MATRIX SPECTROSCOPY OF PEROXYL RADICALS VIA A HYPERTHERMAL NOZZLE

EVAN B. JOCHNOWITZ, X. ZHANG, G. B. ELLISON, *Dept. Chemistry, University of Colorado Boulder, CO 80309-0215*; M. R. NIMLOS, *Center for Renewable Chemical Technologies & Materials, NREL, 1617 Cole Blvd., Golden, CO 80401*.

We have developed a hyperthermal nozzle to produce organic radicals for study in a cryogenic matrix. This hot nozzle thermally decomposes organic precursors in a stream of Ar and produces roughly 10^{13} hydrocarbon radicals/pulse. This technique has enabled us to prepare alkylperoxyl radicals by co-deposition with oxygen. In the atmospheric ?processing? of organic aerosols, surface bound peroxyl radicals will be important reaction intermediates. We have successfully studied the CH3OO radical by combining CH_3 and O_2 in an Ar matrix at 20 K. Preliminary results for allylperoxyl (CH_2CHCH_2OO) and propargylperoxyl ($HCCCH_2OO$) radical will be presented.