Smeared-out ions at a charged surface
By
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Host: Dr Lu Bing Sui

Abstract

The focus of the talk are "soft" counterions, generated when a charge is smeared-out over a finite volume. It turns out that such ions overscreen a charged surface by overcompensation of a surface charge. This phenomenon is known as charge inversion and is connected to the related phenomenon of attraction between the same charged surfaces. In standard paradigm involving point-ions, correlations play a central role in the charge inversion mechanism. For smeared-out ions, on the other hand, correlations have no importance and charge inversion is captured by the mean-field. In addition, charge inversion of smeared-out ions may transform into charge layering when a charge density profile becomes oscillating. The point when this happens is completely determined by a bulk electrolyte.

Short Biography

Derek Frydel obtained his Ph.D. in Chemistry from the University of Chicago under Stuart Rice in 2006. Afterwards he undertook a number of postdoctoral positions at the Max-Planck-Institute in Stuttgart, Tel Aviv University, Institute of Physics in Porto Alegre, Brazil, and ESPCI Paris. Currently he holds a position in the Institute for Advanced Study, Shenzhen University. The focus of his research is theoretical understanding of the liquid-state with special focus on electrostatics. He has also done worked with hydrodynamics of confined systems. Presently he is interested in systems out of equilibrium such as active matter.