# ACCURATE DETERMINATION OF THE GROUND STATE CONSTANTS, INCLUDING $A_0$ AND $D_K^0$, OF $D_3Si^{35}Cl$

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In a previous study[a] of monoisotopic $D_3Si^{35}Cl$, the analysis of the fundamental bands $\nu_3$ and $\nu_6$, linked by a Coriolis resonance, was reported. New Fourier transform infrared spectra of this compound were recorded in the 500 and 1000 $cm^{-1}$ regions. The first purpose was to obtain accurate ground state constants. The 'normal' G.S. constants $B_0$, $D_J^0$, and $D_{JK}^0$ were deduced from GSCD. As for the constants $A_0$ and $D_K^0$, they were obtained by the now well-established method of combining data from the fundamental $\nu_6$, the overtone $(2\nu_6)^{\mp 2}$ and the hot band $(2\nu_6)^{\pm 2}$-$(\nu_6)^{\pm 1}$. Special care was taken to correct calibration differences between the two spectral regions. This was done by checking closed loops such as $\nu_3$, $2\nu_3$, and $2\nu_3$ - $\nu_3$ on one hand or $\nu_6$,$(2\nu_6)^0$ and $(2\nu_6)^0$ - $\nu_6$ on the other hand. The values obtained are $A_0$ =1.427830 $cm^{-1}$ and $D_K^0$=5.36× $10^{-6}$ $cm^{-1}$ (provisional values). Some sextic H constants could also be determined. In a second stage, the upper state energies of $(2\nu_6)^{\pm 2}$, $(2\nu_6)^0$, $2\nu_3$ and $\nu_3 + \nu_6$ were fitted together to obtain the upper state constants. Note that, due to the weakness of the $\nu_3 + \nu_6$ band, the hot bands $\nu_3 + \nu_6 - \nu_3$ and $\nu_3 + \nu_6 - \nu_6$ were used instead.

[a] J.E. Gadhi, H. Bürger, and E.B. Mkadmi, submitted to *J. Mol. Spectrosc.*