LASER SPECTROSCOPY OF THE $C\ ^1\Sigma - X\ ^1\Sigma$ TRANSITION OF YI

J. W-H. LEUNG, C. Y. HUNG, and A. S-C. CHEUNG, *Department of Chemistry, The University of Hong Kong, Pokfulam Road, Hong Kong*.

Electronic transition of YI has been studied using laser ablation/reaction supersonic free jet expansion and laser induced fluorescence spectroscopy. YI molecule was generated by laser ablation of an yttrium rod in the presence of CH_3I vapor. High resolution laser induced fluorescence spectrum of YI has been recorded in the near infrared region 11850-13000 cm^{-1}, using a cw single frequency Ti:sapphire ring laser. 15 bands of the $C\ ^1\Sigma - X\ ^1\Sigma$ transition of YI have been rotationally analyzed. Each band displays the pattern of R and P branches only, which is characteristic of a $^1\Sigma - ^1\Sigma$ transition. Least squares fit of all the available lines of YI molecule yielded molecular constants for both the $X\ ^1\Sigma$ and $C^1\Sigma$ states.