

Vapor Pressures of [C_nPy][Ntf₂] Ionic Liquids

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The knowledge of vapor pressures of ILs is fundamental for the development of theoretical models and for the interpretation of many other physical properties. From the vapor pressure, it is possible to derive the enthalpies and the entropies of vaporization, leading to a thermodynamic interpretation of the vaporization equilibrium and giving some insights concerning the cation and anion interaction as well as the percolation phenomenon. The present work is part of a wider project, dealing with the thermodynamic study of pure ionic liquids, focused on a highly accurate volatility study of ionic liquids. The vapor pressures of *N*-alkylpyridinium bis(trifluoromethylsulfonyl)imide ([C_nPy][Ntf₂], where n = 2 - 4) were measured using a Knudsen effusion apparatus combined with a quartz crystal microbalance.[1] Based on the previous data, the standard molar enthalpies, entropies and Gibbs energies of vaporization were derived. The obtained results will be used to evaluate and rationalize the volatility of ILs focusing on the entropic and enthalpic contributions, cation identity and the effect of the alkyl chain length.

[1]- L. M. N. B. F. Santos, L. M. S. S. Lima, C. F. R. A. C. Lima, F. D. Magalhães, M. C. Torres, B. Schröder, M. A. V. Ribeiro da Silva, *J. Chem. Thermodyn.* 2011, 43, 834-843.

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