THE 5-0 OVERTONE BAND OF HCl BY INTRACAVITY LASER ABSORPTION SPECTROSCOPY

JAMES J. O'BRIEN, STEVEN A. RYAN, *Department of Chemistry and Biochemistry, University of Missouri, St Louis, MO 63121-4499*; LEAH C. O'BRIEN, *Department of Chemistry, Southern Illinois University, Edwardsville, IL 62026-1652*.

The 5-0 overtone band of HCl was recorded using intracavity laser absorption spectroscopy. The experimental conditions provided an effective pathlength of 23.6 km for the 1.81 m long intracavity compartment that contained the HCl gas. Most lines were recorded at 12-22 torr pressure: no noticeable pressure broadening or pressure shifts were observed in the spectra at the HCl pressures used in these experiments. Unblended lines could be determined to an accuracy of better than 0.005 cm^{-1}, with a precision of better than 0.002 cm^{-1}as indicated by the fit. Data from the two isotopologues were fit separately and the molecular constants compare favorably with previous literature values.