

## 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<sup>d</sup>. 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  $87\text{ cm}^{-1}$ . By using a radio-frequency discharge through a flowing mixture of  $\text{C}_2\text{H}_4$  and  $\text{N}_2$ , rotational emission of HCN was detected in the spectral range  $30 - 180\text{ cm}^{-1}$ . 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<sup>b</sup> and infrared spectroscopy<sup>c</sup>.

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<sup>d</sup>O. Pirali and M. Vervloet, 58<sup>th</sup> International Symposium on Molecular Spectroscopy, paper **WE06** (2003).

<sup>b</sup>Zelinger, T. Amano, V. Ahrens, S. Brünken, F. Lewen, H.S.P. Müller, and G. Winnewisser, *J. Molec. Spectrosc.*, **220**, 223 (2003).

<sup>c</sup>A. G. Maki, G. Ch. Mellau, S. Klee, M. Winnewisser, and W. Quapp, *J. Molec. Spectrosc.*, **202**, 67 (2000).