

# COLLISION INDUCED ABSORPTION OF THE $a^1\Delta_g-X^3\Sigma^-_g$ BAND OF OXYGEN NEAR 1.27 $\mu\text{M}$ BY CAVITY RING DOWN SPECTROSCOPY

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Collision induced absorption (CIA) coefficients of the  $a^1\Delta_g-X^3\Sigma^-_g(v=0-0)$  band of oxygen have been measured using cavity ring down spectroscopy (CRDS) technique at room temperature. More precisely, the  $B_{O_2-O_2}$ ,  $B_{O_2-N_2}$  and  $B_{O_2-Air}$  coefficients have been determined with a reduced uncertainty from series of low density spectra (from 0.36 to 0.85 amagat) of pure oxygen and  $N_2+O_2$  mixture with  $O_2=20.95\%$ . For that 12 distributed feed-back laser diodes were used below  $7920\text{ cm}^{-1}$  together with an external cavity diode laser above this wavenumber. We particularly paid attention to the base line stability ( $2 \times 10^{-10}\text{ cm}^{-1}$ ) during the entire measurements. CIA was obtained from the difference between the absorbing samples spectra and argon spectra recorded for the same densities after removal of the local contribution of the absorption lines. The low densities at which the spectra were recorded were very useful to reliably remove this local contribution. The retrieved coefficients were compared to the CIA reported in HITRAN2016. A good overall agreement is found but differences between 5 and 8% for  $B_{O_2-Air}$  coefficients are observed below  $7850\text{ cm}^{-1}$ .