IR-IR DOUBLE RESONANCE SPECTROSCOPY: ISOMERIZATION DYNAMICS OF THE LINEAR HCN-HF AND BENT HF-HCN COMPLEXES EMBEDDED IN HELIUM NANODROPLETS

GARY E. DOUBERLY, JEREMY MERRITT, and ROGER E. MILLER, *Department of Chemistry, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599*.

High resolution infrared laser spectroscopy is used to characterize the bent HF-HCN isomer embedded in helium nanodroplets. The binding energy of the bent isomer is found to be 1700 cm^{-1} less than the global minimum linear structure. The higher energy isomer is stabilized as a result of the rapid cooling provided by the helium droplet upon the formation of the molecular complex. IR-IR double resonance spectroscopy is used to probe the vibrational dynamics of both isomers. Population transfer between the two isomers is observed after the absorption of the first infrared photon. However, population transfer to the linear isomer is observed to be more efficient upon vibrational excitation of the bent HF-HCN molecular complex.