ESD Aqueous Geochemistry Lab Analytical Service Center

We are a LBNL recharge facility for ICP-MS analysis. We offer full analytical services on the instrument (we analyze the sample for you), or you can rent time for self use at an hourly charge. In order to use instrument or have analytical work done, you need a valid LBNL account number.

Notice that fees represent what it cost for the service - LDRD/IGPP, G&A etc. are not included (these are usually around 57-58% for most projects).

Prices are effective October 1, 2012.

Self Use

This means that you are renting the instrument for a block of time that you will be charged for on an hourly basis.

- *Hourly instrument fee:* *$ 76*

NOTICE:

1. You need to sign up for a block of time in advance. You will be charged for that block if you forget to cancel or don't' show up on time. If you are on time, you will only be charged for the actual time you use;
2. Initial training required - typically 4 hours at current labor charge;
3. Training will be given on how to use the instrument, but not on how to do the data analysis nor on method development and quality control;
4. All sample and standard preparation is the responsibility of the user

Analytical Services

All prices are per sample, based on basic sample preparation consisting of sample dilution and spiking with internal standard where used. For digestion, extraction, filtering, centrifugation or other pre-treatment - additional cost is listed below.

Turn-around time is typically 4 weeks.

- *Semi-quantitative analysis* *$21*
  (72 elements, one analysis, no replicates.)
- *Quantitative analysis* *$29*
  (multiple elements, 5 or more replicates per sample)
- *Ultra Trace Metal Analysis* *$420*
  (ppt level of trace metals; includes digestion of solid sample, spiking etc)

NOTICE:

1. We analyze the sample ”as is” - no filtering or pre-treatment unless specified on delivery or requested in an advance.
2. For spiked or duplicate samples - these count as separate and therefore additional samples
3. If you request to include analysis of a reference material in addition to your samples - these will count as a separate analysis/sample
4. When we analyze a sample using a multi-element method, realize that it in order to be efficient—both with regards to analytical time and sample consumption—the method is a compromise between many optimal settings, so certain elements will not always yield the best possible result.
5. At times the concentration ratio between elements may be so high that two or more dilutions are necessary. For example, a sample in which Na is 1,000 mg/L and Ca is 10 ug/L cannot be analyzed in the same run and require two different dilutions, and thus two separate analyses. Another example is selenium in groundwater samples - often, the Se concentration is very low compared to other elements in the sample, making it unsuitable for accurate determination in the sample in a multi-element method with a standard dilution.
6. Some elements or group of elements must be analyzed by themselves to get reliable results and will count as separate analyses. Some of these elements are Hg, Au, ^{99}Tc, ^{210}Pb, ^{226}Ra, Br, S+P, rare earth elements REE, platinum group elements PGE. For example, you may have a groundwater sample that you want to analyze for Ca, Fe, Mn + S + Hg. This will then count as three (3) separate analyses.
7. Ultra Trace Metals Analysis – this means you are measuring certain elements at ppt (or picogram/gram) concentration. The analysis includes:
    a. Dissolution of solid sample. If microwave assisted digestion is required, this will be extra per sample
    b. Typically, the dissolved/digested sample will be divided into two sample portions where one is spiked with the most crucial elements. Both sample portions are analyzed, and spike recovery data are reported. We can also dissolve two samples and spike one. This will still count as one sample for analytical purposes
    c. All lab ware has been specially cleaned with UHP (ultra high purity) grade acids to minimize any contamination from the lab ware and checked for cleanliness before use.
    d. Preparation work is done in laminar flow hoods to minimize contamination.
8. A quote can always be obtained before analysis starts to give you an idea what the total cost is likely to be.

Special or Additional Sample Pre-Treatment

- *Microwave assisted digestions (for subsequent ICP-MS analysis). Includes milling of sample if necessary, but not sieving.*
  Cost per sample *$ 75*
- *Other microwave assisted preparation – drying, pre-concentration, HF removal*
  Cost per sample *$ 75*
- *Simple acid digestion, extraction, filtering, centrifugation, pre-concentration, sieving of solid fraction for microwave-assisted digestion.*
  Labor charge per hour *$ 85*

Custom analytical work

This includes:

- Initial method development for analyses we don't do on a routine basis.
- Speciation work (Se, Cr, As, V, Br) using HPLC-ICP-MS
- Isotope ratio (e.g. $^{235}U/^{238}U$, $^{25}Mg/^{24}Mg$)
- Isotope fraction/abundance analysis (% abundance of each isotope)
- Isotope dilution analysis for the most accurate and precise concentration determination

You will pay the actual cost = labor charges + instrument charges + supplies.

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