

Phase Behavior for the Binary and Ternary Mixture of 2-Phenylethyl Methacrylate Polymers and Monomers in Compressed Liquid Fluids

양동선, 변헌수*, 윤순도

전남대학교

(hsbyun@chonnam.ac.kr*)

Experimental cloud-point curves of binary and ternary mixtures for poly(2-phenylethyl methacrylate) [P(2-PEMA)] in supercritical carbon dioxide(CO₂) + 2-phenylethyl methacrylate(2-PEMA), CO₂ + dimethyl ether (DME), Propylene + DME and 1-Butene + DME were measured at temperature range of (48 ~ 202)°C and pressures up to 2243.10 bar. Cloud-point behavior of those systems were showed in changed of the pressure-temperature (P-T) when solvent content was changed. Experimental data of phase behaviors for 2-PEMA in supercritical carbon dioxide was performed at temperature range of (40 ~ 120)°C and pressure range of 77 ~ 267 bar. The carbon dioxide + 2-PEMA systems exhibit type-I phase behavior with a continuous mixture critical curve. The experimental result for the CO₂ + 2-PEMA systems is correlated with Peng-Robinson equation of state using a mixing rule including two adjustable parameters. The critical property of 2-PEMA is predicted with Joback-Lydersen and Lee-Kesler method.