ZEKE-PFI Spectroscopy of the Sodium-Water and Sodium-Ammonia Dimers

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Single-photon ZEKE-PFI experiments have been performed on the Na-H_2O, Na-D_2O, Na-NH_3, and Na-ND_3 clusters in a molecular beam, and two-photon ZEKE-PFI experiments have been performed on the Na-NH_3 and Na-ND_3 clusters. From the single photon spectra the ionization potentials and intermolecular stretching vibrational frequencies of the cluster ions have been determined, as well as the changes in the intermolecular bending vibrational frequencies upon ionization. The intermolecular bending vibrational frequencies of the Na-NH_3 and Na-ND_3 cluster ions were obtained from the two-photon ZEKE-PFI spectra. Partially resolved rotational structure in the spectra will be discussed.