

Abstract Submitted
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Nonlinear Microrheology of Dilute Aqueous Polymer and Biopolymer Solutions J.N. WILKING, T.G. MASON, Department of Chemistry and Biochemistry, University of California- Los Angeles — We have developed an optically driven non-linear microrheometer using birefringent microdisks. With it, we measure the nonlinear rheological properties of dilute aqueous polyethylene oxide (PEO) solutions. As a demonstration, we explore the yield stress with respect to polymer concentration for a range of PEO concentrations. Discotic microparticles are trapped and rotationally driven with a laser tweezer, and LabVIEW is used to track the angular displacement of the disk from its backscattered laser light streak. Results are compared with macroscopic rheological measurements. Using this general nonlinear rheological technique, we also investigate concentrated biopolymer solutions of double stranded DNA.

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