

Conference Program

About ALTA 2017

ALTA 2017, organised by ALTA Metallurgical Services, is the 22nd year of one of the world's premier annual metallurgical events. The conference is an annual gathering of the global Nickel, Cobalt, Copper, Uranium-REE and Gold-PM industries and features highly focused programs, topical forums and presentations by key international speakers. The Uranium-REE sessions are organised in cooperation with the International Atomic Energy Agency (IAEA). Held at Pan Pacific Perth, it comprises three technical conferences, three practically-oriented short courses and a trade exhibition.

This conference is an outstanding platform for exposing the latest worldwide developments in plant operations, process technology, new projects, testwork & scale-up, process modelling & control systems, application of mineralogy & geometallurgy, R&D, equipment, reagents, materials, tailings disposal and environmental alleviation. It is an excellent opportunity to network with a wide variety of key industry professionals and showcase products and services to decision-makers in the pertinent field.

[View Abstracts](#)

PROGRAM OVERVIEW							
Saturday 20 May	Sunday 21 May	Monday 22 May	Tuesday 23 May	Wednesday 24 May	Thursday 25 May	Friday 26 May	Saturday 27 May
SHORT COURSE	SHORT COURSE	CONFERENCE SESSIONS					SHORT COURSE
Treatment of Nickel-Cobalt Laterites	Copper SX/EW Basic Principles & Detailed Plant Design	Nickel-Cobalt-Copper <i>Including Pressure Acid Leaching Forum & Panel</i>			Uranium-REE <i>Including Lithium Processing Forum & Panel</i> - in parallel with - Gold-PM <i>Including Cyanide Alternatives/Alleviation Forum & Panel</i>		Heap Leaching and its Application to Copper, Gold, Uranium & Nickel Ores
		Welcome Reception	Conference Dinner		Happy Hour		
EXHIBITION							

Keynote Speakers

Nickel-Cobalt-Copper Keynote	Mark Benz , President, MRB Business Services (Canada) <i>Process Expertise: The Key to Managing Hydrometallurgical Project Risk</i>
Dinner Address	Alan Taylor , Metallurgical Consultant/Managing Director, ALTA (Australia) <i>Laterite Wars</i>
Uranium-REE Opening	Dr Peter Woods , Team Leader, Uranium Resources & Production, International Atomic Energy Agency (IAEA) (Austria) <i>Red Book 2016; Insights into Uranium Supply and Demand</i>
Uranium-REE Keynote	Grenvil Dunn , Principal Process Engineer, Orway Mineral Consultants (Australia) <i>Planning for a Successful Uranium Pilot Plant Program</i>
Gold-PM Keynote	Dr Stephen La Brooy , Principal Process Consultant, Ausenco (Australia) <i>Fixing the Cyanide Issue - Alleviation or Replacement</i>

ALTA 2017 Co-Sponsors and Partners

Program Overview

Saturday 20 May to Saturday 27 May



Subject to change.

Conference Venue: Pan Pacific Hotel, 207 Adelaide Terrace, Perth

Saturday 20 May

8:30am	Registration Arrival Tea & Coffee	Foyer 5
9:00am	Short Course: Treatment of Nickel-Cobalt Laterites	Meeting Room 5

Sunday 21 May

8:30am	Registration Arrival Tea & Coffee	Foyer 5
9:00am	Short Course: Copper SX/EW Basic Principles and Detailed Plant Design	Meeting Room 5
2:00-5:00pm	Exhibitor Bump-In	Golden Ballroom
3:00-6:00pm	Registration	Foyer 1

Monday 22 May

7:30am	Presenter Briefing	Goldsworthy
7:30am	Registration	Foyer 1
8:00am	Arrival Tea & Coffee	Golden Ballroom
9:00am	Nickel-Cobalt-Copper Sessions	Grand River Ballroom
5:00-7:00pm	Welcome Reception	Golden Ballroom

Tuesday 23 May

7:30am	Presenter Briefing	Goldsworthy
8:30am	Arrival Tea & Coffee	Golden Ballroom
9:00am	Nickel-Cobalt-Copper Sessions	Grand River Ballroom
6:30-10:00pm	Conference Dinner	Grand River Ballroom West

Wednesday 24 May

7:30am	Presenter Briefing	Goldsworthy
8:30am	Arrival Tea & Coffee	Golden Ballroom
9:00am	Nickel-Cobalt-Copper Sessions	Grand River Ballroom

Thursday 25 May

7:30am	Presenter Briefing	Goldsworthy
7:30am	Registration	Foyer 1
8:00am	Arrival Tea & Coffee	Golden Ballroom
9:00am	Uranium-REE Sessions	In parallel with Gold-PM Grand River Ballroom East
9:00am	Gold-PM Sessions	In parallel with Uranium-REE Grand River Ballroom West
5:30-6:30pm	Happy Hour	Golden Ballroom

Friday 26 May

7:30am	Presenter Briefing	Goldsworthy
8:30am	Arrival Tea & Coffee	Golden Ballroom
9:00am	Uranium-REE Sessions	In parallel with Gold-PM Grand River Ballroom East
9:00am	Gold-PM Sessions	In parallel with Uranium-REE Grand River Ballroom West

Saturday 27 May

8:30am	Registration Arrival Tea & Coffee	Foyer 5
9:00am	Short Course: Heap Leaching & its Application to Copper, Gold, Uranium & Nickel Ores	Meeting Room 5

Treatment of Nickel-Cobalt Laterites

Meeting Room 5

8:30am Registration | Arrival Tea & Coffee (Foyer 5)

9:00am **Session 1**

10:30am Morning Tea (Foyer 5)

10:45am **Session 2**

12:15pm Lunch (Monterey's Restaurant)

1:15pm **Session 3**

2:45pm Afternoon Tea (Foyer 5)

3:00pm **Session 4**

4:30pm Close

Course Presenter

Alan Taylor, Metallurgical Consultant/Managing Director, ALTA Metallurgical Services (Australia)

Alan has 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, base metals, phosphates and alumina. Detailed CV available from www.altamet.com.au

Topics Covered

Ore Characterization and Process Implications

- Idealized Orebody Profile
- Real Orebodies
- Metallurgical Implications

Commercial Treatment Processes

- Pressure Acid Leaching
- Reduction Roast-Ammonia Leach (Caron) Process
- Smelting Processes
- Ferronickel and Matte Smelting
- Nickel Pig Iron Smelting

Processes Under Development

- Heap Leaching
- Atmospheric Agitated Tank Leaching
 - Sulphuric Acid Leaching
 - Chloride Leaching
 - Nitric Acid Leaching
- Segregation Roasting

Previously Proposed Processes

- Sulphation Roast
- Republic Steel Process
- Aqueous Chlorination Process

Laterite Project Development

- Project Development Program
- Scoping Phase
- Prefeasibility Phase
- Final Feasibility Phase
- Pilot Plants
- Environmental Aspects

Case Histories

- Moa Bay PAL
- Coral Bay (Rio Tuba) PAL
- Yabulu Reduction Roast-Ammonia Leach
- Cero Motoso Ferronickel Smelting
- PT Inco Matte Smelting

Copper SX/EW Basic Principles and Detailed Plant Design

Meeting Room 5

8:30am Registration | Arrival Tea & Coffee (Foyer 5)

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Course Presenters

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The **SX Fire Protection** section will be presented by **Larry Moore, FM Global** (USA).

Larry is the corporate Principal Engineer, Mining and Metallurgy, for FM Global and is responsible for leading engineering activities in the mining and metallurgical industries globally. He consults internationally in fire protection engineering, specializing in mining, mineral processing, and metallurgical refining; oil, gas and petrochemical plants; and in explosion evaluation and analysis.

Topics Covered

- Basic Process
- Key SX functions
- Reasons for Growth
- Alternative Processes
- Organic Liquids in SX
- Typical Flowsheets
- SX Contractors
- SX Ancillary Facilities
- SX Fire Protection
- EW Cells
- EW Materials Handling
- EW Ancillary Facilities
- Plant Arrangement and Layout
- Materials of Construction
- Testwork
- Scale-Up and Design Criteria
- Plant Operation
- Performance and Risk
- Industry Trends

[Download detailed Course Outline](#)

Monday 22 May

7:30am **Presenter Briefing** (Goldsworthy)

7:30am **Registration** (Foyer 1)

8:00am **Arrival Tea & Coffee** (Golden Ballroom)

Nickel-Cobalt-Copper Sessions (Grand River Ballroom)

Sponsored by



Welcome | Keynote Address

9:00am **Welcome**

Alan Taylor, Managing Director, ALTA Metallurgical Services (Australia)

Sponsor's Welcome

Owen Tinkler, Business Development Director, SOLVAY (USA)

Session Chair: Dr Peter Jolly, General Manager Projects, Highlands Pacific (Australia)

9:15am **Keynote Address: Process Expertise: The Key to Managing Hydrometallurgical Project Risk**

Mark Benz, President, MRB Business Services, (Canada)

Main Sessions

10:00am **The Challenges of Commercialising Novel Technology: Part 1, Background and Theory**

Bryn Harris, NMR360 Inc. (Canada)

10:30am **Morning Tea**

11:00am **The Role of Risk Management Towards Long Term Sustainability in the Mining Industry**

Larry J Moore, FM Global Johnston (USA)

Scandium

11:30am **Development of the Owendale Laterite Project in Central New South Wales**

Boyd Willis, Boyd Willis Hydromet Consulting (Australia)

12:00pm **The Current Status of Scandium Supply Projects and their Technical Challenges**

Nigel Ricketts, EMC Metals Australia Pty Ltd (Australia); **Willem Duyvesteyn**, Scandium International Mining Corp (USA)

12:30pm **Lunch** Sponsored by **BASF**

Session Chair: Tim Newton, Operations Director, Mining and Process Solutions Pty Ltd (Australia)

Nickel Hydromet

1:30pm **Economical Precipitation of Cobalt and Nickel from Solution**

Paul Voigt, Mike Hourn, and Glenn Stieper, Glencore Technology (Australia)

2:00pm **Simulation Software Methodologies for Hydrometallurgical Process Evaluation Applied to Selective Acid Leaching of Mixed Hydroxide Precipitate**

William Hawker, The University of Queensland (Australia); **Mike Dry**, Arithmetek (Canada)

2:30pm **The DNI Process™ - The Next Step to Commercialisation**

Fiona McCarthy, DNI Technologies Pty Ltd (Australia)

3:00pm **Afternoon Tea**

Solvent Extraction

3:30pm **Technological Innovations in TechnipFMC-Krebs Mixer-Settlers Guarantee 100 ppm Solvent Entrainment in Solvent Extraction Plants**

Guillaume Fenol, Francois Daroux, TechnipFMC (France)

4:00pm **Flowsheet Developments Using CYANEX® Reagents**

William Szolga, Matthew Soderstrom, Michael Moser, Laurent Cohen, Owen Tinkler, SOLVAY (USA)

4:30pm **Improvement of the Copper Solvent Extraction Process**

Qiming Tang, Qian Zou, Dan Liu, Feng Li, Qihua Yang, Kopper Chemical Industry Corp. Ltd (China)

5:00-7:00pm **Welcome Reception** (Golden Ballroom)

Sponsored by **NobelClad**

Tuesday 23 May

7:30am **Presenter Briefing** (Goldsworthy)

8:30am **Arrival Tea & Coffee** (Golden Ballroom)

Nickel-Cobalt-Copper Sessions (Grand River Ballroom)

Sponsored by



Session Chair: Owen Tinkler, Business Development Director, SOLVAY (USA)

Ion Exchange

9:00am **Selective Chelating Ion Exchange Resins in Base Metal Recovery and Refining**
Stefan Neufeind, LANXESS Deutschland GmbH (Germany)

9:30am **Continuous Ion Exchange Resin in Slower Settling Solids (RIS) Principles of Operation and Technology Development Over the Past 15 Years**
Roger Wintle, WINRIS3 (Pty) Ltd (South Africa)

10:00am **Innovative Copper and Cobalt Recovery from Concentrate Tailings and a Copper Electrolyte Circuit Based on WINRIS Technology**
Fred Landsberg, BSFW Process Engineering (Pty) Ltd (South Africa)

10:30am **Morning Tea**

Heap Leaching

11:00am **Experiences on Dynamic Heap Leaching of a Black Schist Ore**
Antti Arpalahti, Terrafame (Finland)

11:30am **HeapSim Modelling of High Temperature Heap Bioleaching Data**
Petrus J. van Staden, Mintek (South Africa); Ali Naseri, Sarcheshmeh Copper Complex, Iran; Jochen Petersen, University of Cape Town (South Africa)

12:00pm **An Effective New Leaching Aid Successfully Tested with Oxide and Mixed Sulphide Copper Ores**
Jack Bender, BASF Corporation (USA)

12:30pm **Lunch** Sponsored by **BASF**

Session Chair: Peter Haig, Business Development Manager, BASF (Australia)

Copper Hydromet

1:30pm **Acid Chloride-Sulphate Leaching of Magnetite Hosted Chalcopyrite Concentrates from the Viscaria Copper Project in Sweden**
Nigel Ricketts, Altrius Engineering Services (Australia); Ray Robinson, Avalon Minerals Pty Ltd (Australia)

2:00pm **The FLSmidth® ROL Process: BASF-FLS Pilot Plant Testing**
David Chaiko, Carlos Eyzaguirre, Sara Rocks, Chase Dickinson, Frank Baczek, FLSmidth USA Inc (USA); Jack T. Bender, BASF Corporation (USA); Presented by **Sally Rocks**, FLSmidth USA Inc (USA)

2:30pm **The Economics of Removing Arsenic from Copper Concentrates using the Toowong Process**
Peter Rohner, Jon Loraine, Lachlan McDonald, Core Resources (Australia); Michael Ross, Mineral Technologies (Australia); **Philip Bangerter**, John Baillie, Whittle Consulting (Australia)

3:00pm **Afternoon Tea**

3:30pm **Is Alkaline Glycine a Contender for Copper?**
Mike Dry, Arithmetek Inc. (Canada)

4:00pm **Application of GlyLeach™ to Heaps - Early Commercialisation Opportunities**
Tim Newton, Frank Trask, Mining and Process Solutions (Australia)

4:30pm **Investigation of the Leaching Behavior of a Copper-Iron-Molybdenum Alloy H 2SO4**
Stephan Steinacker, Juergen Antrekowitsch, Montanuniversitaet Leben (Austria)

6:30pm Drinks **Conference Dinner** (Grand River Ballroom West)

7:00pm Dinner

Sponsored by **MOGAS Industries**

10:00pm

Close

Dinner Address: Laterite Wars

Alan Taylor, Managing Director, ALTA Metallurgical Services (Australia)

Wednesday 24 May

7:30am **Presenter Briefing** (Goldsworthy)

8:30am **Arrival Tea & Coffee** (Golden Ballroom)

Nickel-Cobalt-Copper Sessions (Grand River Ballroom)

Sponsored by



Session Chair: **Lourdes Valle**, Senior Process Engineer, SNC-Lavalin (Australia)

Copper Hydromet (Cont)

9:00am **Characterization of a Low-Grade Copper Sulfide Ore To Assess its Suitability for In Situ Recovery**
Jian Li, Laura Kuhar, Peter Austin, Micheal Da Costa, Dave Robinson, CSIRO Mineral Resources (Australia)

Real-Time Copper Nickel Analysis

9:30am **Real-Time X-Ray Fluorescence Analysis of Copper-Nickel Materials Flow on Conveyor Belt**
E.I. Hasikova, A.D. Sokolov and V.L. Titov, Baltic Scientific Instruments (Latvia)

Materials Selection

10:00am **A Snapshot of Plastic Pipe Materials and Current Applications in Hydrometallurgy**
Aviv Scheinman, Golan Plastic (Israel); **Stephen Clarke**, SJC Materials Engineering Ltd (Canada); **Paul Tucker**, Bantrel Co (Canada)

10:30am **Morning Tea**

11:00am **Corrosion Protection in Ore Processing Plants: Materials - Application - Maintenance**
Daniel Kessler, TIP TOP Oberflächenschutz Elbe GmbH (Germany)

Pressure Acid Leaching Forum

11:30am **Dry Stacking of Nickel Laterite Tailings**
Francesco Kaswalder, **Andrew Hawkey**, Aqseptence Group Srl (Diemme® Filtration) (Italy); **Andrew Bodley**, Hatch Pty Ltd (Australia)

12:00am **The Use of a Centrifuge to Reduce Water Content of HPAL Tailings**
Dustin Pepper, Andritz Pty Ltd (Australia); **Nigel Ricketts**, EMC Metals Australia Pty Ltd (Australia)

12:30pm **Lunch** Sponsored by **BASF**

Session Chair: **Mark Benz**, President, MRB Business Services (Canada)

1:30pm **Outotec Hydrometallurgical Pressure Leaching Technologies**
Kaarlo Haavanlammi, Outotec (Finland) Oy (Finland)

2:00pm **Application of Positive Displacement Pumps in HPAL Circuits**
Peter Jolly, Highlands Pacific Pty. Ltd. (Australia); **Andrew Cocks**, MHWirth (Australia)

2:30pm **The HPAL Plants That SNC-Lavalin Built: Where Are They Now?**
Lourdes Valle, Peter Dickson, Andrew Curtis, SNC-Lavalin (Australia)

3:00pm **Afternoon Tea**

3:30pm **Latest Improvement for High Pressure Acid Leach Plant Operation of Coral Bay Nickel Corporation**
Daisuke Saito, Jiro Hayata, Isao Nishikawa, Coral Bay Nickel Corporation (CBNC) (Philippines)

4:00pm **Ramp-up Experience at Meta Nickel HPAL Plant**
Doğan Emre EGE, Meta Nikel Kobalt Madeencilik AG (Turkey); **Johann Verster**, John Parker, Murray Hofmeyr, MOGAS Systems & Consulting LLC (USA); **John Parker**, Process Ideas (South Africa); **Murray Hofmeyr**, GWCH Consulting (Pty) Ltd (South Africa)

4:30pm **Pressure Acid Leaching Panel Discussion and Q&A**

Panel Chair: **Alan Taylor**, Metallurgical Consultant/Managing Director, ALTA Metallurgical Services (Australia)

Conference Close

Uranium-REE Program

In parallel with Gold-PM Sessions

Thursday 25 May to Friday 26 May



Subject to change.

Organised in cooperation with the International Atomic Energy Agency (IAEA)

Thursday 25 May

7:30am **Presenter Briefing** (Goldsworthy)

7:30am **Registration** (Foyer 1)

8:00am **Arrival Tea & Coffee** (Golden Ballroom)

Uranium-REE Sessions (Grand River Ballroom East)

Premium Sponsorship Available

Welcome and Opening Address

9:00am **Welcome**

Alan Taylor, ALTA Metallurgical Services (Australia)

9:10am **Opening Address: Red Book 2016; Insights into Uranium Supply and Demand**

Dr Peter Woods, Team Leader, Uranium Resources and Production Subprogramme, International Atomic Energy Agency (IAEA) (Austria)

Session Chair: Dr Laura Kuhar, Research Team Leader, CSIRO (Australia)

Keynote Address

9:50am **Keynote Address: Planning for a Successful Uranium Pilot Plant Program**

Grenvil Dunn, Principal Process Engineer, Orway Mineral Consultants, (Australia)

10:30am **Morning Tea**

Project Development

11:00am **An Update on A-Cap Resources' Letlhakane Uranium Project in Botswana**

Paul Woolrich, A-Cap Resources Limited (Australia); **Alan Taylor**, ALTA Metallurgical Services (Australia); **Grenvil Dunn**, Orway Mineral Consultants (Australia); **Randall Pyper**, Kappes Cassidy & Associates (Australia)

11:30am **Pilot-scale Testwork for the Process Development of the Mulga Rock Project**

Chad Czerny, Andrew Wydler, Tony Chamberlain, Vimy Resources Limited (Australia)

12:00pm **Metallurgy of the Ngualla Rare Earth Project - Challenges, Choices and Innovations**

Gavin Beer, Consulting Metallurgist (Australia), Roy Gordon, Peak Resources (Australia)

12:30pm **Lunch** Sponsored by **Purolite**

Session Chair: Gavin Beer, Consultant Metallurgist, Met-Chem Consulting (Australia)

Process Technology

1:30pm **IAEA's Overview of Worldwide In Situ Leach Uranium Mining**

Peter Woods, International Atomic Energy Agency (IAEA) (Austria)

2:00pm **Metallurgical Test Work and Modelling Towards Understanding the Suitability of a Uranium Deposit for In-Situ Processing**

Laura Kuhar, Karl Bunney, Michael Jackson, Peter Austin, Jian Li, Dave Robinson, Henning Prommer, CSIRO Mineral Resources (Australia); **Henning Prommer**, Jing Sun, University of Western Australia; **Jess Oram**, **Asha Rao**, Cauldron Energy (Australia)

2:30pm **R&D Progress of Uranium Mining and Metallurgical Industry in China**

Yahui Tan, **Wensheng Liao**, Yijun Zeng, Beijing Research Institute of Chemical Engineering and Metallurgy (BRICEM) (China)

3:00pm **Afternoon Tea**

3:30pm **Pilot Study on Uranium Recovery from Vietnam Uranium Sandstone Low Grade Ores by Heap Leaching**

Than Van Lien, **Tran The Dinh**, **Nguyen Dinh Van**, **Nguyen Ba Tien**, **Nguyen Thi Kim Dung**, Institute for Technology of Radioactive and Rare Elements (ITREE) (Vietnam)

4:00pm **Anion Exchange of Uranium from Sulfuric Acid Solution: Adsorption and Kinetics Characteristics**

Yasser Khawassek, Nuclear Materials Authority (Egypt)

4:30pm **Recovery of Rare Earth, Uranium and Thorium from Industry Residue Leaching Experiments**

Janúbia C.B.S. Amaral, **Carlos A. Morais**, **Pedro H. M. Andrade**, **Monique R. Salum**, Centro de Desenvolvimento da Tecnologia Nuclear (CDTN) (Brasil)

5:00pm **Jarogain Process for Recovering Value-Added Metals from RLE Zinc Residue**

Pertti Koukkari, **Petteri Kangas**, VTT, Technical Research Centre of Finland (Finland); **Mari Lundström**, **Benjamin Wilson**, Aalto University (Finland); **Jussi Rastas**, **Pekka Saikkonen**, Promeca Oy (Finland)

5:30-6:30pm **Happy Hour** (Golden Ballroom)

Sponsored by **Orica**

Friday 26 May

7:30am **Presenter Briefing** (Goldsworthy)

8:30am **Arrival Tea & Coffee** (Golden Ballroom)

Uranium-REE Sessions (Grand River Ballroom East)

Premium Sponsorship Available

Session Chair: **Adrian Griffin**, Managing Director, Lithium Australia (Australia)

Process Technology (Cont)

9:00am **Separation of Thorium, Uranium and Rare Earth Elements from Sulfuric Liquor**

Janúbia C. B. S. Amaral, **Carlos A. Morais**, Centro de Desenvolvimento da Tecnologia Nuclear (CDTN) (Brasil)

9:30am **Study on REES Leached in Phosphate Concentrate with Phosphoric Acid**

Xunxiong Jiang, Shengdong Wang, **LinYong Feng**, Yanqing Fan, Wei Jiang, Beijing General Research Institute of Mining & Metallurgy (BGRIMM) (China)

Lithium Processing Forum

10:00am **Applications of Advanced Analytical and Mass Spectrometry Techniques to the Characterization of Lithium Bearing Ores**

Mark G. Aylmore, Kelly Merigot, **William D.A. Rickard**, David W. Saxey, Denis Fougereuse, Steven M. Reddy, Zakaria Quadir, Noreen Evans, Bradley McDonald, Brent I.A. McInnes, Curtin University; Enej Catovic, Peter Spitalny, Lithium Australia (Australia)

10:30am **Morning Tea**

11:00am **Online Lithium Analysis in Spodumene Concentration**

Lauri Koresaar, Juha Timperi, Outotec (Finland)

11:30am **Specialized Impellers for Hydrometallurgical Processing Applications with Focus on Lithium**

Wolfgang Keller, **Jochen Jung**, EKATO RMT (Germany)

12:00pm **Review of Lithium Pre-Concentration, Extraction, Separation and or Purification using Dow Water and Process Solutions Technologies**

Jaco Bester, Dow Water & Process Solutions (Netherlands)

12:30pm **Lunch** Sponsored by **Purolite**

Session Chair: **Dr Mike Dry**, Owner, Arithmetek Inc. (Canada)

1:30pm **The Case for Secondary Lithium Resources**

Grant Harman, Lithium Consultants Australasia (Australia)

2:00pm **A Broad Look at Lithium Extraction**

Mike Dry, Arithmetek Inc. (Canada)

2:30pm **The Challenges of Recovery of Lithium from Complex Silicates and Optimising Financial Returns**

Damian Connelly, Mineral Engineering Technical Services Pty Ltd (METS) (Australia)

3:00pm **Afternoon Tea** (Foyer 3)

3:30pm **Lithium Process Flowsheets - Challenges and Opportunities**

Chris Griffith, ANSTO Minerals (Australia)

4:00pm **Hydrometallurgical Processes for the Recovery of Lithium**

Adrian Griffin, Lithium Australia (Australia)

4:30pm **Lithium Processing Panel Discussion and Q&A**

Panel Chair: **Dr Mike Dry**, Owner, Arithmetek Inc. (Canada)

Conference Close

Included in proceedings but not presented

Quantitative Analysis of Uranium and Thorium Containing Materials Using Industrial On-Line XRF Analyzer

Elena Hasikova, A.D. Sokolov and V.L. Titov, Baltic Scientific Instruments (Latvia)

Aluminum Oxide Grafted Kaolinite for Efficient Uranium Removal from Aqueous Solution

Ahmed Hussein, Nuclear Materials Authority (Egypt)

Gold-PM Program

In parallel with Uranium-REE Sessions
Thursday 25 May to Friday 26 May



Subject to change.

Thursday 25 May

7:30am **Presenter Breakfast** (Goldsworthy)

7:30am **Registration** (Foyer 1)

8:00am **Arrival Tea & Coffee** (Golden Ballroom)

Gold-PM Sessions (Grand River Ballroom West)

Premium Sponsorship Available

Welcome | Keynote Address

9:00am **Welcome**

Allison Taylor, ALTA Metallurgical Services (Australia)

Session Chair: Tom Robinson, Senior Project Leader, CESL Business Development, Teck Resources Limited (Canada)

9:15am **Keynote Address: Fixing the Cyanide Issue - Alleviation or Replacement**

Dr Stephen La Brooy, Principal Process Consultant, Ausenco (Australia)

Main Sessions

10:00am **Barriers to Best Practice: Variability in Measurement Practices Across the Gold Processing Industry**

Greg Zwolak and **Peter Leckie**, Orica Ltd (Australia)

10:30am **Morning Tea**

Treatment of Refractory Ores

11:00am **Finding a Solution for a Double Refractory Gold Ore**

Damian Connelly, Mineral Engineering Technical Services Pty Ltd (METS) (Australia)

11:30am **Çöpler Sulfide Expansion Project Update**

Karel Osten, Amec Foster Wheeler (Australia); ²Vic Ketcham, Anagold Madencilik (USA)

12:00pm **Pro-active Use of Performance and Operating Data in Understanding Severe Service Valve Life and Failure Contributors**

Jansen Scheepers, Kevin Engel, MOGAS Industries, Inc. (USA)

12:30pm **Lunch** Sponsored by **Purolite**

Session Chair: Karel Osten, Process Consultant, Amec Foster Wheeler (Australia)

1:30pm **The Aachen Reactor™ - An Essential Tool in the Metallurgists "Toolbox" to Increase Gold Recovery**

Stephen Flatman, Michael Battersby, Maelgwyn Mineral Services Ltd (UK)

2:00pm **Enhanced Leaching of Arsenopyrite Concentrates as a Pretreatment for Gold Recovery from Refractory Ores**

Yeonuk Choi, Barrick Gold Corp (Canada); **Oscar Olvera**, AuTec Innovative Extractive Solutions (Canada)

2:30pm **Oxygen Mass Transfer in the Albion Process™: From the Laboratory to the Plant**

Paul Voigt, Daniel Mallah, Mike Hourn, Glenn Stieper, Glencore Technology (Australia)

3:00pm **Afternoon Tea**

Ore Analysis

3:30pm **Gold Ore Analysis Using an Industrial Gamma-Activation Assay System**

A.D.Sokolov, **V.V.Gostilo**, **E.I.Hasikova**, **V.L.Titov**, Baltic Scientific Instruments (Latvia); **M.I.Demsky**, CORAD (Russia)

4:00pm **Development of Photonassay Technology for Rapid Analysis of Gold and Other Elements in Mineral Ores**

James Tickner, Chrysos Corporation Ltd (Australia)

Cyanide Forum

4:30pm **Utilizing Cyanide Recovery Techniques in the CESL Gold-Silver Process**

Tom Robinson, Teck Resources (Canada)

5:00pm **Gold Processing: Back to the Future**

Bryn Harris, NMR360 Inc. (Canada)

5:30-6:30pm **Happy Hour** (Golden Ballroom)

Sponsored by **Orica**

Subject to change.

Friday 26 May

7:30am **Presenter Breakfast** (Goldsworthy)

8:30am **Arrival Tea & Coffee** (Golden Ballroom)

Gold-PM Sessions (Grand River Ballroom West)

Premium Sponsorship Available

Session Chair: **Johanna van Deventer**, Technical Sales Manager, Purolite (South Africa)

Ion Exchange

9:00am **Gold Recovery via Ion Exchange Resins**
Ben Strong, Jeff Bowen, Stephen La Brooy, Ausenco (Australia)

9:30am **Process for the Recovery of Gold from Uranium Resin**
Volha Bazhko, Volha Yahorava, Mintek (South Africa)

Cyanide Alternatives/Alleviation Forum

10:00am **The SART Process: An Overview as Applied for Gold-Copper Porphyries and an Update on Key Process Parameters**
 Chris A. Fleming, SGS Lakefield (Canada); Presented by: **James Brown**, SGS Canada Inc. (Canada)

10:30am **Morning Tea**

11:00am **Cyanide-Free Future of Gold Process Selection - Part II**
 Maria Leikola, Heini Elomaa, Shila Jafari, Lotta Rintala, Benjamin P. Wilson, Mari Lundström, Aalto University (Finland);
 Presented by: **Pertti Koukkari**, VTT, Technical Research Centre of Finland (Finland)

11:30am **Progress in the Process Development of the Alkaline Glycine Based Technologies for Gold-Copper Ores and Concentrates**
 J.J. Eksteen, **E.A. Oraby**, B.C. Tanda, P.J. Tauetsile, G.A. Bezuidenhout, T. Newton, Gold Technology Group, WASM, Curtin University (Australia); T. Newton, F. Trask, I. Bryan, Mining and Process Solutions Pty Ltd (Australia)

12:00pm **Enhanced Gold Ore Leaching in a Thiosulfate-Oxygen System by a Novel Additive**
Xianwen Dai, Onias Sitando, Paul Breuer, CSIRO (Australia); Onias Sitando, Gamini Senanayake, Aleks Nikoloski, Murdoch University (Australia)

12:30pm **Lunch** Sponsored by **Purolite**

Session Chair: **Dr Stephen La Brooy**, Principal Process Consultant, Ausenco (Australia)

1:30pm **The Destruction of Nickel Cyanide**
Welhem Legodi, Volha Bazhko, Mintek (South Africa)

2:00pm **The RECYN Process - Changing the Negative Public Perception of Cyanide**
 (double slot) **Malcolm R. Paterson**, PT Green Gold Engineering (Indonesia)

3:00pm **Afternoon Tea** (Foyer 3)

3:30pm **New Developments in Gold Processing Technology**
Alan Taylor, ALTA Metallurgical Services (Australia)

4:00pm **Cyanide Alternatives/Alleviation Panel Discussion and Q&A**

Panel Chair: **Dr Stephen La Brooy**, Principal Process Consultant, Ausenco (Australia)

Conference Close

Heap Leaching & its Application to Copper, Gold, Uranium & Nickel Ores

Meeting Room 5

8:30am **Registration | Arrival Tea & Coffee** (Foyer 5)

9:00am **Session 1**

10:30am **Morning Tea** (Foyer 5)

10:45am **Session 2**

12:15pm **Lunch** (Monterey's Restaurant)

1:15pm **Session 3**

2:45pm **Afternoon Tea** (Foyer 5)

3:00pm **Session 4**

4:30pm **Close**

Course Presenter

Alan Taylor, Metallurgical Consultant/Managing Director, ALTA Metallurgical Services (Australia)

Alan has 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, base metals, phosphates and alumina. Detailed CV available from www.altamet.com.au

Topics Covered

Heap Leaching Technology General

- Basics
- Alternative Process Flowsheets
- Layout
- Pad Design
- Liner Selection
- Ore Transport and Heap Building Methods
- Solution Management
- Operation and Control
- Cold and Wet Climate Operation
- Remining of Partially Leached Heaps

Applications of Heap Leaching

- Application to Copper Ores
 - Role of Bacteria in Treatment of Sulphide Ores
 - Alternative Ferrous Re-Oxidizing Methods
 - Typical Copper Heap Leach Design Criteria
- Application to Gold Ores
- Application to Uranium Ores
- Application to Nickel Ores

Testwork and Scale-Up

Industry Trends