

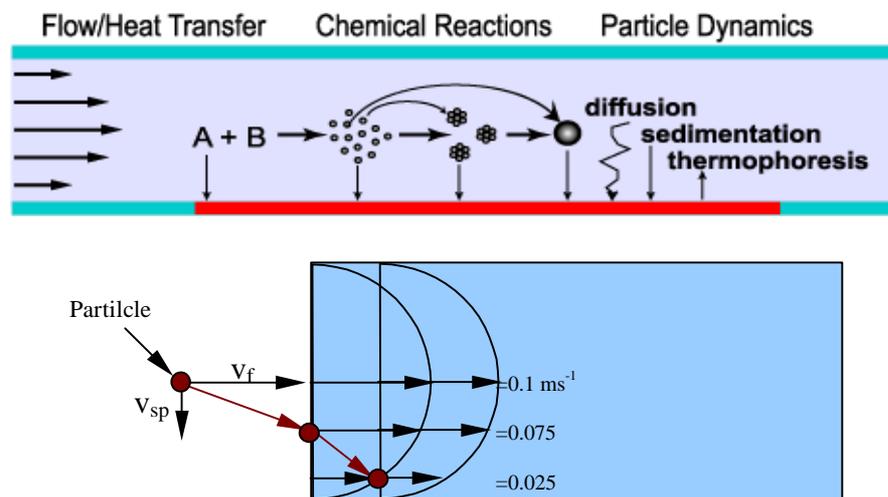
## CFD Investigation of Particle Deposition and Suspension in a Horizontal Pipe Flow

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### ABSTRACT

Particle deposition and suspension in a horizontal pipe flow have been studied with a 3D numerical multiphase mixture model available in Fluent 6.0. The model solves continuity and momentum equations for the mixture and volume fraction equations for the secondary phases. Governing equations were also solved for turbulence parameters of the particulate phases. Considering the forces include gravitational and drag force it is investigated how this deposition depends on the particle diameter, density, the height of the pipe, and the velocity of fluid. The deposition of heavier particles at the bottom wall of the pipe is greater at low velocity rather than high velocity but light particles remain suspended in fluid across the pipe circumference. Particles of small sizes have a greater concentration at the bottom wall of the pipe for low rather than high velocity, whereas there is a greater concentration of particles at the bottom wall of the pipe for higher rather than lower velocity for larger particles.



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