FAR INFRARED FOURIER TRANSFORM SPECTROSCOPY IN EMISSION

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We are currently developing sources allowing gas phase molecular emission to be recorded by FTS in the Far Infrared region. Our preliminary results were presented last year[a]. Improvements of the efficiency of our sources result in the observation of lower frequency molecular emission. We illustrate this with two examples. By recording the thermal vibration-rotation emission spectra of few PAH's using a new technique, the emission spectrum of anthracene was extended (for the first time to our knowledge) to its lowest frequency component located at around 87 cm^{-1}. By using a radio-frequency discharge through a flowing mixture of C_2H_4 and N_2, rotational emission of HCN was detected in the spectral range 30 - 180 cm^{-1}. Rotational lines in pure bending motion were assigned up to the vibrational level (050). Results on HCN will be compared to those obtained by submillimeter-wave spectroscopy[b] and infrared spectroscopy[c].

[a] O. Pirali and M. Vervloet, 58th International Symposium on Molecular Spectroscopy, paper **WE06** (2003).
[b] Zelinger, T. Amano, V. Ahrens, S. Brünken, F. Lewen, H.S.P. Müller, and G. Winnewisser, J. Molec. Spectrosc., **220**, 223 (2003).
[c] A. G. Maki, G. Ch. Mellau, S. Klee, M. Winnewisser, and W. Quapp, J. Molec. Spectrosc., **202**, 67 (2000).