PHOTOELECTRON IMAGING OF AZOLE ANIONS

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We report photoelectron spectra of diazole, triazole and tetrazole anions obtained with a new negative ion photoelectron imaging spectrometer. The design of the imaging portion of the spectrometer is based upon the design reported by Sanov and coworkers [E. Surber, R. Mabbs, and A. Sanov, J. Phys. Chem. A 107, 8215-8224 (2003).)] . Hydroxide ions are formed in a pulsed supersonic expansion by electron impact near the origin of the expansion; subsequent deprotonation of the parent azole by hydroxide ion produces the azolide ion. The desired anion is selected with a time of flight mass spectrometer and photodetached with laser radiation tunable between 210 and 800 nm. The photoelectron image is obtained in an electron imaging spectrometer oriented perpendicular to the ion velocity, and operated in a velocity focusing mode. Initial results yield a photoelectron energy resolution of 40 meV FWHM at 500 meV energy. Electron affinities and N-H bond dissociation energies of several members of this series will be presented. Supported by NSF and AFOSR