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Study of Benzyl- or Cyclohexyl-Functionalized Ionic Liquids Using Inverse Gas Chromatography

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Abstract

Inverse gas-liquid chromatography has been used to measure infinite dilution activity coefficients and gas-to-ionic liquid partition coefficients for a chemically diverse set of organic solutes dissolved in 1-benzyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide, 1-benzyl-1-methylpyrrolidinium bis(trifluoromethylsulfonyl)imide, 1-cyclohexylmethyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide, and *N*-cyclohexylmethylpyridinium bis(trifluoromethylsulfonyl)imide ionic liquids in the temperature range from 323.15 K to 373.15 K. The measured experimental data were extrapolated to 298.15 K and the resulting values correlated mathematically with the Abraham solvation parameter model. The derived Abraham model correlations rigorously describe the experimental partition coefficient data to within 0.14 (or fewer) log units.

Key Words and Phrases: Ionic Liquids, activity Coefficients, gas-to-ionic liquid partition coefficients, inverse gas chromatography

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