INFRARED DEPLETION SPECTROSCOPY OF ANILINE-WATER$_n$(n=2-6) CATION CLUSTERS

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The vibrational spectra of aniline-water$_n$ (n=2-6) cluster cations in the OH stretching vibration region have been measured by infrared depletion technique. The cluster cations were prepared by the near resonant two-photon ionization of neutral aniline-watern clusters. No structure was observed in the UV-excitation spectra, and the origin of the cluster cation seems to be the larger neutral aniline-water clusters. The observed mass spectrum showed magic numbers at n=4 and 5.
The infrared spectrum of aniline-water2 shows strong absorption bands around 3200-3300cm^{-1}, and the absorption of the stretching band of free NH bond was observed at 3440cm^{-1}. This results suggests that one of the NH bonds of aniline interacts with the water dimer in the cluster cation. In the infrared spectra of larger aniline-water$_n(n > 2)$ cations, strong absorption bands were observed at around 3400-3550cm^{-1}. The spectra resemble to those observed in the phenol-watern+ cation. This result suggests that the ring structure of water molecules interacting with the NH bonds of aniline cation.