

WSU GeoAnalytical Laboratory XRF or ICP-MS Submittal Form

Name _____

Mailing address _____

Phone _____

e-mail: _____

Analysis: XRF ICP-MS xrf+icp LOI

Want return of sample? Y N

Powder made in: WC Agate Ceramic Al

	Sample No.	Rock Type		Country	State	Lat/long - UTM - TRS		
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Information on rock type is required prior to sample preparation.

The WSU GeoAnalytical Laboratory requires all samples to be properly located. NSF subsidizes research-oriented analyses, and we assure NSF that only properly located samples are analyzed. All data are treated as confidential. Location data are not required when analyses are charged at full price.

For Lab	Rec'd as:	powder	chips/drill chips	core	sawn slabs	rock	beads			
		agate WC	alumina		clean marks		LOI:	ignited	raw	
Use	Mini-chip + split		QD:	2.5:1	3.1:0.4	50:50	other			
Only	Grind:	RL WC	Spex WC	agate	Fe	alumin	Regrind:	RL WC	Spex WC	Fe

Sample Submittal Instructions for XRF or ICP-MS Analyses:

PAYMENT

All analytical work should be accompanied by a payment method (purchase order, check, or credit card information).

Our prices do not include loss on ignition (LOI) determination; this can be done for an extra fee of \$5/ea.

NOTE: We return all excess sample and powder to North American addresses free of charge.

International clients will be charged for return.

SAMPLE SUBMITTAL FORM

Please use our sample submittal form available on-line, and provide rock type and location information, unusually high or low concentrations expected, unusual mineralogy or sulfides, carbonates, clays etc.

NOTE: Please let us know type of grinding container used if submitting powders.

For SOIL Samples shipped from international addresses - please contact us first to obtain soil import permit forms.

SAMPLES

Samples can be submitted as hand specimens, picked chips or ground powders for no difference in price. We prefer to powder the samples since the powder must be very fine to ensure good replication of XRF and ICP/MS data. We also have highly efficient equipment for chipping, splitting and powdering. Since grain size is an important factor for fusion procedures, we will regrind powders coarser than 50 microns (samples that feel gritty when rubbed across a piece of paper).

GRINDING MEDIA

We normally grind 20-120 gram samples in tungsten carbide (WC) ring mills, but will grind 15-20 gram samples in an agate ball mill upon request. These containers will not contaminate with elements of concern for most isotope analyses except Hf (W interference). Contamination: W, Co, and Ni in tungsten carbide, SiO₂ (<0.2%) in Agate. Nb and Ta contamination for coarse quartz crystal ground in our Rocklabs WC is at ICP/MS detection levels.

NORMAL SAMPLE SIZE

XRF The ideal sample is 20-50 grams of pea-sized chips picked free of weathering rinds, range we can grind is 3-120 grams. Hand samples should be of sufficient size to assure homogeneity (see below). Normal size XRF pellets can be prepared from minimum 2 grams fine powder or slightly more weight in chips.

XRF + ICP/MS as above, but powder minimum to weigh is 3.0 grams

ICP/MS fused bead minimum to weigh is 0.5 grams

ICP/MS straight dissolution (only for glasses, mineral separates, cherts, etc, NOT normal rocks)
prefer 200 mg; min. to weigh is 100 mg

NOTE: rocks are normally large objects! It is best to avoid minimum weights because we cannot replicate failed experiments with such small samples, and they are more subject to potential contamination during processing.

SMALL SAMPLES

We can grind small samples (less than 3 grams) in either agate or WC ball mills with loss of only 10-20 mg per grind.

For 15 mm (half size) XRF beads optimal weight 1.1 gram; min. wt. 0.5 gram

For 8 mm (quarter size) XRF beads opt. wt. 400 mg; min. wt. 150 mg

NOTE: Analytical time may be extended by several months to perform these small bead analyses;
accuracy for small analyses is subject to more uncertainty at present.

COARSE GRAINED SAMPLE SPLITTING

Sub-sampling of coarse plutonic, metamorphic, and even volcanic rocks using commonly employed methods (coning and quartering or riffle splitting) can introduce bias. For coarse samples we coarse chip, fine chip (< 2mm), and sub-sample using a Rocklabs rotary splitter. Sub-sampling error is reduced to the level of analytical error with this procedure. We also prefer to grind a large split (120 g) from coarse samples to further reduce the error.

If your rocks are coarse grained you need to send us a large amount (up to 4 kg).

If you have any questions, feel free to contact Rick Conrey (XRF) or Charles Knaack (ICP-MS)