253d Jamming in Carbon Nanotube Suspensions

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We measure the anisotropy of sheared carbon nanotube suspensions over a broad range of concentration, aspect ratio, and strain rate using a variety of methods. In the semi-dilute regime, our measurements highlight the importance of hydrodynamic excluded-volume interactions with scaling in terms of a dimensionless shear rate, or Peclet number. In more concentrated suspensions, we find that the tubes form an elastic network in quiescence with behavior reminiscent of `jamming' below a critical shear stress. Above this threshold yield stress, we observe a variety of flow-induced structure as a function of confinement, concentration, strain rate and temperature.