Vapor−Liquid Equilibria Measurements of Bitter Orange Aroma Compounds Highly Diluted in Boiling Hydro-Alcoholic Solutions at 101.3 kPa

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ABSTRACT:
In this work, experimental vapor−liquid equilibria (VLE) of water + ethanol + five aroma compound (two monoterpene hydrocarbons, α-pinene and D-limonene, and three oxygenated compounds, linalool, citral, and linalool oxide) mixtures were measured at boiling point at 101.3 kPa for ethanol molar fractions ranging from 0.0140 to 0.8389. The five aroma compounds were selected for their strong contribution to the aroma of the distillate of bitter orange essential oil. First, the thermodynamic consistency of the experimental VLE data was validated. Then the NRTL and Henry's law type models were tested to correlate the experimental data. Good agreement was obtained with both models to predict the phase equilibrium of the oxygenated compounds, and a better

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