

# High-resolution FT spectroscopy of the $^{12}\text{C}^{16}\text{O}$ $\text{a}^3\Pi - \text{X}^1\Sigma^+$ system

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## Abstract

Carbon monoxide (CO) is one of the key molecules in the study of planetary and exoplanetary atmospheres, as well as processes occurring in outer space. Precisely determining the energy of its energy levels and describing the processes governing them is fundamental for modelling astrophysical phenomena and the dynamics of astronomical environment and objects.

Research performed at the Materials Spectroscopy Laboratory at the University of Rzeszów focuses on precise measurements of the frequency of diatomic molecules of great astronomical and astrophysical importance [1,2]. The result of our studies was to obtain 806 spectral lines of the ( $v' - 0$ ) progression of the forbidden Cameron system ( $\text{a}^3\Pi - \text{X}^1\Sigma^+$ ). The spectra were obtained using VUV absorption spectroscopy in SOLEIL synchrotron.

The MARVEL algorithm was applied to the merging of a wide range of experimental terms of the  $^{12}\text{C}^{16}\text{O}$  molecule to build the ExoMol database for the carbon monoxide molecule [3].

## References

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3. S. Mahmoud, N. El-Kork et al. (in preparation).