VIBRONIC SPECTROSCOPY OF PHENYLVINYLNITRILE

DEEPALI N. MEHTA, POLINA NAVOTNAYA, ALEX PAROBEK, RACHEL CLAYTON, VANESA VAQUERO VARA, and TIMOTHY S. ZWIER, *Department of Chemistry, Purdue University, West Lafayette, IN 47907-2084 U.S.A.*

This talk will present results of a gas phase, jet-cooled vibronic spectroscopy study of phenylvinylnitrile (C_6H_5-CH=CH-CN, PVN). This molecule is seen as a potential photochemical precursor to nitrogen heteroaromatics, and therefore is particularly relevant to Titan's atmosphere, where nitriles exist in significant abundance. As a first step towards such photochemical studies, a fluorescence excitation spectrum of PVN spanning the range 33,500-35,840 cm^{-1} (298.5-279.0 nm) has been recorded, and dispersed fluorescence spectra that uncover and characterize the vibronic activity have been acquired. The S_0-S_1 origin is a prominent band located at 33,826 cm^{-1}, and the excitation spectrum is characterized by significant vibronic activity leading to spectral congestion. Hole-burning in the region of 33,500-35,840 cm^{-1} has also been completed, and the excitation spectrum can be assigned solely to (E)-PVN. As PVN is the nitrogen-containing counterpart to phenylvinylacetylene (PVA), a comparison of the vibronic spectroscopy between the two molecules will be made.