

TEMPERATURE-DEPENDENCE OF SELF- AND AIR-BROADENED CO LINE SHAPES IN THE FUNDAMENTAL BAND

ADRIANA PREDOI-CROSS, NAZRUL ISLAM, *Department of Physics and Astronomy, University of Lethbridge, Lethbridge, Canada*; MARY ANN H. SMITH, *self-employed, Retired, Newport News, VA, USA*; V. MALATHY DEVI, *Department of Physics, College of William and Mary, Williamsburg, VA, USA*; SERGEI V IVANOV, *Institute on Laser and Information Technologies, Russian Academy of Sciences, Troitsk, Moscow, Russia*; FRANCK THIBAUT, *Institut de Physique de Rennes, Université de Rennes 1, Rennes, France*.

We present results of an extensive analysis of the CO 1←0 band in 40 spectra of pure carbon monoxide and carbon monoxide mixed with air recorded at temperatures ranging between 79 K and room temperature. All spectra were recorded using the 1-m McMath-Pierce Fourier Transform spectrometer located at Kitt Peak, AZ, USA and two temperature-controlled gas cells. The analysis was carried out using multispectrum fitting software^a and the Voigt, speed-dependent Voigt and Rautian line shape models. When using the Rautian model, we employed calculated narrowing parameters obtained from computed diffusion constants^b for each of the absorber-perturber pairs CO-CO, CO-N₂ and CO-O₂. The experimentally retrieved temperature dependences of the line shape parameters are been compared with previous published results and with the results of calculations for CO-N₂.

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^aD. C. Benner, C. P. Rinsland, V. Malathy Devi, M. A. H. Smith and D. A. Atkins, *JQSRT* **53** (1995) 705-721.

^bJ. O. Hirschfelder, C. F. Curtiss and R. B. Bird, Molecular theory of gases and liquids, New York, Wiley and Sons, 1952.