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**Ideal Glass Transitions, Barrier Hopping and Dynamic Heterogeniety in Suspensions of Nonspherical Colloids** G. YATSENKO, K.S. SCHWEIZER, University of Illinois, Urbana, IL 61801 — The slow translational dynamics and nongaussian fluctuation effects of glassy isotropic fluids composed of nonspherical objects is studied based on a nonlinear stochastic Langevin equation of motion that includes activated barrier hopping. Suspensions of homonuclear diatomic and linear triatomic shaped colloids of variable bond length have been studied. The ideal glass transition boundary (crossover to activated dynamics) is predicted to be a nonmonotonic function of particle aspect ratio and surprisingly occurs at a nearly unique value of the dimensionless compressibility. The magnitude and volume fraction dependences of the entropic barrier, localization length and shear moduli for different aspect ratio systems collapse well onto master curves based on a reduced volume fraction variable that quantifies the distance from the ideal glass transition. Calculations for long polyatomic rods have also been performed. The ideal glass boundary decreases with aspect ratio slower than the nematic phase transition boundary. Solution of the nonlinear Langevin equation via Brownian trajectory simulation have also been performed. Results for the mean square displacement, decoupling of relaxation and diffusion, nongaussian parameter and other measures of dynamic heterogeneity have been determined for different colloidal shapes.

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