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Particle Deposition in Laminar Curved Duct Flow CHAD WINKLER, Southern Illinois University - Edwardsville, PRATAP VANKA, University of Illinois at Urbana-Champaign — Deposition of particles in a duct of square cross-section and constant streamwise curvature is studied numerically. Fully elliptic two-dimensional calculations with three nonzero velocity components are performed on a highly resolved grid. The Reynolds number is varied to simulate typical conditions in laminar micro-mixer devices. The particle density is assumed to be much greater than the fluid density such that the drag term dominates the particle equation of motion. Particle concentrations are low such that the one-way coupling approach is valid. Particle deposition patterns are shown in terms of probability distribution functions of deposition location. The Dean number is varied such that both the classic two- and four-cell Dean vortex patterns are simulated. Deposition trends are presented as a function of particle response time.

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