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Anisotropic Diffusion of Colloidal Particles in a Shear Flow BRIAN LEAHY, DESMOND ONG, XIANG CHENG, ITAI COHEN, Cornell University — Asymmetrically-shaped particles show anisotropic diffusive behavior along different particle axes. This anisotropic diffusion, however, is averaged out on long time scales due to the rotational diffusion of the particles. Here we report on an experimental study of anisotropic colloidal dimers suspended in an oscillatory shear flow. A preferred orientation of the dimers arises due to the applied oscillatory shear. This results in anisotropic particle diffusion that is persistent at long time scales. We compare our results to a simple model of diffusing particles in a shear flow, and comment briefly on the possibility of using this result for assembling out-of-equilibrium colloidal structures.

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