

The effect of solution injection rate and CO₂ feed rate on re-crystallization of PS (polystyrene) in various solvents

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Continuing the objective to find out the condition which produced particles having about 5 μ m to use a material for toner, we investigated the influence of solution injection rate and CO₂ feed rate on polystyrene particle. In various injection rate of solution, particles were relatively less aggregated with comparing to our previous results. This is attributed to increased feed rate of CO₂ from 3.0 ℓ /min to 6.0 ℓ /min. With increasing the solution injection rate, particles were more aggregated but initial particle size was smaller. If the feed rate of CO₂ was very abundant into a precipitator, we could have better particles. From these results, we found out atomization of PS/DCM (dichloromethane) solution is more excellent. In increasing the feed rate of CO₂, particles were less agglomerated and became smaller. We used DCM, toluene, acetone/DCM and acetone/ toluene as a solvent for PS. As a result, DCM is the most suitable solvent for re-crystallization of PS into submicron particles.