Abstract for an Invited Paper
for the GEC14 Meeting of
the American Physical Society

Dynamical Studies of Resonant Electron-Molecule Collisions

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A unique capability of low-energy electrons is to break molecular bonds through low-energy resonant processes. We report a combined experimental and theoretical study on the dynamics following dissociative electron attachment (DEA) at low collision energies that induce ring-breaking in uracil. The experiments employ a DEA reaction microscope [1], consisting of a 3D momentum-imaging negative ion spectrometer, a pulsed low-energy electron gun and an effusive gas target. Building further upon a recently-established technique [2-5], fragment ion kinetic energy and angular distributions resulting from DEA are measured and compared with ab initio scattering calculations to reveal key aspects of the dynamics of the transient anion system. Recent experiments on other related systems will also be presented.


1Supported by Chemical Sciences, Geosciences and Biosciences division of BES/DOE
2In collaboration with Yosuke Kuriyama, Yu Kawarai, Yoshiro Azuma, Sophia University; Carl Winstead, Vincent McKoy, California Institute of Technology; and Ali Belkacem, Lawrence Berkeley National Laboratory.