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Low-frequency dielectric response of a single particle in aqueous suspensions JINGYU WANG, Physics, Lehigh University, Bethlehem, PA, USA 18015, H. DANIEL OU-YANG, Physics and Bioengineering, Lehigh University, Bethlehem, PA, USA 18015 — α -relaxation, the counterion diffusion in the electric double layer, has been used to describe the anomalous low frequency dielectric dispersion of aqueous suspensions of colloidal particles. A microscopic theory describing this relaxation process proposed by Schwarz, however, has not been investigated systematically. We propose to use a single particle dielectrophoresis (DEP) force spectroscopy to study the relaxation mechanism as a function of particle size, temperature and solvent viscosity. Specifically, we measure the dependence of the DEP crossover frequency on force and compare results with predictions by Schwarz.

Jingyu Wang

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