LASER SPECTROSCOPY OF THE $^4\Gamma$ - $X^4\Phi$ TRANSITION IN TITANIUM HYDRIDE, TiH

COLAN LINTON, *Centre for Laser Atomic and Molecular Sciences and Physics Department, University of New Brunswick, Fredericton, NB E3B 5A3, Canada*; SARAH FREY and TIMOTHY C. STEIMLE, *Department of Chemistry and Biochemistry, Arizona State University, Tempe, Arizona 85287-1604*.

A gas phase study of the $^4\Gamma_{2.5}$ - $A^4\Phi_{1.5}$ (0, 0) band in the astrophysically important titanium hydride molecule, TiH, has recently been undertaken. Low resolution dispersed fluorescence spectra of TiH and TiD have yielded information on the vibrational structure. A high resolution study at a linewidth of ≈40 MHz has shown doubling due to resolved hydrogen hyperfine structure in the main ^{48}TiH (74% abundance) isotopologue, and the much weaker ^{46}TiH (8%) and ^{50}TiH (5%) species. Titanium hyperfine structure was also resolved in the weak ^{47}TiH (8%, I = 2.5) and ^{49}TiH (5%, I = 3.5) isotopologues. The magnetic tuning properties of TiH have been examined by studying the Zeeman effect on the low-J lines. The analysis is presently in progress and the latest results will be presented at the symposium.