

### Simulation of Taylor–Couette Reactor for Particle Classification using CFD

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Dynamic characteristics about motion of Taylor–vortex flow and separation of particles in Taylor–Couette reactor were investigated numerically and experimentally. Commercial computational fluid dynamics (CFD) program was used for calculation of the fluid dynamics of Taylor vortex flow and particle classification system. Gravitational and drag force balance affect the particles, when the Taylor–Couette reactor is vertically located. Thus, the particles movement depends on the size of particles and reactor operating conditions. When rotational speed of inner cylinder increases or the feed flow rate decreases, the axial moving velocity of the Taylor vortex decreases. In this study, the Taylor vortex moving velocity and moving region were determined for the various rotational speeds of the inner cylinder and inlet flow rates. To investigate the performance of particle classification, particles with various sizes were grown using heterogeneous reaction in multiphase solver. Then, the Taylor–Couette reactor applied as a crystallizer was proposed, which simultaneously classify the crystals