

## INFRARED SPECTRA OF ACETYLENE-D<sub>2</sub> CLUSTERS

F. MIVEHVAR, J. NOROOZ OLIAEE, M. DEGHANY, N. MOAZZEN-AHMADI, *Department of Physics and Astronomy, University of Calgary, Calgary, AB T2N 1N4, Canada*; A.R.W. MCKELLAR, *Steacie Institute for Molecular Sciences, National Research Council of Canada, Ottawa, ON K1A 0R6, Canada*.

In an effort to observe the spectra of acetylene clusters (C<sub>2</sub>H<sub>2</sub>)<sub>n</sub> with  $n \geq 4$  and the very weakly bound He-C<sub>2</sub>H<sub>2</sub> complex, spectra of acetylene-d<sub>2</sub> clusters in the region of the C<sub>2</sub>D<sub>2</sub>  $\nu_3$  fundamental ( $\sim 2439$  cm<sup>-1</sup>) were recorded using a tunable diode laser to probe a pulsed supersonic slit jet expansion. So far, several bands below 2439 cm<sup>-1</sup> have been recorded. Two can be attributed to a parallel  $\nu_3^{\parallel}$  and perpendicular  $\nu_3^{\perp}$  band for the T-shaped C<sub>2</sub>D<sub>2</sub> dimer. The interconversion splittings are clearly seen in these bands. There are other mystery bands whose origins are being investigated both experimentally and theoretically. In this talk I will discuss possible assignments of these bands to C<sub>2</sub>D<sub>2</sub> clusters.