



CANMET MINING AND MINERAL SCIENCES LABORATORIES

Footprint Reduction



Program objectives

The Footprint Reduction program promotes the creation of the science and technology required by the mineral processing and extractive metallurgy industry. The industry needs to respond to the growing challenges of improving productivity, low-grade ores and more refractory hard-to-treat ores, low-grade and “dirty” concentrates not suitable for smelting, high energy use and the increase in environmental footprint.

Expertise

The experts within the program form four teams that specialize in

- mineralogical characterization and surface chemistry
- mineral processing
- precious metals hydrometallurgy
- base metals hydrometallurgy

Our laboratories are equipped with modern characterization and analytical facilities. We have access to other external laboratories with state-of-the-art characterization technologies, and we work on projects in collaboration with other experts within and outside the organization.

Key issues

Base metals hydrometallurgy

- stabilization of iron residues
- control of impurities (Bi, Te and Se)

- clean, environmentally acceptable hydrometallurgical process as an alternative to traditional smelting
- ion exchange technology for the purification of copper electrolytes

Precious metals hydrometallurgy

- increasing gold and silver extraction rates from hard-to-treat ores while minimizing the use of cyanide
- minimizing reagent use in thiosulphate leaching, which is an alternative process to cyanidation for certain types of gold ores

Mineral processing

- developing more efficient selective flotation procedures for base metal minerals, that are assisted by surface chemistry
- high-intensity conditioning of flotation pulp to promote selectivity, recovery and concentrate grade
- recycling all process water in flotation
- improving efficiency in ore fragmentation and comminution to reduce power consumption and processing costs

Special projects

- converting metallurgical slag into a cement-forming product to be used as a substitute for the Portland cement in a mine-backfill, which has the potential to reduce greenhouse gases and waste

Contact Us

This research is part of CANMET-MMSL's broader plan to foster sustainable growth in Canada's mining and mineral industry. To work with us, contact

www.nrcan-rncan.gc.ca/mms-smm/tect-tech/index-eng.htm

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Cat. No. M39-126/4-2009 (Print)
ISBN 978-1-100-50379-0

Cat. No. M39-126/4-2009E-PDF (On-line)
ISBN 978-1-100-14061-2

Her Majesty the Queen in Right of Canada, 2009



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