

Seeding effect on supersaturation and final crystal size of ammonium sulfate in solution crystallization

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The effect of seeding on supersaturation and crystal size of ammonium sulfate was investigated. In this study, different seeding methods were employed in terms of seeding amounts, seeding time and size of seed crystals and compared to unseeded processes. The effect on supersaturation was analysed based on the induction time and initial evaporation rate. In this experiment, grounded commercial grade of ammonium sulfate was used. Evaporation crystallization was used to generate the supersaturation at different temperatures, seed amounts and seeding time as well as solution addition to enhance fines dissolution.

The results from the study showed that in the presence of seed crystals secondary nucleation can be suppressed. Also the amount of required seeds to overcome the secondary nucleation depended on the mean size, quantity and quality of seeds, as well as the evaporation method. Thus, control of the seed amount for the seeded process adjusts the level of supersaturation, nucleation rate and growth rate.