

OSCILLATOR STRENGTHS AND PREDISSOCIATION RATES FOR $W - X$ BANDS AND THE $4P5P$ COMPLEX IN $^{13}\text{C}^{16}\text{O}$ AND $^{12}\text{C}^{18}\text{O}$

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We are conducting experiments on the DESIRS beam-line at the SOLEIL Synchrotron to acquire the necessary data on oscillator strengths and predissociation rates for modeling CO photochemistry in astronomical environments. A VUV Fourier Transform Spectrometer provides a resolving power of about 350,000, allowing us to discern individual lines in electronic transitions. Here we focus on results obtained from absorption spectra of $^{13}\text{C}^{16}\text{O}$ and $^{12}\text{C}^{18}\text{O}$ for the $W \ ^1\Pi - X \ ^1\Sigma^+$ bands with $v' = 0 - 3$ and $v'' = 0$ and the four overlapping bands (three resolved and one diffuse) observed between 92.97 and 93.35 nm. The three resolved bands are transitions to the upper levels $4p\pi(2)$, $5p\pi(0)$, and $5p\sigma(0)$ of the $4p(2)$ and $5p(0)$ complexes, and the diffuse band is associated with a non Rydberg level $I \ ^1\Pi$; weak features in $^{13}\text{C}^{16}\text{O}$ are likely associated with absorption to the $4p\sigma(2)$ and $II \ ^1\Pi$ levels. Several perturbations are also revealed in the high-resolution spectra. We compare our results with earlier determinations for these isotopologues of CO, as well as our SOLEIL measurements on $^{12}\text{C}^{16}\text{O}$.