

Beyond DLVO: Using the extended surface forces apparatus to examine hydrated ion layering in salt solutions.

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Abstract:

The DLVO theory used to calculate the forces between two surfaces in a low-concentration electrolyte solution models the solution as a continuum and is thus not applicable at small separations. The extended surface forces apparatus (eSFA) is well-suited to examine this range, as measurement of the distance between two mica surfaces with 10-pm accuracy is possible with it. Recent experiments with the eSFA reveal the expulsion of hydrated-ion layers as the surfaces approach, rather than water layers as has previously been suggested.