

SONDERSEMINAR

Am Mittwoch, 15.03.2017, um 11:00 Uhr

Raum 46-576

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Analysis of Electric Double layer

The Electric Double Layer (EDL) has been studied for over a century. The mean-field model of EDL in terms of the nonlinear Poisson-Boltzmann equation is well-established study instrument in a broad range of scientific research areas: electrochemistry, colloid chemistry, biophysics, etc. This equation describes the equilibrium distribution in space of the electrostatic potential and ionic concentrations in the system. In spite of the respectable age of analyzing EDL in terms of the Poisson-Boltzmann equation, there still remain numerous unresolved questions related to this approach. Thus, traditionally, the Poisson-Boltzmann equation has been analyzed for open systems. Typically, such a system consists of a charged surface with the ions dissociated from it and the ions of an electrolyte added to the system at a specified finite concentration. For a macroscopic system, this usually implies that the ions of the added electrolyte constitute an overwhelming majority compared to those dissociated from the interface. As opposed, to this approach, in this study we study, both analytically and numerically, a closed system, with the total mass of added salt as the control parameter. Our analysis particularly focuses on the case when the amount of ions of the added electrolyte is comparable to that of ions dissociated from the interface. We show that, in this case, a novel, previously undetected boundary layer forms near the interface as a fine substructure of the common EDL.

Der Gast wird betreut von Prof. Dr. H. M. Urbassek

GÄSTE SIND HERZLICH WILLKOMMEN!