NON-RESONANT IONIZATION-DETECTED INFRARED SPECTROSCOPY (NID-IR): EXPLORATORY STUDIES ON A SERIES OF ORGANIC MOLECULES

ANDREW M. ELLIS, TOM E. SALTER, VICTOR MIKHAILOV, and COREY J. EVANS, *Department of Chemistry, University of Leicester, Leicester, LE1 7RH, UK*.

NID-IR is a two-colour laser technique for recording IR spectra mass selectively. In contrast to the more well known ion dip approach, NID-IR measures the gain in ion current from a near zero background and is therefore potentially far more sensitive. It was first introduced by Fujii and co-workers [a] and was used to record IR spectra of several species in a supersonic molecular beam including phenol, fluorophenol, and acetylene. In preparation for studies of transient species, including organic free radicals and metal-solvent clusters, we have been exploring the mechanism and limitations of NID-IR spectroscopy. This talk will describe the technique and will summarise our latest findings from a series of studies of organic molecules, particularly substituted aromatics.

[a] T. Omi, H. Shitomi, N. Sekiya, K. Takazawa, and M. Fujii, Chem. Phys. Lett. 252, 287 (1996).