# THE VIBRATIONAL/ROTATIONAL ASSIGNMENT OF THE LIF SPECTRUM OF THE $\tilde{A}^2A_1$-$\tilde{X}^2E$ ELECTRONIC TRANSITION OF THE METHOXY RADICAL

MICHAEL B. PUSHKARSKY, DAVID E. POWERS, and TERRY A. MILLER, *The Ohio State University, Department of Chemistry, The Laser Spectroscopy Facility, 120 West 18th Ave., Columbus, OH 43210.*

The methoxy radical was revisited and its LIF spectrum in a free jet expansion was recorded using a specially designed extension attached to the nozzle.This modification allowed us to cool molecules vibrationally and observe only transitions from the vibrationless level of the ground electronic state. This gave rise to a dramatic simplification of the spectrum, compared to previous observations.
However, even a vibrationally cold spectrum is quite complex because the methoxy radical ground state has E symmetry and thus exibits Jahn-Teller distorsion giving rise to transitions from the vibrationless level of the lower electronic state to both symmetric and asymmetric vibronic levels of the upper electronic state .
We have used the rotational analysis of the spectra to distinguish between bands in the LIF spectrum due to transitions to symmetric and assymetric modes.