

## SELECTIVE PRODUCTION OF HCN MONOMER AND EVIDENCE FOR GAS-PHASE DIMERIZATION

THOMAS HOWARD, *Department of Chemistry and Biochemistry, University of Maryland, College Park, MD, USA*; EMILY K HOCKEY, *Department of Chemistry and Biochemistry, University of Maryland, College Park, College Park, MD, USA*; DARYA KISURYNA, *Physics, University of Maryland, College Park, MD, USA*; JESSICA PALKO, LEAH G DODSON, *Department of Chemistry and Biochemistry, University of Maryland, College Park, MD, USA*.

Hydrogen cyanide (HCN) is a molecule of importance in astrochemistry. To prepare for experiments to study its reactivity, we selectively produced a molecular beam of monomeric HCN using a cryogenic buffer-gas source. The HCN beam was first interrogated by condensing it on a 10K substrate using argon as a bath gas to create an inert matrix. Based on a comparison of the resulting infrared spectrum with experiments that use conventional effusive sources, HCN polymers can be nearly eliminated from the matrix using a cryogenic buffer-gas beam source. Our experiments suggest that HCN undergoes polymerization in the gas phase and may exist, to some extent, as a dimer under ambient conditions. We will discuss further investigations using continuous-wave cavity ringdown spectroscopy to examine the first vibrational overtone of the alkynyl C-H stretch of HCN monomer and dimer in the near infrared.