

ELECTRONIC SPECTROSCOPY OF THE $A^1 A''-X^1 A'$ SYSTEM OF CHCl AND CDCl

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We report a comprehensive new study of the electronic spectroscopy of the $A^1 A''-X^1 A'$ system of CH^{35}Cl , CH^{37}Cl , CD^{35}Cl and CD^{37}Cl in the region 450-750 nm. For each isotopomer, cold bands in the progressions 2_0^n , $2_0^n 3_0^m$ ($m=1-2$), $1_0^1 2_0^n$, and $1_0^1 2_0^n 3_0^m$ ($m=1-2$) were observed. The spectra were measured under jet-cooled conditions using a pulsed discharge source, and rotationally analyzed to yield precise values for the band origins and rotational constants. The derived $A^1 A''$ state vibrational intervals are combined in Dixon plots with previous experimental results^{a,b,c,d} to derive barriers to linearity for the 2^n progression. The $A^1 A''$ C-H (C-D) stretching frequency was determined for the first time, and the observed ν_2 and ν_3 dependence of the $\text{CH(D)}^{35}\text{Cl}-\text{CH(D)}^{37}\text{Cl}$ isotope splitting in the $A^1 A''$ state is investigated.

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