

ZEKE SPECTROSCOPY OF GALLIUM-METHYLAMINE COMPLEXES: Ga-NH<sub>n</sub>(CH<sub>3</sub>)<sub>3-n</sub> (n = 0-2)

PARAGRANJITA BHOWMIK, SHENGGANG LI, JASON F. FULLER, GRETCHEN K. ROTHSCHOPF, BRADFORD R. SOHNLEIN, XU WANG, and DONG-SHENG YANG, *Department of Chemistry, University of Kentucky, Lexington, KY 40506-0055*.

Gallium-amine complexes were produced by reactions of gallium atoms and methylamines seeded in helium or argon carrier gases. The Ga-NH<sub>n</sub>(CH<sub>3</sub>)<sub>3-n</sub> complexes have adiabatic ionization potentials of 39330, 38790, and 38081 cm<sup>-1</sup> for n = 2, 1, and 0, respectively. The ZEKE spectrum of Ga-NH<sub>2</sub>CH<sub>3</sub> exhibits 299 and 124 cm<sup>-1</sup> vibrations in the ionic state and a 93 cm<sup>-1</sup> vibration in the neutral state. In the case of Ga-NH(CH<sub>3</sub>)<sub>2</sub>, 864, 331, 206, and 132 cm<sup>-1</sup> vibrations were measured for the ion, and 177 and 128 cm<sup>-1</sup> vibrations for the neutral molecule. For Ga-N(CH<sub>3</sub>)<sub>3</sub>, the spectrum displays ionic vibrations of 785, 462, 188, and 111 cm<sup>-1</sup> and a neutral vibration of 133 cm<sup>-1</sup>. Assignments of the observed vibrations will be discussed in comparison with theoretical calculations.