PFI-ZEKE SPECTROSCOPY OF ALUMINUM IMIDAZOLE AND PYRIMIDINE COMPLEXES

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Aluminum complexes of imidazole (1,3-$C_3H_4N_2$) and pyrimidine (1,3-$C_4H_4N_2$) are produced by interactions between laser-ablated aluminum atoms with imidazole or pyrimidine vapor in supersonic molecular beams and studied by pulsed field ionization zero electron kinetic energy spectroscopy. The ionization energies of Al-imidazole and -pyrimidine are measured to be 35344(5) and 44182(6) cm^{-1}, and the Al^+-imidazole and -pyrimidine stretching frequencies are 308 and 262 cm^{-1}, respectively. In addition, an Al^+-imidazole in-plane bending mode is determined to be 125 cm^{-1}. Preliminary spectral analysis shows that aluminum atom or ion binds with single nitrogen of the ligand, and both complexes are in C_s symmetry.