Consistency test for ternary liquid-liquid equilibrium based on the point-to-point test and statistical tests

<u>류범찬</u>, 강정원[†]
고려대학교

(jwkang@korea.ac.kr[†])

The consistency test evaluates the thermodynamic quality of the data set using thermodynamic rules, usually the Gibbs-Duhem equation. Many researchers developed consistency tests because the test provides comprehensive information about experimental data. Unfortunately, test development for liquid-liquid equilibria (LLE) has progressed little compared to many VLE tests. Therefore, this study proposes a method for testing ternary LLE data based on point-to-point and statistical tests. We modified the Gibbs-Duhem equation to apply to the reported LLE data easily using some assumptions. Statistical analysis on model capability and consistency test make the LLE consistency test sufficient for estimating data quality. We applied the test to the experimental ternary LLE data set, including type 0, 1, 2, and 3 LLE data. The results showed that the test successfully evaluated different types of LLE data sets. In particular, the LLE test detected some outliers that would otherwise be difficult to find.