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ALTA



5-7 May 2026

Pan Pacific Hotel | Perth, Australia

Innovation in Mining & Metallurgical Processing

EVENT-AT-A-GLANCE

5 May Tuesday	6 May Wednesday	7 May Thursday
<p>NICKEL-COBALT-COPPER</p>	<p>RARE EARTHS & URANIUM</p>	<p>LITHIUM</p>
<p>SUSTAINABLE MINING</p>		<p>GOLD & PRECIOUS METALS</p>
<p>SHORT COURSES</p>		

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Your Invitation to Join Us in Australia



ALTA

5-7 May 2026

Pan Pacific Hotel
Perth, Australia

The annual ALTA conference was established in Australia by metallurgical consultant Alan Taylor in 1995. The conference is a world-class annual metallurgical meeting and a leading platform for innovation for more than a quarter century.

The ALTA conference is well-known for providing exceptional opportunities to share ideas and develop new connections. The carefully crafted programs are practically oriented, and the themes running through the conference reflect key current and developing technology trends.

A very special thanks to our invited world-class speakers for their key participation and contributions. In addition, we greatly value our sponsors, exhibitors, and delegates who make ALTA an annual must-attend meeting, and many attendees are long-term ALTA regulars.

In 2024, the ALTA conference became a part of Cambridge EnerTech, a leading provider of global energy storage conferences and exhibitions. The conference founder, Alan Taylor, remains actively involved in the continued growth of the conference.

We look forward to welcoming you to Australia and furthering the continued innovation in mining and metallurgical processing globally.

Sincerely,

Craig Wohlers
General Manager
Cambridge EnerTech

Alan Taylor
Managing Director
JO-AL Consulting



SHORT COURSES*

5 MAY

TUESDAY 5 MAY 18:15-19:45

SC1: Autoclave Mass and Energy Balance: How to Increase Your Reaction Yield

Instructor:

Rob Mock, Director Research & Development, NOVA Hydromet

This short course will teach the first-principles basics of mass and energy balance (MEB) modeling for autoclaves. MEB topics covered include micro-scale overpressure, autoclave compartment inputs and outputs, compartment mixing, and how to balance reactants, residence time, temperature, and pressure for maximum yield. Examples will be provided from a gold pressure oxidation process, although principles are applicable to HPAL processes as well.

**Separate registration required*

HOTEL & TRAVEL INFORMATION

CONFERENCE VENUE AND HOTEL:

Pan Pacific Perth

207 Adelaide Terrace,

Perth, WA 6000

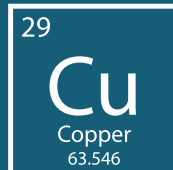
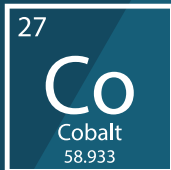
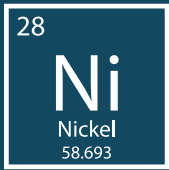
Tel: +61 8 9224 7777

Discounted Room Rate: \$275

Discounted Room Rate Cut-off Date: 3 April 2026



For hotel reservations, please go to the
Travel Page at <https://www.altamet.com.au/travel>



NICKEL-COBALT-COPPER

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

5 - 6 May 2026

TUESDAY 5 MAY

8:00 Registration Open

8:00 Arrival Tea and Coffee (Sponsorship Opportunity Available)

8:50 Organiser's Remarks

PROCESS OPTIMISATION

8:55 Chairperson's Remarks

Michael Dry, PhD, Owner, Arithmetek, Canada

9:00 Getting More From Your Autoclave: Mass & Energy Balance Sensitivity Analysis

Rob Mock, Director Research & Development, NOVA Hydromet

Autoclave reactions are sensitive to several parameters, particularly temperature, overpressure, and reactant concentrations. This talk will cover how to quantify autoclave reaction tradeoffs by controlling these parameters. The talk will explore how to use mass and energy balance analysis to determine how sensitive autoclave yields are. Even small process variations can have big impacts on reaction yield.

9:30 Making Copper 2026 - A New Paradigm

James Vaughan, PhD, Professor, School of Chemical Engineering, University of Queensland

Copper is essential for the energy transition; increased demand has increased the price of the metal. Here we review primary copper production, with examples of state of the art operations. Key environmental performance considerations and indicators are highlighted. A new approach to treating copper concentrates was invented at the University of Queensland and is being developed by Banksia Minerals Processing.

10:00 Computational Fluid Dynamics (CFD) Erosion Modelling

Thien Dinh, PhD, Senior Research Scientist, CSIRO

This paper presents a computationally efficient computational fluid dynamic (CFD) based model for slurry flow-induced erosion in mineral processing. The model reliably predicts erosion patterns by validating its results against CSIRO's experimental data for a range of flow configurations. By avoiding explicit particle tracking, the model achieves up to 100 times faster computation than traditional particle-tracking based approaches. The model is compatible with standard CFD frameworks, requiring minimal integration effort.

10:30 Morning Tea in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

11:00 Copper Refining: New Case Study

Dirk Steinhilber, PhD, Application Technology Manager, LANXESS Deutschland GmbH

The electrolytic refining of raw copper allows large-scale access to high-purity copper, which is primarily required in the electrical and electronics industry. During this process, bismuth and antimony dissolve in the electrolyte and are efficiently removed by Lewatit MDS TP 260, an ion exchange resin from the German specialty chemicals group, Lanxess. In this paper, we present the copper electrolyte refining and the industrial use in an Australian case study.

11:20 From Plant Data to Better Decisions: Hybrid Modelling of Selenium Removal from Copper Solutions in a Base Metal Refinery

Suné Grobbelaar, PhD, Technical Lead, Dynamet

A high-fidelity model was developed of the sulphurous acid and precipitation circuits for selenium removal from copper solution at a base metal refinery. The transient model mimicked the existing plant's behaviour and supported its upgrade. A hybrid approach combining first-principles and data-driven methods captured Se/Te and Cu/Ni behaviour. Applied to the upgraded configuration, the model validated the design, enabled scenario testing, and provided a data-driven basis for de-risking the investment.

11:40 Recent CSIRO Hydrometallurgical-Based Critical Mineral Processing Activities

Keith Barnard, PhD, Group Leader, Hydrometallurgy, CSIRO Molecular Science

Australia is rich in critical minerals but high economic costs challenge domestic processing. Strategic R&D offers a pathway to overcome these barriers, enabling innovative, cost-effective technologies that strengthen Australia's role in global supply chains. Collaboration with commercial partners ensures solutions are economically viable and implementable. This presentation highlights current CSIRO hydrometallurgical activity areas, including chalcopyrite processing, battery-grade manganese sulphate production, and recovering vanadium and titanium from vanadium titanomagnetites.

12:00 Advancing Equipment in Hydrometallurgy: The Development & Field Success of VEL-8 Coating

VELAN

Vinh Nguyen, Director, Aftermarket, Aftermarket, VELAN

Protective coatings are essential for improving equipment durability in hydrometallurgical environments. This presentation highlights VEL-8, a next-generation ceramic coating developed for extreme service. Field trials in HPAL and POx operations demonstrated significantly improved durability, with up to 24 months of service life. Results show VEL-8 outperforms conventional coatings and provides reliable protection for valves and other severe-service equipment.

12:30 Networking Luncheon (Sponsorship Opportunity Available)

PROCESS OPTIMISATION

13:30 Chairperson's Remarks

James Vaughan, PhD, Professor, School of Chemical Engineering, University of Queensland

13:35 Twenty Years of Ti-Clad Autoclave Fabrication Leading to Improved Design Performance

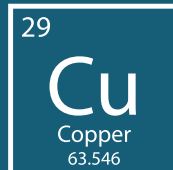
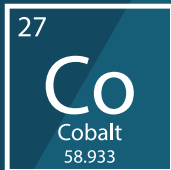
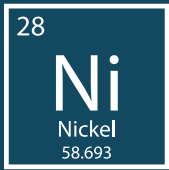
Patrick Van Roy, Chief Sales Officer, Coek

Mukesh Ahlvardi, Global Director, Pressure Vessel Applications, NobelClad

This presentation introduces key insights highlighting lessons learned over 20 years of Ti-clad autoclave fabrication, using POX and HPAL technology. A primary focus is erosion challenges within autoclaves, particularly affecting internal welds for supports and clips, as well as welds for flush cover strips on plate connections and nozzles. This presentation will focus on how a number of these concerns can be controlled.

14:05 Froude-Based Calibration Refinement for Physical Scale Modelling of Iron Ore Transfer Chutes

Corin Holmes, General Manager, Jenike & Johanson



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In this study, Physical Scale Modelling (PSM) uses a 1/10th-scale model and surrogate material, calibrated by matching the Froude number for dynamic similarity. The focus is on how Froude-based calibration affects flow behaviour and material surcharge profiles on conveyors, ensuring the model replicates real flow patterns and trajectories.

14:35 PANEL DISCUSSION: Novel Trends in Nickel, Cobalt and Copper Processing Methods

Moderator: Murdoch Mackenzie, PhD, Consultant Metallurgist, Australia

This panel discussion will explore innovative advancements in the extraction, refining, and recycling of these critical metals. Our international panel of experts will highlight cutting-edge techniques aimed at improving efficiency, sustainability, and environmental impact. Topics will include advanced hydrometallurgy, bioleaching, and automated processing technologies. The session will also address challenges and opportunities in meeting growing demand for these metals in batteries and green technologies.

Panelists:

Alan Taylor, Managing Director & Metallurgical Consultant, Jo Al Enterprises Pty Ltd, ALTA Metallurgical Services

Michael Dry, PhD, Owner, Arithmetek, Canada

David Dreisinger, PhD, Professor, Materials Engineering, University of British Columbia

15:35 Afternoon Tea in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

16:05 Application and Validation of Experimental and Numerical Techniques in the Study and Development of Erosion Resistant Impellers: Baseline Common HPAL and POX Impellers.

SPXFLOW

Tarang Bulchandani, Sebior Engineering, Mixing Technology, Mixing Solutions, SPX FLOW

In this presentation, we discuss techniques for characterizing impeller blade wear. Experimental and numerical simulation techniques are useful for understanding observed wear patterns and subsequently quantification. We will present results from several studies and efforts regarding our wear exploration efforts. Additionally, lab scale results will be compared to full scale impellers extracted from real installs to further validate both the experimental, numerical and computational results. Finally, how these results are used in developing impeller geometry will be discussed.

LEACHING METHODS

16:35 High-Purity Hydrogen Sulphide Production Process for Nickel and Cobalt Recovery in Hydrometallurgical Refining

Yimeng Xu, Assistant Manager, License Management, JGC Corp

Hydrogen sulfide (H₂S) and sodium hydrosulfide (NaSH) are essential reagents in hydrometallurgical refining of non-ferrous metals. We've developed proprietary technology to produce H₂S with over 99.9 wt% purity using hydrogen, sulfur, and a high-performance, long-life catalyst, with capacity ranging from 500 TPA to 15,000 TPA. This high-purity H₂S enables more efficient recovery of high-purity valuable metals, enhancing the sustainability and effectiveness of metal recycling processes.

16:55 Recharge and Recover: Maximizing Organic Inventory through Accelerated Gravity

Flottweg

Pavel Sitnikov, Sales Engineer, Flottweg Australia

Optimizing organic inventory is critical for reducing operational costs in Solvent Extraction circuits. This presentation explores practical methods for maximizing solvent recovery and health across diverse hydrometallurgy circuits. By utilizing accelerated gravity via solid-bowl centrifugation, operators can efficiently recover lost organic from CRUD accumulations. This is paired with novel controlled clay-dosing flowsheets to improve organic solvent health and transfer efficiency. Together, these strategies provide a robust framework for minimizing reagent loss and ensuring a high-purity organic phase for improved circuit stability.

GRAVITY SEPARATION METHODS

17:15 Expanded Role for Gravity Separation in Achieving Pre-Concentration of Minerals Ahead of Midstream Processing

Kevin Galvin, PhD, Director of the ARC Centre of Excellence for Enabling Eco-Efficient Beneficiation of Minerals, Newcastle Institute for Energy and Resources, University of Newcastle

This presentation explores the new principles governing what is possible through gravity separation, including the potential to produce ultra-high grade iron ore in a single stage. Ores that fail to liberate in full still invite significant mass rejection, reducing the scale of the next phase of processing. Then the key to the next phase is comminution, supported by highly efficient classification with no bypass, to achieve full liberation.

17:35 Welcome Reception in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

18:15 Evening Short Course Recommended Course*

SC1: Autoclave Mass and Energy Balance: How to Increase Your Reaction Yield

*Separate registration required. See registration page for details: <https://www.altamet.com.au/short-courses>

19:45 Close of Day

WEDNESDAY 6 MAY

8:00 Registration Open

8:00 Arrival Tea and Coffee in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

8:20 Organiser's Remarks

8:55 Chairperson's Remarks

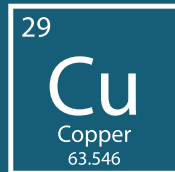
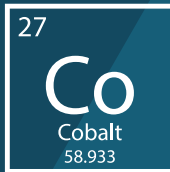
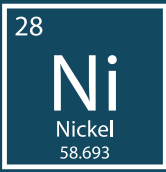
Kevin Galvin, PhD, Director of the ARC Centre of Excellence for Enabling Eco-Efficient Beneficiation of Minerals, Newcastle Institute for Energy and Resources, University of Newcastle

DEEP SEA NODULE MINING AND PROCESSING

9:00 EMM from Sea Nodules

Michael Dry, PhD, Owner, Arithmetek, Canada

If sea nodules are to become a major source of nickel, they will also produce enough manganese to disrupt the global manganese market, assuming the manganese is not discarded. In HPAL RKEF processing of sea nodules the



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manganese becomes an oxide slag that is said to be suitable for making FeMn or SiMn. This paper presents a route recovering nickel and cobalt as MSP and manganese metal from sea nodules.

12:00 Networking Luncheon (*Sponsorship Opportunity Available*)

12:55 Close of the Nickel-Cobalt-Copper Track

GLOBAL MARKET DEMAND

9:30 Ramu Nickel: The Next Decade

Craig Lennon, CEO, Nickel 28 Capital Corp

The Ramu nickel project commenced construction 2008—commissioning in 2012—and has been in operation for over a decade at levels above design nameplate and operating at the lower end of the cost curve for HPAL operations. This paper will provide an overview of the unique features of the project, achievements of the first decade of operations, recent improvements the project has made, what can be expected for the next decade.

10:00 Morning Tea in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

10:30 Sponsored Presentation (*Opportunity Available*)

11:00 Exploring Trade-Offs between Capex, Opex and Operational Flexibility While Producing Battery Grade Nickel Sulphate Product

Chris Madin, Manager, JordProxa

The production of battery-grade nickel sulphate involves key trade-offs between Capital Expenditure (CapEx), Operational Expenditure (OpEx), and operational flexibility, primarily influenced by the chosen process technology and purity requirements. This paper describes crystalliser design features to produce battery grade nickel sulphate hexahydrate product, and will compare the operating conditions, crystalliser types, preferred energy source, control of product purity, and trade-off between capital and operating costs.

11:20 The Implementation of an Innovative Inline Microscope for Real-Time Particle Size Distribution (PSD) Monitoring in an Iron Ore Processing Plant in Brazil

Damian Thorpe, Manager Advanced Milling Instrumentation, Molycop

In this study, the technology was installed at the hydrocyclone overflow of one ball mill circuit, the latest possible measurement point before flotation and the most critical location for PSD control (90% -150 um). Real-time feedback from the inline microscope enabled more precise management of the grinding and classification circuit in an iron ore concentrator. As a result, the operation achieved improved mill throughput stability.

AI APPLICATIONS IN METALLURGY

11:40 Generative AI for Metallurgists: Improving Analysis, Design, and Communication

Jess Page, Group Technical Manager, Data Analytics, WGA Wallbridge Gilbert Aztec, Australia

Generative artificial intelligence (AI) is transforming how metallurgists analyse data, design process models, and communicate complex ideas in copper operations. By combining metallurgical expertise with generative tools, engineers can rapidly prototype dynamic models, automate repetitive analytical tasks, and communicate technical insights more effectively.



SUSTAINABLE MINING

Driving Decarbonisation, Efficiency & Responsible Resource Management

5 - 6 May 2026

TUESDAY 5 MAY

8:00 Registration Open

8:00 Arrival Tea and Coffee (*Sponsorship Opportunity Available*)

8:50 Organiser's Remarks

SUSTAINABILITY PRINCIPLES AND TOOLS

8:55 Chairperson's Remarks

Samantha Langley, Head, Sustainability, Vulcan Energy Resources

9:00 Unlocking Step Change Sustainability Solutions for Mining

Leigh Staines, Industry Advisor, Commercialisation, Univ Of Queensland / Managing Director, Banksia Minerals Processing

Delivering a genuine shift in mining sustainability will require more than incremental efficiency gains. Step-change solutions are needed, using new technologies to replace long-standing conventions and enable new flowsheets and supply-chain approaches. Banksia Minerals Processing is bridging the gap between breakthrough research and commercial reality through development of a novel copper refining process that could challenge traditional smelting. Founder and Managing Director Leigh Staines will share the Banksia story.

9:30 Introduction to Developing Interoperable Tools that Combine Life Cycle Assessments, ESG Reporting, and Traceability across Supply Chains

Phoebe Whattoff, Country Director Australia, Australia, Minviro Ltd.

Global supply chains face growing pressure to show environmental integrity, social responsibility, and transparent data flows. This presentation outlines existing digital frameworks, industry feedback on current practices, and the development of interoperable tools that integrate LCA, ESG reporting, and traceability into a cohesive data architecture. By unifying these siloed domains, such tools deliver consistent product insights, support regulatory compliance, and help decision-makers identify meaningful opportunities to reduce impacts.

10:00 From Principles to Performance: ESG Frameworks and Standards and Ensuring They Drive Value

Marie-Alice Small, Group Manager Sustainability, PLS

This session will cover the complex ESG framework and standards landscape companies face today—and how to cut through, prioritise what matters, and avoid falling into the trap of disclosure for disclosure's sake. We'll explore practical ways to address mandatory requirements and meet stakeholder expectations, embed sustainability into strategy, and ensure reporting if focused on real performance success metrics and value rather than becoming just a checkbox.

10:30 Morning Tea in the Exhibit Hall with Poster Viewing

(*Sponsorship Opportunity Available*)

11:00 Mission Critical – Building Resilient Mines for a Modern Society

Toby Whincup, Global Dir Critical Minerals, Critical Minerals, ERM Environmental Resources Mgmt

Amid a looming global critical minerals shortfall and rising geopolitical competition, mining is now central to economic and territorial security, the energy transition, and technological progress. Yet most new projects face significant delays. We analyzed 224 predevelopment mines worldwide,

interviewed five key stakeholder groups, joined expert panels, and reviewed open-source data to uncover root causes. From these insights, we developed a practical roadmap to accelerate development and strengthen commercial viability.

PROCESS EFFICIENCY AND OPERATIONAL SUSTAINABILITY

11:30 Climate Factors and Emission Trends in Global Mining

James Chappelow, Senior Principal Analyst, Mine Economics & Emissions, S + P Global Energy

The mining industry stands at a critical intersection of resource extraction and climate action. As a key enabler of the global energy transition, mines face the urgent challenge of reducing their carbon footprint. This session will cover emission profiles and decarbonisation strategies, offering insights into the CO₂e variability of copper and gold mining operations.

12:00 Bellevue Gold's Journey to Net Zero Emissions by 2026—As the World's First Net Zero Gold Mine

Michael Williams, Sustainability Superintendent, Bellevue Gold

Bellevue Gold is Australia's most renewably powered mine, and is the world's first net zero (Scope 1 and Scope 2) emission gold mine. With operations commencing in late 2023, and the solar farm constructed in 2024 and the wind turbines in 2025—Bellevue Gold has achieved some world firsts—including running the entire mine with 'engines off' and 100% instantaneous renewable energy for over 100 hours.

12:30 Networking Luncheon (*Sponsorship Opportunity Available*)

PROCESS EFFICIENCY AND OPERATIONAL SUSTAINABILITY (CONT.)

13:30 Chairperson's Remarks

Marie-Alice Small, Group Manager Sustainability, PLS

13:35 Sponsored Presentation (*Opportunity Available*)

14:05 From Brine to Battery: Powering the Energy Transition with Sustainable Lithium

Samantha Langley, Head, Sustainability, Vulcan Energy Resources

Vulcan Energy is building the world's first carbon-neutral, integrated lithium, and renewable energy business to decarbonise battery production and support a sustainable future. Lithium is sourced from deep geothermal brines and extracted using Adsorbent Direct Lithium Extraction (A-DLE), an efficient, low-cost, and sustainable process that minimises water and land impacts whilst significantly reducing greenhouse gas emissions. Coupled with geothermal power generation, Vulcan will deliver sustainable lithium for the energy transition.

14:35 Don't Take Schist for Granite: Sorting Out the Elephant

Grant Wellwood, PhD, Principal, Wellwood Associates

Sensor-based ore sorting is often hailed as a sustainability game-changer—boosting resource efficiency, cutting comminution energy, and reducing tailings. Yet, moving from lab success to reliable industrial performance faces a treacherous "Valley of Death." This presentation candidly explores overlooked challenges—strategic intent, feed presentation, chute design, and



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downstream impacts—helping attendees grasp real-world pitfalls and build informed, realistic business cases that account for hidden technical and operational complexities.

15:05 Mine-to-Process Integration and Optimisation for Brownfield Operations and Greenfield Engineering Design

Lachlan Brennan, Process Engineer, Mining and Minerals Processing, Hatch
Drill-and-blast fragmentation strongly influences comminution throughput, costs, and energy use, just as grinding size affects downstream separation. Optimising stages in isolation often harms overall performance. With a structured, audit-driven, data-based approach, real and lasting improvements are achievable. Hatch's Mine-to-Process Optimisation projects typically deliver higher throughput, reduced comminution energy intensity, and improved recovery.

15:35 Afternoon Tea in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

16:05 Scaling Solutions: CSIRO's Integrated Approach to Sustainable Mining Challenges

Marc Elmoultie, PhD, Research Group Leader: Mine Safety & Environment, CSIRO

CSIRO's Sustainable Mining Technologies programme delivers practical, field-proven solutions to industry challenges in emissions abatement, water-positive mining, efficient resource recovery, and waste reduction. This presentation showcases emissions reduction technology for ventilation air methane, from R&D to pilot scale, alongside modular water treatment pilots and advanced sensing technologies for *in situ* analytics. Real-world trial data, scale-up pathways, and case studies will be presented, demonstrating CSIRO's commitment to advancing sustainability in mining.

16:35 Nature-Based Design in TSF Closure: Engineering Long-Term Value

Justin Walls, Principal Consultant (Tailings) - Mine Closure, SRK Consulting
This presentation examines how nature-based design, including geomorphic modelling and ecosystem restoration, can improve tailings storage facility closure outcomes. Focus is placed on enhanced physical stability, chemical neutrality, and biodiversity, showing how these approaches reduce long-term environmental liabilities and maintenance costs, deliver quantifiable performance, and create multifunctional land uses beyond regulatory compliance.

17:05 Sponsored Presentation (Opportunity Available)

17:35 Welcome Reception in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

18:15 Evening Short Course

Recommended Course*

SC1: Autoclave Mass and Energy Balance: How to Increase Your Reaction Yield

*Separate registration required. See registration page for details: <https://www.altamet.com.au/short-courses>

19:45 Close of Day

WEDNESDAY 6 MAY

8:00 Registration Open

8:00 Arrival Tea and Coffee in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

PROCESS EFFICIENCY AND OPERATIONAL SUSTAINABILITY

8:50 Organizer's Remarks

8:55 Chairperson's Remarks

Michael Dry, PhD, Owner, Arithmetek, Canada

9:00 How Pre-Concentration through Early-Stage Waste Rejection Can Play a Key Role in Enhancing Sustainable Mining

Tony Parry, PhD, Senior Consultant, Nexus Bonum, Australia

Trends towards sustainable mining have seen growing interest in the use of ore sorting to achieve pre-concentration of plant feeds. It's all about minimising the processing of mining dilution and sub-economic grade feed in the mineral processing plant. In this presentation, we examine a number of case studies and assess sustainability benefits where ore sorting is being used (or planned to be used) in Australian mining and processing operations.

9:30 Too Good To Be True? Clean, Sustainable Metals Processing Through Low-cost, High-performance, Rock-breathing Bacteria

Eric Macris, CEO, Viridian Biometals

Viridian Biometals is developing proprietary critical minerals refining technology that is 50%+ less expensive to build and 30%+ less expensive to operate than conventional processing. The technology harnesses bacteria that breathe ore and extract metals with no toxic waste, no burning of fossil fuels and no need for a freshwater supply, solving the most pressing environmental and economic problems with conventional refining.

10:00 Morning Tea in the Exhibit Hall with Poster Viewing (Sponsorship Opportunity Available)

10:30 Sponsored Presentation (Opportunity Available)

11:00 PANEL DISCUSSION: Mining Sustainability: Challenges, Opportunities and Illusions

Moderator: Leigh Staines, Industry Advisor, Commercialisation, Univ Of Queensland / Managing Director, Banksia Minerals Processing

This panel will unpack Mining Sustainability: Challenges, Opportunities and Illusions, exploring real-world hurdles, genuine progress, and common misconceptions in decarbonisation, ESG implementation, operational efficiency, and long-term environmental and social outcomes. Drawing on diverse perspectives from industry leaders, the discussion will challenge assumptions, highlight practical strategies, and illuminate where promise meets reality in the pursuit of more responsible mining practices.

Panelists:

Caoilin Chestnutt, Executive Director, ACARP

Phoebe Whattoff, Country Director Australia, Australia, Minviro Ltd.

12:00 Networking Luncheon (Sponsorship Opportunity Available)

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AI AND DATA-DRIVEN SUSTAINABILITY

12:55 Chairperson's Remarks

Grant Wellwood, PhD, Principal, Wellwood Associates

13:00 From Ore to Opportunity: AI as a Financial Governance Engine for Sustainable Mining

Matthew Schneider, Professor, Murdoch University

As sustainability reshapes mining finance, trust in data, ESG performance, and valuation has become critical. This paper explores how agentic AI can function as a financial governance engine, integrating geological, operational, and ESG data into a continuously updated, auditable valuation model. By transforming static feasibility studies into living digital twins, AI enables real-time risk visibility, stronger investment confidence, and accelerated access to sustainability-linked capital.

13:30 Data-Driven Decarbonisation: How Life-Cycle Assessments and Emissions Benchmarking Shape Value-Chain Strategies to Support the Global Energy Transition

Glenton Moses, Group Advisor: Climate Change, PLS

Unlock data-driven decarbonisation with life-cycle assessments and emissions benchmarking. Discover how integrating granular emissions data and performance metrics identifies hotspots, drives targeted interventions, and aligns with global regulatory and market expectations. This session shows how transparent, science-based frameworks accelerate decarbonisation across complex supply chains.

14:00 Striking the Right Chord: Cost Effective and Sustainable AI Apps in Operations

Elsa Jordaan, PhD, Principal / Director, Deployed Analytics

Data science can reveal powerful insights, but deployed models often fail due to trust issues, unclear actions, or misaligned decision processes. To deploy cost effective and sustainable AI apps require much more than a good enough model. This talk discusses the key notes an AI program of work needs to truly "hear the music in the data."

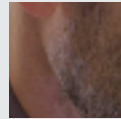
14:30 Afternoon Tea in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

15:00 Development of a Global-to-Local ESG Intelligence and Governance Platform Initiative for the Minerals Value Chain Using Generative AI

Silvia Black, PhD, Senior Program Manager, Amira Global

Environmental, Social, and Governance (ESG) reporting has become complex and fragmented, with companies in the minerals industry facing multiple frameworks, memberships, regulatory obligations, and site-level certifications. This creates duplication, inefficiency, and risk, particularly for junior and mid-tier companies with limited resources. A collaborative initiative is presented designed to help stakeholders across the entire minerals value chain understand, track and respond to ESG reporting obligations and credentials.



15:30 Featured In-Depth Presentation: Lithium Battery Recycling: Essential Concepts, Industry Challenges, and Opportunities

Aleks Nikoloski, PhD, Professor, Centre for Water & Energy & Waste, Murdoch University

With growing demand for critical minerals and increasing ESG pressures, lithium-ion (Li-ion) battery recycling is a key component of sustainable mining. This extended featured presentation outlines the recycling pathway, from safe handling and pretreatment to physical separation and processing of "black mass" to recover valuable metals. It highlights how recycling reduces reliance on primary extraction while supporting circular economy outcomes and resilient mineral supply chains.

17:00 Session Break

17:30 Networking Reception and ALTA 2026 Awards Dinner

**Separate registration required. See registration page for details.*

20:30 Close of the Sustainable Mining Track

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RARE EARTHS AND URANIUM

The Latest Innovations, Technologies, and Strategies in the Extraction and Processing of Rare-Earth Elements and Uranium

6 May 2026

WEDNESDAY 6 MAY

GLOBAL DEMAND

12:55 Chairperson's Remarks

Keith Barnard, PhD, Group Leader, Hydrometallurgy, CSIRO Molecular Science

13:00 IAEA Support to Member States for Sustainable Uranium Production Cycle Activities

Carmen Good, Uranium Production Specialist, International Atomic Energy Agency

The IAEA assists its Member States in developing sustainable uranium production cycle activities to ensure a reliable nuclear fuel supply. Support spans all phases—from exploration and mining to processing, decommissioning, and remediation. The Agency provides technical advice, guidance publications, and integrated review missions, along with up-to-date information on global uranium resources, production trends, and demand projections.

13:30 Continuing Developments at the Boland ISR Rare Earth Project: The Vision for Low Cost, Low Impact, Domestic Rare Earth Production

Robert Blythman, Exploration Manager, Cobra Resources plc

Cobra Resources are progressing the ISR amenability story of the Boland Rare Earth Project on the Eyre Peninsula of South Australia. Rare earth recoveries, acid consumption, and permeabilities have been assessed in bench scale tests at ANSTO and continue to demonstrate ISR amenability in the Narlabay Paeleochannel for rare earths.

14:00 Santa Quitéria Project, Ceará, Brazil: A Strategic Project for Brazil

Alessandra Costa Barreto, Project Manager, Environmental Management, INB Industrias Nucleares do Brasil SA

Industrias Nucleares do Brasil (INB) and FOSNOR/Galvani have been working together to develop the Santa Quitéria Project, Ceará/Brazil. The objective is to mine and process an ore composed of phosphate and uranium, known as colophanite. At this moment it is important to present the progress already achieved in the development of the project and its next challengers until the start of production.

14:30 Afternoon Tea in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

PROCESS OPTIMISATION

15:00 Presentation to be Announced



15:15 Impurity Control in Rare Earth Hydrometallurgy: A Combined Experimental and Thermodynamic Study

Esme Lau, DRA Global

Leslie Miller, Senior Application Engineer, OLI Systems, United States

This study explores selective impurity removal from rare earth sulfate liquors using controlled phosphate addition. Experimental work combined with thermodynamic modeling identified conditions that promote iron and thorium precipitation while minimizing rare earth losses. The integration of data-driven

modeling and laboratory validation provides new insight into impurity behavior across pH ranges, supporting the development of more efficient and selective rare earth purification strategies.

15:45 Lessons Learned from Rare Earth Projects with Beneficiation and Purification

Matthew Nicholls, Senior Process Engineer, METS Engineering

Rare earth elements (REE) are a key to modern society and they are typically difficult metallurgical development projects. The typical unit operations are mining, beneficiation, hydrometallurgical treatment, separation, and refining to produce magnets with the last two steps being dominated by Chinese knowhow. This paper discusses how each REE deposit is unique, the beneficiation testwork and hydrometallurgical processing to produce mixed rare earth carbonates (MREC).

16:15 Mines to Medicine—The Potential for Radium Recovery from Rare Earth Refining

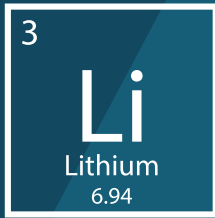
Andrew Napier, General Manager, entX

This presentation will cover opportunities to recover radium from residue or waste streams generated during the processing or refining of thorium containing rare earth materials and overview the pathway for this to be used in production of radiopharmaceuticals for targeted alpha therapy treatment.

17:30 Networking Reception and ALTA 2026 Awards Dinner

**Separate registration required. See registration page for details.*

20:30 Close of the Rare Earths and Uranium Track



INNOVATIONS IN LITHIUM EXTRACTION, REFINEMENT, AND RECYCLING

Advances in Lithium Processing with Economic Viability, Environmental Compliance, and Supply-Chain Resilience

7 May 2026

THURSDAY 7 MAY

8:00 Registration Open

8:00 Arrival Tea and Coffee in the Exhibit Hall with Poster Viewing
(Sponsorship Opportunity Available)

8:50 Organiser's Remarks

GLOBAL MARKET DEMAND

8:55 Chairperson's Remarks
Tobias Elwert, PhD, CTO, cylib GmbH

9:00 Cost, Carbon, and Control: The Global Economics of Lithium Extraction, Refining, and Recycling
Cameron Perks, PhD, Product Director Lithium, Benchmark Mineral Intelligence

As lithium extraction and refining technologies evolve, economics will determine what scales. This presentation examines cost structures across hard rock, brine, clay, DLE, and recycling pathways; China's enduring refining advantage; ex-China policy ambitions; and emerging process innovation. It outlines how carbon intensity, capital discipline, and strategic control are shaping the next phase of global lithium supply.

LITHIUM PROCESSING METHODS

9:30 Lithium Purification
Wolfgang Keller, Vice President & Head of R&D, EKATO RMT GmbH, Germany
Battery-grade lithium carbonate production involves converting Li_2CO_3 into soluble lithium bicarbonate for impurity removal. Scaling this process is complex due to three-phase interactions. A case study using original products presents pilot tests in a scalable stirred reactor and scale-up methodology. Key parameters—pressure, temperature, stirring, and gas injection—were analyzed. The study validated process conditions and developed a commercial reactor design, demonstrating a safe and reliable scale-up approach.

9:55 Alkaline Lithium Extraction Process: A Cleaner, Selective Alternative for Direct Alpha Spodumene Processing
Aleks Nikoloski, PhD, Professor, Centre for Water & Energy & Waste, Murdoch University

This process introduces sodium bicarbonate as a novel secondary leaching agent for lithium extraction from alkaline-roasted spodumene. The process eliminates high-temperature calcination and hazardous acids, reducing energy use and environmental risk. While lithium recovery is ~10% lower than acid leaching, impurity dissolution is drastically reduced, yielding a purer product and simpler purification. This innovation offers a safer, more sustainable pathway for battery-grade lithium production.

10:15 Beyond Brine: Traditional and Emerging Applications of Ion Exchange DLE

Nicolas Grosso Giordano, Business Development Manager, Lilac Solutions
Ion exchange (IX) based DLE enables efficient extraction of lithium from a wide range of brines, across lithium concentration ranges and variable feed chemistries. This presentation will review the technical basis of Lilac's IX technology and its traditional applications in salar, lake, and oilfield brines, and



discuss how emerging applications in hydrometallurgical streams — hard-rock, clay, and battery recycling — offer a path to improving yields outside traditional DLE applications.

10:30 Morning Tea in the Exhibit Hall with Poster Viewing
(Sponsorship Opportunity Available)

11:00 Simulating Dense Media Separation (DMS) Benefits on Overall Lithium Recovery

Alex Holtzapfle, President, Metsim International, LLC

The beneficiation of lithium typically involves Dense Media Separation (DMS) to pre-concentrate lithium-bearing minerals like spodumene. DMS uses the specific gravity differences between minerals to achieve separation. This method is particularly effective in processing coarse-grained ores. The objective of this work is to validate the behavior of the proposed pre-concentration flowchart using METSIM simulations, as well as evaluate different scenarios altering DMS to optimise lithium recovery.

11:30 Preferential Recovery Method for Lithium from NCM and LFP Black Powder via Pressure Oxidative Leaching

Joon Sung Choi, Senior Researcher, Research Institute of Industrial Science & Technology, South Korea

This study presents a preferential method for recovering lithium from NCM (LiNiMnCoO_2) and LFP (LiFePO_4) black powders (BPs) using pressure oxidative leaching in autoclave systems. This leaching process demonstrated exceptional selectivity for lithium extraction, simultaneously precipitating transition metals as reusable hydroxides and oxides.

12:00 Evaluation of Lithium-Carbonate Synthesis Process in Specific Conditions

Eun Jin Jung, Research Institute of Industrial Science and Technology

This work investigates lithium carbonate precipitation from sodium-rich lithium sulfate liquors by controlling the feed rate of a sodium carbonate slurry and systematically evaluating purity as a function of the number of washing cycles. The influence of slurry feed rate on product purity is elucidated, and the feasibility of producing battery-grade Li_2CO_3 under impurity-rich recycling conditions is assessed.

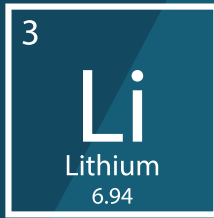
12:30 From Rock, Clay or Brine: A Cross-Resource Comparison of LHM Production Pathways

Greg Mandigo, Director of Evaporation & Crystallization Technology, Aquatech

Lithium hydroxide monohydrate (LHM) has become the preferred lithium chemical for high energy density cathode materials used for electric vehicles and energy storage. The production of battery-grade LHM product from various resources requires alignment between many factors including resource grade, geography and technology process to create an economically viable project. This work provides a focused technoeconomic comparison of various LHM production pathways from resources including hard-rock spodumene, sedimentary clays and brine including geographical considerations. The analysis highlights where each pathway is most competitive and which resource-process combinations are best positioned to support long-term lithium production demand.



13:00 Networking Luncheon (Sponsorship Opportunity Available)



INNOVATIONS IN LITHIUM EXTRACTION, REFINEMENT, AND RECYCLING

Advances in Lithium Processing with Economic Viability, Environmental Compliance, and Supply-Chain Resilience

7 May 2026

LITHIUM PROCESSING METHODS

14:00 Chairperson's Remarks

Alex Holtzapfle, President, Metsim International, LLC

14:05 Engineering Lithium-Carbonate Plants for Purity, Sustainability, and Value

Nipen Shah, PhD, Head of Sales, JordProxa

This presentation will discuss the production of high-purity battery-grade lithium carbonate product from lithium brine sources.

14:35 Sustainable Biotechnology platform for Mineral Recovery

Chun-Xia Zhao, PhD, NHMRC Leadership Fellow Deputy Director of ARC Centre of Excellence, School of Chemical Engineering Faculty of Sciences, Engineering and Technology, The University of Adelaide

This approach offers broad applicability—from primary mineral separation to urban mining applications such as recycling photovoltaic panels, magnets, and batteries—delivering significant environmental, economic, and operational benefits. This work demonstrates the transformative potential of biomolecule-based separation strategies to redefine the future of mineral processing and resource recovery.

14:55 Why Lithium Refineries Struggle in Australia and How S-DLE Could Potentially Change the Game

Amir Razmjou, PhD, Associate Professor, Edith Cowan University

This presentation explores Spodumene Direct Lithium Extraction (S-DLE) as an alternative processing pathway for hard-rock resources. By selectively targeting lithium rather than digesting the bulk mineral matrix, S-DLE offers the potential to simplify flowsheets, reduce chemical intensity, and improve impurity control. As a locally developed technology platform, S-DLE may provide a more practical and scalable pathway for establishing sustainable lithium refining capability in Australia."

LITHIUM RECYCLING

15:15 Perspectives on Lithium Iron Phosphate (LFP) Battery Recycling: Will Europe Follow China?

Tobias Elwert, PhD, CTO, cylib GmbH

Lithium iron phosphate cathode active chemistries are, besides layered oxide chemistries, the most important group of cathode active materials for lithium-ion batteries. The presentation discusses the differences between the Chinese and the European market and its implications on recycling. As the Chinese market is much more mature, a special emphasis is laid on the question to what extent learnings from China can be transferred to Europe.

15:35 Afternoon Tea in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

16:05 Reducing the Risk of Recycling Industrialisation: Developments on Direct Recycling and Deactivation

Steve Sloop, PhD, President, OnTo Technology LLC

Dr. Sloop will discuss a three-dimensional approach for battery materials reclamation: Deactivation, Direct Recycling, and Design. The service of lithium-ion batteries and recycling of their materials is at the forefront of the

reestablishment of the North American supply chain of critical materials refining and manufacturing. The industrialisation of this requires innovative processes and design to realize cost and safety demands for US dominance in the next generation of lithium-ion manufacturing.

ADVANCES IN DIRECT LITHIUM EXTRACTION

16:35 Direct Lithium Extraction: Tailored Technologies for Higher Yield and Purity

Jaco Bester, TS&D Specialist, Mining & Nutrition, DuPont

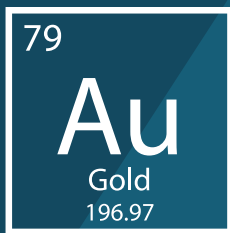
This presentation highlights how DuPont's sorbent, ion exchange, nanofiltration, and reverse osmosis technologies work together to streamline Direct Lithium Extraction, enabling higher sorbent productivity, reliable high-purity output through divalent ion removal, and ultra-high lithium concentration via efficient dewatering. Attendees will see how optimized process sequencing and data-backed design insights can reduce processing complexity, improve product quality, and accelerate commercialization timelines.

17:05 Advancing Direct Lithium Extraction: Demonstrated High Recovery, High Purity, and Low Water Use

Katerina Kryst, PhD, Senior Vice President, Technology, Summit Nanotech

Summit Nanotech's direct lithium extraction (DLE) process combines its proprietary eLIVATE sorbent with a sequenced column approach to achieve high lithium recovery, high impurity rejection, and low water use. Validated field data from a South American demonstration system, supported by pilot data from additional South and North American brines, confirm that these performance outcomes are achievable beyond the lab, providing a scalable and environmentally responsible path for lithium production.

17:35 Close of the Lithium Track



GOLD AND PRECIOUS METALS

Innovations in Ore Processing, Recovery, and Refining

7 May 2026

THURSDAY 7 MAY

8:00 Registration Open

8:00 Arrival Tea and Coffee in the Exhibit Hall with Poster Viewing
(Sponsorship Opportunity Available)

8:50 Organiser's Remarks

PRICING AND PRODUCTION EXPANSION

8:55 Chairperson's Remarks

Paul Breuer, PhD, Principal Research Scientist, CSIRO Mineral Resources

9:00 Value through Disruption: The Case for Gold & Silver
Gustavo Gomes, Founder, Terranova Holdings

This session explores recent global instability driving abnormal gold and silver demand through ETFs and national reserve rebuilding, especially in MENA and China. With potential U.S. dollar replacement and prices doubling year-on-year, opportunities arise via asset reshuffling, new entrants, and tech-driven value creation. Yet, high prices risk poor cost control and overpriced M&As. Smart management remains key—cycles always return, even in gold's seemingly unstoppable boom.

LEACH METHODS AND ADVANCEMENTS

9:30 The Seabridge Process Gold Recovery from Pyrite Concentrates Using Thiosulfate Leaching

David Dreisinger, PhD, Professor, Materials Engineering, University of British Columbia

The Seabridge Process for Gold Recovery from Pyrite Concentrates uses thiosulfate leaching followed by gold precipitation from solution and thiosulfate recycle. Gold may be precipitated from the leach solution using a range of precipitants including copper concentrate, ferrous sulfate, and sodium hydrosulfide. The latest results and flowsheet developments will be presented and discussed.

10:00 CSIRO Sustainable Gold Cyanidation Technology

Xianwen Dai, PhD, Senior Research Scientist, CSIRO Mineral Resources

CSIRO has developed a patented technology that improves the sustainability and economics of the gold cyanidation process through enhanced gold recovery and improved cyanide recycling. The process chemistry and economics have been validated through a month-long continuous bench scale mini-piloting. This innovative and patented technology is now ready for pilot scale demonstration in the field (TRL 4).

10:30 Morning Tea in the Exhibit Hall with Poster Viewing
(Sponsorship Opportunity Available)

11:00 Evaluating a Novel Roast-Leach Flowsheet for PGM Concentrates Using Alkaline Glycine

Bradley Schwehr, PhD, Research Fellow, Curtin University

The refractory nature of PGM concentrates necessitates aggressive oxidative chlorination or smelting, limiting the applicability of benign lixiviants like glycine, despite glycine's favourable alkaline selectivity and compatibility with Pd/Pt coordination chemistry. This presentation evaluates a novel roast-leach process flowsheet designed to leverage the selectivity of glycine leaching for PGM recovery, enabled by targeted thermal pretreatment.

11:30 25 Years On: An Update on the Platsol Process

James Brown, Manager, Extractive Metallurgy, SGS Group Management Ltd.

The Platsol process, developed in the 1990s at Lakefield Research (now SGS) by International PGM Technologies Ltd., was designed to treat Polymet Mining's NorthMet copper-nickel-PGM concentrate. This high-temperature, pressure oxidative leach process enables extraction of both base and precious metals from sulphide concentrates. This presentation provides an update on the process and shares recent test results confirming Platsol remains a technically viable option for treating PGM-bearing sulphide concentrates.

12:00 How Thiosulfate is a Commercial Alternative to Cyanide for Gold Processing

Paul Breuer, PhD, Principal Research Scientist, CSIRO Mineral Resources

Several operational advancements to the thiosulfate technology invented by CSIRO, being commercialised by Clean Mining, have been achieved in recent years. These include the ability to treat a broader range of materials, such as gravity and flotation/sulfide concentrates, and replacing the use of mercury by artisanal and small gold miners. The commercial case for thiosulfate becomes evident when the economic assessment is made for the life of mine.

12:30 Sponsored Presentation (Opportunity Available)

13:00 Networking Luncheon (Sponsorship Opportunity Available)

PROCESS OPTIMISATION AND TECHNOLOGY

14:00 Chairperson's Remarks

David Dreisinger, PhD, Professor, Materials Engineering, University of British Columbia

14:05 Enhancing Gold Leaching Efficiency and Safety through Advanced Sensor Technology

Taylor McKertich, Mining Industry Manager, Endress & Hauser Australia Pty. Ltd.

Gold leaching operations face critical challenges in maintaining optimal pH and dissolved oxygen levels to maximise recovery while ensuring safety in cyanide environments. This presentation will showcase how advanced sensor technologies—Memosens CPS47D for pH and COS81D for dissolved oxygen—have transformed process control at various gold mines across the world, including in Western Australia, reducing maintenance, improving reliability, and minimizing operator exposure to hazardous conditions.

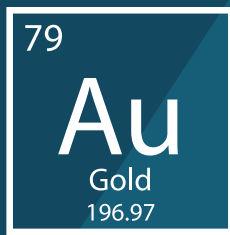
14:35 Between a Rock and a Hard Place: Why Rejecting HPGR Recycle is the Smarter Path

Grant Wellwood, PhD, Principal, Wellwood Associates

HPGR circuits challenge metallurgists: although energy-efficient, high circulating loads become bottlenecks, forcing fresh feed reductions of over 50%. Traditionally treated as unfinished material, recycle streams were analysed using causal loop modelling and a year of high-frequency data. Results show the recycle stream has a higher Bond Work Index, indicating hard, unmineralized waste. Rejecting or sorting this fraction can unlock higher throughput and gold production, while reducing wasted comminution energy.

15:05 A Review of Aachen High Shear Reactors in Gold Tailings Retreatment Processes

Wiehan Botes, Process Manager, Metallurgy, Maelgwyn Mineral Services Africa



GOLD AND PRECIOUS METALS

Innovations in Ore Processing, Recovery, and Refining

7 May 2026

The Aachen High Shear Reactor, a highly efficient oxygen mass transfer and shear device, has been widely implemented in the gold industry and is gaining substantial traction in tailings reprocessing. Maelgwyn South Africa currently operates Aachen reactors across four tailings retreatment plants in South Africa. This presentation provides an overview of the application of Aachen reactors in tailings retreatment and highlights the operational benefits observed in the South African context.

15:35 Afternoon Tea in the Exhibit Hall with Poster Viewing

(Sponsorship Opportunity Available)

16:05 Optimisation Opportunities in Gold Processing Plants Using PhotonAssay

Joel Chuah, Manager, Technical Services, Chrysol Corporation Limited

PhotonAssay provides rapid, non-destructive gold analysis with significantly faster turnaround than fire assay. Near real-time results enable improved process control opportunities. Additionally, the larger sample mass used in PhotonAssay reduces sampling error, delivering more representative data for metallurgical accounting and reconciliation. These capabilities support enhanced operational efficiency and decision-making in gold processing plants.

16:35 The Aachen High Shear Reactor: Redefining Oxygen Transfer in Gold Processing

Reinhardt Weideman, Application Engineer, Maelgwyn Mineral Services Africa

Oxygen plays a vital role in gold cyanidation, governing leaching kinetics and overall recovery. Conventional sparging methods often deliver low volumetric mass transfer coefficients (kLa), resulting in poor oxygen utilisation and limited gold dissolution, particularly in slurries containing high oxygen-consuming minerals. The Aachen High Shear Reactor introduces intense gas-liquid dispersion and enhanced mass transfer, redefining oxygen delivery within gold leaching circuits to improve kinetics, efficiency, and overall process performance.

17:05 Gold: Insights from Geochemistry for Discovery to Processing

Maryam Abdus-Salam, PhD, Researcher, Mineral, Microbes, Solution and Metals Laboratory, Monash University

Our group integrates state-of-the-art experimental and modelling approaches to decipher the fundamental geochemical processes that form – and destroy – ore deposits. Recent advances include showing how earthquake-induced piezoelectricity can form high grade gold, or how sulfide precipitation mechanisms control the distribution of Au grade. We translate these fundamental approaches into geometallurgy, e.g. providing a new framework for pyrite-chalcopyrite galvanic interactions. We bridge discovery and recovery for complex, low-grade resources.

17:05 Close of the Gold and Precious Metals Track

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