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### **Ion Specific Effects at Interfaces**

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Availability of highly reactive halogen ions at the surface of aerosols has tremendous implications for the atmospheric chemistry. Yet neither simulations, experiments, nor existing theories are able to provide a fully consistent description of the electrolyte-air interface. In this talk a new theory will be presented which allows us to explicitly calculate the ionic density profiles, the surface tension, and the electrostatic potential difference across the solution-air interface [1,2]. The theory takes into account both ionic hydration and polarizability [3]. The theoretical predictions are compared to experiments and are found to be in excellent agreement. Finally, the implications of the present theory for stability of lyotropic colloidal suspensions will be considered [4], shedding new light on one of the oldest puzzles of physical chemistry — the Hofmeister effect.

[1] Y. Levin, A.P. dos Santos, and A. Diehl, *Phys. Rev. Lett.* **103**, 257802 (2009).

[2] A. P. dos Santos, A. Diehl, and Y. Levin, *Langmuir* **26**, 10778 (2010)

[3] Y. Levin, *Phys. Rev. Lett.* **102**, 147803 (2009)

[4] A. P. dos Santos and Yan Levin, *Phys. Rev. Lett.* **106**, 167801 (2011)