HIGH-RESOLUTION MEASUREMENTS OF THE BROADENING AND SHIFTING OF CO-N_2 AT LOW-TEMPERATURES

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Atmospheric remote sounding requires an increasingly accurate knowledge of the spectral properties of gases under environmental conditions. To that end, high-resolution measurements of the broadening and shifting of several CO-N_2 fundamental P and R branch lines are presented at $-45°$C and $-10°$C, and pressures of about 50 kPa. Combining our broadening results with previously published data [a], the measured temperature dependence of the broadening coefficients is compared with the temperature dependence predicted by the usual scaling law, $\gamma_1/\gamma_2 = (T_1/T_2)^{-n}$. It is shown that the law is no longer accurate within experimental error. The temperature dependence of the shifts is also measured.

[a] A. Predoi-Cross, C. Luo, P. M. Sinclair, J. R. Drummond, and A. D. May, J. Mol. Spec. 198, 291-303 (1999).