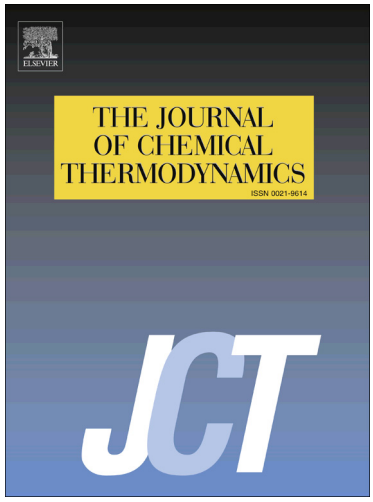

Liquid-liquid equilibrium for ternary systems of ethyl acetate/ isopropyl acetate + 2,2,3,3-tetrafluoro-1-propanol + water at 298.15, 318.15 K

Dongmei Xu, Lianzheng Zhang, Jun Gao, Dhakal Pratik, Liwen Zhao, Zhifang Cui

PII: S0021-9614(16)30404-9
DOI: http://dx.doi.org/10.1016/j.jct.2016.12.006
Reference: YJCHT 4917

To appear in: *J. Chem. Thermodynamics*

Received Date: 30 July 2016
Revised Date: 15 November 2016
Accepted Date: 4 December 2016

Please cite this article as: D. Xu, L. Zhang, J. Gao, D. Pratik, L. Zhao, Z. Cui, Liquid-liquid equilibrium for ternary systems of ethyl acetate/ isopropyl acetate + 2,2,3,3-tetrafluoro-1-propanol + water at 298.15, 318.15 K, *J. Chem. Thermodynamics* (2016), doi: http://dx.doi.org/10.1016/j.jct.2016.12.006

Liquid-liquid equilibrium for ternary systems of ethyl acetate/ isopropyl acetate + 2,2,3,3-tetrafluoro-1-propanol + water at 298.15, 318.15 K

Dongmei Xu, Lianzheng Zhang, Jun Gao, Dhakal Pratik, Liwen Zhao, Zhifang Cui*

College of Chemical and Environmental Engineering, Shandong University of Science and Technology, Qingdao, 266590, China

Corresponding Author

*E-mail: gao@sdust.edu.cn.

Abstract: The liquid-liquid equilibrium (LLE) data for the ternary systems of ethyl acetate + 2,2,3,3-tetrafluoro-1-propanol + water and isopropyl acetate + 2,2,3,3-tetrafluoro-1-propanol + water were measured at T = 298.15 K and T = 318.15 K under 101.3 kPa. Bachman and Hand equations were selected to check and confirm the reliability of the measured tie-line data, and the correlation coefficient (R^2) were all close to 1. Meanwhile, the distribution coefficient and separation factor were calculated and discussed in detail. In addition, the nonrandom two-liquid (NRTL) and universal quasi-chemical (UNIQUAC) activity coefficient models were applied to correlate the experimental data, and the *RMSD* values for the two models obtained are 0.0104, 0.0104 correlated by NRTL, and 0.0077, 0.0128 by UNIQUAC, respectively, which indicate that the experimental LLE data can be successfully correlated by both the NRTL and the UNIQUAC models. Also, the corresponding binary interaction parameters were regressed. The correlated model parameters could be applied for the optimization and design of the separation process.

Keywords: Liquid-liquid equilibrium; 2,2,3,3-tetrafluoro-1-propanol; ethyl acetate; isopropyl acetate; NRTL; UNIQUAC