PHOTOELECTRON SPECTROSCOPY OF DOPED HELIUM NANODROPLETS

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The photoionization of aromatic molecules (aniline, phenol, and toluene) in helium droplets was studied with photoelectron spectroscopy. The photoelectron spectra resemble closely those of gas phase molecules except for the droplet size dependent shift. This shift is caused by the lowering of the ionization threshold upon solvation and can be readily estimated. The individual peaks in photoelectron spectra are broadened, which is thought to partially reflect the rearrangement of helium upon ion solvation. The droplet size and kinetic energy dependences of the peak broadening towards lower energy may be attributed to the relaxation of the photoelectrons as they pass through a helium droplet. ZEKE spectroscopy of surface-doped helium droplets will be discussed.