

MAR15-2014-020165

Abstract for an Invited Paper
for the MAR15 Meeting of
the American Physical Society

Ion Microsolvation Probed by Cryogenic Ion Trap Vibrational Spectroscopy

KNUT R. ASMIS, Wilhelm-Ostwald-Institut für Physikalische und Theoretische Chemie, Universität Leipzig, Germany

How ions are solvated in solution has intrigued physical chemists since the development of the theory of electrolytic dissociation by Arrhenius at the end of the nineteenth century. A molecular-level understanding of ion solvation is not only important for understanding chemical processes in solution, but also plays an important role in understanding the surface speciation and reactivity of aerosols. Infrared photodissociation (IRPD) spectroscopy of mass-selected ions, thermalized to cryogenic temperatures, allows for a detailed characterization of the influence of the stepwise solvation of an ion on its properties, one solvent molecule at a time. Recent advances in the vibrational spectroscopy of atmospherically-relevant microsolvated ions are highlighted, with particular emphasis on using isomer-specific detection schemes and measuring IRPD spectra down into the terahertz region of the electromagnetic spectrum.