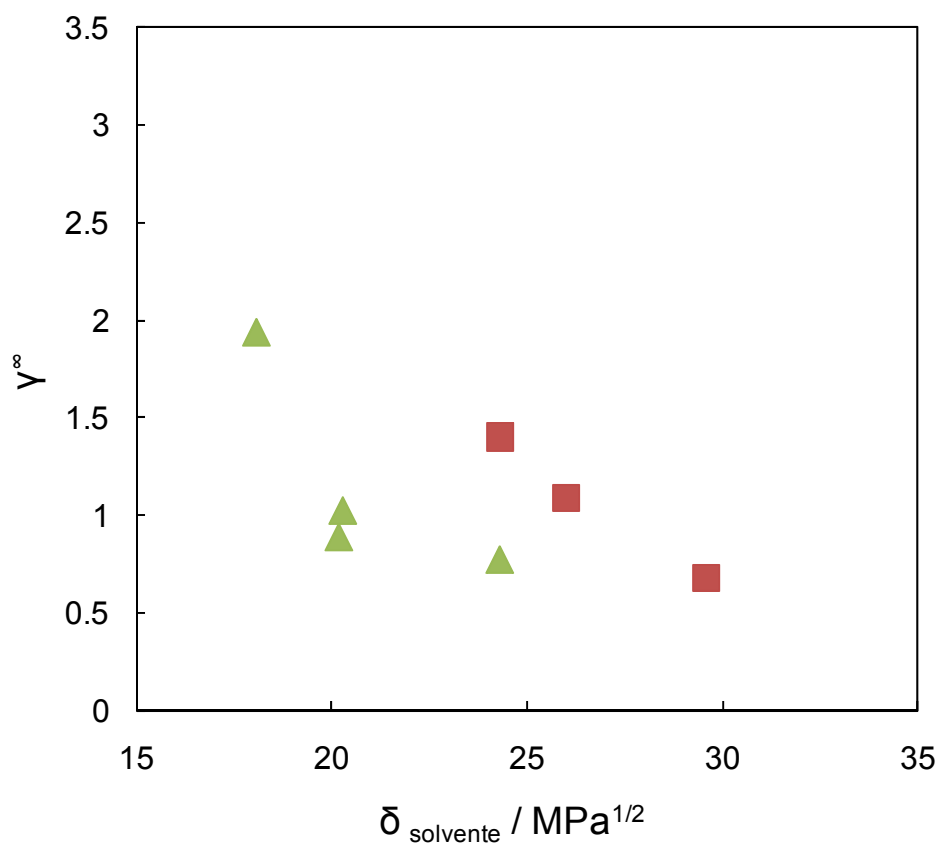


Figure S5 - Activity coefficients at infinite dilution for $[\text{C}_4\text{MIM}][\text{CF}_3\text{SO}_3]$ in a series of solvents expressed as function of the solvents solubility parameters.^[25, 76]

Tables

Table S1 – Data of solubility of [C₄MIM][PF₆] in a mixture of 1-propanol and water, for different compositions.

1-propanol / vv %	δ / MPa ^{1/2}	x_{IL} / wt %
0	47.9	1.875
15	44.36	2.556
30	40.82	11.202
45	37.28	Miscible
60	33.74	Miscible
85	27.84	17.435
90	26.66	2.787

Table S2 - Data of solubility of [C₄MIM][PF₆] in a mixture of 1-propanol and toluene, for different compositions.

1-propanol / vv %	δ / MPa ^{1/2}	x_{IL} / wt %
100	24.300	0.600
85	19.115	0.140
70	20.03	0.513
55	20.945	miscible
40	21.86	miscible
25	22.775	miscible
10	23.69	0.782

Table S3 – Molar Volume data and respective Solubility Parameter for the range of solvents considered in the estimation of Solubility Parameter of Ionic Liquids.

Solvents	V_m / cm ³ .mol ⁻¹	δ_{solvent} / MPa ^{1/2}
propane	85	11.8
propane	89.4	13.1
pentane	116.1	14.3
hexane	131.6	14.9
heptane	147.4	15.1

1-hexene	125.9	15.1
octane	163.5	15.6
diethyl ether	104.8	15.8
methylcyclohexane	128.3	15.9
tetrachloromethane	97.1	17.6
ethylbenzene	123.1	18
p-xylene	123.9	18
o-xylene=1-2-dimethylbenzene	121.2	18
ethyl acetate	98.5	18.1
toluene	106.8	18.2
ethyl acetate	98.5	18.6
benzene	89.4	18.8
2-butanone	90.1	19
chloroform	80.7	19
acetylacetone=2,4 pentanedione	117.7	19.5
acetone=2-propanone	74	20.2
dichloromethane	63.9	20.3
1,4-dioxane	85.7	20.5
2-butanol	92	22.1
1-pentanol	108.7	22.3
1-butanol	92.8	23.3
2-propanol	76.8	23.5
acetonitrile	52.6	24.3
1-propanol	75.2	24.3
ethanol	58.7	26
methanol	40	29.6
water	18	47.9
