

Understanding Aqueous Solutions of Ionic Liquid Mixtures: A Step Towards the Design of Ionic Liquids Formulations

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Ionic liquids (ILs) have been foreseen as alternative solvents to replace volatile solvent used in the current chemical and separation process. They are often known as designer solvents but their designer solvent character can be further enhanced by the use mixtures instead of pure compounds.

In the present work, we have studied the non ideality of ionic liquid mixtures in aqueous solutions as a method to develop heuristics allowing the design ILs formulation by mixing two ILs with different basicity, namely [C₄C₁im]Cl (high basicity) and [C₄C₁im][CF₃SO₃] (low basicity). The results here reported show that while the water activity of these mixtures cannot be considered a linear combination of the behaviors of the two binaries they cover nevertheless a wide range of basicities and that behaviour can be adjusted by the proper combination of two ILs in aqueous solution. This suggests the possible use of mixtures of variable basicity as alternative to the utilization of individual ILs in the design and optimization of advanced media for separations or chemical processing.