EXPERIMENTAL AND THEORETICAL HE-BROADENED LINE PARAMETERS OF CARBON MONOXIDE IN THE FUNDAMENTAL BAND

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We report experimental measurements and theoretical calculations for He-broadened Lorentz half-width coefficients and He- pressure-shift coefficients of 45 carbon monoxide transitions in the 1-0 band. The high-resolution spectra analyzed in this study were recorded over a range of sample temperatures between 296 and 80 K. The He-broadened line parameters and their temperature dependences were retrieved using a multispectrum nonlinear least squares analysis program. A previous analysis of these spectra^{*a*} used only the Voigt line shape. In the present study four line shape models were compared including Voigt, speed dependent Voigt, Rautian (to take into account confinement narrowing) and Rautian with speed dependence. The line mixing coefficients have been calculated using the Exponential Power Gap scaling law. We were unable to retrieve the temperature dependence of the line mixing coefficients. The current measurements and theoretical results are compared with other published results, where appropriate.

^aA. W. Mantz et al., J. Molec. Structure <u>742</u> (2005) 99-110.