ELECTRONIC SPECTRUM OF $AgNH_3$ COMPLEX

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An electronic transition of silver-ammonia 1:1 complex has been observed for the first time. The complexes of silver and ammonia were produced with the laser ablation of silver followed by collisions with ammonia seeded in carrier gas in a free jet expansion. The spectra of complexes were observed by using resonantly enhanced multiphoton ionization (REMPI) spectroscopy combined with a mass selection by a time-of-flight mass spectrometer. The origin of the band system located at 21410 cm^{-1} is red shifted by more than 8000 cm^{-1} from a corresponding transition of a silver atom (Ag 5p $^2P_{1/2} \leftarrow$ 5s ^2S), which indicates a significant stabilization of the complex in its electronic excited state. In the spectrum, long progressions having energy spacings of about 370 cm^{-1} were observed. They were assigned to the progression of the intermolecular stretching mode, and those combined with the intermolecular bending mode, and inversion of ammonia mode.