ZERO ELECTRON KINETIC ENERGY SPECTRA OF $GaNH_3$ AND $GaNH_2(CH_3)$

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Zero electron kinetic energy (ZEKE) spectra were obtained for the $GaNH_3$ and $GaNH_2(CH_3)$ complexes. Ab initio and Franck-Condon factor calculations were performed to help spectral assignments. $GaNH_3$ has a $^1A_1$ (C_{3v}) ground state in the ion and a ^{2}A'(C_s) ground state in the neutral. The ionization potential of the ^{2}A'(C_s) state is 40136 (5) cm^{-1}. Metal-ligand stretching frequencies are 270 cm^{-1} in the $^1A_1$ state and 161 cm^{-1} in the ^{2}A' state. The spectrum of $GaNH_2(CH_3)$ displays more vibronic transitions but at lower energies than $GaNH_3$. The ionization potential of $GaNH_2(CH_3)$ is 39331(5) cm^{-1}. The Ga^+-N stretching in this case has a frequency of 299 cm^{-1} in the ion. The Ga^+-N-C and Ga-N-C bending vibrations have frequencies of 126 and 94 cm^{-1}, respectively.