Recrystallization of Polystyrene using the Supercritical Carbon Dioxide as an Anti Solvent

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Polystyrene is able to be used as a source for toner when its particle size is about 5μm. The object of this study is to find out the experimental condition which produced particles having about 5μm. DCM (dichloromethane) was used as a solvent for the polystyrene while CO_2 was used as an anti solvent. To find it, temperature was ranged from 40℃ to 60℃ with 10℃ increment, pressure was 70, 150 and 200 bar, respectively. Polystyrene concentration in DCM was varied from 4.0wt% to 50.0wt% to investigate the effect on particles size by relative ratio of polystyrene solution and CO_2. The polystyrene row materials had rod shape that was 0.5cm length, width ranging from 0.2cm to 0.35cm and from 0.1 to 0.2cm thick. Going through SAS process, particles size was reduced and its shape became spherical.