

Abstract Submitted  
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**Rheology and migration in colloidal and noncolloidal suspensions**

JEFFREY MORRIS, Levich Institute, City College of New York — Suspensions of solid particles in liquids provide a useful setting for development of continuum description of particle-laden fluids. These mixtures can be made density matched, so that the volume fraction is freely variable, and the rheology can be measured in standard rheometric apparatus. This work will describe the rheology of concentrated suspensions and its implications in continuum description of the bulk flow of the mixture; the development will focus on colloidal suspensions where Brownian motion is relevant, with the limit of strong shear taken to describe noncolloidal suspensions. The normal stress response of these suspensions will be shown to be critical to description of the migration of the particles, leading to strong concentration gradients. The normal stress differences as well as the isotropic normal stress of the particle phase, or nonequilibrium osmotic pressure, will be described and related to these migration phenomena. The implications of the normal stress differences in secondary flow generation will also be described.

Jeffrey Morris  
Levich Institute, City College of New York

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