

## LASER INDUCED FLUORESCENCE SPECTROSCOPY OF JET COOLED SiCN : ROTATIONAL ANALYSIS OF THE HOT BANDS

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We have generated SiCN in supersonic free jet expansions, and observed the laser induced fluorescence ( LIF ) of the vibrationally hot bands of the  $\tilde{A} \ ^2\Delta - \tilde{X} \ ^2\Pi$  transition. We have measured dispersed fluorescence ( DF ) spectra from the single vibronic levels ( SVL's ),  $\tilde{A} (01^10) \ ^2\Phi$  and  $\ ^2\Pi$ , and rotationally resolved LIF excitation spectra of the two hot bands,  $\tilde{A} (01^10) \ ^2\Phi - \tilde{X} (01^10) \ ^2\Delta$  and  $\tilde{A} (01^10) \ ^2\Pi - \tilde{X} (01^10) \ ^2\Sigma^{(-)}$ . The rotational energy levels were reasonably analyzed as those of the  $\ ^2K' - \ ^2K''$  transitions, but their line intensities calculated from the Hönl-London factors derived in the intermediate case between Hund's case (a) and (b) could not reproduce the observed spectra. The Hönl-London factors derived in the  $\ ^2\Lambda' - \ ^2\Lambda'' ( \ ^2\Delta - \ ^2\Pi )$  transition reasonably reproduced the spectra. It indicates that coupling between the electronic orbital and vibrational angular momenta is weak in the SiCN  $\ ^2\Delta - \ ^2\Pi$  system, and a basis set of  $|\Lambda \ v_2 \ l \ \Sigma; J \ P \ M_J\rangle$ , so-called "l-basis", better describes the system than that of  $|\Lambda \ v_2 \ K \ \Sigma; J \ P \ M_J\rangle$ .