LASER ABLATION SPECTROSCOPY OF SrCCH AND SrNC

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We have recently begun an investigation of polyatomic strontium-containing molecules. These species are created in a laser ablation source via the reaction of strontium atoms with the appropriate reactant gas entrained in argon. The spectra are then measured at low and high resolution by laser excitation spectroscopy.
For SrCCH the $\tilde{A}^2\Pi - \tilde{X}^2\Sigma^+$ transition has been observed and assigned. Rotational and fine structure constants have been derived from a fit of the data to a standard $^2\Pi(a) -^2 \Sigma^+(b)$ Hamiltonian. A large negative value of the Λ-doubling constant, p, was determined indicating that the $\tilde{B}^2\Sigma^+$ must be nearby. However, a search showed no sign of the $\tilde{B}^2\Sigma^+$ - $\tilde{X}^2\Sigma^+$ transition, suggesting that the $\tilde{B}^2\Sigma^+$ state is predissociative. In addition, comparisons with other alkaline earth metal acetylides will be discussed. Finally, preliminary results on SrNC will also be presented.