

Dispersion Polymerization of Poly(vinyl pyrrolidone) and Poly(vinyl caprolactam) in supercritical CO₂

배 원, 권소영, 신보현, 김화용*
서울대학교 응용화학부
(hwayongk@snu.ac.kr*)

Poly(vinyl amide) such as poly(vinyl pyrrolidone) and poly(vinyl caprolactam) are highly polar, amphoteric polymers. Poly(vinyl amide) exhibits a unique properties, including solubility in water and in organic solvent. Also Poly(vinyl amide) has very low toxicity, high complexing ability, good film forming characteristics and adhesive properties. Therefore Poly(vinyl amide) has been used in a wide variety of industrial applications.

We performed heterogeneous dispersion polymerization of poly(vinyl pyrrolidone) and poly(vinyl caprolactam) using poly[perfluoro (meth)acrylate] as the dispersant in scCO₂. Polymerization was carried out at T=343K, P=200-340 bar and AIBN was used as a initiator. Experimental results have shown that particle size of PVP and PVCL decreased as the dispersant concentration increased. In our polymerization conditions, poly(HDFDMA) was a better dispersant for PVP in scCO₂ to control particle size and particle size distribution. And for PVCL, poly(HDFDA) have shown better results to control particle size and particle size distribution than poly(HDFDMA).