Computation of high energy crystal size distribution in a T-mixer

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Modelling of a crystallizer is needed for understanding of the interaction of crystal growth and nucleation and influence of process conditions on final product-size distribution. A model for crystallizer is usually based on combination of fluid mechanics with precipitation process description. The objective of this study is to apply a dispersion model for simulation of crystallization in T-mixer and for derivation of the model parameters from experimental data. The derived model is validated by comparison with experimental data on crystallization of high energy material in T-mixer reported by Korean Research Institute of Chemical Technology. For the given operating conditions we simulated crystallization in the crystallizer using the developed model. Kinetics parameters for nucleation and growth rates were determined from matching the simulated and experimental CSDs. The comparison between predicted CSDs and those from experiments leads to a rather good agreement. The model is valuable in studying the influence of various operating conditions on CSD.