Line-shape study of self-broadened carbon monoxide transitions from the (3←0) band measured with cavity ring-down spectroscopy

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We present high-precision line-shape measurements of self-broadened CO transitions from (3←0) and (4←1) bands and four isotopologs, located in the spectral region of (6201 – 6211) cm^{-1}. Experimental spectra were measured using the frequency-stabilized cavity ring-down spectrometer (FS-CRDS) [1]. Ten of twelve investigated lines were measured for the first time. We have shown that the narrowing of the spectral lines should be taken into account on order to correctly determine their collisional broadening parameters and line intensities. In our experimental conditions (CO pressure below 0.6 kPa) line narrowing can be equally well described by Dicke narrowing or the speed dependence of collisional broadening. Experimental line intensities measured with subpercent relative uncertainties and line positions were compared to data available in the HITRAN spectroscopic database [2]. Results will be published in Ref. [3].

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