

## MLS Scientific Publication

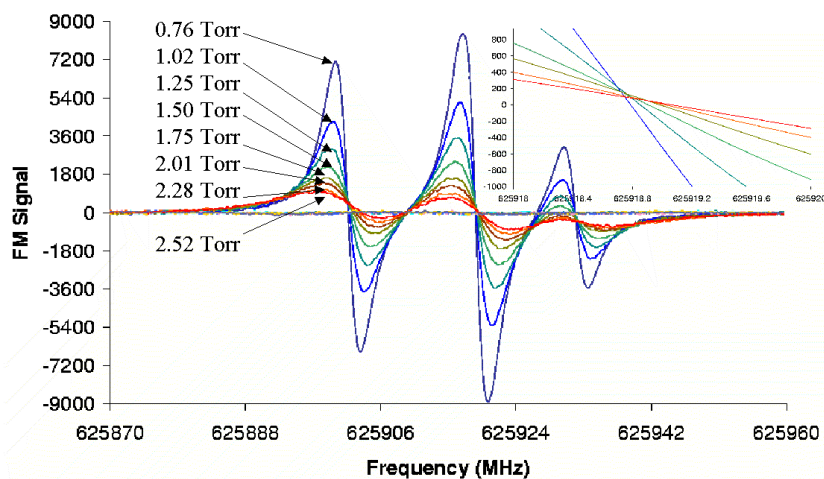
Scientific Themes: Atmospheric Chemistry, Submillimeter Spectroscopy.

**Temperature Dependent Pressure Induced Lineshape of the HCl  $J = 1 \leftarrow 0$  Rotational Transition in Nitrogen and Oxygen.** *Journal of Quantitative Spectroscopy and Radiative Transfer*, Drouin B.J., Volume 83, Issues 3-4, 1 February 2004, Pages 321-331.

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### Summary

The pressure induced broadening and shift of the lowest rotational transition of hydrogen chloride have been measured in both nitrogen and oxygen as a function of temperature. This work improves the accuracy of the broadening parameter and provides the first experimental parameterization of the pressure shift. The HCl air broadened half-width is determined to  $<4.1\%$  across the temperature range of the stratosphere and upper troposphere.



A 210 K run of 20 mTorr 1% HCl in Nitrogen and 760-2520 mTorr Oxygen. The traces decrease in amplitude for higher pressures measured at 250 mTorr increments. The inset shows the lineshift to higher frequency for higher pressures.