SUBMILLIMETER MEASUREMENTS OF THE PRESSURE BROADENING OF BrO AND HO_2

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The pressure broadening coefficients of BrO and HO_2 have been measured independently at Ibaraki University and Jet Propulsion Laboratory for the transitions in the 620-650 GHz region. These lines are planned to be monitored by the JEM/SMILES and EOS/MLS missions. For reliable retrieval of the atmospheric observation data, the pressure broadening parameters should be determined within a few percent uncertainty. The submillimeter-wave spectrometer uses a Russian-made backward-wave oscillator(BWO) as a submillimeter-wave source. The radicals were produced in a DC discharge or microwave discharge applied in a side arm attached to the inlet of the 10 cm diameter absorption cell. The buffer gas inlet is separated from the discharge inlet. Two calibrated Baratron pressure gauges were placed both at the inlet side and the pumping side and the pressure gradient was found to be negligible. The line profiles are analyzed by using a convolution method that was developed by Pickett[a]. This method was particularly useful for complicated line profiles such as BrO that have hyperfine and Λ-type doublings. The pressure broadening coefficients are obtained at both laboratories and the results are in very good agreement, indicating that these results are free from systematic errors.

[a] H. M. Pickett, *Appl. Opt.* **19**, 2745-2749(1980)