Breakup of a droplet in a particulate shear flow AREZOO ARDEKANI, ROGER RANGEL, University of California Irvine — A numerical simulation using a Distributed-Lagrange-Multiplier-based computational method is conducted in order to simulate the breakup of a droplet in a particulate shear flow. The results show that the presence of particles strongly affects droplet deformation and may, in some cases, facilitate droplet breakup. In this problem, in addition to the capillary number and viscosity ratio, the particle volume fraction, the droplet-to-particle diameter ratio, and the particle initial distribution are important in controlling the droplet deformation and breakup.

Arezoo Ardekani
University of California Irvine

Date submitted: 30 Jul 2008   Electronic form version 1.4