Phase Behavior of Polymethylmethacrylate in HCFC-22 and HCFC-22 + CO_2 in Supercritical State

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We measured the cloud point using the variable volume cell apparatus for Poly(methly methacrylate)(PMMA) in dimethylether(DME) and carbondioxide at high pressure.
In this work, we measured cloud points using an apparatus with variable volume cell to get data on the solubility of PMMA in various solvents such as dimethylether(DME)and CO_2. PMMA was dissolved well in the two solvents below 27MPa, and the cloud points of this were measured with the concentrations in solvents. The solubility of PMMA was not concerned with concentrations of PMMA and exhibited LCST behavior in each solvent. We also investigated the effect of CO_2 on the cloud point of PMMA as adding CO_2 which is non-polar into each solvent. The cloud point pressure of PMMA increased proportionally to the amount of CO_2 added at the same temperature. According to this result, it was known that CO_2 could be used as an anti-solvent, and the cloud point of PMMA could be controlled by changing the concentration of CO_2.