

Synthesis of styrene-based toner particles by suspension polymerization

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The grinding and classifying processes in producing toners by traditional method are energy intensive and of low efficiency. Therefore, polymerization routes to prepare toner particles have been proposed recently. Suspension polymerization method has the advantages of preparing toner particles with perfectly spherical shape and being less of the stabilizer adsorption in comparison to emulsion polymerization method. Good quality toners should have average particle size of several microns. In this study, a suspension polymerization of styrene-based toner particles in aqueous phase was employed to explore if polymerized toner particles ranging from 1 to 10 microns can be produced easily under controllable process conditions. Polyvinyl alcohol (PVA) was selected as a stabilizer and 2, 2'-azobis-(2-methylbutyronitrile (ADVN) as an initiator. To investigate particle size and particle size distribution, particle size analysis were carried out. Residual monomers in the aqueous phase were measured by GC. The morphology of prepared toner particles was observed by FE-SEM.