ROTATIONAL SPECTRA OF VIBRATIONALLY EXCITED HCL

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Survey spectra of a cold, inductively coupled discharge through He and HCl revealed a series of vibrationally excited transitions. The temperature dependence of these states was similar to that observed for the HCl cation and suggests a link in the formation or destruction mechanisms. Unlike the cation, the vibrational excitation was unaffected by larger concentrations of HCl and both were relatively insensitive to the pressure of the Helium buffer gas. Predictions based on band parameters from rotational spectra up to v = 2 and infrared overtone studies allowed rapid collection of spectra from v = 0 through v = 8 for both chlorine isotopologues. The new data set has been combined with existing rotational and infrared data in an isotope-independent Dunham model and fitted. We will compare this refined model to previous isotope-independent models of HCl.