

Abstract Submitted  
for the DFD17 Meeting of  
The American Physical Society

**Rheology of concentrated suspensions of non-colloidal rigid fibers**

ELISABETH GUAZZELLI, FRANCO TAPIA, Aix Marseille Univ, CNRS, SAIF SHAIKH, Aix Marseille Univ, CNRS, and University of Florida, JASON E. BUTLER, University of Florida, OLIVIER POULIQUEN, Aix Marseille Univ, CNRS — Pressure and volume-imposed rheology is used to study suspensions of non-colloidal, rigid fibers in the concentrated regime for aspect ratios ranging from 3 to 15. The suspensions exhibit yield-stresses. Subtracting these apparent yield-stresses reveals a viscous scaling for both the shear and normal stresses. The variation in aspect ratio does not affect the friction coefficient (ratio of shear and normal stresses), but increasing the aspect ratio lowers the maximum volume fraction at which the suspension flows. Constitutive laws are proposed for the viscosities and the friction coefficient close to this maximum flowable fraction. The scaling of the stresses near this jamming transition are found to differ substantially from that of a suspension of spheres.

Elisabeth Guazzelli  
Aix Marseille Univ, CNRS

Date submitted: 21 Jul 2017

Electronic form version 1.4