

### Mixing effect in an Opposed-jet precipitator

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To carry out rapid precipitation on a practical scale, the use of an Opposed-Jets mixer(O-J mixer) was explored in terms of its ability to deliver rapid micromixing. Precipitation of celestite has been carried out to examine micromixing and macromixing effects because of its good behavior, namely the wide range of supersaturation in which the precipitate does not agglomerate and keeps the same form factors. The precipitation in the O-J mixer has two mechanisms. First, induction time is larger than the characteristic time of fluid motion. Second, induction time is comparable or smaller than the characteristic time of fluid motion. First case, the influence of macromixing effect to CSD is dominant. The CSD became narrow as the jet Reynolds number is increased. And the median size of is decreased as the jet Reynolds number is increased. This means the precipitation occurred in more homogeneous surroundings as the jet Reynolds number became higher. In this case reactor geometry is important factor to design and after impingement, the velocity distribution of chamber affects the CSD of the precipitated product. To specify more clearly, the use of CFD was applied. Dissipation energy and fluid streak line was calculated on the several geometries and operation conditions.