

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Dynamics in Semidilute Rod Suspensions PRAMUKTA KUMAR, DAN BLAIR, JEFFREY URBACH, Department of Physics, Georgetown University — While shear-thinning in semidilute suspensions of rod-like particles has been widely observed, the underlying mechanisms are often unclear. We have developed a model system of fluorescent SU-8 rods suspended in a Glycerol/Ethylene-Glycol solution. This model system exhibits an order of magnitude difference in apparent viscosity at low shear rates as compared to high shear rates while showing no discernible difference in structure. Using a coupled confocal microscope and rheometer instrument along with fiber identification and particle tracking routines, we directly image and quantify the 3D structure and dynamics of our model system under shear flow in order to determine how particle interactions could be generating the observed shear thinning. In particular we look at how interactions modify Jeffery's orbits in semidilute suspensions as compared to the motion of an isolated rod or ellipsoid.

Pramukta Kumar
Department of Physics, Georgetown University

Date submitted: 08 Dec 2011

Electronic form version 1.4