

## Use of Calorimetry Model and Batch Control Technique for Scale-up of Unseeded Batch Cooling Crystallization of Organic Material

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A scale-up method to design and implement a cooling profile for unseeded batch cooling crystallization has been investigated. The reduced heat transfer area to volume ratio causes increase in the temperature difference between the reactor and jacket in a large crystallizer, which results in temperature and super-saturation gradient in the solution and consequently rough seeds or unwanted nucleation occurs. Addressing this problem, a method to design a cooling profile for a scaled-up crystallizer that can replicate the seed crystal generation in a small crystallizer and a batch control technique that can practice the cooling profile as designed in a large crystallizer is proposed.