DISPERSED FLUORESCENCE SPECTROSCOPY OF CHD_2O: A PSEUDO-JAHN-TELLER MOLECULE WITH INTERESTING EMISSION SPECTRA

VADIM STAKHURSKY, ILIAS SIOUTIS, VLADIMIR LOZOVSKY[a], TERRY A. MILLER, and C. BRADLEY MOORE[b], *Laser Spectroscopy Facility, Department of Chemistry, The Ohio State University, Columbus, OH 43210*.

Methoxy radical (CH_3O) is an important intermediate in the combustion of hydrocarbon fuels. It is also an interesting target for theoretical studies, since the doubly degenerate ground $\widetilde{X}^2E$ electronic state exhibits Jahn-Teller (JT) activity. Upon asymmetric deuteration the electronic state splits into two pseudo-degenerate states. To address the issue of the reduction of symmetry in JT active systems we report the laser excited, dispersed fluorescence (DF) spectra of CHD_2O. A comprehensive model Hamiltonian which includes linear and quadratic JT coupling terms is developed and used to assign ground state vibronic levels up to 2000 cm^{-1} above the vibrationless level. The experimental observations and intensity simulations for 5 DF traces, from the 3^4, $3^25'^1$, $3^25''^1$, $3^26'^1$, $3^26''^1$ vibrational levels of the $\widetilde{A}^2A'$ state, will be presented.

[a]Deceased

[b]Current address: Northwestern University, 633 Clark Street, Evanston, IL 60208-1108