

MICROSOLVATION OF THE $\text{Mg}_2\text{SO}_4^{2+}$ CATION: CRYOGENIC VIBRATIONAL SPECTROSCOPY OF $(\text{Mg}^{2+})_2\text{SO}_4^{2-}(\text{H}_2\text{O})_{n=4-11}$

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Cryogenic ion vibrational predissociation (CIVP) spectroscopy was used to examine the onset of solvation upon the incremental addition of water molecules to the $\text{Mg}_2\text{SO}_4^{2+}(\text{H}_2\text{O})_n$ cation ($n = 4 - 11$). D_2 predissociation spectra are reported for each cluster over the range $1000\text{-}3800\text{ cm}^{-1}$. Initially, the Mg^{2+} atoms each interact with two oxygen atoms on the sulfate anion in a bifurcated arrangement. The breaking of this motif occurs upon addition of the eighth water molecule as evidenced by splitting of the water bend, and broad absorption in the $3000\text{-}3400\text{ cm}^{-1}$ range indicative of hydrogen bonding between the water molecules and sulfate ion.