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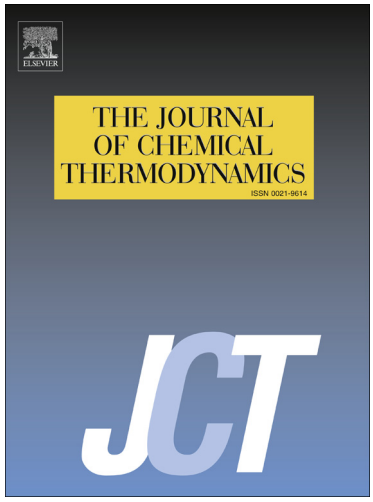

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Measurement and thermodynamic modelling of ternary liquid-liquid equilibrium for extraction of thioglycolic acid from aqueous solution with different solvents

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Abstract: Liquid-liquid equilibrium (LLE) data for the ternary systems {water + thioglycolic acid + (butyl acetate, isobutyl acetate or isopropyl acetate)} were determined at 293.15 K and 101.3 kPa. The solubility values were obtained by using the titration method. Moreover, the Hand and Othmer-Tobias equations were applied to validate the reliability of the obtained LLE values, and the distribution coefficients and separation factors were calculated to evaluate the solvents performances to extract thioglycolic acid from aqueous solution. The results indicate that isobutyl acetate is the best among the organic solvents studied for the separation of thioglycolic acid from aqueous solution. The thermodynamic NRTL and UNIQUAC models were used to correlate the experimental LLE results for the systems studied, and the binary interaction parameter values of the two models were optimized from the LLE correlation.

Keywords: Liquid–liquid equilibria; Solubility; Thioglycolic acid; Extraction; Thermodynamic models

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