

HIGH-RESOLUTION MEASUREMENTS OF THE BROADENING AND SHIFTING OF CO-N₂ AT LOW-TEMPERATURES

RICHARD WEHR, A. VITCU, R. CIURYLO, J. R. DRUMMOND and A. D. MAY, *Department of Physics, University of Toronto, ON M5S 1A7, Canada.*

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-N₂ 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.

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