

Mathematical modeling and optimal cooling strategy for batch crystallization

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A new model for a crystallization process in a batch reactor is developed to obtain desired crystal size distribution (CSD), while using a new theory concerning the metastable limit. The metastable limit is calculated through a dynamic approach. The model is derived by a population balance equations. The resulting partial differential equation is solved by a combination between the finite differences method and the method of characteristics. After the model is calculated, the cooling strategy is optimized. The optimization problem was solved by Generic Algorithm, a global optimization technique.