

Liquid-Liquid Phase Equilibrium of Two Ionic Liquids

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The unique properties of ionic liquids (ILs), such as a negligible vapour pressure, high chemical and thermal stabilities, wide liquidus temperature range, and the possibility of fine tuning their properties through appropriate cation/anion combinations make of them viable candidates to replace the common organic and volatile solvents currently used in an extensive range of industrial applications [1]. In fact, there are *circa* 600 different organic solvents used by industry while there are one million of possible combinations of ions or different ionic liquids [1]. In particular, ionic liquids have been designated as potential solvents for “clean” liquid-liquid extractions [2]. Therefore, the search on novel biphasic systems composed of two ionic liquids, while comprising the determination of their liquid-liquid equilibrium, allows the creation of a new plethora of separation processes constituted only by non-volatile solvents. In this work, immiscible mixtures of cholinium- and phosphonium-based ionic liquids were investigated and their phase diagrams were determined from 40°C to 150°C. Nuclear Magnetic Resonance (NMR) and Electrospray Ionisation - Mass Spectrometry (ESI-MS) were used as analytical techniques for the quantification of each ion/ionic liquid and for the evaluation of the ionic exchange extension in such mixtures.

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References

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