SOLVING THE PUZZLE OF TETRATOMIC, 23-VALENCE-ELECTRON MOLECULES

MARILYN E. JACOX, *Optical Technology Division, National Institute of Standards and Technology, Gaithersburg, MD 20899-8441.*

Because of extensive electron correlation, the ground-state structures, infrared spectra, and chemical bonding properties of a number of tetratomic molecules which possess 23 valence electrons are anomalous. Approaches which have recently been helpful in understanding this phenomenon include ab initio calculations and spectroscopic observations of these species trapped in solid neon at temperatures near 4 K. Molecules for which infrared spectra have been obtained and which will be discussed include NO_3, NNO_2 anion, BF_3 cation, and O_4 cation.