

^{13}C ANALYSIS OF DISSOLVED ORGANIC CARBON (DOC)

Sample preparation:

Water samples and standards are prepared in 12 mL septum vials with a replicate at every 3rd sample. Phosphoric acid (85%) is added to each sample in order to expel the inorganic carbon, and saturated potassium persulfate is added to aid in the digestion of the organic carbon. Samples are flushed with ultrapure helium, and microwaved for 55 seconds for complete release of any organic carbon as CO_2 .

Sample Analysis:

Samples are analyzed by continuous flow isotope ratio mass spectrometry. An aliquot of each digested sample is injected into the Finnigan Mat, DeltaPlus XL IRMS IRMS system and analyzed. The analysis consists of a comparison between the isotopic ratio of the samples against a CO_2 reference gas. Injection volumes are selected to ensure peak height is similar to that of the reference gas. Three calibrated internal carbon standards are prepared and run under the same conditions as the samples. Standards are run at the beginning and end of every run, as well as after every 8-12 samples. These standards have been calibrated to VPDB via analysis of NBS-19 and NBS-18. 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 $\pm 0.3\%$.