

Abstract Submitted
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**Active and Passive Microscopic Viscoelastic Response in
Poly(Ethylene) Oxide Solutions** OLGA LATINOVIC, H. DANIEL OU-YANG

— It has been proposed that one can determine the viscoelastic response function from the thermal fluctuations of colloidal tracer particles. Despite attempts to validate the approach, there has not been a direct comparison between the viscoelastic response obtained by thermally driven particles, and independent microscopic measurements which do not depend on thermal fluctuations. This paper reports a study that compares the two approaches. In the passive measurements, the Brownian motion of a probe particle was used to obtain the viscoelastic modulus of poly (ethylene) oxide solutions using the fluctuation-dissipation theorem and the generalized Stokes-Einstein relation. In the active measurements, the same probe particle is set into forced oscillations by oscillating optical tweezers and the viscoelastic moduli of the solution are obtained from the in-phase and out-of-phase components of the particle's motion.

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