

SPECTROSCOPIC CHARACTERIZATION OF Be_2^+ $X^2\Sigma_u^+$ AND THE IONIZATION ENERGY OF Be_2

I. O. ANTONOV, B. J. BARKER, V. E. BONDYBEY, M. C. HEAVEN, *Department of Chemistry, Emory University, Atlanta, GA 30322.*

Rotationally resolved spectra for Be_2^+ were recorded with PFI-ZEKE technique. Vibrational levels $v^+=0-6$ were observed. The symmetry of the ground state was determined as $^2\Sigma_u^+$. The bond energy was found to be $D_e^+ = 16348(5) \text{ cm}^{-1}$ and the equilibrium distance $R_e^+ = 2.211(8) \text{ \AA}$. The ionization energy for Be_2 was refined at $59824(2) \text{ cm}^{-1}$. Comparisons with high-level theoretical calculations indicate that the bonding in Be_2^+ is adequately described by MRDCI calculations with moderately large basis sets.