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.