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Shear Induced diffusivity of non-spherical particles MAURICIO LOPEZ, MICHAEL GRAHAM, University of Wisconsin-Madison — The shear induced diffusivity of non-spherical particles is studied both experimentally and numerically. Experimentally, the shear induced diffusivity of fractal aggregates is obtained by measuring the width of the interface between dyed and non-dyed suspensions flowing adjacently in a microfluidic channel using Leveque scaling. Numerical calculations of the shear induced diffusivity of rods, "bucky balls" and branched particles are performed by integrating the mean square displacement upon collision of two particles over all possible collisions. Particle trajectories are calculated using rigid body dynamics along with the Stokesian Dynamics method, and a short range repulsive force between beads belonging to different particles. The effect of the range of the repulsive force on the shear induced diffusivity is studied for all the particles used in our calculations. It is found that from the particles tested rods have the smallest shear induced diffusivity, while open branched particles have the largest. The increase in diffusivity is especially large in the vorticity direction.

Mauricio Lopez
University of Wisconsin-Madison

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