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SPECTROSCOPIC STUDY OF CO IN THE FUNDAMENTAL BAND OVER A RANGE OF TEMPERATURES FROM 296 TO 79 K

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We present the results of a spectroscopic study of 27 spectra of the fundamental band of pure carbon monoxide and carbon monoxide mixed with air, recorded over a range of temperatures. The Voigt, speed-dependent Voigt and Rautian line shape models have been employed in the analysis. Line intensities, air- and self-broadening coefficients, pressure induced air- and self-shift coefficients, Einstein A-coefficients and line-mixing parameters have been retrieved. The Exponential Power Gap and Energy Corrected Sudden scaling laws have been used to calculate line-mixing parameters. The pure carbon monoxide half widths have been calculated at different temperatures using a potential energy surface based on a Tipping-Herman intermolecular interaction potential and taking the electrostatic interactions into account. We have compared our measurement results with theoretical results (for the CO-CO system) and with previous published studies.

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