ISOTOPE TRACER TECHNOLOGIES INC

^{18}O ANALYSIS OF WATER (H_2O) BY ISOTOPE RATIO MASS SPECTROMETRY

Sample Analysis:

Samples are injected into a Finnigan Mat, DeltaPlus IRMS system coupled with a Thermo Finnigan high temperature conversion elemental analyzer (TC/EA). Samples are converted to CO gas in the TC/EA, operating at 1450°C. The produced CO gas is purified via a 5Å packed GC molecular sieve column, and then transferred to the IRMS by a He carrier gas for oxygen isotopic ratio determination. The TC/EA consists of an outer ceramic mantel tube of aluminum oxide and an inner glassy carbon reactor. The space between the internal and the external tube is continuously flushed with helium to avoid any undesired oxidation. The instrument is equipped with a high precision autosampler, which allows for a consistent injection volume of 0.5µL of sample water. Three to four calibrated internal standards are included at the beginning and end of every run, as well as after every 10 samples. The employed internal standards have been calibrated to VSMOW, GISP, and SLAP. The results are evaluated and corrected against standards that bracket the samples, and then reported against the international reference material.

The analytical precision for analysis is ± 0.2‰.

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