

### Coating Flows of Particle Suspensions

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Microscale flows of particle suspension may be affected by diffusion-induced particle migration and non-linear and time-dependent rheological behavior, which is associated with microscopic structures that are formed and destroyed during flow. Despite recent developments particle migration and on time-dependent models which are able to describe the mechanical behavior of thixotropic fluids, most complex flow analyses do not take these effects into account. Flow simulations of particle suspensions are generally developed considering uniform particle concentration within the flow and using steady-state data of viscosity as a function of local shear rate, i.e. using the liquid steady-state flow curve. This approach may lead to inaccurate results in small scale flows such as in coating processes, at the residence time inside the coating bead is in the order of a second or less. We study these phenomena on small scale flows, through a constricted channel and near the downstream meniscus of slot coating process.