Improving crystal size distribution by internal seeding combined cooling/anti-solvent crystallization with a cooling/heating cycle

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Improving crystal size distribution by internal seeding combined cooling/antisolvent crystallization with a cooling/heating cycle

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Abstract

This work investigates the effect of internal seeding and an initial cooling/heating cycle on the final crystal size distribution (CSD) during a combined cooling/antisolvent crystallization of L-asparagine monohydrate from it's aqueous solution using isopropyl-alcohol as antisolvent. Internal seeds were generated by one-pot addition of various amounts of antisolvent to the crystallizer. It was then followed by a cooling/heating cycle to dissolve the fines produced and thus obtain a suitable initial seed. A combined cooling/antisolvent crystallization was then followed by employing a linear cooling profile with simultaneous addition of antisolvent with a constant mass flow rate to promote the growth of the internally generated seeds. The amount of initial antisolvent influences the characteristics of the internal seeds generated and the effect of initial amount of antisolvent on the final CSD is investigated. It was found that the introduction of a single cooling/heating cycle significantly improves the reproducibility of final CSD as well as the mean size. Overall, the study indicates

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