2019 CMA CONFERENCE

ColdBlock Technologies hosted the 2019 Canadian Mineral Analysts Conference (CMA) in Niagara Falls, Ontario on Sept. 8-12, 2019.

The conference brought together Canadian earth science, mineral exploration and mining analytical laboratories in government, academic institutions, the mining industry, and the private sector, as well as, manufacturers and suppliers for analytical laboratories.

SEPTEMBER/OCTOBER 2019 HIGHLIGHTS

2019 Canadian Mineral Analysts Conference and Proceedings


Comparative Study Of The ColdBlock Technologies Workstation Against Traditional Methods For Gold and Base Metals Matthew Leybourne, Queen’s University, 2019 CMA Conference Proceedings, Page 29


“Conference proceedings confirm high precision, speed, workplace safety and substantial ROI.”

2019 CANADIAN MINERAL ANALYSTS CONFERENCE

The Canadian Mineral Analysts Association gathered on Sept. 8-12 to discuss the latest developments in the mineral analysis industry. Hosted by ColdBlock Technologies, the conference brought together Canadian earth science, mineral exploration and mining analytical laboratories in government, academic institutions, the mining industry, and the private sector, as well as, manufacturers and suppliers for analytical laboratories.

Technical presentations focused on: 1) Chemometrics, 2) Spectrometric techniques and 3) Sample dissolution techniques. Two papers were published on the application of ColdBlock™ Digestion Technology for environmental and mining applications.

The plenary presentations and technical abstracts are available at: https://2019cma.com/conference-programming/
TECHNICAL ABSTRACT:

The Geological Survey of Canada’s Inorganic Geochemistry Research Laboratory (IGRL) has investigated the ColdBlock™ Digestion system for aqua regia (AR) and sequential dissolution (SD) environmental analyses. In a ColdBlock digestion, atomic bonds in sample particles are attacked directly via the infrared radiation, rather than indirectly via the fluid medium as in hotplate or microwave digestions. For AR digestions (ISO11466.3, USEPA3050B), the ColdBlock digestion:

1) greatly improved precision (from 12.9% to 1.3%) over both in-house and outsourced traditional AR digestions
2) produced comparable recoveries to standard digestions
3) produced >60% time savings compared to standard AR digestions

Traditional Sequential Dissolution analyses aim to provide a sample's elemental distribution via a sequence of dissolutions that "operationally" isolate individual matrix components. The highly controlled and automated ColdBlock system has tremendous scope for varying reaction conditions via the IR intensity, reaction time and fluid medium controls. Simple experiments that only varied IR intensity (i.e. using only the bond irradiation component) generated SD's that successively attacked increasingly stable bonds and appear to have effectively dissolved individual matrix components; meanwhile, the automation and control maintained high precision and accuracy. This new approach also produced substantial time savings over traditional sequential extraction schemes.
Author: Dr. Matthew Leybourne, Queen’s University

Title: Comparative Study Of The ColdBlock Technologies Workstation Against Traditional Methods For Gold and Base Metals.

**TECHNICAL ABSTRACT:**

ColdBlock™ Digestion technology uses short-wave infrared radiation with an integrated cooling zone to digest geological and biological samples faster, at a fraction of the cost, than traditional techniques, while still producing accurate and reproducible results.

This project, carried out in partnership with AMIRA and industry sponsors, was designed to compare traditional methods with ColdBlock for geological materials of interest to the mining industry. The project was carried out in two phases. The first phase involved the digestion of selected gold ore samples (both certified reference materials and company sponsor samples) from each sponsor using PbO Fire Assay and ColdBlock technology and comparing the recoveries.

Phase two was carried out on base metal samples from three different sponsors comparing the recoveries obtained with ColdBlock with those obtained using a hot block.

Phase 1 showed good correlation in gold results between the traditional fire assay method and the ColdBlock technology with $R^2$ values ranging from 0.9045 to 1.000 for all five sponsors. For phase 2, the base metal samples showed good correlations between ColdBlock™ digestions and hot block digestion techniques with $R^2$ values ranging from 0.9876 to 0.9993 for copper and 0.9717 to 0.9983 for iron for the three sponsors.

The return on investmen carried out for the gold samples as well as for the base metal samples showed a great business case for the use of ColdBlock Technologies. For the use of ColdBlock technology to replace PbO Fire Assay the return on investment was recognised between day 1 and day 240 with $0.84M to $2.4M savings over 5 years, and for traditional digestions the return on investment was recognised between day 30 and day 60 with a savings of $0.81M to $6.77M savings over 5 years.
COLDBLOCK’S TECHNOLOGIES
- Fast, safe and efficient sample digestion method

by Kathrine Moore

Headquartered in St. Catharines, Ontario, ColdBlock Technologies Inc. was founded in 2014 to develop their sample digestion technology initially for the mining industry. ColdBlock™ Digestion is an alternative to conventional technologies used by laboratories to determine precious and base metal concentrations in samples from their mining operations.

ColdBlock™ Digestion is the only digestion technology that uses focused short-wave infrared radiation and a cooling block to dissolve ore samples. Unlike fire assay which can take several hours, ColdBlock™ Digestion can process large-size sample material in minutes and eliminate the hazards associated with lead-containing flux. For base metal applications, samples are digested in minutes with a reduced requirement for hazardous reagents (such as perchloric and hydrofluoric acid) in the digestion process.

Recently, ColdBlock Technologies collaborated with AMIRA International, Newcrest, Freeport McMoRan, Newgold, Centerra Gold and SGS to validate the technology in the real world. The results are expected to be unveiled in the fall of 2019. Nick Kuryluk, Chief Executive Officer of ColdBlock Technologies, explains that ColdBlock™ Digestion technology delivers a compelling ROI to laboratories who are seeking higher efficiencies and productivity.

Benefits of the ColdBlock Digestion System:
• Very rapid digestions (Minutes)
• High accuracy and reproducibility
• Cost-efficiency
• Reduced environmental impact
• Improved occupational safety

Today, ColdBlock Technologies provides countertop units to the global market that are capable of processing both small and large sample sizes. The company says the units are easily installed and simply require a single phase 240V/30A/60Hz electrical supply and a ventilation system.

The ColdBlock™ Digestion system can be used in several ways: by companies with onsite laboratories to continuously measure metal concentrations in samples from their mining operations and by commercial laboratories to make their lab services more efficient and cost-effective.

Another possibility, which would be of great benefit to explorers, is the potential to use the ColdBlock™ Digestion system to analyze drill core samples at drill sites on remote exploration projects. Results can be had in minutes rather than the weeks it can take to receive results from samples shipped to labs. Drilling decisions can be made on the spot shortening the drilling process by weeks and saving the company costs for not only the fire assays but the cost of flying heavy core boxes off site for processing.

ColdBlock Technologies supports clients through its Research and Development Lab where they provide online and in-person support to current and prospective clients.
APPLICATION NOTES

Visit www.coldblock.ca for the latest application notes. Recent additions include:

- Rare Earth Elements
  - CRM 465 (OREAS)
  - Rare Earth Thorium ORE (Natural Resources Canada)
  - Rare Earth Zirconium and Niobium (Natural Resources Canada)
- Molybdenum Sulfide Concentrate
- Low Level Gold Oxide

WHAT IS ON THE HORIZON?

✓ ColdBock Technologies will be unveiling new website this fall
✓ EPA equivalency testing for environmental applications
✓ Gold Assay Round Robin
Questions?

Visit www.coldblock.ca to access:

- Publications
- Applications Notes
- Product Brochure

Contact Kathy Moffatt, Director of Sales Operation, for a demonstration or additional information.

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