



## **A Novel Analytical System for Studying the Stable Isotopes of Carbon Monoxide using CF-IRMS**

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CO is the major sink for OH, has multiple anthropogenic and natural sources, has a large seasonal variability and an importance in paleo atmospheric chemistry. Measurement of its isotopic composition is useful in constraining individual source and sink processes and thus its global cycle.

Traditionally, CO isotope analysis was carried out with offline extraction systems, which require large amounts of air. In recent years, also continuous-flow techniques have been developed. One uses the principle of conversion to CO<sub>2</sub> and subsequent isotope analysis of CO<sub>2</sub>, and the other uses isotope measurement on CO directly. These existing techniques allow precise measurement of  $\delta^{13}\text{C}$  and  $\delta^{18}\text{O}$ . For  $\delta^{17}\text{O}$  in CO, it is still necessary to process large samples and use offline analysis.

We are in the process of building an automated continuous-flow system for analyzing all three stable isotopes,  $\delta^{13}\text{C}$ ,  $\delta^{18}\text{O}$  and  $\delta^{17}\text{O}$ , of Carbon Monoxide. As a first step, a traditional  $\delta^{13}\text{C}$  and  $\delta^{18}\text{O}$  system has been set up. We chose to use the method of oxidation to CO<sub>2</sub>, because this can later be coupled to an analytical system for determining  $\delta^{17}\text{O}$  in CO<sub>2</sub>, whereas no direct method for  $\delta^{17}\text{O}$  analysis in CO exists yet. On the other hand, it is known that the use of Schütze reagent causes a blank signal that can be a significant fraction of a sample peak and has to be corrected for. We present the general setup of the system, the attempts to reduce the Schütze blank signal, and first measurement results.