Effect of the Cation Symmetry on the Volatility of $[C_nC_nim][Ntf_2]$ Ionic Liquids

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The volatility study of the imidazolium based IL family, ($[C_nC_1im][Ntf_2]$ with n =2 – 8, 10, 12) has already been performed in our laboratory, and for the first time, the percolation phenomenon was experimentally evidenced based on the thermodynamic parameters of vaporization.[1] In order to evaluate the effect of the cation topological symmetry, the vapor pressures of 1,3-dialkylimidazolium bis(trifluoromethylsulfonyl)imide ($[C_nC_nim][Ntf_2]$, where n = 1 - 6), were additionally measured using the same Knudsen effusion apparatus combined with a quartz crystal microbalance.[2] Based on the vapor pressure dependence with the temperature, the standard molar enthalpies, entropies and Gibbs energies of vaporization were derived. The results obtained will be used to dissect the enthalpic and entropic contribution to the ILs volatility and to assess the effect of the cation symmetry on the volatility.

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