

High Pressure Phase Equilibria for the 2-Ethoxyethyl Methacrylate and 2,3-Epoxypropyl Methacrylate in Supercritical Carbon Dioxide

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In this work, the solubility curves of binary mixture for 2-ethoxyethyl methacrylate(2-EEMA) and 2,3-epoxypropyl methacrylate(2,3-EPMA) in supercritical carbon dioxide are measured in static method at five temperatures of (40, 60, 80, 100 and 120) °C and pressures up to 213 bar. Both CO₂ + 2-EEMA and CO₂ + 2,3-EPMA systems have continuous critical mixture (locus) curves that exhibit maximums in pressure – temperature space between the critical temperatures of CO₂ + 2-EEMA and CO₂ + 2,3-EPMA. The solubility of 2-EEMA and 2,3-EPMA for the CO₂ + 2-EEMA and CO₂ + 2,3-EPMA systems increases as the temperature increases at a fixed pressure. The CO₂ + 2-EEMA and CO₂ + 2,3-EPMA systems exhibit type-I phase behavior. The experimental results for the CO₂ + 2-EEMA and CO₂ + 2,3-EPMA systems are correlated with Peng–Robinson equation of state using a mixing rule including two adjustable parameters.