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Short-time diffusivities of suspensions of rigid fibers with hydrodynamic interactions: The influence on the scaling of long-time rotational diffusivities JOONTAEK PARK, JASON BUTLER, University of Florida — Brownian dynamics simulations indicate that the scaling behavior of the long-time rotational diffusion of concentrated, isotropic suspensions of rigid fibers depends upon the ratio of short-time rotational and translational velocities.[1] However, the previous work used infinite dilution values for the short-time diffusivities, ignoring the effects of concentration. We have calculated short-time diffusivities for concentrated suspensions of rigid fibers which include multibody hydrodynamic interactions between fibers. These improved values of the short-time diffusivities are utilized to calculate the long-time rotational diffusion. We discuss the effect of hydrodynamic interactions on the short-time diffusivities and the consequent scaling behavior of the long-time rotational diffusvity.

[1]Cobb & Butler, J. Chem. Phys. 2005

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