

PULSED FIELD IONIZATION OF GALLIUM AND INDIUM COMPLEXES WITH TRIMETHYLPHOSPHINE

SHENGGANG LI, GRETCHEN K. ROTHSCHOPF, BRADFORD R. SOHNLEIN, and DONG-SHENG YANG, *Department of Chemistry, University of Kentucky, Lexington, KY 40506-0055.*

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(CH₃)₃ and In-P(CH₃)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(CH₃)₃ and In-P(CH₃)₃ exhibited distinctive spectral profiles, which were assigned by comparison with *ab initio* calculations. These spectra are also different from that of Al-P(CH₃)₃^a.

^aS. Li, G. K. Rothschof, and D. -S. Yang, *J. Chem. Phys.* (issue of 15 April 2002).