

Modeling and Measurement Technique of Crystallization Process

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Crystallization kinetics determines crystal size distribution and crystal mean size which are important for crystallization processes. Therefore, many researchers have investigated mechanism and model to predict crystallization phenomena. Despite a number of developments, theoretical interpretation of experimental results in crystallization is carried out till now. In this research, a model for crystallization process is developed and a method for measurement of crystal growth and nucleation rate is proposed. The measuring technique is focused on how to measure the crystallization kinetics simply and easily as well as to have robustness on the morphology of crystal. In order to explain experimental results, a model for crystallization is developed using reaction kinetics model. The developed model is possible to predict crystallization phenomena such as crystal growth, dissolution, nucleation, meta-stable region and so on. For verifying the proposed model and method, a set of experiments for potash alum in water were conducted under various initial saturation temperatures and degree of super-saturation, and the crystallization kinetic parameters were estimated with the developed model.