HIGH-RESOLUTION INFRARED SPECTROSCOPY OF NEUTRAL COINAGE METAL-ADSORBATE SYSTEMS IN SUPERFLUID HELIUM DROPLETS

P. L. STILES, R. E. MILLER, *Department of Chemistry, University of North Carolina, Chapel Hill, NC 27599*.

The interaction between adsorbates and neutral coinage metals (Cu, Ag, Au) has been the subject of numerous studies. Goals have varied from the understanding of dispersion and/or covalent interactions between open-shell atoms and closed-shell molecules to using these systems as models for understanding cataysis. Here we present the high-resolution IR spectra of neutral coinage metals (Cu and Ag) bound to several closed-shell molecules, which include HCN, HCCCN, and HCCH. Through vibrational shifts, rotationally resolved IR spectra and Stark spectroscopy we were able to determine the structures and nature of interaction between the metal and adsorbate. The measurement of these complexes were made possible through the use of superfluid helium droplet spectroscopy.