

Author(s): Reis, M (Reis, Marina); Leitao, RE (Leitao, Ruben E.); Martins, F (Martins, Filomena)

Title: Enthalpies of Solution of 1-Butyl-3-methylimidazolium Tetrafluoroborate in 15 Solvents at 298.15 K

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Abstract: Enthalpies of solution of 1-butyl-3-methylimidazolium tetra fluoroborate, [BMIm]BF₄, are reported at 298.15 K in a set of 15 hydrogen bond donor and hydrogen bond acceptor solvents, chosen by their diversity, namely, water, methanol, ethanol, 1,2-ethanediol, 2-chloroethanol, 2-methoxyethanol, formamide, propylene carbonate, nitromethane, acetonitrile, dimethyl sulfoxide, acetone, N,N-dimethylformamide, N,N-dimethylacetamide, and aniline. These values are shown to be largely independent of [BMIm]BF₄ concentration. The obtained enthalpies of solution vary from very endothermic to quite exothermic, thus showing a very high sensitivity of the enthalpies of solution of [BMIm]BF₄ to solvent properties. Solvent effects on the solution process of this IL are analyzed by a quantitative structure-property relationship methodology, using the TAKA equation and a modified equation, which significantly improves the model's predictive ability. The observed differences in the enthalpies of solution are rationalized in terms of the solvent properties found to be relevant, that is, π^* and E-T(N).

Addresses: [Reis, Marina; Leitao, Ruben E.; Martins, Filomena] Univ Lisbon, Dept Quim & Bioquim, Fac Ciencias, CQB, P-1749016 Lisbon, Portugal; [Leitao, Ruben E.] CQB, Dept Engn Quim, ISEL, Inst Politecn Lisboa, P-1950062 Lisbon, Portugal

Reprint Address: Martins, F, Univ Lisbon, Dept Quim & Bioquim, Fac Ciencias, CQB, Ed C8, Campo Grande, P-1749016 Lisbon, Portugal.

E-mail Address: filomena.martins@fc.ul.pt

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