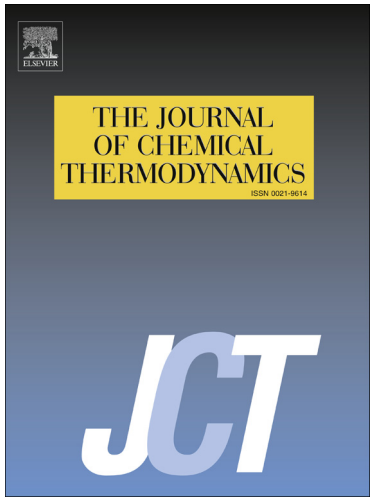


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# Phase behaviour of the pseudo-ternary system carbon dioxide + ethanol + fish oil at high pressures

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**ABSTRACT**

This work provides experimental fluid phase equilibrium data of the pseudo-ternary mixture $CO_2$ + ethanol + fish oil, a system of interest in pharmaceutical and food-industry applications such as the production of omega-3-enriched lipid derivatives at mild, non-oxidative conditions. Experimental tie-lines were obtained by means of an analytical isothermal method with recirculation of the vapour phase. Measurements were carried out in the temperature range 323.15 K-343.15 K and at pressures from 10 MPa to 30 MPa. The Peng-Robinson equation of state coupled with the conventional van der Waals mixing rules with two adjustable parameters was used for experimental data correlation.

**Keywords**

Phase equilibrium, Supercritical carbon dioxide, Ethanol, Fish oil, Thermodynamic modelling, Peng-Robinson equation of state.