

FINAL
AGENDA

SAVE \$300!

Register by September 26



ALTA AMERICAS

Innovation in Mining & Metallurgical Processing

December 9-11, 2025

Caesars Palace | Las Vegas, NV

DECEMBER 9-10



**Critical Battery
Minerals**

DECEMBER 10-11



**Nickel-Cobalt-
Copper**

2025 CONFERENCE TOPICS:

- Lithium Ore and Brine Processing
- Rare Earth, Vanadium and Battery Doping Element Ore Processing
- Graphite Ore Processing
- Solvent Extraction and Ion Exchange Technology and Processes
- Pretreatment and Lixiviants—Processes and Development
- Sustainability and ESG in Mining and Mineral Operations
- Market Trends Driving Extraction Operations
- Nickel-Cobalt-Copper Ore Processing
- Deep Sea Nodule Characterization and Processing
- Plant Design, Construction, and Performance Improvements
- Modelling and Artificial Intelligence in Process Optimization
- Life Cycle Assessments and Feasibility Studies in Metallurgical Operations
- Comminution, Physical Processing, and Froth Flotation
- Leach Processes for Nickel, Cobalt, Copper Mineral Ores
- Pyrometallurgical Processing and Advancements
- Impurity Removal to Meet Commercial Specifications
- Solid/Liquid Separation Processing Advancements
- Tailings and Waste Streams—Management and Reclamation
- Safety Considerations in Metallurgical Processing



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CRITICAL BATTERY MINERALS

Advances in Mining & Metallurgical Processing Methods for Extraction and Recovery of Critical Minerals

DECEMBER 9-10, 2025

Tuesday, December 9

7:00 am Registration and Morning Coffee

7:50 Organizer's Remarks

MARKET DEMAND AND OVERVIEW

7:55 Chairperson's Remarks

David St. Angelo, MS, CTO, Operations and Technology Development, Mangrove Lithium

8:00 From Mine to Market: ESG Stewardship throughout Critical Mineral Supply Chains

Adele Rouleau, Senior Environmental Consultant, Geosyntec Consultants
ESG continues to spark controversy and pushback with changing political landscapes shifting the dial on opinion and policy. The trends, however, are clear that ESG continues to play an important role in securing project finance and derisking projects. An overview of the ESG trends impacting mineral supply chains will be covered, along with strategies which mining companies can implement to ensure sustainable and ESG friendly operations.

8:30 To Fund or Not to Fund? That Is the Question

Michael Dry, PhD, Owner, Arithmetek, Canada

Project economics do not improve substantially as more time, effort, and money go into the project concerned. This presentation is about evaluating the potential economics of new metal extraction/processing projects before the expenditure of significant amounts of money on development and engineering. Selected case studies are used to illustrate the methodology for calculating capital and operating costs, along with revenue, from initial assumptions or limited preliminary data, for preliminary cost modeling.

9:00 Rare Earths: Strategic Upstream Implications

Edward Keith, Head of Consulting Operations, Benchmark Mineral Intelligence

Edward will present Benchmark's outlook on Rare Earth Minerals. He will discuss North America's supply-demand dynamics, highlighting the key challenges and emerging opportunities facing the industry, and how these are expected to develop in the years ahead.

9:30 Grand Opening Coffee Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

10:10 The Evolving Needs from Critical Battery Minerals in the Energy Transition

Mervyn Stevens, Vice President, Battery Minerals & Materials, Worley

This presentation explores the evolving demand for critical battery minerals in the energy transition, highlighting shifting supply chain dynamics, emerging technologies, and strategies for securing sustainable and resilient mineral sourcing to support global electrification and decarbonization efforts.

10:40 Critical Minerals and Trade Policy

Andrew Saucer, Battery Raw Materials Analyst, Fastmarkets

Changing trade policy is a central theme of commodity markets in 2025 with critical minerals being one of the cornerstones of how these policies are shaped. This talk will examine how these changes across the year helped drive critical minerals markets and Fastmarkets outlook on how they will impact markets in 2026.

11:10 Sponsored Presentation (Opportunity Available)

11:40 Networking Luncheon (Sponsorship Opportunity Available)

12:10 pm Dessert Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

LITHIUM PROCESSING

12:40 Chairperson's Remarks

Michael Dry, PhD, Owner, Arithmetek, Canada

12:45 Analysis of Lithium Carbonate and Hydroxide Production Routes without Use of Soda Ash and Lime

Peter Ehren, Co-Founder & CTO, Management, Lithium Ark Holding BV

The lithium industry is growing, but the production methods are not improved, and have high environmental impact and excessive production cost. Several production routes are analyzed that do not use soda ash and lime to make battery grade lithium hydroxide and carbonate.

1:15 The Impact to Brine Pre-Treatment and Impurities to Direct Lithium Extraction Effectiveness and Economics

Chris Doornbos, President & CEO & Director, E3 Lithium

A lot of emphasis is placed on the technology choice for Direct Lithium Extraction. However, as the technologies become increasingly ubiquitous, it becomes more apparent what the impact of brine chemistry and more importantly, the impurity removal required, is to make projects successful technically and economically. This talk will discuss some of the more common elements and gasses found in brines that need to be removed to successfully deploy DLE.

1:45 Direct Lithium Extraction by Ion Exchange: Process Development, Scale-Up, and Integration into the Lithium Value Chain

Nicolas Grosso, PhD, Director Innovation, Lilac Solutions

Among direct lithium extraction (DLE) technologies, ion-exchange (IX)—where lithium and protons are selectively exchanged—offers high recoveries, selectivity, low water use, and product flexibility. We will provide a case-study in the development and scale-up of Lilac's IX technology from laboratory to demo scale, and ongoing commercialization efforts. These latter efforts benefit from flexible process chemistries enabled by IX, which contribute to optimized economics at the project level.

2:15 Refreshment Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

2:45 From Rock to Battery: Electrolysis for High-Purity, Battery-Grade Lithium

David St. Angelo, MS, CTO, Operations and Technology Development, Mangrove Lithium

The demand for lithium-ion batteries is driving the need for scalable, sustainable lithium production. This presentation introduces an electrochemical technology, providing a direct, flexible pathway from spodumene-derived intermediates to high-purity, battery-grade lithium hydroxide. An update on Mangrove's first commercial plant in Delta, British Columbia will be shared along with the role of electrochemical refining in simplifying battery materials supply chains.

3:15 Presentation to be Announced

3:45 Sponsored Presentation (Opportunity Available)

RARE EARTH PROCESSING

4:15 Using Magnetic Forces and Alternative Ion-Exchange Processing to Enhance Rare-Earth-Element Separations

Michael Free, PhD, Professor, Materials Science and Engineering, University of Utah

Magnetic forces and alternative ion exchange processing can be used to enhance rare earth elements separations. This presentation discusses these new and modified approaches to perform challenging REE separations and presents related results.

4:45 Advancing Low-Impact Extraction of Heavy Rare Earths in Palaeochannel Systems: The Boland Opportunity

Robert Blythman, Exploration Manager, Cobra Resources plc



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Cobra Resources' Boland discovery presents a rare-earth opportunity within a palaeochannel setting, where heavy rare earths occur as ionically bound mineralisation in permeable clay-sand horizons. Metallurgical testing demonstrates strong response to low-acidity leach conditions and direct precipitation to mixed rare earth carbonate. The project exemplifies a low-impact, processing-efficient development model, highlighting the metallurgical advantages and scalability of clay-hosted REE systems in sedimentary environments

5:15 Networking Reception in the Exhibit Hall with Poster Viewing
(Sponsorship Opportunity Available)

6:15 Close of Day

Wednesday, December 10

8:00 am Registration and Morning Coffee

8:20 Organizer's Remarks

TECHNOLOGY IN PROCESS OPTIMIZATION

8:25 Chairperson's Remarks

Adele Rouleau, Senior Environmental Consultant, Geosyntec Consultants

8:30 Solid State Microwave for Industrial Applications

Kevin Cho, General Manager, RFHIC Corp

Microwave technology has come a long way since the 1940s—with the magnetron born in 1940 for military radar, and microwaves finding new life in everything from ovens to particle accelerators. What's less talked about: solid state microwave amplifiers also have their roots in defense—but today they're key to some exciting industrial uses. Broadly, microwaves are used for heating and for generating plasma which we call RF Energy. In mining, the real opportunity is in heating: solid state microwaves can weaken the bonds of materials so that less energy is needed to break them apart. Less wasted energy, less heat loss, meaning a cleaner, more sustainable way to extract metals from ore. In this talk, I will walk through examples of industrial solid state microwave systems. We'll look at the basic science and the savings.

9:00 Taming Your Autoclave: Turning Data into Knowledge Using AI and Other Tools

Brant Mock, PhD, President, Nova Hydromet

Big data, industry 4.0, AI, and other buzzwords are inundating our industry, but what does it look like to turn huge amounts of data we collect into actionable insights? This presentation explores which autoclave system data nodes may be more important and what tools exist to synthesize that data into knowledge to optimize autoclave process for higher yield and lower downtime. Statistics-based AI models and mathematical/physics-based models will be considered.

9:30 From Barrels to Battery Metals and the Advancement of Predictive Modeling in Mining

Andy Rafal, CEO, OLI Systems

As mining faces harsher ores, brines, and water limits, predictive chemistry offers a proven solution. Borrowing from oil and gas, modeling techniques can help mining engineers reduce risk, extend equipment life, and cut chemical and water waste. This session explores how accurate simulations—not more sensors—can drive the next leap in mining efficiency and environmental performance.

10:00 Sponsored Presentation (Opportunity Available)

10:30 Coffee Break in the Exhibit Hall with Poster Viewing
(Sponsorship Opportunity Available)

PLENARY KEYNOTE

11:15 Chairperson's Remarks

Craig Wohlers, General Manager, Cambridge EnerTech



11:20 How GM Is Driving Battery Development and Enabling an All-EV Future

Kurt Kelyt, Vice President, Battery, Propulsion, and Sustainability, General Motors

GM has established a foundation to accelerate the investment in and development of battery technology with a robust supply chain to support its growth over the next decade. In this talk, Kurt will discuss GM's strategies for investing in new technologies and how its in-house capabilities enhance those efforts, with an overview and rationale behind key investments made to date.



11:50 The Road to Profitable Electrification of Transportation Driven by Innovations in Electrochemistry

Donald Sadoway, PhD, Professor Emeritus of Materials Chemistry, MIT, CSO & Co-Founder, Pure Lithium

Electrification of transportation hinges on innovation in battery chemistry, not only on the vehicle. Installation of charging points would be accelerated by stationary storage on site. If power generation is to be based on carbon-free but intermittent renewables, massive stationary storage is required. These are three different use cases, each optimally satisfied by a different battery chemistry, all of them beyond lithium-ion, priced no more than legacy technology.



12:20 pm How Redwood Materials Is Building a Sustainable Battery Supply Chain

Colin Campbell, CTO, Redwood Materials

Redwood Materials is building the future of energy to power tomorrow's technologies from AI to grid-scale storage. This keynote will explore how Redwood developed the largest off-grid microgrid in North America using second-life EV batteries, and how battery reuse and innovative energy systems are reshaping the power landscape to meet the rising global energy demand.

12:50 Networking Luncheon (Sponsorship Opportunity Available)

1:50 Dessert Break in the Exhibit Hall with Poster Viewing
(Sponsorship Opportunity Available) with Interactive Roundtables



NICKEL-COBALT-COPPER

DECEMBER 10-11, 2025

Advances in Mining & Metallurgical Processing Methods for Extraction, Recovery & Recycling Critical Minerals

Wednesday, December 10

8:00 am Registration Open

2:20 pm Organizer's Remarks

MARKET DEMAND AND OVERVIEW

2:25 Chairperson's Remarks

Sarah Stockwell, PhD, Conference Producer, Cambridge EnerTech

2:30 Energy Transition Upstream Implications

Edward Keith, Head of Consulting Operations, Benchmark Mineral Intelligence

Ed will present Benchmark's outlook on Nickel, Cobalt, and Copper. He will discuss North America's supply-demand dynamics, leveraging insights from Benchmark's newly formed Copper division, highlighting the key challenges and emerging opportunities facing the industry, and how these are expected to develop in the years ahead.

3:00 Talk Title to be Announced

David Anonychuk, Global VP Metallurgy & Consulting, Natural Resources, SGS Canada Inc

3:30 Sponsored Presentation (Opportunity Available)

4:00 Refreshment Break in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

EXTRACTION OPERATIONS FOR THE ENERGY TRANSITION

4:30 The Piauí Nickel Project: Sustainable Nickel and Cobalt for the Energy Transition

Anne Oxley, Founder & CTO, Brazilian Nickel

Brazilian Nickel's Piauí project will produce nickel and cobalt in MHP to feed EV cathode production using a lower-cost, less-energy intensive, simple and flexible heap leaching process. This process is inherently low carbon, but BRN has several work programs looking at innovative ways to reduce the carbon footprint or even eliminate the CO₂ emissions, with a view to becoming a net carbon-zero or even carbon-negative producer.

5:00 Solving Strategic Vulnerability of Battery Metals

Oliver Gunasekara, Co-Founder & CEO, Impossible Metals

Impossible Metals addresses the strategic vulnerability of critical metals. Seabed mining offers a vital solution for America's metal needs. Our system utilizes autonomous underwater vehicles for efficient nodule collection. We project rapid scale-up, aligning with national interest in critical metal feedstocks.

5:30 Biological Intelligence in Action: Recovering Critical Minerals with Microbes and AI

Liz Dennett, PhD, CEO and Founder, Endolith

What if microbes could help solve the copper crisis? Backed by BHP's Think & Act Differently program and working with six of the world's ten largest mining companies, Endolith's platform uses engineered microbes and AI to extract copper from waste...faster, cheaper, and cleaner. CEO Dr. Liz Dennett shares why biological intelligence is reshaping mineral recovery and what it means for the future of the supply chain.

6:00 Close of Day

Thursday, December 11

8:00 am Registration and Morning Coffee

8:20 Organizer's Remarks

LEACH METHODS

8:25 Chairperson's Remarks

Oliver Gunasekara, Co-Founder & CEO, Impossible Metals

8:30 5 New Impeller Innovations for HPAL

Wolfgang Keller, Vice President & Head of R&D, EKATO RMT GmbH, Germany

In HPAL autoclaves, agitators play a critical role in achieving rapid and uniform mixing of ore suspension with sulfuric acid. Despite this, deposit formation on impellers and autoclave walls remains a significant challenge, as discussed at ALTA 2024. A promising solution involves an energy-efficient impeller with a specially engineered shape to minimise deposits. This design has been rigorously tested on various scales and is now ready for large-scale implementation

9:00 Autoclave Letdown: It's Not Just about the Valve

Rob Mock, Director Research & Development, NOVA Hydromet

The level control valve (LCV) is also known as the letdown valve (LDV) in HPAL and POX processes. The two different names indicate multifaceted purposes and natures of these valves and associated systems: letdown systems that are physically interconnected and phenomenologically interrelated, and process control that incorporates data and instrumentation in the realms of control theory and statistical process control. Skilled system implementation reduces process losses and improves equipment life.

9:20 Relining of Pressure Vessels in HPAL and POX

Daniel Keßler, PhD, Managing Director, DSB Säurebau

Autoclaves and pressure vessels are key equipment in HPAL and POX applications. Surface protection linings within these vessels consist of combined linings using membranes and bricks. Due to temperature, pressure, and chemical attacks, several relinings are necessary during the mine lifetime. We show the latest developments and field experience in relining of pressure vessels in Ni, Co, and Au applications.

9:40 Flash Tank Evolution in the Autoclave Industry

Johann Verster, Chemical Engineer, Process, Caldera Engineering

The presentation offers valuable insights into the role and efficiency of flash tanks in the High Pressure Acid Leach (HPAL) process. These vessels are primarily used to reduce pressure from the reactor or autoclave in a stepwise manner, from extremely high pressures to atmospheric conditions. Over the years, the design of flash tanks and associated equipment has evolved significantly, resulting in systems that are now considered both robust and efficient.

10:00 Practical Use of CFD Modeling and Pilot Testing for High Pressure Autoclave Mixing Performance Optimization

SPXFLOW

Jason Giacomelli, Mixing Technology Manager, Mixers, SPX Flow

This presentation will demonstrate the role mixers play in the HPAL process through discussion of real-life examples. This will be done by utilizing CFD to compare different mixing solutions with respect to velocity/energy distribution, acid concentration distribution, and residence time distribution. The latest results of Large Eddy Simulations in an HPAL application will be shared, and finally, the latest results of impeller wearing resistance pilot testing with CFD verification will be reviewed to complete the discussion on the importance of mixers in HPAL

10:30 Coffee & Bagel Break in the Exhibit Hall with Last Chance for Poster Viewing (Sponsorship Opportunity Available)

11:00 Revolutionizing Equipment Reliability: The Game-Changing Impact of FM-1500 & BM-1600 Coating Technologies

Evelyn Ng, PhD, Group Materials & Innovation Manager, Callidus Group

This presentation highlights the breakthrough FM-1500 & BM-1600 coating technologies, designed to enhance the reliability and lifespan of critical equipment in severe service mining. The session will cover their unique properties, successful case studies, and the significant improvements they bring to operational efficiency, safety, and cost-effectiveness. Attendees will gain insights into how these surface technologies are transforming asset integrity management in extreme service environments.



NICKEL-COBALT-COPPER

DECEMBER 10-11, 2025

Advances in Mining & Metallurgical Processing Methods for Extraction, Recovery & Recycling Critical Minerals

NOVEL METHODS AND PROCESS OPTIMIZATION

11:30 Using Activated-Carbon-Assisted Hydrometallurgical Approaches to Recover Nickel from Mine Tailings

Pengbo Chu, PhD, University of Nevada

This presentation proposes the use of activated carbon as a catalyst with sulfuric acid to enhance the recovery of nickel in a nickel-sulfide rougher flotation tailing. The results show that 98% Ni can be recovered into the solution under certain conditions. The ability of the activated carbon to convert the dissolved ferrous ions into ferric was proposed to be the main reaction for the enhanced metal leaching.

12:00 pm Crushing Smarter, Not Harder: Revolutionizing Ore Processing Efficiency with Breakthrough Heat Treatment Technology

Carrie Hartford, PE, Director Business Development, Project Engineering, Jenike & Johanson Inc.

Comminution accounts for ~3% of global energy use, making it a key target for decarbonization in the battery supply chain. Microwave pre-treatment can significantly reduce crushing energy, creating micro-fractures that improve grinding, flotation, and leaching efficiency. This talk explores how microwave-assisted comminution enhances the processing of lithium, nickel, cobalt, and graphite, supports new low-emission flowsheets, and offers a path to more sustainable battery materials production.

12:30 Enjoy Lunch on Your Own

1:30 Chairperson's Remarks

Liz Dennett, PhD, CEO and Founder, Endolith

1:35 Refining of Critical Minerals via Electrochemistry and Deep Eutectic Solvents

Larry Spickard, Vice President, Manufacturing, Xerion Advanced Battery Corp.

This presentation explores the electrochemical refining of critical minerals—cobalt, copper, and nickel—from mined ore concentrates. Using deep eutectic solvents and specialized electrodeposition techniques, we demonstrate a sustainable, selective approach to metal recovery. Results

highlight the potential for greener, more efficient refining processes as an alternative to conventional hydrometallurgical and pyrometallurgical methods in critical mineral supply chains.

2:05 Unlocking Enhanced Copper and Nickel Recovery through High-Pressure Slurry Ablation (HPSA)

John Lee, COO and Co-Founder, Disa Technologies Inc.

High-Pressure Slurry Ablation (HPSA) is a novel process that uses high-energy particle collisions to liberate valuable minerals without overgrinding. Originally developed for uranium waste, recent testing shows improved copper and nickel recovery through enhanced surface activation and flotation performance. By using the ore as its own grinding media, HPSA reduces consumables and energy use, offering a cost-effective, scalable solution.

2:35 Session Break

CLOSING PLENARY PANEL DISCUSSION

2:45 PANEL DISCUSSION: Navigating the Global EV Growth in Harmony with Shifting US Policy, Demanding Energy Security, and Big Data Requirements



Moderator: Christina Lampe-Onnerud, PhD, Founder and CEO, Cadenza Innovation

In a world where EV momentum continues to evolve, the industry is facing great uncertainty in policy and energy priorities. In this Plenary Closing Discussion, we are ending the conference with a thought-provoking and insightful panel of experts led by Christina Lampe-Onnerud.

3:45 Close of Conference

Present a Poster and Save \$50

Cambridge EnerTech encourages attendees to gain further exposure by presenting their work in the poster sessions. To secure an onsite poster board and/or ensure your poster is included in the conference materials, your full submission must be received, and your registration paid in full by **November 7, 2025**.

Register and indicate that you would like to present a poster. Once your registration has been fully processed, we will send an email with a unique link and instructions for submitting your abstract and other materials. Please see below for more information.

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- Your research will be seen by leaders from top commercial, academic and government institutes
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Conference Venue and Host Hotel:

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Discounted Room Rate Cut-off Date:
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For hotel reservations, please go to the Travel page of Altamet.com

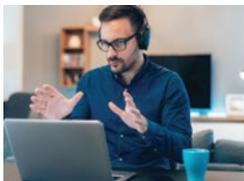
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