

Budget 2021 Critical Minerals Research, Development & Demonstration Program

RD&D Program Introduction

The Budget 2021 Critical Minerals RD&D Program is a 3-year program being led by CanmetMINING, Natural Resources Canada. Developed from the Budget 2021 announcement to advance the development of Canada's critical minerals value chains, the Program has two key components:

RESEARCH
Support early technology development

DEMONSTRATION
Advance technologies towards pre-commercialization via piloting



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The Program focuses on three program streams:

- ▶ **Battery Minerals (lithium, nickel, cobalt, graphite, vanadium, etc.)**
Mineralogical transformation into battery chemicals, achieve battery grade specifications at lower cost/energy, impurity removal/control, metallurgical optimization of yield.
- ▶ **Mining Value from Waste**
Inventory of critical minerals from waste resources including mine tailings and post-consumer waste, process development for recovery, repurpose and recycling of critical minerals.
- ▶ **Clean Tech and Other Value Chains (REE, chromite, niobium)**
Magnet value chain R&D for cost-competitive production REE. Alternative processing and separation options.

RESEARCH

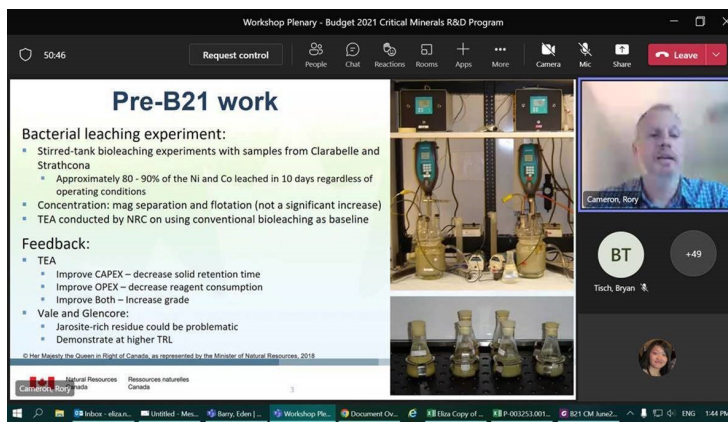
Critical Minerals R&D Updates

Through a Call-for-Proposal process for federal researchers, 33 projects focusing on the three research streams were initiated under the Budget 2021 Program. The projects are being lead by CanmetMINING (CMIN), CanmetENERGY, CanmetMATERIALS (CMAT), and National Research Council (NRC), with involvement from the Geological Survey of Canada (GSC) and the Hazards, Adaptations and Operations Branch (HAOB), and in collaboration with nearly 50 Canadian industry partners. Projects include research on lithium recovery from brine, rare earth elements separation, recycling of end-of-life batteries, and many other technologies needed to process critical minerals.

▶ Critical Minerals R&D Program Technical Workshops

CanmetMINING hosted a technical workshop in June to bring together the Federal R&D family and our policy colleagues. The workshop provided an introductory overview of the research projects funded under Budget 2021. Researchers presented on the scope and progress of projects, and most importantly, got acquainted with one another and made important connections for future collaborative R&D.

Follow-up workshops are planned for Winter 2022, to provide a review on R&D progress. Stay tuned for more information!



▶ Project Highlight: Lithium From Brine

The Lithium from Brine project is developing innovative technologies to recover this critical mineral from domestic sources. The project seeks to characterize promising Canadian lithium brine sources, develop methods to reduce energy demand, lower the complexity, and enhance lithium separation when compared to existing processes. The project is led by CanmetMINING and includes CanmetENERGY, Geological Survey Canada and National Research Council as research partners. The project team will perform feasibility studies on a variety of technologies.

Two of the CanmetMINING's test system used in the project are shown below: the electro dialysis system and the vacuum membrane distillation system. A techno-economic analysis will be performed, and weighed against experimental results to develop an optimized flowsheet and demonstrate economic viability of a commercial scale operation. This optimized process will be demonstrated in collaboration with industrial partners to determine the benefits of novel processes.



CanmetMINING's bench-scale electro dialysis system



CanmetMINING's pilot-scale vacuum membrane distillation system

DEMONSTRATION

Critical Minerals Demonstration Program Updates

To support and advance technologies for the battery and magnet value chains toward commercialization, the CMRD&D program will provide funding towards pilot plants and demonstrations projects in Canada through Grants & Contributions. The CMRD&D program received 50 Letters of Interest from companies and research entities across the Canada. After a review period, 14 proposals were invited to submit a full proposal. Final evaluations of the proposals are nearly completed. For more information on this program, please click [here](#).

Contact us

Please don't hesitate to contact us if you have any questions, or if you want to be added/removed from our contact list. If you are a researcher and would like to contribute to our newsletter, please reach out to be featured in the next edition of our newsletter, please reach out to us!

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Did you know...?

Natural Resources Canada is currently drafting the Canada's critical minerals strategy?

For more information, please visit the [Critical Minerals Center of Excellence](#) website.