

Abstract Submitted
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Multivalent Ion Screening of Charged Glass Surface Studied by Streaming Potential Measurements RAN LI, BRIAN TODD, Purdue Univ — Ions present in solution strongly modify local electrical properties of charged surfaces. While the effects of monovalent ions are accurately described by the Poisson-Boltzmann equation, the mechanism by which multivalent ions screen charged surfaces remains unclear. A recent theory by dos Santos et. al [A. P. dos Santos, A. Diehl, and Y. Levin, J. Chem. Phys. 132, 104105 (2010)] treats the electrolyte solution as consisting of two sub-systems: a strongly coupled liquid of multivalent ions adjacent to the charged surface and a gaslike phase further into the bulk. The theory makes quantitative predictions of the electric potential in solutions containing both multivalent and monovalent ions. We used the streaming potential technique to measure electric potentials over a range of multivalent and monovalent ion concentrations and used the data to evaluate dos Santos et. al's theory. We found that SCL predictions agree quantitatively with our experimental data.

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