OBSERVATION OF VIBRATIONALLY HOT CH_2CHO IN THE 351NM PHOTODISSOCIATION OF XCH_2CH_2ONO (X=F,Cl,Br,OH)

RABI CHHANTYAL-PUN, MING-WEI CHEN[a] and TERRY A. MILLER, *Laser Spectroscopy Facility, Department of Chemistry, The Ohio State University, 120 W. 18th Avenue, Columbus OH 43210*.

Alkyl nitrites have been used in the past as precursors for producing alkoxy radicals which are important intermediates in combustion and atmospheric chemistry. Substituted alkoxies, particularly hydroxy substituted alkoxy radicals, are important intermediates in the atmospheric chemistry of alkenes. In this talk we will present results obtained from the 351nm photodissociation of XCH_2CH_2ONO (X=F,Cl,Br,OH). The resulting photo-fragments were probed by laser induced fluorescence (LIF) technique downstream of a free-jet expansion. We were not able to observe any transitions resulting from the corresponding XCH_2CH_2O radicals except for FCH_2CH_2ONO. We were able to observe HCHO and also vibrationally hot CH_2CHO from all the different precursors. In CH_2CHO, there is a significant excitation in the CC torsion and CCO bend vibrations. There is also some excitation in CC stretching and CH_2 rock vibrations. HCHO is produced due to dissociation of XCH_2CH_2O in the ground state as the CC scission energy is less than the available photon energy.

[a]Present address: School of Chemical Science, University of Illinois at Urbana Champaign,106 Noyes Lab, 505 S. Mathews, Urbana, IL 61801