VISIBLE LASER EXCITATION SPECTROSCOPY OF YbOH

TODD C. MELVILLE and JOHN A. COXON, *Department of Chemistry, Dalhousie University, Halifax, NS, Canada B3H 4J3*.

Laser excitation spectroscopy has been employed in the first observation of the visible $\tilde{A}^2\Pi - \tilde{X}^2\Sigma$ electronic transition of YbOH. YbOH radicals were produced in a Broida-type oven by the reaction of ytterbium metal vapor with H_2O_2 vapor. A Coherent 599 dye laser operating in broadband mode (1 cm^{-1}bandwidth) was used to investigate the vibrational structure of the $\tilde{A}-\tilde{X}$ system at low-resolution. The output of a Coherent 699-29 ring dye laser operating in single frequency mode was used with selective detection of fluorescence to record high-resolution spectra of the 000 - 000 and 000 - 100 bands in the range 575 - 595 nm; the measurement accuracy of the line positions was 0.003 cm^{-1}. The results are consistent with a linear structure for YbOH. The vibrational and rotational analysis of the $\tilde{A}-\tilde{X}$ transition will be discussed.