LIF SPECTROSCOPY OF A \(\Sigma - \Sigma\) TYPE BAND SYSTEM IN THE C\(_2\)H\(_2\)/CS\(_2\) DISCHARGE PLASMA

MASAKAZU NAKAJIMA\(^{a}\), HITOMI TOYOSHIMA, YU YONEDA, YOSHIHIRO SUMIYOSHI, and YA-SUKI ENDO. Department of Basic Science, Graduate School of Arts and Sciences, The University of Tokyo, Tokyo 153-8902, Japan.

New vibronic band system has been observed in the 21800–23000 cm\(^{-1}\) region by laser-induced fluorescence spectroscopy in a discharged supersonic jet of the C\(_2\)H\(_2\) and CS\(_2\) mixture gas. Several chemical tests indicate that the spectral carrier contains H, C and S atom(s). High-resolution spectra of these vibronic bands show \(\Sigma - \Sigma\) type rotational structures. The origin band position and the effective rotational constants of the upper and lower levels have been determined to be \(T_0=21877.7706(7)\), \(B'_{\text{eff}}=0.04932(1)\) and \(B''_{\text{eff}}=0.05013(2)\)cm\(^{-1}\), respectively. Based on the results of \textit{a b initio} calculations, it is considered that bent HSCCS is the most probable candidate for the spectral carrier.

\(^{a}\)Current address: Division of Chemistry, Graduate School of Science, Kyoto University, Kyoto 606-8502, Japan