Dissociation of Molecules by Low Energy Electron Attachment

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Abstract:

Low-energy electrons have unique capabilities to break molecular bonds and drive chemical reactions through resonant processes. I will report the latest results on the dynamics following dissociative electron attachment (DEA) in several simple gas phase molecules for electron-molecule collision energies below 15 eV. The experiments employ a DEA reaction microscope, consisting of a 3D momentum-imaging negative ion spectrometer, a pulsed low-energy electron gun and an effusive gas target. The instrument enables a precise measurement of the relative anion fragment yields, anion fragment kinetic energy and angular distributions, which are compared with ab initio scattering calculations to reveal key aspects of the dynamics of the transient anion system. Future prospects for pursuing electron-driven processes in more complex systems of technological concern will also be discussed.

Friday, September 30th, 2016
4:00-5:00 pm
Goudsmit Conference Room, LP 208