

INFRARED LASER VELOCITY MODULATION SPECTROSCOPY OF SiCl^+ ($X^1\Sigma^+$) UP TO $V=6$

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Many fundamental and hot band absorption lines of $^{28}\text{Si}^{35}\text{Cl}^+$, $^{28}\text{Si}^{37}\text{Cl}^+$, $^{29}\text{Si}^{35}\text{Cl}^+$ and $^{30}\text{Si}^{35}\text{Cl}^+$ have been detected between 630 and 700 cm^{-1} in a SiCl_4/He ac discharge using diode laser velocity modulation spectroscopy. The data have been fitted to give mass independent coefficients U_{kl} . The derived spectroscopic constants for $^{28}\text{Si}^{35}\text{Cl}^+$ include $\omega_e = 678.24316(18)\text{ cm}^{-1}$ and $B_e = 0.2870288(14)\text{ cm}^{-1}$. The equilibrium internuclear distance is $r_e = 1.9439105(46)\text{ \AA}$. The equilibrium dissociation energy calculated from the expanded Dunham-Morse potential is $D_e = 49431(57)\text{ cm}^{-1}$.