

Sample Submission Instructions

It is the responsibility of the researcher to determine the appropriate collection and preparation techniques for their sample material. If you are unsure, please contact the laboratory manager before submitting samples (ankerssm@iastate.edu).

Complete the Sample Submission form and **use a unique identifier for each sample ID**. If you are submitting duplicate samples, you can add a suffix to make it unique (i.e. sample1-01, sample1-02, sample1.1, sample 1.2). Please keep sample identifiers as short as possible.

Email a digital copy of your submission file to ankerssm@iastate.edu. Include a copy of the sample submission form in your sample shipment. Send samples to the following address:

Suzanne Ankerstjerne
Stable Isotope Lab
2237 Osborn Dr.
253 Science Hall
Ames, Iowa 50011-3212

SOLID SAMPLES

Samples must be completely dry and arrive in a homogenous, pulverized/powdered form. Please ship samples in tightly sealed vials. Plastic microcentrifuge tubes work great. Avoid sending samples in plastic bags or paper envelopes. These are not well sealed and can cause static electricity during weighing.

A. Carbonates

ThermoFinnigan GasBench II: For measurements of $\delta^{13}\text{C}$ (inorganic carbon) and $\delta^{18}\text{O}$, samples are analyzed using the GB. Samples (~5mg) are typically supplied in powdered form, which the lab staff weighs into 12 mL Exetainer vials and acidifies.

Costech Elemental Analyzer: For measurements of $\delta^{13}\text{C}$ (organic carbon) and ^{15}N , samples are analyzed using the EA. For more information contact the SIPERG Lab manager.

B. Organic Materials (ie: animal tissues, soils, plant material, etc)

Costech Elemental Analyzer: For measurements of $\delta^{13}\text{C}$ (organic carbon) and $\delta^{15}\text{N}$, preparation techniques and ideal sample size vary depending on the elemental concentrations and type of material being analyzed. Samples must be dried and ground into a powder prior to weighing. For more information refer to [Solid Sample Preparation](#) or contact the SIPERG Lab manager.

C. Soils

Costech Elemental Analyzer: For $\delta^{13}\text{C}$ (organic carbon) and $\delta^{15}\text{N}$ analysis, samples are analyzed using the EA techniques identified above. For measurements of $\delta^{13}\text{C}$ for both organic and inorganic carbon and $\delta^{18}\text{O}$, please contact the lab manager to discuss sample preparation and analysis options.

Wrapped and weighed samples for the EA: Contact the lab manager prior to weighing and encapsulating samples to ensure that the sample amount is within the device detection range. Record and submit the precise mass of each sample on the sample submission sheet. Samples can be arranged and shipped in a microplate. Be sure the individual wells of the plate are isolated, so samples do not shift during shipping. Some packing techniques include a note card, plastic film, or thin foam packing under the plate lid.

WATER SAMPLES

Water samples must be clean and filtered (e.g., 45 μm glass fiber filters). Samples with little to no particulates such as snow or ice may not require filtration. If samples arrive and need to be filtered prior to analysis, this may incur an additional fee per sample. Please send at least 5mL of water per sample in small, tightly-sealed vessels with little to no head space.

NOTE: Samples submitted for DIC measurement require additional treatment prior to submission. Stopping the microbial activity by filtering or poisoning immediately after collection. There are various methods to preserve DIC samples. The water sample should fill the vial completely (i.e., have a positive meniscus) with no headspace or air bubbles. Any air bubbles or leaks are a source of gas exchange, which may significantly alter DIC results. Butyl rubber is the best gas tight septa material for DIC samples. Refrigerate samples (do not freeze) prior to shipping and ship in insulated containers as soon as possible after collection.

If you have questions about the condition of your water samples, please contact the lab manager prior to shipping.

Picarro: $\delta^{18}\text{O}$ and $\delta^2\text{H}$ are analyzed using our Picarro L2130-i Isotopic Water Isotope Analyzer. Samples are prepared in 2 mL Fisherbrand screw thread vials.

GasBench II: $\delta^{18}\text{O}$ and $\delta^{13}\text{C}_{\text{DIC}}$ can be measured using the GasBench. Samples are prepared and analyzed in 12 mL Exetainer vials with chlorobutyl septa caps.