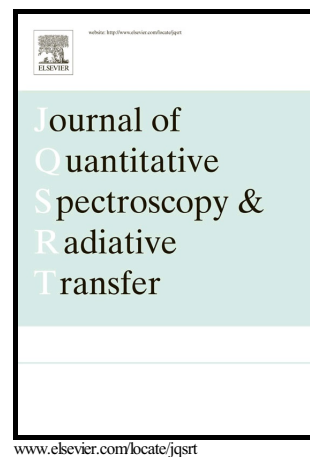


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# Room Temperature Self- and H<sub>2</sub>-Broadened Line Parameters of Carbon Monoxide in the First Overtone Band: Theoretical and Revised Experimental Results

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## Abstract

Lorentz self- and H<sub>2</sub>-broadened half-width and pressure-induced shift coefficients, line mixing coefficients as well as line center positions and intensities were obtained using a nonlinear least square fitting technique for 48 (P(24) to R(23)) ro-vibrational transitions belonging to the first overtone (2←0) band of <sup>12</sup>C<sup>16</sup>O at room temperature. All spectra in the 4146 to 4332 cm<sup>-1</sup> spectral interval were fitted simultaneously employing four line shape functions: the Voigt, Speed Dependent Voigt, Rautian and Speed Dependent Rautian profiles. The collisional line mixing effect has been observed and investigated as an asymmetry in the analyzed line profiles. A semi-empirical Exponential Power Gap Law method was used to estimate the self- and H<sub>2</sub>-broadening coefficients and the collisional line mixing parameters. Additionally, a classical approach was applied to calculate the half-width coefficients of

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