

## Stirring and Mixing Effects in Agglomerative Precipitation

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Precipitation of solid products from liquid, ionic solutions including mixing, chemical reaction, nucleation, growth and agglomeration of crystals is considered. Modeling of agglomeration that dominates the process at high supersaturation includes simulation of effects of bulk fluid motion, Brownian diffusion, colloidal forces and mixing. Modeling of particle collision is based on the convective-diffusion equation for the particle pair probability. Modeling of the relative particle motion includes effects of hydrodynamic interactions by employing the mobility functions. The colloidal interaction forces are calculated from the DLVO theory using the Gouy-Stern-Grahame double layer model and Nernst equation. Mixing controls distribution of supersaturation and affects electrical interactions between particles by affecting the local ion concentration. Mixing is modeled using PDF approach. Probability of agglomeration function is used to identify particle collisions leading to agglomeration, whereas multifractal formalism enables formulation of the subgrid closure for turbulent stresses. Results of computations are compared with experimental data.

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