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**CHE-0234461**

**Reaction Dynamics &  
Astrochemistry**

The collision-energy dependent reaction dynamics of bimolecular atom-radical and radical-radical encounters involving ground state carbon and silicon atoms as well as propargyl and allyl radicals are of fundamental importance to planetary scientists and astrochemists. The untangling of these elementary processes will help in the understanding of the origin and evolution of silicon and carbon-bearing molecules in the outflow of carbon stars, molecular clouds, cometary comae, and hydro-carbon rich atmospheres of planets and their moons. The experiments are conducted under single collision conditions utilizing a recently commissioned crossed molecular beams machine. Laser ablation is carried out to generate supersonic atom beams of ground state carbon and silicon; allyl and propargyl species are prepared via flash pyrolysis.



The research is performed within the framework of a cross disciplinary curriculum in reaction dynamics and astrochemistry linking the Department of Chemistry with the Department of Physics & Astronomy, the Institute for Astronomy (IfA), the Hawai'ian Institute of Geophysics and Planetology (HIGP), and the Astrobiology Institute (NAI). Involving post docs, graduate, and under-graduate students, this interaction will relate chemical dynamics to astrochemistry, planetary sciences, laboratory astrophysics, astrobiology, and combustion chemistry. The development of an interdisciplinary, PhD grating program in Astrochemistry & Astrobiology is currently in progress.

More information can be found at

<http://www.chem.hawaii.edu/Bil301/welcome.html>.