THE APPLICATION OF A VUV-FT SPECTROMETER AND SYNCHROTRON RADIATION SOURCE TO MEASUREMENTS OF THE NO BANDS

K. YOSHINO and J. RUFUS, *Harvard Smithsonian Center for Astrophysics, Cambridge, MA 02138, U.S.A.*; A. S. -C. CHEUNG, *University of Hong Kong, Hong Kong*; A. P. THORNE and J. E. MURRAY, *Imperial College of Science, Technology, and Medicine, London, U.K.*; K. ITO and T. MATSUI, *Photon Factory, KEK, Tsukuba, Ibaraki 305-0801, Japan*; T. IMAJO, *Japan women's university, Tokyo 112-8681, Japan*.

The Imperial College VUV-FT spectrometer has been equipped with optically contacted, beam splitters made from single crystals of $MgF_2$ and the short wavelength performance has been demonstrated down to $\sim$139 nm. To make ultrahigh resolution VUV photoabsorption cross section measurements with the VUV-FTS require a pure continuum source below 190 nm and the best choice: is synchrotron radiation from a storage ring facility. Moreover a suitable zero-dispersion predisperser is available on beam line 12-B of the synchrotron radiation source at the Photon Factory. We therefore moved the IC VUV FT spectrometer from Imperial College, London to the Photon Factory, Japan to exploit the bandwidth-limited synchrotron radiation as a background source for FT absorption spectroscopy.

The VUV-FT spectra of all NO bands in the wavelength region 195-160 nm have been recorded with an instrumental resolution of 0.06 $\mathrm{cm}^{-1}$ (about a half of the Doppler widths). The analytical results of the $\beta$(9,0), $\delta$(1,0), $\epsilon$(1,0), $\beta$(6,0), and $\gamma$(3,0) bands have been published. Accurate line positions and cross sections of the $\beta$(11,0) and $\epsilon$(0,0) bands have been determined. The term values of the D(0) and B(11) levels will be presented. Absolute band oscillator strengths of the both bands have been obtained from the integration of cross sections of individual line.

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