MOLECULAR ASPECTS OF ANIONIC HYDRATION

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A water molecule becomes dramatically distorted upon attaching to small negatively charged species like the halide anions. This effect, in turn, weakens the interaction between neighboring molecules in the primary hydration shell, making water networks bound to an anion much more fragile than the free clusters. We explore the intramolecular distortions and network morphologies of water in the vicinity of atomic and molecular anions using infrared spectroscopy. Survey work is carried out with the "mass-selected matrix isolation" technique, an argon-cluster mediated method in which bands of ionic complexes embedded in an argon cluster are detected by photo-induced evaporation of the matrix. Once bands are located, we then employ a double resonance scheme to resolve their rotational structure and elucidate structural details of the complexes.