

Solubility of polycaprolactone in various solvents with and without CO₂

류지호, 박지영¹, 이윤우², 유기풍, 임종성*
서강대학교 화공생명공학과; ¹한국과학기술연구원;
²서울대학교 응용화학부
(limjs@sogang.ac.kr*)

A biodegradable polycaprolactone (PCL) is used as a coating material on drugs for microencapsulation in various solvents, and this microencapsulation is applicable to drug delivery system. In case drugs were encapsulated by a coating material, the manufacturing condition and method could be changed according to the solubility of coating materials in solvent, so the solubility data are requisite. In this work, we measured cloud points using an apparatus with variable volume cell to get data on the solubility of PCL in solvents such as HCFC-22, HFC-143a and DME. PCL was dissolved well in HCFC-22 and DME below 37MPa, and the cloud points of this were measured with the concentrations in solvents. On the other hand, PCL was not dissolved in HFC-143a. We also investigated the effect of CO₂ on the cloud point of PCL as adding CO₂ into HCFC-22, DME. The cloud point pressure of PCL increased proportionally to the amount of CO₂ added at the same temperature. According to this result, CO₂ could be used as an anti-solvent, and the cloud point of PCL could be controlled by changing the concentration of CO₂.