

Abstract Submitted
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Determination of colloidal osmotic equation of state by dielectrophoresis JACOB MAZZA, HAO HUANG, H. DANIEL OU-YANG, Lehigh University — Osmotic equation of state $[P(N,T)]$ describes both the mechanical properties and phase behavior of a colloidal suspension. As an alternative to sedimentation, we propose a new approach to determine $P(N,T)$ by dielectrophoresis (DEP). Using fluorescence confocal microscopy, we obtain particle density profiles in order to determine the DEP force distribution when the particle concentration is low and the inter-particle interactions are negligible. From the known force distribution and Einstein's osmotic equilibrium equation, we can calculate $P(N,T)$ from the particle density profile of interacting, charge-stabilized polystyrene latex particles under different salt concentrations and added neutral polymers. The osmotic equation of state for colloidal suspensions can then be crosschecked by sedimentation equilibrium.

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