HIGH-RESOLUTION SPECTROSCOPY OF NITROUS ACID (HONO) AND ITS DEUTERATED SPECIES (DONO) IN THE FAR- AND MID-INFRARED REGIONS

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Nitrous acid (HONO) is an important source for OH radicals in tropospheric photochemistry.[a] Currently it is measured in the atmosphere using its ultraviolet absorption bands[b] but it has also been detected in the mid-infrared spectral region using a tuneable diode-laser.[c] In order to complete and extend previous laboratory work on the infrared fundamental bands of *trans*-HONO[d] and *cis*-HONO[e] and also of its deuterated species (DONO)[f] we have carried out a number of new spectroscopic studies, focusing on

- the first high-resolution spectra of *trans*- and *cis*-HONO and -DONO in the far-infrared region (30–120 cm^{-1}),
- the first high-resolution spectra and analysis of the ν_1 bands of *trans*- and *cis*-DONO around 2600 cm^{-1},
- new high-resolution spectra and analysis of the Coriolis-interacting ν_5 and ν_6 bands of HONO around 600 cm^{-1}.[g]

In this talk we will present the main results and some comparisons with previous studies.

[a] B. J. Finlayson-Pitts, J. N. Pitts, Jr., Chemistry of the Upper and Lower Atmosphere, Academic Press, 2000.
[b] J. Stutz, E. S. Kim, U. Platt, P. Bruno, C. Perrino, and A. Febo, J. Geophys. Res. D 105, 14585-14592, 2000.
[c] C. L. Schiller, S. Locquiao, T. J. Johnson, and G. W. Harris, J. Atm. Chem. 40, 275-292, 2001.
[d] J.-M. Guilmot, M. Godefroid, and M. Herman, J. Mol. Spectrosc. 160, 387-400, 1993.
[e] J.-M. Guilmot, M. Godefroid, and M. Herman, J. Mol. Spectrosc. 160, 401-410, 1993.
[f] L. O. Halonen, C. M. Deeley, I. M. Mills and V.-M. Horneman, Can. J. Phys. 62, 1300-1305, 1984.
[g] C. M.Deeley, I. M. Mills, L. O. Halonen, and J. Kauppinen, Can. J. Phys. 63, 962-965, 1985.