PROBING THE $\tilde{C}\ ^1B_2$ STATE OF CS_2 THROUGH (1+1) REMPI SPECTROSCOPY

A.S. BEATTY, R.C. SHIELL, J.W. HEPBURN, *Department of Chemistry, University of Waterloo, Waterloo, Ontario, N2L 3G1, Canada*.

THE (1+1) REMPI spectrum of CS_2, from 208 to 217 nm, has been obtained for the isotopes $^{12}C^{32}S_2$ and $^{12}C^{34}S^{32}S$ using a pulsed supersonic molecular beam and a time of flight mass spectrometer. The carrier gases used were helium and a helium/butane mixture in order to observe spectra with different degrees of vibrational cooling. Previous work in this wavelength range used gas cells and resulted in tentative assignments of the vibrational structure of the $\tilde{C}\ ^1B_2$ - $X\ ^1\Sigma_g{}^+$ spectrum. Spectra taken at different wavelength ranges have been partially understood yet are dependent on the origin assignment. The present work, using a molecular beam and two isotopes of CS_2, is expected to facilitate assignment of the origin and the lower vibrational levels of the $\tilde{C}\ ^1B_2$ state of CS_2. This should allow future studies of the dissociation dynamics of the individual assigned bands to be conducted.