



28TH Annual Conference Proceedings

Lithium-Battery Technology-Rare Earths

Co-Sponsored by



ALTA Metallurgical Services, Melbourne, Australia

www.altamet.com.au

**PROCEEDINGS OF
ALTA 2024 Lithium-Battery Technology-Rare-Earths SESSIONS**

**30 May 2024
Perth, Australia**

978-0-6458390-1-2

**ALTA Metallurgical Services Publications
All Rights Reserved**

Publications may be printed for single use only. Additional electronic or hardcopy distribution without the express permission of ALTA Metallurgical Services is strictly prohibited.

Publications may not be reproduced in whole or in part without the express written permission of ALTA Metallurgical Services.

The content of conference papers and presentations are the sole responsibility of the authors

Thursday 30 May 2024

	Page
Keynote Presentation: Moving up The Value Chain from Mines to Batteries Celina Mikolajczak, Chief Battery Technology Officer, Lyten (Virtual) Andrew Nissan, Senior Director of Battery Strategic Sourcing, Lyten	1
Australian Leverage to Global Carbon Neutrality Adrian Griffin, Principal, Future Technology Trust, Australia	21
Piloting the Neometals ELI Process Mike Tamlin, Head of Lithium, Neometals, Australia	49
Process Modelling and Life Cycle Assessment: Conventional and Novel Processing of Spodumene Mike Dry, Owner, Arithmetek, Canada Phoebe Whatoff, Director, Minviro, Australia	58
The Production of High-Purity Battery-Grade Lithium Carbonate Product from Lithium Brine Sources Nipen Shah, Head of Sales, JordProxa, Australia	73
Membrane-Assisted Direct Lithium Extraction Amir Razmjou, Associate Professor, Edith Cowan University, Australia	86
Kinetics of Spodumene Recrystallisation Bogdan Długogórski, Distinguished Research Professor, Charles Darwin University, Australia	99
Phosphate Removal from Wastewater Using Calcium Silicate By-Products Derived from the LieNA Process Shilpi Ray Biswas, Researcher, Murdoch University, Australia	115
Clariant New-Generation Collectors for Flotation of Lithium Ores Matthew Pupazzoni, Business Development Metallurgist, Clariant Mining Solutions, Australia	128
Rethinking Powder Handling in Critical Minerals Processing: Designing for Robustness and Value Retention Tristan Bower, Head of Global Sales, Floveyor, Australia	134
Processing and Disposal of Residues Comprising Naturally-Occurring Radioactive Material (NORM) Hagen Gunther Jung, Executive Director, GeoEnergy Consult, Germany	148
Process Selection Considerations for Recovery of Rare Earths from Mineral Sands Concentrates Gavin Beer, Head Metallurgical Projects, Met-Chem Consulting, Australia	159
Lessons Learned from Ionic Clay Testwork Matthew Nicholls, Senior Process Engineer, METS Engineering, Australia	171
Optimising Reagent Use in Clay Hosted Rare Earth Extraction Jess Page, Manager, Data Analytics, WGA, Australia	189
Rare Earth Extraction with Ionquest 801 Chiara Francesca Carrozza, Technical Development Specialist, Italmatch Chemicals, Italy	198

Friday 31 May 2024

	Page
Thermodynamic Modelling of Rare Earth Solvent Extraction Brett Schug, Senior Simulation Consultant, SysCAD, Canada	208
Precipitation of Rare Earth Element Salts of High Purity Kerstin Forsberg, Professor, KTH Royal Institute of Technology, Sweden	224
Australia's Only Rare Earths Project With In Situ Recovery Potential Robert Blythman, Exploration Manager, Cobra Resources, Australia	249
Lithium-ion Battery Shredding Challenges Andreas Mönch, Principal Research Consultant, CSIRO, Australia	260
Impact of Organic Impurities on Acid Leaching of Valuable Metals from Used Li-ion Batteries Mooki Bae, Researcher, Korea Institute of Geoscience and Mineral Resources (KIGAM), South Korea	271
Lewatit Ion Exchange Resins for the Recycling of Lithium-ion Batteries Dirk Steinhilber, Manager, Technical Marketing, LANXESS, Germany	286
Low-Carbon Footprint Bio-Diluents for Solvent Extraction in Lithium-ion Battery Recycling Zubin Arora, Global Market Manager, TotalEnergies Fluids, France	300
Hydrometallurgical Process to Extract Metals from LFP-NMC Blackmass in Spent Lithium-Ion Batteries Alexandre Chagnes, Professor, Université de Lorraine, France	309
Recent Technological Progress in Metals' Recovery from Spent NCM Battery Promoted by New Separation Reagents Shengxi Wu, Lecturer, Central South University, China	319
Optimised Nickel and Cobalt Recovery from Battery Waste Using Solvent Extraction Leslie Miller, Senior Application Engineer, OLI Systems, USA	347
Integrated Technologies for Efficient Recycling of Lithium-Ion Batteries Leonel Yew, Process Engineer, Neometals, Australia	358
Development of Aurubis' Hydrometallurgical Li-ion Battery Recycling Process Andrew Harris, Senior Research & Development Metallurgist, Aurubis AG, Germany	366
Matte Smelting and Purification Process for Recycling of EoL-LiB Joon Sung Choi, Researcher, Research Institute of Industrial Science and Technology (RIST), South Korea	380