

Abstract Submitted  
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**Ion-momentum imaging of dissociative electron attachment dynamics in N<sub>2</sub>O and HCCH** JAMES EDMOND, DYLAN REEDY, ALI MORADMAND, Auburn University, DANIEL HAXTON, Lawrence Berkeley National Laboratory, ANN OREL, University of California, Davis, THOMAS RESCIGNO, Lawrence Berkeley National Laboratory, ALLEN LANDERS, MICHAEL FOGLE, Auburn University — We have studied the low-energy dissociative electron attachment (DEA) interactions for nitrous oxide and acetylene at 2.3 eV and 3 eV shape resonances, respectively. We observed dissociation using an ion-momentum imaging apparatus based on the Cold Target Recoil Ion Momentum Spectroscopy (COLTRIMS) method in which a molecular beam produced by a gas jet is crossed by a pulsed electron beam. The DEA reaction involving nitrous oxide resulted in oxygen anions whose angular distributions implied the dominant interaction state at its energy was <sup>2</sup>Π and suggested a dissociation via a near linear configuration, contradicting previous work stating that a significant Σ contribution resulted in a bending dynamic upon attachment. For acetylene, the DEA reaction produced C<sub>2</sub>H anions at a <sup>2</sup>Π<sub>g</sub> resonance whose measured angular distributions were indicative of a bending dynamic in the dissociation process. While this bending mechanism has been hinted at by previous experimental observations, direct observations never occurred. Changes to our theoretical predictions have led to good agreement with our experimental fragment distribution, and our observed Kinetic Energy Release for the anions showed low energy fragments alongside internal excitation of said fragments.

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