

High Pressure Phase Behavior of Carbon Dioxide-Heptadecafluorodecyl Acrylate and Carbon Dioxide-Heptadecafluorodecyl Methacrylate systems

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Fluoropolymer was used in the various industrial applications including seals, bearings, antistick coatings, self-lubricating parts, pipe liners and micropowders etc. Most fluoropolymers were insoluble in many organic solvents except CFCs. But CFCs have many environmental problems. So it is necessary to develop alternative solvent for synthesis and processing of fluoropolymers. For the homogeneous radical polymerization, monomer and polymer must be dissolved in $scCO_2$ at given temperature and pressure.

In this work we measured pressure-composition(P-x) isotherms for binary mixture of CO_2 + perfluoroalkyl (meth)acrylate using a variable volume cell at temperature from 323 to 353K and pressure up to 140bar. Phase behavior of these binary systems were modeled with Peng-Robinson equation of state with two adjustable parameters.