

Recrystallization of Polycaprolactone (PCL) into Submicron Particles in Supercritical Carbon Dioxide

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Supercritical fluids have been used as solvents in a variety of biopolymer processes such as polymer synthesis, process separations, polymerization, and related processes. Recently, supercritical CO₂ has been investigated as a viable solvent for processing biodegradable polymer, although to the best of our knowledge, the phase behavior of polycaprolactone in supercritical CO₂ has been reported. The semi-continuous supercritical anti solvent (SAS) process was used to produce the PCL into the submicron particles. The object of this study was to investigate the effect of the various process parameters such as temperature, pressure and solution concentration on particles of PCL. The SEM (scanning electron microscope) was used to observe the morphology, size, and of particles recrystallized by SAS process. The mean particle size and its distribution of processed particles were measured by using a laser diffraction particle size analyzer. Going through SAS process, particles size was reduced and its shape became spherical.