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Department of Chemistry

Seminar

9:45 a.m. Thursday, September 10, 2015 • 331 Smith Hall



Professor

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Molecular Clusters from Supersonic Jets to the Upper Atmosphere

Research interests: high resolution spectroscopic studies of small molecular clusters to elicit extraordinary detail about molecular and electronic structure. Computational chemistry, at times, is used to support the work. The insights gained lead to the understanding of many diverse topics ranging from solvation to the chemistry of the atmosphere.

Website: <http://www.chem.umn.edu/groups/kleopold/>

Abstract

Molecular clusters form the bridge between single-molecule and bulk descriptions of matter. We apply the methods of high resolution microwave spectroscopy to examine small molecular clusters formed in a supersonic jet. These studies provide exquisite structural detail as well as insight into electron distributions and the internal dynamics associated with soft intermolecular vibrations. After a brief description of methodology, a variety of examples will be discussed, with emphasis on new results that have potential implications for atmospheric chemistry. These include recent work on the formation of formic sulfuric anhydride and on measurement of partial proton transfer in the trimethylamine–formic acid adduct. New experiments exploring the use of 3D printing technology to enhance supersonic jet performance will also be described.

Refreshments will be served prior to the seminar.