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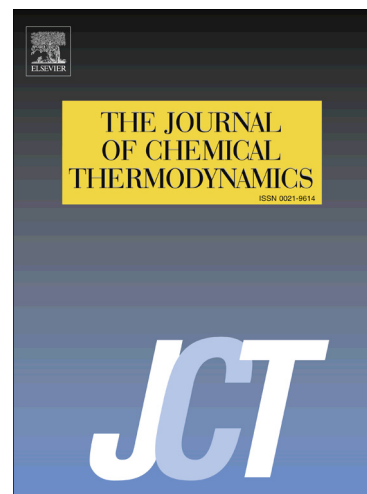
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Study of separation of water + 2-propanol mixture using different ionic liquids: 1-butyl- 3-methylimidazolium bis(trifluoromethylsulfonyl)imide or 1-butyl- 1-methylpyrrolidinium bis(trifluoromethylsulfonyl)imide

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Abstract

The liquid–liquid equilibria data of water (1) + 2-propanol (2) + [bmim][Tf₂N] (3) and water (1) + 2-propanol (2) + [bmp][Tf₂N] (3) at 283.2, 303.2 and 323.2 K and atmospheric pressure were measured with the objective of understanding the behaviour of these two systems and to try to improve the extraction of 2-propanol from water from economical and environmental points of view. The thermodynamic parameters were determined using the non-random two-liquid (NRTL) and universal quasichemical (UNIQUAC) models, and excellent results were achieved in both cases (the maximum root-mean-square deviation was 0.433%). Lastly, the capability of the two ionic liquids to separate 2-propanol from the aqueous mixture was studied and compared with the capabilities of other bis(trifluoromethylsulfonyl)imide-based ionic liquids from the literature.

Keywords: liquid–liquid equilibria; ionic liquid; 1-butyl-3-methylimidazolium bis(trifluoromethylsulfonyl)imide ([bmim][Tf₂N]); 1-butyl-1-methylpyrrolidinium bis(trifluoromethylsulfonyl)imide ([bmp][Tf₂N]); 2-propanol; water.

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