INFRARED SPECTROSCOPY OF COLD, HYDRATED ALKALINE EARTH-HYDROXIDE CLUSTERS

CHRISTOPHER JOHNSON, CHRISTOPHER LEAVITT, JOSEPH FOURNIER, MARK JOHNSON, *Department of Chemistry, Yale University, New Haven, CT 06520*.

Hydrated, singly-charged $[MOH]^+$ (M=Mg,Ca) clusters have been investigated using mass-selective cryogenic infrared spectroscopy. Spectra of $[MOH]^+ \cdot (H_2O)_n$ reveal broad features beginning at $n = 3$ that approach 1000 cm^{-1} in width at $n = 5$, indicative of large amplitude motion in the water network despite ion temperatures below 40 K. Comparison to calculated structures and spectra help to elucidate the structural and charge-separation dynamics occurring in these clusters.