

FM LASER ABSORPTION OF THE $\tilde{A}(000) \leftarrow \tilde{X}(010)$ AND $\tilde{A}(000) \leftarrow \tilde{X}(011)$ BANDS OF HCCl

RYAN G. BIRD, GREGORY E. HALL, AND TREVOR J. SEARS, *Department of Chemistry, Brookhaven National Laboratory, Upton, NY 11973-5000.*

The $000 \leftarrow 010$ and $000 \leftarrow 011$ bands of the $\tilde{A} \leftarrow \tilde{X}$ system of HCCl lying at approximately $11\,100\text{cm}^{-1}$ and $10\,300\text{cm}^{-1}$, respectively, were recorded and analyzed. HCCl was formed by the photolysis of a continuous flow of a 1% mixture of HCClBr_2 in nitrogen buffer gas at a total pressure of 1 Torr using an ArF excimer laser at 193nm. The spectrum was recorded in absorption using a continuous wave, frequency-modulated, Ti:Sapphire laser and a Herriot-type absorption cell. In the, stronger, $000 \leftarrow 010$ transition, three subbands, $K=0 \leftarrow 1$, $1 \leftarrow 0$, $1 \leftarrow 2$, of HC^{35}Cl and one subband, $K=0 \leftarrow 1$, of HC^{37}Cl were identified. Since the upper state in the transition is known from previous work, the analysis determines the the rotational and vibrational energies of these ground electronic state levels of HCCl for the first time.