1063-76-214 **Matthew R Mata*** (matthewmata@math.ucla.edu), 520 Portola Plaza, Los Angeles, CA 90095-1555, and **Andrea L Bertozzi**. *A Numerical Scheme for Particle-Laden Thin Film Flow in 2-D.*

Currently, the physics of particle-laden thin film flow are not fully understood, and recent experiments have raised questions with current theory. There is a need for fully 2-D simulations to compare with experimental data. To this end, a numerical scheme is presented for a lubrication model derived for particle-laden thin film flow in two dimensions with surface tension. The scheme relies on an ADI process to handle the higher-order terms, and an iterative procedure to improve the solution at each timestep. This is the first paper to simulate the 2-D particle-laden thin film lubrication model. Several aspects of the scheme are examined for a test problem, such as the timestep, runtime, and number of iterations. The results from the scheme are compared to experimental data. The simulation agrees qualitatively with experiments, but could be quantitatively improved. (Received August 17, 2010)