Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Determination of the hydrodynamic friction matrix for various anisotropic particles[1] DANIELA KRAFT, Center for Soft Matter Research, New York University, USA, RAPHAEL WITTKOWKSI, HARTMUT LÖWEN, Heinrich Heine University Düsseldorf, Germany, DAVID PINE, Center for Soft Matter Research, New York University, USA — The relationship between the shape of a colloidal particle and its Brownian motion can be captured by the hydrodynamic friction matrix. It fully describes the translational and rotational diffusion along the particle's main axes as well as the coupling between rotational and translational diffusion. We observed a wide variety of anisotropic colloidal particles with confocal microscopy and calculated the hydrodynamic friction matrix from the particle trajectories. We find that symmetries in the particle shape are reflected in the entries of the friction matrix. We compare our experimentally obtained results with numerical simulations and theoretical predictions.

[1]Financial support through a Rubicon grant by the Netherlands Organisation for Scientific Research.

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Date submitted: 04 Dec 2012 Electronic form version 1.4