PULSED FIELD IONIZATION OF GALLIUM AND INDIUM COMPLEXES WITH TRIMETHYLPHOSPHINE

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Complexes of gallium and indium with phosphines are precursors for chemical vapor deposition of the metal-phosphide semiconductor compounds. In this talk, we will report the preparation and characterization of the gaseous 1:1 complexes of Ga-P$(CH_3)_3$ and In-P$(CH_3)_3$. The complexes were produced by reactions of laser-vaporized metal atoms and trimethylphosphine seeded in helium gas, identified by time-of-flight mass spectrometry, and characterized by pulsed field ionization-zero electron kinetic energy (ZEKE) spectroscopy. The ZEKE spectra of Ga-P$(CH_3)_3$ and In-P$(CH_3)_3$ exhibited distinctive spectral profiles, which were assigned by comparison with *ab initio* calculations. These spectra are also different from that of Al-P$(CH_3)_3$ [a].

[a] S. Li, G. K. Rothschopf, and D. -S. Yang, *J. Chem. Phys.* (issue of 15 April 2002).