

INFRARED SPECTRA OF MOLECULAR IONS FORMED FROM SF<sub>4</sub> AND SF<sub>6</sub> AND TRAPPED IN A NEON MATRIX

CATHERINE L. LUGEZ and MARILYN E. JACOX, *Optical Technology Division, National Institute of Standards and Technology, Gaithersburg, MD 20899*; ROLLIN A. KING and H. F. SCHAEFER III, *Center for Computational Chemistry, University of Georgia, Athens, GA 30602*.

When SF<sub>4</sub> or SF<sub>6</sub> is subjected to Penning ionization and photoionization by excited neon atoms and their resonance radiation (16.6-16.8 eV) and the products are rapidly frozen in an excess of solid neon, the resulting solid deposit shows prominent infrared absorptions which can be assigned to cation and anion products. Among the species identified through their infrared absorptions are SF<sub>3</sub><sup>+</sup>, SF<sub>5</sub><sup>+</sup>, SF<sub>5</sub><sup>-</sup>, and F<sub>2</sub>SO<sup>+</sup>. The assignments are aided by consideration of the spectra of related systems and by the results of ab initio calculations.