

RESEARCH PAPERS

一个基于NRTL方程的液体混合物表面张力模型

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摘要 A new equation for predicting surface tension is proposed based on the thermodynamic definition of surface tension and the expression of the Gibbs free energy of the system. Using the NRTL equation to represent the excess Gibbs free energy, a two-parameter surface tension equation is derived. The feasibility of the new equation has been tested in terms of 124 binary and 16 multicomponent systems(13-ternary and 3-quaternary) with absolute relative deviations of 0.59% and 1.55% respectively. This model is also predictive for the temperature dependence of surface tension of liquid mixtures. It is shown that, with good accuracy, this equation is simple and reliable for practical use.

关键词 [model](#) [surface tension](#) [liquid mixtures](#) [Gibbs free energy](#) [NRTL equation](#)

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A Surface Tension Model for Liquid Mixtures Based on NRTL Equation

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Abstract A new equation for predicting surface tension is proposed based on the thermodynamic definition of surface tension and the expression of the Gibbs free energy of the system. Using the NRTL equation to represent the excess Gibbs free energy, a two-parameter surface tension equation is derived. The feasibility of the new equation has been tested in terms of 124 binary and 16 multicomponent systems(13-ternary and 3-quaternary) with absolute relative deviations of 0.59% and 1.55% respectively. This model is also predictive for the temperature dependence of surface tension of liquid mixtures. It is shown that, with good accuracy, this equation is simple and reliable for practical use.

Key words [model](#); [surface tension](#); [liquid mixtures](#); [Gibbs free energy](#); [NRTL equation](#)

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