

Micromixing effect in an opposed-jets precipitator

전호진, 김예훈, 함승주*

연세대학교

(Haam@yonsei.ac.kr*)

Precipitation of strontium sulfate has been studied in an opposed-jets precipitator, both experimentally and with computational fluid dynamics(CFD) modeling. The momentum balance, mass balance, precipitation kinetics, and population balance equation with micromixing model were implemented in the CFD software (Fluent). The influence of the hydrodynamics on the CSD of the precipitate has been studied by changing the inlet velocity and jets spacing while keeping the species concentration in the reactor constant. Higher dissipation energy is induced by higher inlet velocity and narrower jets spacing. As dissipation energy goes higher, the particle size is decreased and the number density is increased because of high nucleation rate. The CFD model was able to predict the influence of the inlet velocity and jets spacing on the mean particle size, the coefficient of variation of the particle size distribution, and the degree of conversion.