



Portable XRF Analysis

ALS Geochemistry now offering portable XRF analysis immediately after sample preparation.

Fast Knowledge of Sample Content

Handheld or portable XRF (pXRF) is gaining traction as an important tool in mineral exploration and mining, with applications ranging from exploration drilling on new projects to ore sorting in established mines and characterization of waste piles for environmental treatment. Drill core can be analyzed for key pathfinder elements early in the geochemical sampling stage, putting solid data in the hands of geologists who need to make drill placement decisions on the fly.

A New Tool for Time-Sensitive Decisions

ALS Geochemistry offers semi-quantitative portable XRF analysis on pulps immediately after sample preparation, within three days of receipt at the lab closest to your project. pXRF analysis on a sample pulp produces a more representative view of the sample's geochemistry than an analysis taken on the solid surface of rock or drill core, and the results are available while traditional geochemical analyses are pending in the laboratory. ALS's signature quality control and decades of XRF expertise are applied to a selection of elements relevant to exploration for many types of deposits. Detection limits, precision and accuracy of the method are suitable for identifying anomalous samples to aid in resource identification and exploration drilling.

Breaking Boundaries with Innovative Solutions

ALS Geochemistry's innovative application of portable XRF after sample preparation breaks through barriers to effective implementation. Like any instrument used in analytical geochemistry, portable XRF requires regular calibration, quality checks with reference materials, personnel training and detailed attention to sample representivity to produce dependable results. All of these considerations distract from the task at hand - deciding where to drill next.

Your project now has access to the rapid turnaround benefits of reliable pXRF results while avoiding the capital and overhead costs inherent to on-site analysis.



pXRF-30 – Semi-quantitative scan by pXRF

A pulverized sample is analyzed immediately following sample preparation using the Olympus Delta Premium 6000 portable XRF. The samples are scanned using a rhodium anode and Geochem Mode calibration (fundamental parameters).

The method is a semi-quantitative scan aimed at quickly identifying anomalous samples. A set of key exploration elements are reported at detection limits relevant to identifying geochemical anomalies and aiding in drilling decisions. Precision and accuracy for the method is $\pm 20\%$.

Analyte	Symbol	Units	Lower Limit
Copper	Cu	ppm	50
Lead	Pb	ppm	50
Zinc	Zn	ppm	50
Nickel	Ni	ppm	50
Arsenic	As	ppm	50
Manganese	Mn	ppm	100
Chromium	Cr	ppm	100
Iron	Fe	%	0.5
Calcium	Ca	%	0.5
Sulfur	S	%	0.1

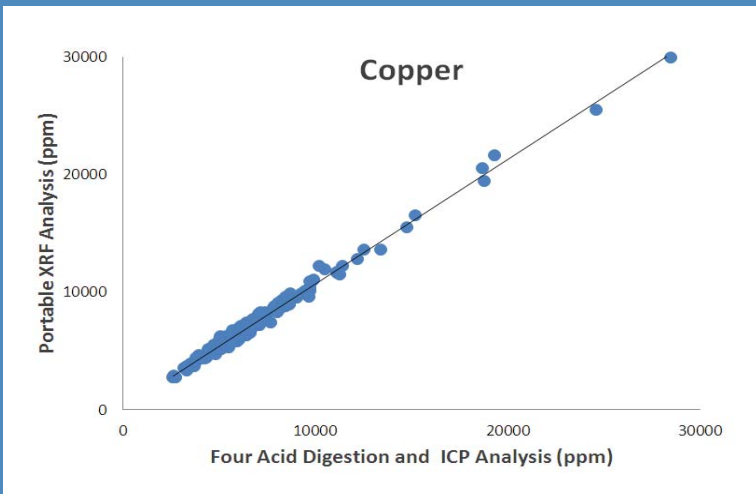


Figure: Plot of copper results by portable XRF (method code pXRF-30) against four acid digestion and ICP-OES (method codes Cu-ICP61 and Cu-OG62) for real copper porphyry samples. There is excellent correlation between the methods, with a trendline R^2 value of 0.99.

ALS Geochemistry has tested and validated the suite of elements offered by portable XRF to ensure reliable, high quality results suitable for snap drilling decisions. The plot at the left shows real data from a copper porphyry project. Portable XRF on pulverized samples is compared to near-total four acid digestion and ICP-OES analysis for copper, with excellent correlation between the methods.

Not every element is suitable for analysis by portable XRF – it's well known that gold, unfortunately, can't be reliably measured using this technology. However, when there is a key exploration element that indicates proximity to mineralization for your project not included in the pXRF suite listed above, please contact us; we can discuss the possibility of reporting for you.

We're excited to help you implement a pXRF program that provides value to your operations. Please contact one of our client services teams, listed below, for more information.

ALS MINERALS CLIENT SERVICES

Canada – Vancouver
+1 604 984 0221
ClientServicesWCAN@alsglobal.com

USA – Reno
+1 775 356 5395
ClientServicesUSA@alsglobal.com

Mexico – Hermosillo
+52 662 218 4403
ClientServicesMEX@alsglobal.com

Peru – Lima
+51 1 574 5700
ALS.LI.ServClientesMin@alsglobal.com

Chile – Santiago
+56 2 2654 6100
Santiago.MineralServices@alsglobal.com

Brazil – Belo Horizonte
+55 31 3045 8400
ALS.BH.ClientServMin@alsglobal.com

Europe – Loughrea
+353 91 841 741
ALS.M.Loughrea@alsglobal.com

Africa – Johannesburg
+27 11 608 0555
ClientServicesAfrica@alsglobal.com

Australia/Asia – Brisbane
+61 7 3243 7222
Geochemistry.Australasia@alsglobal.com

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