

## DETECTION AND CHARACTERIZATION OF SCANDIUM IMIDE, ScNH

T.C. STEIMLE, J. XIN, A. J. MARR and S. A. BEATON, *Dept. of Chemistry and Biochemistry, Arizona State University, Tempe, AZ 85287-1604.*

Supersonic molecular beams of scandium imide, ScNH, and deuterated imide, ScND, were produced using a laser ablation/reaction source and interrogated by laser induced fluorescence and dispersed fluorescence spectroscopy. The fine and magnetic hyperfine interactions and Stark effect in the (0,0)  $A^2\Pi_r - X^2\Sigma^+$  transition of ScNH (origin = 15023.033  $\text{cm}^{-1}$ ) were analyzed. Ground state vibrational spacings for ScNH and ScND were measured. The determined permanent electric dipole moments are  $\mu(A^2\Pi_r) = 4.08(7)\text{D}$  and  $\mu(X^2\Sigma^+) = 2.28(15)\text{D}$ . The Sc ( $I = \frac{7}{2}$ ) magnetic hyperfine structure was analyzed from which a plausible molecular orbital description was made. A comparison with experimental observations<sup>a,b</sup> and theoretical predictions<sup>c</sup> for YNH has been made.

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<sup>a</sup>B. Simard, W.J. Balfour, M. Vasseur, and P.A. Hackett, *J. Chem. Phys.* **93**, 4481,(1990).

<sup>b</sup>*ibid* Presentation TC13 "45th Ohio State Symposium on Molecular Spectroscopy", June 11-15, 1990.

<sup>c</sup>K.K. Das and K. Balsubramanian, *J. Chem. Phys.* **93**, 6671,(1990).