Stochastic simulation of crystal particle attrition based on the statistic of the Lagrangian particle simulation in a stirred vessel

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Abstract

Attrition of crystal particles is one of the most significant phenomena to operate a crystallizer stably. On this subject we performed the Lagrangian simulation of crystal particles motion and particles collision on obstacles in a stirred vessel. In this study the stochastic simulation method of crystal particle attrition was developed based on the statistical data obtained from the Lagrangian simulation of solid particle suspension and collision on obstacles. The results show that the stochastic method is pretty efficient to estimate the time evolution of attrition volume and particle size, especially for crystallization that lasts several hours.