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Revealing Dissociative Electron Attachment Dynamics in Polyatomic Molecules Using Momentum Imaging Experiments and Electron Scattering Calculations[1] ALI BELKACEM, DANIEL SLAUGHTER, Chemical Sciences, LBNL — Understanding electron-driven chemical reactions is important for improving a variety of technological applications such as materials processing and the important role they play in the radiation damage in bulk matter. Furthermore, dissociative electron attachment often exhibits site-selective bond cleavage, which holds promise for prediction and precise control of electron-driven chemical reactions. Recent dynamical studies of these reactions have demonstrated that an understanding of anion dissociation dynamics beyond simple one-dimensional models is crucial in interpreting the measured fragment angular distributions. We combine ion fragment momentum imaging experiments with electron attachment entrance amplitude calculations to interrogate the non-Born-Oppenheimer dynamics of dissociative electron attachment in polyatomic molecules. We will report recent experimental developments in molecules of technological interest including methanol, methane and uracil.

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