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Determination of colloidal osmotic equation of state by dielectrophoresis HAO HUANG, JACOB MAZZA, H. DANIEL OU-YANG, Lehigh University — Osmotic equation of state P(N,T) describes both the mechanical properties and phase behavior of a colloid suspension. Traditionally, it is measured by sedimentation or scattering methods. However, these methods are tedious and time consuming. Here, we propose an alternative approach to determine P(N,T) by dielectrophoresis (DEP). Confocal imaging is used to measure the particle density profile, from which we can determine the DEP force field when the particle concentration is low and the inter-particle interactions are negligible. Once the force field is known, using a generalized sedimentation equilibrium equation, we can calculate P(N,T) from the particle density profile of interacting colloids. We will report our results for charge-stabilized polystyrene latex particles under different salt concentrations, salt types, as well as added neutral polymers.

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