

# Conference Program

#ALTA2020online



**Nickel-Cobalt-Copper,  
Uranium-REE, Gold-PM,  
In Situ Recovery,  
Lithium & Battery Technology**

**CONFERENCE & EXHIBITION**

***ALTA** - a leading platform for innovation since 1995*

live online 9-27 November | on-demand until March  
25th annual event

Thank you to our partners and co-sponsors



[www.altamet.com.au](http://www.altamet.com.au)



**ALTA 2020** 25  
ONLINE NOVEMBER

## conference program

technical sessions, short courses and webinars

All times are listed AWST (Perth) with recordings of all technical content available on-demand until March 2021

#ALTA2020online

### message from the Chair



We invite you to join us at **ALTA 2020 Online**, our **25th annual conference**. We are excited to present another outstanding technical program to the metallurgical industry.

For the past 25 years we have provided a dynamic forum for sharing ideas, innovations, technologies and projects. ALTA and the industry have come a long way since our first conference in 1995, but our focus on the importance of metallurgical innovation remains the same. In recent years the program has expanded to include the hot topics of Lithium Processing, Battery Technology and In-Situ Recovery, and to reflect the rapidly developing field of battery metals. This year we are offering six practically-oriented short courses, the presenters drawing from extensive industry experience.

Panel discussions have always been a key feature of ALTA conferences, and delegates will continue to benefit from this valuable knowledge sharing, discussion and debate with key industry representatives from around the globe. By publishing the detailed panel notes and making them freely available, ALTA continues to lead the way in facilitating open discussion to benefit the wider industry.

The conference is designed to be accessible to participants in all time zones, while being presented live in Perth time (AWST). Presentations, panel discussions, short courses and webinars will be available for on-demand viewing from the day of presentation until March 2021. Presenter Q&A chat will remain live for the duration of the conference, providing ongoing opportunity for meaningful discussion.

We thank our opening and keynote speakers and all our presenters for their contribution to this excellent program. We also recognise the important role of our partners, co-sponsors, sponsors and exhibitors.

#### Alan Taylor

Conference Founder and Chair  
Managing Director and Metallurgical Consultant  
ALTA Metallurgical Services

### about the conference

**ALTA 2020 Online** is a world-class annual metallurgical conference and a leading platform for innovation.

We are pleased to partner with **CSIRO Mineral Resources** for the In-Situ Recovery Conference and **Curtin Gold Technology Group** for the Gold-PM Conference. The Uranium-REE and In-Situ Recovery Conferences, and Uranium Processing short course are organised in co operation with **International Atomic Energy Agency**.

The value-packed program comprises five conferences, five panel discussions, six short courses, three webinars, virtual exhibition and networking.

This digital version of this highly regarded annual conference makes it easy for you to participate from anywhere in the world.

The emphasis of the carefully crafted program is practical rather than academic, and the themes running through the conference are the various aspects of technology and project development.

This is an outstanding platform for discovering the latest worldwide developments in plant operations, process technology, new projects, testwork and scale-up, process modelling and control systems, application of mineralogy and geomettallurgy, R&D, equipment, reagents, materials, tailings disposal and environmental alleviation.

### what do people say about ALTA?

"Undoubtedly, this is the premier conference of its' type in our industry"

"Bottom line – I think ALTA is pretty much the best technical conference I've found."

"This must be one of the most professional conferences on the calendar in our field and certainly the best organised."

"It is always a feast for a metallurgist to attend an ALTA conference."

"It is clear that ALTA remains the gold standard for conferences in the field of hydrometallurgy."

"If one is into the hydrometallurgy of Ni-Co-Cu, U-REE, Li, Gold-PM, this is the annual conference to attend."

"The sessions exceeded the highest expectations with pertinent and practical presentations and discussions, knowledgeable industry representatives and service providers with appropriate products."

"ALTA is not only a knowledge hub, but also a gathering place for Hydromet operators and suppliers, exchanging knowledge in the ongoing efforts."

"In hard-nosed financial terms, it pays for itself by many orders of magnitude – in good times and bad times."

Over the past 24 years, 3,471 people from 66 countries have attended ALTA conferences 6,410 times - a true testament to the quality of this world-class annual metallurgical event. [read our Testimonials](#)



## How will it work?

Our innovative online **Community**, the hub of the conference, will open 1 October. The Lobby welcomes you with announcements and the daily agenda. From there, delegates can access sessions, papers, panels discussions, Q&A, webinars, the virtual exhibition and networking.

This event is designed to be **accessible to participants in all time zones**, while being presented live in Perth time (AWST) **9-27 November**. All content will be available for on-demand viewing until March 2021. Presenter Q&A chat will remain live for the duration of the conference, providing ongoing opportunities for meaningful discussion.

The Community offers a variety of **networking features**, including:

- Intelligent Networking: Your personal networking service suggesting connections based on delegate activity and profile.
- Delegate List: Search and identify connections by mutual areas of interest (this feature is yet to be released).
- Presenter Q&A: Technical sessions with Q&A chat box and presenter email.
- Panel Discussions: Live panel discussions with Q&A chat to encourage delegate interaction with industry experts.
- Virtual Expo: Connecting with exhibitors and sponsors via live chat or video meeting table.
- Social Functions: Virtual gatherings in an informal setting.

**Visitors are welcome!** If you are unable to join the technical sessions, book a **free pass** to access webinars and the expo.

## entitlements

The technical program is the foundation of ALTA conferences and we are excited to present a value-packed offering for our online event. Your registration includes:

- Keynote presentations and live Q&A discussions (recordings available on-demand for 4 months)
- Technical presentations with Q&A chat (recordings available on-demand for 4 months)
- Live panel discussions with industry experts, including Q&A (recordings available on-demand for 4 months)
- Papers during the conference and e-proceedings book after the conference
- Live technical webinars (recordings available on-demand for 4 months)
- Virtual exhibition including interaction with industry experts
- Networking with other attendees, presenters, exhibitors and sponsors

## registration

We invite you to participate from the convenience of your home or office.

- [Register here](#). Fees are listed in Australian dollars and include 10% GST
- Payment options include credit card and bank transfer
- Each registration includes a **single-user license** for **one delegate** to access sessions and papers.
- Sharing registrations is prohibited – contact ALTA for group rates.
- To access discount, self-funded and presenter rates [contact ALTA](#) for coupon code
- For general conference information, visit [FAQs](#)
- Terms & Conditions available on the [conference website](#)



**ALTA 2020** 25  
ONLINE NOVEMBER

## conference program

technical sessions, short courses and webinars

#ALTA2020online

All times are listed AWST (Perth) with recordings of all technical content available on-demand until March 2021

thank you to our sponsors, exhibitors, co-sponsors and partners

### sponsors

**EKATO**

**LANXESS**  
Energizing Chemistry

**NobelClad**

**Air Liquide**  
creative oxygen

**Purolite**

**ENVIRO  
COPPER**  
THE INVISIBLE MINE

**Jordproxa**  
future focused

**MOGAS**  
SEVERE SERVICE BALL VALVES

**BASF**  
We create chemistry



**SOLVAY**  
asking more from chemistry®

**KOCH KNIGHT**

**mhworth**

**Metso:Outotec**

**ANSTO**

**AMERICAN  
ELEMENTS**  
THE ADVANCED MATERIALS MANUFACTURER®

### exhibitors

**JENIKE**  
SCIENCE ENGINEERING DESIGN

**matec**  
pacific

**CG  
IS**  
The World's Best Values®

**CORE**

**CSIRO**

**SysCAD**

**PQ Corporation**

**Diemme  
Filtration**  
A brand of  
Aquepace Group

**CLEAN  
TEQ**  
Powering Innovation

**MEI**

**OLI**  
systems, inc.

**SUNRESIN**

**DUPONT**

**ALTA**

Water Solutions

### partners and co-sponsors

**SAIMM**  
THE SOUTHERN AFRICAN INSTITUTE  
OF MINING AND METALLURGY

**IAEA**  
International Atomic Energy Agency

**CSIRO**

**FUTURE  
BATTERY  
INDUSTRIES** CRC

**amira**

**Curtin University**

**COM 2020**  
CONFERENCE OF METALLURGISTS  
MET+SOC

**URANIUM 2020**

**AusYGN**

**MEI**

**IM** INTERNATIONAL  
MINING

**COPPER  
WORLDWIDE**



**ALTA2020** 25  
ONLINE NOVEMBER

#ALTA2020online

## conference program

technical sessions, short courses and webinars

All times are listed AWST (Perth) with recordings of all technical content available on-demand until March 2021



**ALTA2020** 25  
ONLINE NOVEMBER

## Program Overview

### Week 1 : 9-13 November

Virtual Exhibition

Monday 9	Short Course: A-Z of Copper Ore Leaching
Tuesday 10	<b>Nickel-Cobalt-Copper Conference</b>
Wednesday 11	<b>Nickel-Cobalt-Copper Conference</b>
Thursday 12	<b>Nickel-Cobalt-Copper Conference</b> Hydromet Processing of Ni-Co-Cu Sulphides Forum, Panel, Q&A
Friday 13	Short Course: The ART of HPAL - The Way to Success

Social: Trivia Night

Webinar: BASF

Webinar: JordProxa

### Week 2 : 17-20 November

Virtual Exhibition

Tuesday 17	Short Course: Uranium Ore Processing
Wednesday 18	<b>Uranium-REE Conference</b> Application of Membranes Forum, Panel, Q&A
Thursday 19	<b>In-Situ Recovery Conference</b> Application of ISR to Copper Forum, Panel, Q&A
Friday 20	Short Course: SX and its Application to Cu, U and Ni-Co

### Week 3 : 23-27 November

Virtual Exhibition

Monday 23	Short Course: Design of Successful Bulk Flow Systems for Hydromet Operations (Part 1)
Tuesday 24	Short Course: Design of Successful Bulk Flow Systems for Hydromet Operations (Part 2)
Wednesday 25	<b>Gold-PM Conference</b> Cyanide Alleviation & Alternative Lixiviants Forum, Panel, Q&A
Thursday 26	<b>Lithium &amp; Battery Technology Conference</b> Trends in Battery Technology Forum, Panel, Q&A
Friday 27	Short Course: Lithium Processing

Webinar: LANXESS

Social: Draws & Prizes

5 conferences ♦ 110 papers ♦ 5 panels ♦ 6 short courses ♦ 3 webinars

[view program and abstracts](#)



## keynote speakers

### Conference Opening



#### Prof Jacques Eksteen

Chief Operating Officer  
and Research Director  
Future Battery Industries CRC  
(Australia)

[view full bio and abstract](#)

*A Research-Based Strategy for Establishing Australia as a Leading Player in the Emerging Global Battery Industry*

### Nickel-Cobalt-Copper Keynote



#### John Neale

Technical Specialist  
Mintek (South Africa)

[view full bio abstract](#)

*Bioleaching of Nickel and Cobalt - The Progress and The Potential*

### Uranium-REE Opening



#### Martin Fairclough

Uranium Specialist, Uranium  
Resources and Production  
International Atomic Energy Agency  
(Austria)

[view abstract](#)

*The Role of Unconventional Uranium Resources*

### Uranium-REE Keynote



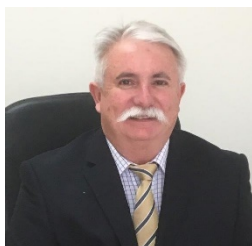
#### Darryl Butcher

Director  
BDB Process (Australia)

[view full bio and abstract](#)

*Review of Membrane Technology as a Process Tool*

### In-Situ Recovery Keynote



#### Leon Faulkner

Managing Director  
EnviroCopper Ltd (Australia)

[view full bio and abstract](#)

*Opportunities and Challenges for Copper ISR – Kapunda CRC-P as an Example*

### Gold-PM Keynote



#### Karel Osten

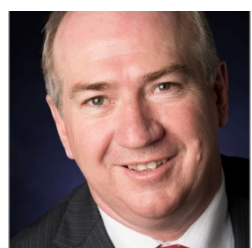
Independent Consultant  
METTKO Pty Ltd (Australia)

[full bio and abstract](#)

*POX – Has it Reached its Full Potential, or is There Still Room for Improvement for Treating Refractory Gold Ores?*

### Lithium & Battery Technology Keynote

*Establishing Australia's Battery Industry Supply Chain*



#### Prof Peter Talbot

The Centre for Clean Energy  
Technologies and Practices,  
Queensland University of  
Technology (Australia)

[view full bio and abstract](#)



### short courses

#### A-Z of Copper Ore Leaching

Monday 9 November

7:00am – 2:15pm AWST

**Alan Taylor**

Metallurgical Consultant and Managing Director, ALTA Metallurgical Services (Australia)

[Course outline](#)

#### The ART of HPAL

Friday 13 November

7:00am – 12:00pm AWST

**Dr Naoyuki Tsuchida**

Research Advisor, Institute of Industrial Science, The University of Tokyo (Japan), former Director and Senior Managing Executive Officer, Sumitomo Metal Mining

**Fumio Iwamoto**

President, Japan Metal Consulting (Japan), former Executive Chief Engineer, Sumitomo Metal Mining

[Course outline](#)

#### Uranium Ore Processing

Tuesday 17 November

7:00am – 2:15pm AWST

**Alan Taylor**

Metallurgical Consultant and Managing Director, ALTA Metallurgical Services (Australia)

[Course outline](#)

#### SX and its Application to Copper, Uranium & Nickel-Cobalt

Friday 20 November

7:00am – 2:15pm AWST

**Alan Taylor**

Metallurgical Consultant and Managing Director, ALTA Metallurgical Services (Australia)

[Course outline](#)

#### Design of Successful Bulk Flow Systems for Hydromet Operations

Part 1: Monday 23 November

Part 2: Tuesday 24 November

Part 1: 6:45am – 11:00am AWST

Part 2: 6:55am – 11:00am AWST

**Corin Homes**

Operations Manager, Jenike & Johanson (Australia)

**Eric Maynard**

Vice President and Director of Education, Jenike & Johanson (USA)

[Course outline](#)

#### Lithium Processing

Friday 27 November

7:00am – 3:00pm AWST

**Damian Connelly**

Principal Consulting Engineer, METS Engineering (Australia)

**Dr Dennis Yan**

Consulting Metallurgist, METS Engineering (Australia)

[Course outline](#)



IN YOUR  
ELEMENT!

# 2019/20 PORTFOLIO

## The following summarises the testwork we undertook in 2019/20

Sample Storage (Long Term – Atmospheric)	750m2	Flotation Pilots	3
Sample Storage (Long Term – Cold Room)	20m2	Bulk Float Test	3
Pilot Plant Operational Area – 750m2	750m2	Repair Lab Float Machine	1
Bulk Filtration of Slurries (1000m3)	2	Precipitation Tests	45
HIT Comminution Tests	90	IX Tests	16
Continuous Leach, IX, Crystallisation Pilots	3	SX Tests	22
Grind Determinations	53	Crystallisation Tests	5
Sizings	126	Thickening Testwork	4
Cyclosizing	61	Plate and Frame Filter Trials	2
Cycloning Trials	21	Roasting Trials	2
Tailing Retreatment Projects	3	Heat Treatment of Imported Samples	1
Reflux Classifier Tests	2	Bulk Grinds	2
Continuous Atmospheric Leach Pilots	1	Liquor Assays	1455
Manufacture CIL Pilot Leach Circuit	2	Solid Assays	3642
Laser Sizing	23	Assay Digests	2619
BBMWI	3	QXRD Analyses	298
BRMWI	1	Gas Assays	16
Regrind Tests	28	MLA	2
Flotation Tests	174	Written Technical Reports	11
Atmospheric Leach Tests	74		

**Chris Bucknell**  
Laboratory Manager  
288 Musgrave Road, Coopers Plains  
QLD 4108  
chris@brismetlab.com.au | 0417 445 514







Tuesday 10 November

### Nickel-Cobalt-Copper Conference

Thank you to our sponsor



7:30am

Virtual Expo and Networking

Welcome and Opening Address

8:00am

**Welcome from the Chair**

Alan Taylor, Conference Founder & Chair, Managing Director & Metallurgical Consultant, ALTA Metallurgical Services (Australia)

**Sponsor Welcome**

Andrew Bekle, Account Manager, Solvay (Australia)

8:10am

**Opening Address: A Research-Based Strategy for Establishing Australia as a Leading Player in the Emerging Global Battery Industry**

Prof Jacques Eksteen, Chief Operating Officer and Research Director, Future Battery Industries CRC (Australia)

Keynote Address

8:35am

**Keynote Address: Bioleaching of Nickel and Cobalt - The Progress and The Potential**

John Neale, Technical Specialist, Mintek (South Africa)

EV Implications

9:10am

**A Metallurgical Evaluation of the Transition to Electric Vehicles**

Mike Dry, Arithmetek Inc (Canada); Bryn Harris, NMR360 Inc (Canada)

9:35am

**Energy and Emission Performance of Lithium Ion Battery Powered Vehicles**

Peter Jolly, Consultant (Australia)

10:00am

Morning Tea Break - Virtual Expo and Networking

Precursor Products

10:20am

**Market Outlook for Battery Grade Nickel Sulphate and Implications of Varying Product Specifications**

Nipen M. Shah, John J. Warner, JordProxa Pty Ltd (Australia)

10:45am

**Nickel Sulfate for Lithium-Ion Batteries – How Alternative Production Pathways Impact Greenhouse Gas Intensity**

Sam Spencer, Simon Donegan, Clean TeQ Limited (Australia); Rob Rouwette, Energetics Pty Ltd (Australia)

11:10am

**Critical Control Points - The Key to EV Chemical Quality and Value Chain Productivity?**

Corin Holmes, Jenike & Johanson (Australia)

Nickel-Cobalt Process Innovation

11:35am

**Nickel Slag Leaching Evaluation at Laboratory Batch and Continuous Pilot Level (cancelled)**

Chad Czorny, (Former) SGS Mineral Metallurgy (Australia); James McQuie, Lourdes Valle, BHP Nickel West (Australia); Niels Verbaan, SGS Lakefield (Canada)

12:00pm

Lunch Break - Virtual Expo and Networking

Copper Process Innovation

12:40pm

**A Brief History, and Future, of Process Innovation in Copper**

Richard Macoun, Consultant, Australia

1:05pm

**Copper Slag Waste Resource Potential For A Circular Economy: A Review**

Tina Phiri Chanda, Pritam Singh, Aleksandar Nikoloski, Faculty of Energy and Engineering, Murdoch University (Australia)



**ALTA 2020** <sup>25</sup>  
ONLINE NOVEMBER

#ALTA2020online

## conference program

technical sessions, short courses and webinars

All times are listed AWST (Perth) with recordings of all technical content available on-demand until March 2021

**Tuesday 10 November** (continued)

### Nickel-Cobalt-Copper Conference

Thank you to our sponsor



Ion Exchange

- 1:30pm **Resin in Pulp Processing Equipment**  
Jeff Claflin, Stephen La Brooy, **Thomas Heinzle**, Ausenco (Australia); Darryl Butcher, BDB Process (Australia)
- 1:55pm **Advanced Ion Exchange: Selective Recovery and Purification of Zinc Sulfate and Cobalt Leach Solutions**  
**Les-Lee Thompson**, Chimerical Technology (South Africa); Steve Colley, PQ Corporation (United Kingdom)
- 2:20pm **Afternoon Tea Break - Virtual Expo and Networking**
- 2:40pm **Nickel- and Cobalt-Concentrate Purification by Solvent Impregnated Ion Exchange Resins: A Case Study**  
**Dirk Steinhilber**, Beryn Adams, LANXESS (Germany); Naomi Sourour, Vale Canada Ltd (Canada)
- 3:05pm **Heap Leach Solution Transport Modelling for Improved Process Control and Production Forecasting**  
**Oliver Kloiber-Deane**, Element Process (Australia)
- 3:30pm **Dry Stacking of Tailings by 3D Printing**  
**Tim Graham**, Tim Graham, Atom Minerals (Australia)
- 3:55pm **Opening Social Event: Trivia Quiz**

Heap Leaching

Tailings



**Autoclave Feed Pumps**  
for your  
HPAL Challenges

Visit our ALTA booth to learn more

MHWirth is a pioneer in slurry pump technology and has been manufacturing piston diaphragm slurry pumps for more than 45 years. More than 1 000 positive displacement pumps have been built with power ratings of up to 3 000 kW.

Our unique features reduce vibrations and fatigue wear, extending the pump's availability and lifetime:

- MHWirth's pulse reduction system (PRS)
- MHWirth's telescopic expansion joint system (for HPAL applications)

MHWirth slurry pumps perform successfully in numerous projects worldwide in various applications:

- Autoclave and digester feed
- Tailings transport
- Pipeline slurry transfer

[mhwirth.com](http://mhwirth.com)





Wednesday 11 November

## Nickel-Cobalt-Copper Conference

Thank you to our sponsor



7:30am Virtual Expo and Networking

Welcome to Day Two

8:00am Welcome from the Chair

Alan Taylor, Conference Founder & Chair, Managing Director & Metallurgical Consultant, ALTA Metallurgical Services (Australia)

Laterites

8:10am The ART of HPAL

Naoyuki Tsuchida, The University of Tokyo (Japan); Fumio Iwamoto, Japan Metal Consulting Ltd (Japan); Takeshi Yokoyama, TY Consulting (Japan)

8:35am Update on the Performance of the Ramu Nickel Operation in Papua New Guinea

Gao Yong Xue, Ramu Nickel Limited (Papua New Guinea); Peter Jolly, Consultant (Australia)

9:00am Improved Paste Pumping to HPAL Storage Tank at Murrin Murrin Operations

Jie Wu, Lachlan Graham, Dean Harris, Greg Short, Warren Bruckard, CSIRO Mineral Resources (Australia); Paul Wiltshire, Marek Pawelek, Murrin Murrin Operations Pty Ltd (Australia)

9:25am Pulse Reduction System for Autoclave Feed Pumps

Roman Jansen, Norbert Jaeger, Tony Hendriks, MHWirth (Germany); Andrew Cocks, MHWirth (Australia)

9:50am Morning Tea Break - Virtual Expo and Networking

10:10am The Case for a Chloride-Based Process for the Treatment of Nickel Laterites

Bryn Harris, NMR360 Inc (Canada)

10:35am Townsville Energy Chemicals Hub - The 'TECH' Project

Boyd Willis, John Downie, Queensland Pacific Metals (Australia)

11:00am Next Generation Laterite Processing

Elina Oksanen, Christopher Ecott, Eero Kolehmainen, Kaarlo Haavanlammi, Janne Karonen, Metso Outotec (Finland) Oy (Finland)

11:25am Continued Development of NiWest Ni Laterite Project - NiWest Solution Neutralisation, FE/AL Removal and Direct Solvent Extraction Continuous Piloting

David Readett, Mworx (Australia); Jamie Sullivan, GME Resources (Australia)

11:50am Lunch Break - Virtual Expo and Networking

12:30pm Jervois' Nico Young Ni Laterite Project – Development of a Ni Laterite Heap Leach

David Readett, Mworx (Australia); Michael Rodriguez, Jervois Mining (Australia)

12:55pm In-Situ Recovery - Emerging Technology for the Extraction of Nickel and Cobalt from Laterite Deposits

Maxim Seredkin, CSA Global Pty Ltd (Australia); Mikhail Savenya, Sergey Sukleta, UGTC Ltd (Russian Federation)

Solvent Extraction

1:18pm Commercialization of Acorga® CR60 Crud Mitigation Reagent in North America and Central Asia

Bravo Mbao, Solvay EMEA & APAC (Zambia); Aidar Argyn, Solvay EMEA (Kazakhstan); Laurent Cohen, Luis Moya, Tyler McCallum, Owen Tinkler, Solvay USA (USA); Aizharyk Berdaliyev, KAZ Minerals (Kazakhstan)

1:45pm Silica Issues Versus Copper Solvent Extraction Plant Design

G. Mitshabu, K. Tshenye, BASF (South Africa); J. Anderson, P. Haig, BASF (Australia); M. Mishra, Chemaf (DRC); P. Ilunga, MMG Kinsevere (DRC)

**Wednesday 11 November**

**Nickel-Cobalt-Copper Conference**

Thank you to our sponsor



2:10pm **Afternoon Tea Break - Virtual Expo and Networking**

2:30pm **Silica Management in a Copper Solvent Extraction Plant - MMG Kinsevere Case Study**  
 Laetitia Tartibu, Patient Ilunga, Francis Banze, William Elongo, Jean Rodrigues Nkomba, Yannick Makola, Ryan Whyte, MMG Kinsevere (DRC); Nigel Thiel, Kevin Rees, MMG Australia (Australia); Daniel Verwey, Tshikele Mukongo; Protea Chemicals (South Africa); Delphin Muteba, Guy Banza, Solvay (DRC)

2:55pm **Copper and Cobalt Recovery from Tailings Leach Plant Solutions - A Case of a Leach Plant on the The Copperbelt of Zambia**  
 Milton Simukoko, Mwansa Mibenge, Credo Nguni, Charles Zulu, Field Kondowe, Konkola Copper Mines plc (Zambia); Leonard Kabondo, The Copperbelt University (Zambia)

**Webinar**

3:20pm Pilot and Full-Scale Trials for BASF LixTRA™ Leaching Aid Reagent  
 presented by **BASF**

**EKATO**

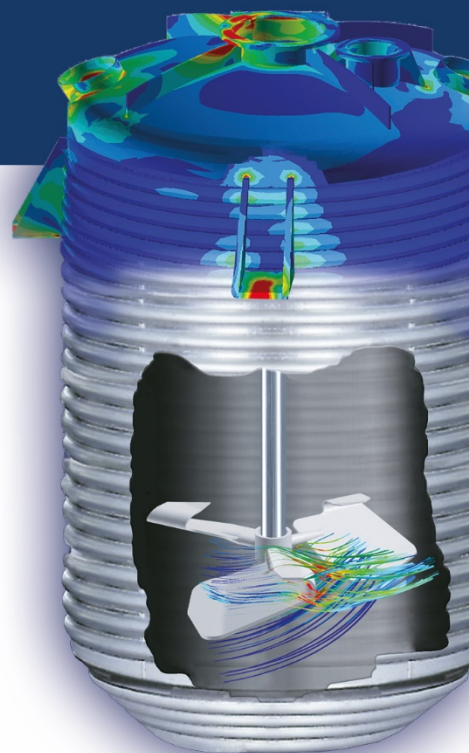
**WORLDWIDE MARKET LEADER IN MIXING TECHNOLOGIES**

- Customized solutions for the process oriented industries
- R&D center with most modern equipment
- Wide range of engineering services
- 24h service worldwide

Headquarters in Germany:  
 EKATO Rühr- und Mischtechnik GmbH  
 +49 7622 29-0 / info@ekato.com

Local contact in Australia:  
 EKATO Corporation  
 +61 8 9314 2388 / australia@ekato.com

**www.ekato.com**







Thursday 12 November

### Nickel-Cobalt-Copper Conference

Thank you to our sponsor



7:30am Virtual Expo and Networking

Welcome to Day Three

8:00am Welcome from the Chair

Alan Taylor, Conference Founder & Chair, Managing Director & Metallurgical Consultant, ALTA Metallurgical Services (Australia)

Solvent Extraction (continued)

8:10am Acid Removal by Solvent Extraction for use in Electrolyte to Neutral Aqueous Systems

Jack Bender, Noah Oliver, Tim McDonald, Rebecca Copp, Chase Wadded, BASF Corp (USA); Peter Haig; BASF (Australia)

Deep Sea Nodules

8:35am Deep-Sea Polymetallic Nodule Mining and Processing

Alexander Sutherland, Henry Von Schroeter, Jeffrey Donald, Hatch (Canada)

9:00am Harvesting Nodules from the Seabed Surface and Extracting Cobalt, Nickel, Copper and Manganese

Colin Seaborn, Ocean Minerals LLC (Australia); Hans Smit, John Halkyard, Ocean Minerals LLC (USA)

Filtration

9:25am How Very Large Filter Presses such as the GHT5000 will Influence the CAPEX and the OPEX of Tailings Filtration Plants

Andrew Hawkey, Diemme Filtration (Aqseptence Group Srl) (Australia); Davide Cavalli, Diemme Filtration (Aqseptence Group Srl), (Italy); Tom Marshall, GR Engineering Services Limited (Australia)

9:50am Morning Tea Break - Virtual Expo and Networking

10:10am Performances Improvement with High Pressure Plate and Press Filters

Edoardo Sommacal, Matec Pacific (Australia)

Forum: Hydromet Processing of Ni-Co-Cu Sulphides

10:35am Comparison of Methods for Sulphide Processing in Nickel Laterite HPAL Plants

Hermann Scriba, LiNiCo Pty Ltd (Australia)

11:00am Re-Treatment of Tailings Using Chloride-Based Processing

Bryn Harris, NMR360 Inc (Canada); Mike Dry, Arithmetek Inc (Canada)

11:25am Efficient Recovery of Cobalt from Pyrite - Update on COB Process Development

Andrew Tong, Cobalt Blue Holdings Pty Ltd (Australia)

11:50am Lunch Break - Virtual Expo and Networking

12:30pm Flowsheet Development for the Conversion of Nickel Concentrate to Nickel Sulphate – IGO's Proactively Green Approach to Produce Critical Materials for the Clean Energy Revolution

C. Ward, Z. Hearne, C. Tiemann, P. Gouteff, IGO Limited (Australia)

12:55pm Versality of Metso Outotec's BIOX® Processes – Positioning of the MesoTherm™ Technology for Base Metal Sulphide Applications

Craig van Buuren, Jakolien Strauss, Jan van Niekerk, Metso Outotec (South Africa)

1:20pm Copper Nickel Separation Challenges and Flowsheet Development

Damian Connelly, METS Engineering Group Pty Ltd (Australia)

**Thursday 12 November (continued)**
**Nickel-Cobalt-Copper Conference**

Thank you to our sponsor



1:45pm

**Atmospheric Leaching of Copper Pressure Leach Residue**

Nico Groenewald, Grant Summerton, Anglo American Technical Solutions (South Africa)

2:10pm

**Afternoon Tea Break - Virtual Expo and Networking**

2:30pm

**Global Copper Value Chain Trends and Complex Concentrates Processing Challenges 2020-2025**

Carlos R. Risopatron, International Copper Study Group (Portugal)

2:55pm

**Panel discussion and Q&A: Hydromet Processing of Ni-Co-Cu Sulphides**

Panel Chair: Alan Taylor, Managing Director &amp; Metallurgical Consultant, ALTA Metallurgical Services (Australia)

3:55pm

**Webinar**

 Crystallisation for Battery Chemicals: Chemistry, Purity and Energy Efficiency  
 Part 1: Fundamentals of Crystallisation

 presented by [JordProxa](#)

4:30pm

**Webinar**

 Crystallisation for Battery Chemicals: Chemistry, Purity and Energy Efficiency  
 Part 2: What Makes Lithium Flowsheet Different?

 presented by [JordProxa](#)


# Economic Advantages of Clad Lining Systems

## PROCESSING ENVIRONMENTS RELY ON CLAD

- Nickel – HPAL Autoclaves – Ti-Clad
- Gold – POX Autoclaves – Ti-Clad
- Uranium – Alkaline Leach Autoclaves – Alloy 600 Clad







Wednesday 18 November

### Uranium-REE Conference

Thank you to our sponsor



7:30am Virtual Expo and Networking

Welcome and Opening Address

8:00am **Welcome and Highlights**

**Alan Taylor**, Conference Founder & Chair, Managing Director & Metallurgical Consultant, ALTA Metallurgical Services (Australia)

#### Sponsor Welcome

**Dr Karin Soldenhoff**, Technology Manager, ANSTO Minerals Australia)

8:10am **Opening Address: The Role of Unconventional Uranium Resources**

**Martin Fairclough**, Uranium Specialist, Uranium Resources and Production, International Atomic Energy Agency (IAEA) (Austria)

Keynote Address

8:35am **Keynote Address: Review of Membrane Technology as a Process Tool**

**Darryl Butcher**, Director, BDB Process (Australia); Contributors: Paul Boshoff, Simon Donegan, BDB Process Pty Ltd (Australia)

Sessions

9:10am **Vanadium Boom Driving Revival of By-Product Vanadium Recovery from Uranium Ores**

**Alan Taylor**, ALTA Metallurgical Services (Australia)

9:35am **Minerals Criticality Assessment from an Australian Perspective**

**David Whittle**, Mohan Yellishetty, Stuart Walsh, Zhehan Weng, Monash University (Australia); Gavin Mudd, RMIT University (Australia)

9:58am **Rare Earth Concentrate Processing and Purification Comparison and Optimization Using OLI Simulation**

**Louis de Klerk**, Northern Minerals (Australia); **Gaurav Das**, **Anthony Gerbino**, OLI Systems (USA)

10:25am **Morning Tea Break - Virtual Expo and Networking**

10:45am **Sulfuric Acid Baking of Monazite for Rare Earths**

**John Demol**, Elizabeth Ho, ANSTO (Australia); Gamini Senanayake, College of Science, Health, Engineering and Education, Murdoch University (Australia)

11:10am **Greenland Rare Earths**

**Damien Krebs**, Greenland Minerals Ltd (Australia)

11:35am **Numerical Modeling of Uranium Transport in Fractured Media (Cancelled)**

**Kurina N.M.**, **Drozko E.G.**, **Kuvaev A.A.**, FSBI Hydrospetsgeologia (Russian Federation)

12:00pm **A Guide for Testing Ion Exchange Resins**

**Dirk Steinhilber**, Stefan Neufeind, LANXESS (Germany); Lydia Tang, Rajeev Bhavaraju, LANXESS (Australia)

12:25pm **Lunch Break - Virtual Expo and Networking**

Forum: Application of Membranes

1:05pm **Development of the Tiris Uranium Project, Mauritania**

**Will Goodall**, Aura Energy Limited (Australia)

1:30pm **Commercial Application of Membranes at Kayelakera and Langer Heinrich**

**Darryl Butcher**, Paul Boshoff, Simon Donegan, BDB Process Pty Ltd (Australia)

2:00pm **Applications of Membranes in Uranium and Lithium Processing**

**Adrian Manis**, Elizabeth Ho, James Quinn, Karin Soldenhoff, ANSTO Minerals (Australia)

**Wednesday 18 November** (continued)

### Uranium-REE Conference

Thank you to our sponsor



2:25pm **Case Study: Concentration of Uranium Eluate Using Nanofiltration on an ISR Plant in Kazakhstan**  
Les-Lee Thompson, Chimerical Technology (South Africa); Adrien Deberge, Orano Mining (France)

2:50pm **Afternoon Tea Break - Virtual Expo and Networking**

3:10pm **Preventing Gypsum Scaling of Minewater RO/NF/UF Membranes**  
Stephen Chesters, Max Fazel, Gregory Gibson, Genesys International Ltd (United Kingdom)

3:35pm **Cleaning Calcium Sulfate in Mine Water Membranes**  
Stephen Chesters, Max Fazel, Gregory Gibson, Genesys International Ltd (United Kingdom)

4:00pm **Panel discussion and Q&A: Application of Membranes**

*Panel Chair: Alan Taylor, Metallurgical Consultant and Managing Director(Australia)*



### Purolite has supplied ion exchange resins to the hydrometallurgical industry for over 30 years.



Such experience ensures that we understand our clients' needs and have allowed us to custom configure our products to target specific elements of interest.

Our resins are used for the bulk recovery of metals, such as gold and uranium, either directly from the pulp (resin-in-pulp), or from partially clarified liquors (fluidised bed design) and clarified liquors.

Our wide range of chelating resins provides the desired selectivity to target specific impurities, removing these impurities to the stringent low levels demanded by modern operations and producing metal streams of high purity, and high value. Examples of customers who have benefitted from Purolite's superior products include producers of copper, battery-grade lithium and nickel and cobalt salts and metal.

[www.purolite.com](http://www.purolite.com)  
+61 (2) 8860 6560  
[sales.australia@purolite.com](mailto:sales.australia@purolite.com)





We create chemistry

**Mining Solutions** - providing solutions to the mining industry of today and for the future based on BASF's core competencies.

**Leaching Aids** - LixTRA™ provides the industry an opportunity to increase metal recovery, reduce mining costs and extend the life of the mine in an environmentally sound and sustainable manner.

**Solvent Extractants** - LIX® solvent extractants are recognized throughout the copper industry as the go to reagent for copper recovery.

**Flotation Reagents** - our customized Lupromin® formulations provide superior performance at reduced dose rates and costs.

**Flocculants** - BASF's Magnafloc® range of floccuants and coagulants are used extensively whenever the extraction process uses water or lixiviants to aid mineral and metal recovery.

**Binders** - BASF has developed Alcotac® CS, a new innovative polymer-based binder, focused on the improvement of pelletization operations especially in iron ore.

**BASF Intelligent Mine powered by IntelliSense.io** - making mining operations efficient, sustainable and safe through the combination of unique chemical and process expertise and trusted artificial intelligence solutions.

**Follow us on LinkedIn**







Thursday 19 November

## In-Situ Recovery Conference

Thank you to our sponsor



7:30am

Virtual Expo and Networking

Conference and Sponsor Welcome

8:00am

### Welcome and Highlights

**Alan Taylor**, Conference Founder & Chair, Managing Director & Metallurgical Consultant, ALTA Metallurgical Services (Australia)

### Sponsor Welcome

**Philippa Faulkner**, Business Development Manager, EnviroCopper Ltd (Australia)

Keynote Address

8:10am

### Keynote Address: Opportunities and Challenges for Copper ISR – Kapunda CRC-P as an Example

**Leon Faulkner**, Managing Director, EnviroCopper Ltd (Australia); **Philippa Faulkner**, EnviroCopper Ltd (Australia)

Forum: Application of ISR to Copper

8:45am

### Community Perceptions of Potential New Copper Mining, Kapunda, S.A.

**Tom Measham**, Simone Felton, Andrea Walton, CSIRO Land and Water, Australia

9:10am

### In-Situ Recovery of Copper Comes of Age

**Alan Taylor**, ALTA Metallurgical Services (Australia)

9:40am

### US Bureau of Mines Santa Cruz In Situ Copper Mining Project and Program

**Drummond "Dusty" Earley III**, D3 Geochem (USA); **Frank F. Roberto**, Newmont USA Ltd (USA)

10:00am

Morning Tea Break - Virtual Expo and Networking

10:20am

### High-Resolution X-ray Computed Tomography Study of Coarse Leached Particles for In-Situ Recovery Applications

**Laura Kuhar**, Belinda Godel, Tania Hidalgo, Amy Evans, Michael Verrall, CSIRO Minerals (Australia); **Andreas Beinlich**, University of Bergen (Norway); **Ken Rogers**, King River Resources Ltd (Australia)

10:45am

### Panel discussion and Q&A: Application of ISR to Copper

*Panel Chair:* **Dr Laura Kuhar**, CSIRO Mineral Resources (Australia)

Environmental

11:45am

### In Situ Recovery (ISR) - The Permitting Challenge

**Doris Hiam-Galvez**, Egardt Gerber, John Pekrul, Hatch (Canada); **Drummond Earley**, D3 Geochem (USA)

12:10pm

### Assessing the Impacts of Hydraulic Fracturing on Water Quality in the Vicinity of Well Sites in the Surat Basin, Queensland

**Simon C. Apte**, Mike Williams, Brad M. Angel, Rai S. Kookana, Josh King, Adelle Craig; CSIRO Land and Water (Australia)

12:35pm

### Trials at Depth with Vesi™ – A New Ground Water Monitoring Technology for ISR Operations

**Daniella Caruso**, Mikko Vepsäläinen, Kathie McGregor, Miao Chen, Dylan Marley, David Macedo, Tony Kilpatrick, Avi Bendavid, Luda Malishev, CSIRO Mineral Resources (Australia); **Kathryn Levingstone**, Rohan Calley, Nathan Hoskins; Heathgate Resources Pty Ltd, (Australia); **Tim Duff**, National Energy Resources Australia (NERA) (Australia)

1:00pm

Lunch Break - Virtual Expo and Networking



**ALTA 2020** <sup>25</sup>  
ONLINE NOVEMBER

## conference program

technical sessions, short courses and webinars

All times are listed AWST (Perth) with recordings of all technical content available on-demand until March 2021

#ALTA2020online

Thursday 19 November (continued)

### In-Situ Recovery Conference

Thank you to our sponsor



Modelling

1:40pm **Informatisation Systems for ISR Mines**  
Maxim Seredkin, CSA Global Pty Ltd (Australia)

Economics

2:05pm **Economic Modelling and Application of In-Situ Recovery in Hard Rock Mining**  
Mario Rossien, Evolution Mining Ltd (Australia)

2:30pm **Expanding the Value Case for InSitu Mining**  
Ewan Sellers, Mining 3 / CSIRO (Australia)

Permeability

2:55pm **Directional Drilling and Hydraulic Fracturing for ISR Applications**  
Saeed Salimzadeh, James Kear, Kevin Quinlan, CSIRO (Australia)

3:20pm **Afternoon Tea Break - Virtual Expo and Networking**

3:40pm **Design Options for Underground Leach Systems**  
Peter Dare-Bryan, Stephen Boyce, Orica (Australia)

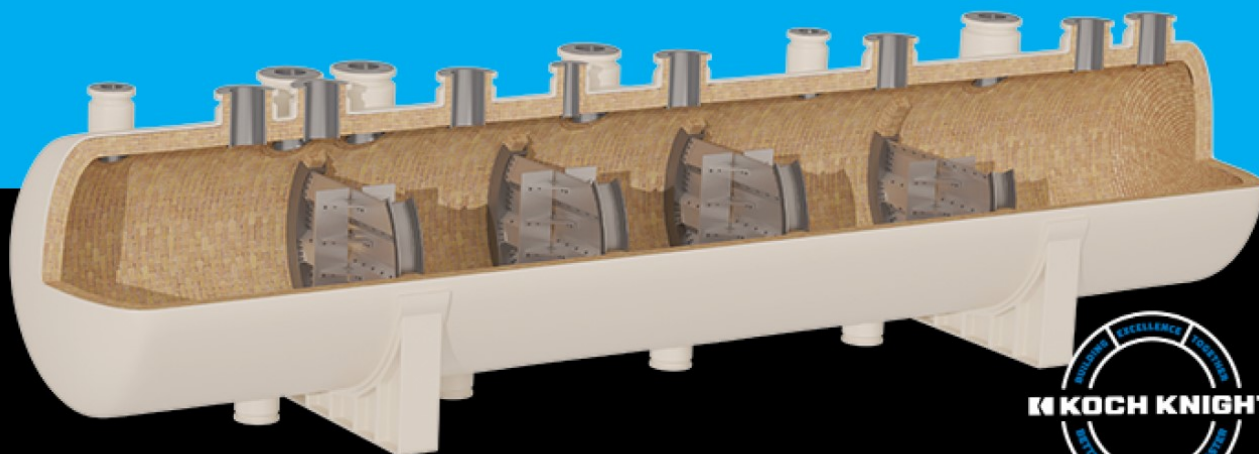
4:03pm **Fluid Flow Performance Through Deep Hard Fractured Rock Masses in a Potential In-Situ Leaching Mine Site in Western Australia**

Mostafa Sharifzadeh, Ping Chang, Department of Mining and Metallurgical Engineering, WASM, Curtin University (Australia)  
Yao Wenli, Key Laboratory of Deep Coal Resource Mining, Ministry of Education, School of Mines, China University of Mining and Technology (China); Mohammad Sarmadivaleh, Department of Petroleum Engineering, WASM, Curtin University (Australia)

4:30pm **Applicability of Permeability Enhancement for In-Situ Recovery**  
Erika Myers, Horst Maerten, Jana Nicolai, Micha Zauner, Umwelt- und Ingenieurtechnik GmbH Dresden (Germany)

4:55pm **Investigation of Coal Cleat Network Stimulation Through Liquid Nitrogen Fracturing**  
Hamed Akhondzadeh, Alireza Keshavarz, Faisal Ur Rahman Awan, Stefan Iglaier, Edith Cowan University (Australia); Maxim Lebedev, Curtin University (Australia)

Specializing in the **engineering design, manufacture, installation and maintenance** of corrosion resistant lining systems for hydrometallurgical industry.



5385 Orchardview Drive SE - East Canton, OH 44730 - USA - P: +1 (330) 488-1651 - kochknight.com

# QUALITY PURIFIES.



**Lewatit®** ion exchange resins from LANXESS offer safe, efficient, economical and sustainable technical solutions in the field of mining and hydrometallurgy. Our extensive product portfolio and application knowledge covers the recovery and purification of a wide variety of base metals, rare earths and precious metals as well as the treatment of wastewater streams like Acid Mine Drainage (AMD). Special selective resins are increasingly employed in various flowsheets, which are being developed for the production of battery grade materials. Our global manufacturing and supply chain network along with our technical support capabilities place us in a strong position to serve our customers in the mining industry.  
**[lpt.lanxess.com](http://lpt.lanxess.com)**

**X Lewatit®**

**QUALITY WORKS.**

**LANXESS**  
Energizing Chemistry





### Wednesday 25 November

### Gold-PM Conference

Thank you to our sponsor



7:30am Virtual Expo and Networking

Conference and Sponsor Welcome

8:00am **Welcome from the Chair**

**Alan Taylor**, Conference Founder & Chair, Managing Director & Metallurgical Consultant, ALTA Metallurgical Services (Australia)

**Sponsor Welcome**

Air Liquide Australia Limited

Keynote Address

8:08am **Keynote Address: POX – Has it Reached its Full Potential, or is There Still Room for Improvement for Treating Refractory Gold Ores?**

**Karel Osten**, Independent Consultant, METTKO Pty Ltd (Australia)

PhotonAssaying

8:50am **PhotonAssay Update: Validation Work, Gold Performance Improvements and Prospective Silver and Moisture Services**

**Olivia Lannan**, Rhys Preston, James Tickner, Dirk Treasure, Chrysos Corporation Ltd (Australia)

Forum: Cyanide Alleviation & Alternative Lixiviants

9:15am **ReCYN III – The New Generation of Gold Plants - Replacing Carbon**

**Malcolm Roy Paterson**, PT GreenGold Technology (Indonesia)

9:45am **Non-Toxic Reagent for Gold Leaching**

**Kristina Kazakoff**, Paul Kelly, Clean Mining Ltd – part of the Clean Earth Technologies Group (Australia)

10:05am **Morning Tea Break - Virtual Expo and Networking**

10:25am **Non and Reduced Cyanide Gold Extraction Systems**

**Frank Trask**, Mining and Process Solutions (Australia)

10:50am **Measuring Gold Lixiviant Concentrations: Let's Make It Easy for The Operators**

**Danielle Thompson**, CSIRO Mineral Resources (Australia); El-Sayed Oraby, Curtin University of Technology (Australia)

11:10am **Thiocyanate Recovery from Waste Solutions Using Solvent Extraction**

**David Dreisinger**, Jianming Lu, University of British Columbia (Canada); Gary Kordosky, Todd Beers, Winner Water Services Inc., (USA)

11:35am **Life Cycle Assessment of Hydrometallurgical Processes Based on Flowsheet Simulation – Case Study of Gold from the Deposit with Battery Metals**

**Marja Rinne**, Mika Sahlman, Mari Lundström, Aalto University (Finland); Heini Elomaa, Outotec Oy (Finland)

Panel discussion and Q&A: **Cyanide Alleviation & Alternative Lixiviants**

*Panel Chair:* **Karel Osten**, Independent Consultant, METTKO Pty Ltd (Australia)

1:00pm **Lunch Break - Virtual Expo and Networking**

Refractory Ores

1:40pm **An Investigation of Pressure, Atmospheric and Bacterial Oxidation Processes for the Treatment of a Refractory Gold Concentrate**

**Chris Casingena**, **Chad Czerny**, Paul Carter, (Formerly) SGS Minerals Metallurgy (Australia)



## Wednesday 25 November (continued)

### Gold-PM Conference

Thank you to our sponsor



- 2:05pm **Recent Developments in the Metso Outotec BIOX® Process**  
Jan van Niekerk, Craig van Buuren, Metso Outotec (South Africa)
- 2:30pm **Commissioning Experience on Recent Outotec POX Projects**  
Antti Saarikoski, Metso Outotec (Finland)
- 2:55pm **Extract More Ounces with the MACH Reactor**  
Adrian Singh, Gold Ore Pty Ltd (South Africa)

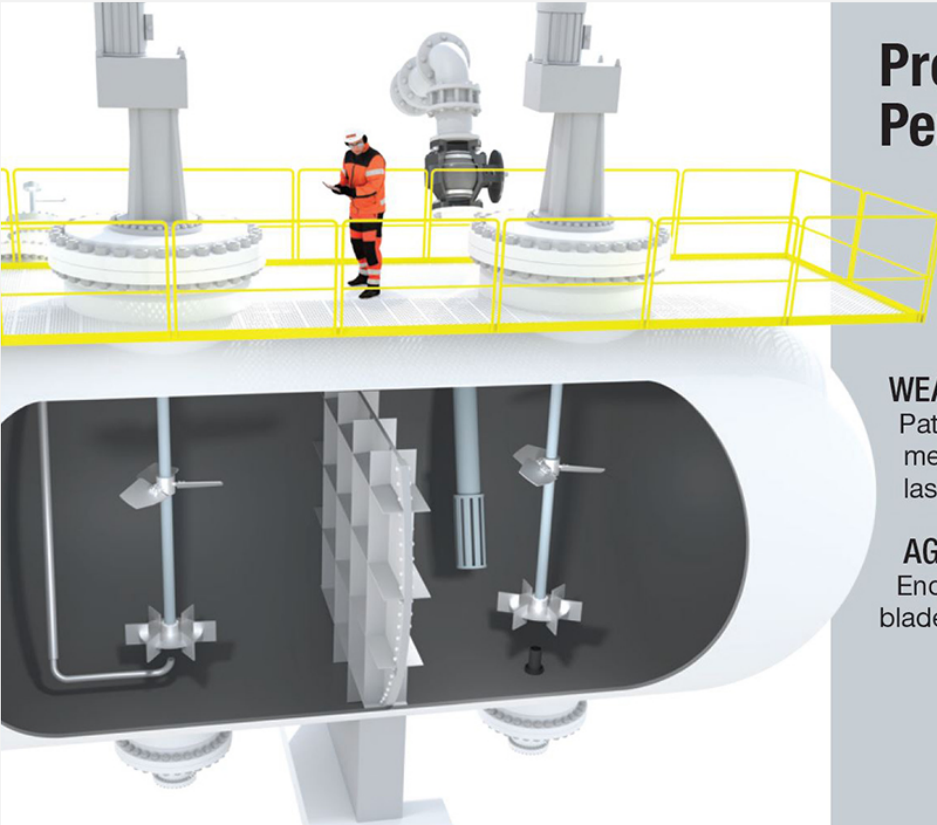
3:25pm **Afternoon Tea Break - Virtual Expo and Networking**

### Ion Exchange

- 3:45pm **Ion Exchange – Bringing Flexibility, Robustness, and Higher Recoveries to Mine Water Treatment**  
Sivan Iswaran, Clean TeQ Water (Australia)
- 4:10pm **Evaluation of Ion Exchange Technology for Au Recovery from Complex Ores Containing Cu and Preg-  
Robbing Material**  
Olga Bazhko, Mintek (South Africa)
- 4:30pm **Improve Silver Refining Quality and Quantity: Regenerable Ion-Exchange Resin for Highly Selective  
Palladium Capture in Nitric Acid**  
Dmitriy Kondrutskiy, Axion – Rare and Noble Metals (Russia); Vladimir Parfenov, Rodion Kalinin, **Aleksei Kornienko**, Krastsvetmet (Russia)
- 4:55pm **The Application of Ore Sorting Technology to Upgrade of Gold Ores**  
Tony Parry, OreSort Solutions (Australia); Geoff Laing, Nexus Bonum Limited (Australia)

### Webinar

- 5:20pm **Role of Lewatit® Ion Exchange Resins in the Recovery and Purification of Metals - "Battery Materials and Beyond"**  
*presented by [LANXESS](#)*



## Proven Performance

**VALVES**  
Severe service ball valves

**WEAR PROTECTION**  
Patented ML-381™ metallurgically bonded laser cladding

**AGITATORS**  
End-to-end agitator blade services

**MOGAS®**

# Advanced Thermal Process Engineering

**JordProxa** specialises in the conversion of liquids to solids through advanced thermal processes including evaporation, crystallisation and drying.

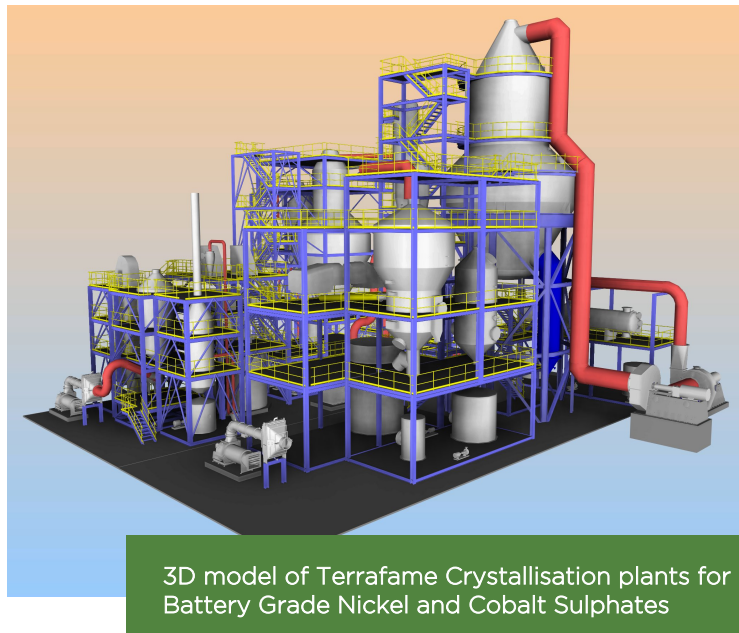
Our evaporation and crystallisation plants deliver:

- High purity battery grade products
- Improved yields, reduced OPEX
- Minimal time to production
- Modular option



## INDUSTRIAL APPLICATIONS

Our crystallisers are often used in resource processing plants and are renowned for their robust and reliable operation. We have extensive experience in producing a range of high purity battery grade products.



## CAPABILITIES AND SERVICES

- Process equipment design and supply
- Fully integrated modular plant delivery
- Global supply network
- Engineering and detailed design
- FEED studies or phased engineering contracts
- Research, analytical and in-house pilot testing facilities
- Process and project development
- Design, build, own, operate and facility maintenance.

Big enough to be trusted with **technically complex, custom-built plant and systems.** Small enough to be innovative, reliable and responsive.



Thursday 26 November

## Lithium & Battery Technology Conference

Thank you to our sponsor



7:30am

Virtual Expo and Networking

Conference and Sponsor Welcome

8:00am

### Welcome from the Chair

**Alan Taylor**, Conference Founder & Chair, Managing Director & Metallurgical Consultant, ALTA Metallurgical Services (Australia)

### Sponsor Welcome

**Dr Chris Griffith**, Senior Process Chemist / Business Development Lead, ANSTO (Australia)

Keynote Address

8:10am

### Keynote Address: Establishing Australia's Battery Industry Supply Chain

**Prof Peter Talbot**, The Centre for Clean Energy Technologies and Practices, Queensland University of Technology (Australia)

Sessions

8:45am

### Challenges to High Purity Lithium Chemical Concentrate Production

**Chris Griffith**, Maree Emmett, Michael Page and Adam Roper, ANSTO (Australia)

9:16am

### Analysis of The Bald Hill Lithium Project Failure

**Damian Connelly**, METS Engineering Group Pty Ltd (Australia)

9:40am

### Lithium Ion Sieve Technology for Recovery of Lithium from Brine

**Mike Dry**, Arithmetek Inc (Canada)

10:05am

### The Effect of Impurities on the Calcination of Spodumene

**Mark G. Aylmore**, Martin Wells, Matthew R. Rowles, John de Laeter Centre, Faculty of Science & Engineering, Curtin University, (Australia)

10:30am

Morning Tea Break - Virtual Expo and Networking

10:45am

### Value Added Product Recovery from Spodumene Leach Residue

**Goutam Kumar Das**, Dianne Bedell, CSIRO Mineral Resources (Australia); Yatendra Sharma, Chris Reed, Neometals Pty Ltd, (Australia)

11:05am

### Accurate Mineralogical Analysis for Efficient Lithium Ore Processing

Nicholas Norberg, Uwe König, Malvern Panalytical BV (The Netherlands); Hari Bhaskar, **Olga Narygina**, Malvern Panalytical, a division of Spectris Australia Pty Ltd (Australia)

11:35pm

### Outotec Lithium Hydroxide Process - A Progress Update

**Marika Tiihonen**, Liisa Haavanlammi, Sami Kinnunen, Eero Kolehmainen, Metso Outotec (Finland)

12:00pm

### Lithium Process Development Using METSIM and OLI Systems (cancelled)

**Alex Holtzapfel**, METSIM International (USA); Jim Groutsch, MetEng Pty Ltd (Australia)

12:25pm

Lunch Break - Virtual Expo and Networking

1:00pm

### Application of Chelation Resins and Membranes to Solve Purity and Recovery Needs in the Lithium and Battery Space

**Daryl Gisch**, DuPont Water Solutions (USA); **Jaco Bester**, DuPont Water Solutions (the Netherlands)

Forum: Trends in Battery Technology

1:25pm

### Development of Advanced Electrolytes for Lithium (Ion) Batteries

**Adam S Best**, Marzi Barghamadi, Gavin E. Collis, John Chiefari, Anthony F Hollenkamp, Mustafa Musameh, CSIRO Manufacturing, (Australia); Thomas Rüther, CSIRO Energy (Australia)





**ALTA2020** <sup>25</sup>  
ONLINE NOVEMBER

## conference program

technical sessions, short courses and webinars

All times are listed AWST (Perth) with recordings of all technical content available on-demand until March 2021

#ALTA2020online

Thursday 26 November (continued)

### Lithium & Battery Technology Conference

Thank you to our sponsor



- 1:55pm **Lithium Battery Anode R&D Trends**  
Mahdokht Shaibani, Mainak Majumder, Monash University (Australia); Nicolas Eshraghi, University of Liège (Belgium)
- 2:20pm **Lithium Ferro Phosphate – The ‘Safe’ Lithium-Ion Battery**  
Adrian Griffin, Lithium Australia (Australia); Mike Vaisey, VSPC Limited (Australia)
- 2:45pm **Australian Battery Recycling Challenges and Opportunities**  
Andrew Mackenzie, Envirostream (Australia)

3:10pm **Afternoon Tea Break - Virtual Expo and Networking**

3:30pm **Finland-based Circular Ecosystem of Battery Metals (BATCircle)**  
Pry-Mikko Hannula, Antti Porvali, Pertti Kauranen, Mari Lundström, Aalto University (Finland)

3:55pm **Recent Insights on Lithium-Ion Battery Technologies**  
Alexandre Chagnes, Université de Lorraine, CNRS, GeoRessources (France)

4:20pm **Panel discussion and Q&A: Trends in Battery Technology**

*Panel Chair: Dr Jacques Eksteen, Chief Operating Officer and Research Director, Future Battery Industries CRC (Australia)*

5:20pm **Closing Event – Booth Draws and Treasure Hunt Winner**

# Partner for positive change

Metso Outotec is a frontrunner in sustainable technologies, end-to-end solutions and services for the aggregates, minerals processing, metals refining and recycling industries globally. By improving our customers' energy and water efficiency, increasing their productivity, and reducing environmental risks with our product and process expertise, we are the partner for positive change.

mogroup.com



**Metso:Outotec**

## about us

ALTA Metallurgical Services (ALTA) was established in 1985 by Metallurgical Consultant and Managing Director, **Alan Taylor**, to serve the worldwide mining, minerals and metallurgical industries. ALTA offers a wide range of services and resources to the metallurgical industry, including...

### consulting

High-level metallurgical and project development consulting.

### short courses

Practically oriented live and online short courses presented by Alan Taylor. Topics include treatment of nickel laterites, copper ore leaching, uranium ore processing, copper SX-EW, heap leaching and solvent extraction.

### conferences

The ALTA conference is a world-class annual metallurgical conference and a leading platform for innovation. The 25th anniversary event **ALTA 2020 Online** will be held 9-27 November. It comprises five international conferences, six short courses, five panel discussions, three technical webinars, and a virtual trade exhibition. It features highly focused programs, topical forums and presentations from key international speakers.

### publications

Proceedings and manuals from ALTA conferences, seminars and short courses.

### MetBytes

Free technical articles offering metallurgical commentary and insights.

### free library

Includes proceedings from ALTA 1995-2019 Nickel-Cobalt-Copper, Uranium-REE-Lithium and Gold-PM conferences for free download (1650+ papers). The library is expanded regularly, providing a major ongoing free resource to the industry.



Alan Taylor has over 40 years' experience in the metallurgical, mineral and chemical processing industries in Australasia, New Zealand, North and South America, Africa, Asia and Europe. He has worked in metallurgical consulting, project development, engineering/construction, plant operations, plant start-up and technology development. Projects and studies have involved copper, gold/silver, nickel/cobalt, uranium and base metals.

Since 1985, as an independent metallurgical consultant, Alan has undertaken feasibility studies, project assessment, project development, supervision of testwork, flowsheet development, basic engineering, supervision of detailed engineering, plant commissioning and peer reviews and audits. Clients have included a variety of major and junior mining, exploration and engineering companies throughout Australia and overseas.

Alan is Founder and Chair of the annual ALTA metallurgical conference.

### extensive experience includes

- Gold/Silver
- Copper
- Nickel/Cobalt
- Uranium
- Base Metals
- Leaching: atmospheric, heap, in-place, bio. and pressure
- Cyanidation and CIP/CIL
- Solid/Liquid separation
- Flotation
- Electrowinning and electrorefining
- Solvent extraction/ion exchange