

Abstract Submitted  
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**Roles of Particle-Wall and Particle-Particle Interactions in Highly Confined Suspensions of Spherical Particles being Sheared at Low Reynolds Numbers** ASHOK SANGANI<sup>1</sup>, National Science Foundation, ANDREAS ACRIVOS, City College of the City University of New York, PHILIPPE PEYLA, Laboratoire de Physique Interdisciplinaire — The roles of particle-wall and particle-particle interactions are examined for suspensions of spherical particles in a viscous fluid being confined and sheared at low Reynolds numbers by two parallel walls moving with equal but opposite velocities. It is shown that the channel-width scale interactions between the spheres tend to decrease the overall viscous dissipation in highly confined suspensions. In other words, the increase in the viscous dissipation caused by the particle-wall interactions is partially compensated by the particle-particle interactions. As a consequence, the total dissipation as a function of particle volume fraction in random suspensions may go through a maximum for a fixed ratio of sphere radius to spacing between the walls.

<sup>1</sup>On leave from Syracuse University

Ashok Sangani  
National Science Foundation/ Syracuse University

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