HIGH RESOLUTION LASER SPECTROSCOPY OF $SrOCH_3$

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The $\tilde{A}^2$E$-\tilde{X}^2$A$_1$ transition of $SrOCH_3$ was first studied at high resolution by O'Brien et al.[a] using a Broida oven. However lines with typically J$\leq$20 were not observed and congestion prevented them from resolving transitions from the $\Omega = 1/2$ component of the upper state. We have studied the $\tilde{B}^2A_1 - \tilde{X}^2A_1$ and the $\tilde{A}^2E - \tilde{X}^2A_1$ transitions of $SrOCH_3$ in a laser ablation molecular jet source, where jet cooling and low Doppler widths greatly simplified the spectra. An optical-optical double resonance technique facilitated definite assignments in a number of the transitions observed. Our analysis of the $\tilde{A}^2E - \tilde{X}^2A_1$ transition was straightforward, but a perturbation was observed in the $\tilde{B}^2A_1$ $K' = 1$ F_2 levels. A satisfactory fit was achieved for the $\tilde{B}^2A_1 - \tilde{X}^2A_1$ transition when a separate B parameter was used to fit the perturbed levels.

[a] L. C. O'Brien, C. R. Brazier and P. F. Bernath, J. Mol. Spectrosc. 130 (1988) 33-45