Cloud Point of Poly (methylmethacrylate) in Dimethylether, and Dimethylether + CO_2 in Supercritical State

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In this work, we measured cloud points using a static type apparatus with variable volume cell to get data on the solubility of PMMA in DME. PMMA was dissolved well in the solvents in the range of 25.18 ~ 45.03MPa, and the cloud points of this were measured with the concentrations (1, 3, 5, wt%) in solvents. The solubility of PMMA was not concerned with concentrations of PMMA and exhibited LCST (lower critical solution temperature) 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.