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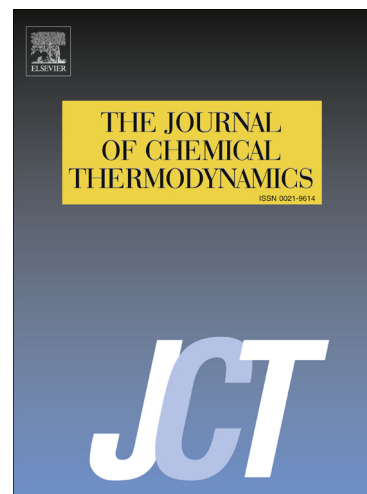
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Correlation and thermodynamic analysis of solubility of diphenhydramine hydrochloride in pure and binary solvents

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Abstract

The solubility of diphenhydramine hydrochloride (DH) in four pure solvents (methanol, ethanol, acetone and ethyl acetate) and two binary solvents (ethanol + ethyl acetate and ethanol + acetone) was determined at temperatures from 278.15 K to 323.15 K. The experimental solubility of DH is well correlated by the modified Apelblat equation, the CNIBS/R-K equation and the hybrid model, respectively. All the measured solubility of DH shows temperature dependence. In binary mixtures, the solubility curve displays a maximum with the solvent composition changing, particularly, the maximum point increases with temperature. Moreover, the activity coefficients as well as thermodynamic properties of mixing were obtained and discussed.

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