High pressure hase behavior of lactate esters in supercritical carbon dioxide

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Lactate esters are the interesting solvent because of eco-friendly solvents made from bio-sources. Some parts of chemical industry substitute many them for halogenated solvents due to the environment regulation. However, it is difficult to remove by the distillation methods due to the high boiling point. This problem can be solved by supercritical carbon dioxide ($scCO_2$) which is easily evaporated. For the design and operation of SCF treatment of lactate ester, the thermodynamic data of the CO_2 + lactate ester system are required. Therefore, we measured the pressure-composition (P-x) isotherms for CO_2 + methyl lactate and CO_2 + ethyl lactate binary mixture systems. The static method with a variable volume view cell was employed to obtain the experimental data in the CO_2 at temperature from 323 to 363 K. Experimental data were correlated with the Peng-Robins Equation of state (PR-EOS).