

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

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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  $\approx 40$  MHz has shown doubling due to resolved hydrogen hyperfine structure in the main  ${}^{48}\text{TiH}$  (74% abundance) isotopologue, and the much weaker  ${}^{46}\text{TiH}$  (8%) and  ${}^{50}\text{TiH}$  (5%) species. Titanium hyperfine structure was also resolved in the weak  ${}^{47}\text{TiH}$  (8%,  $I = 2.5$ ) and  ${}^{49}\text{TiH}$  (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.