INFRARED PHOTODISSOCIATION SPECTROSCOPY OF METAL WATER COMPLEXES

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Metal ion complexes of the type M^+-$(H_2O)_n$, (M = Fe, Mg) are produced in the gas phase by laser vaporization in a supersonic expansion cluster source and mass selected in a Wiley-Mclaren Time-Of-Flight mass spectrometer. The complexes are studied by resonance enhanced infrared photodissociation spectroscopy using an IR OPO/OPA light source near the symmetric and antisymmetric O-H stretch region of water. Vibrational spectra show shifts due to the interaction of the metal ion in the first solvation sphere. The onset of the second solvation sphere can be observed by the onset of an additional band attributed to a hydrogen bond donor vibration.