

# CRITCON: Discovery, Characterisation and Processing of Critical Minerals

## Detailed Program

**Monday 22<sup>nd</sup> May, 9:00 am to 3:00 pm: Pre-Conference Workshop**, South Australia Drill Core Reference Library, Tonsley Innovation District.

**Monday 22<sup>nd</sup> May, 5:30 pm to 8:00 pm: Welcome Reception (drinks and canapés)**, National Wine Centre, Adelaide

**Tuesday 23<sup>rd</sup> May: Theme 1. Discovery**

Time	Title	Presenter
08:30 – 08:40	Introduction	Michael Goodsite (University of Adelaide)
08:40 – 08:50	Welcome to Country	Uncle Rod
08:50 – 09:10	Conference Opening	Hon Tom Koutsantonis MP, Minister for Infrastructure and Transport, Minister for Energy and Mining (Government of South Australia)
09:10 – 09:30	Critical Minerals in Australia – recent trends and policy setting	Michael Neimanis (Critical Minerals Office)
09:30 – 09:50	National geoscience: the foundation for Australia's critical minerals future	Anthony Schofield (Geoscience Australia)
09:50 – 10:10	Unravelling South Australia's critical mineral potential	Carmen Krapf (Geological Survey of SA)
10:10 – 10:40	<b>Morning tea</b>	
10:40 – 11:00	Geological knowledge from data: A machine assisted and human driven approach	Eun-Jung Holden (University of WA)
11:00 – 11:20	Digital decisions that attract the herd	Genéne Kleppe (Digital Twinning Australia)
11:20 – 11:40	Natural source-field induced polarization exploration for an IOCG deposit	Graham Heinson (University of Adelaide)
11:40 – 12:00	Recent insights into tellurium biogeochemical cycling from nano- to macro-scale	Owen Missen (University of Tasmania)
12:00 – 12:20	Metamict zircon as metal source for unconformity-related REE deposits	Jessica Walsh (University of Adelaide)
12:20 – 13:20	<b>Lunch</b>	
13:20 – 14:00	<b>KEYNOTE:</b> Lithium potential in the 3T (tin, tantalum, tungsten) belt of Central Africa	Anouk Borst (Royal Museum for Central Africa & KU Leuven)
14:00 – 14:20	The Finniss Lithium Project, Northern Territory	Graeme McDonald (Core Lithium Ltd)
14:20 – 14:40	Direct geochronology of Li-bearing minerals	Jarred Lloyd (University of Adelaide & Geological Survey of SA)
14:40 – 15:00	Key genetic processes for magmatic Ni-Cu-Co-PGE sulfide systems, and recently-developed exploration tools (geochemistry and mineral chemistry)	Margaux Le Vaillant (CSIRO)
15:00 – 15:30	<b>Afternoon tea</b>	
15:30 – 15:50	REE mobility in fluids and melts	John Mavrogenes (Australian National University)
15:50 – 16:10	Redox control on HFSE sequestration in peralkaline magmas	Brenainn Simpson (University of QLD & Geological Survey of NSW)
16:10 – 16:30	Magmatic REE mineralisation in carbonatites	Michael Anenburg (Australian National University)
16:30 – 16:50	The geology of the Mount Weld Carbonatite	Ross Chandler (Australian National University)
17:00 – 18:00	<b>POSTER SESSION</b>	
	<i>See last page for list of posters</i>	

## Wednesday 24<sup>th</sup> May: Theme 2. Characterisation

Time	Title	Presenter
08:50 – 09:10	Drivers for Australia's mine waste renaissance: The 3 C's	Anita Parbhakar-Fox (University of QLD)
09:10 – 09:30	A 15 Gt resource of critical minerals? A comprehensive mapping of tailings and the potential for critical minerals across Australia	Gavin Mudd (RMIT University)
09:30 – 09:50	Nickel and cobalt in tailings from the Eloise Deposit, North QLD	Kam Bhowany (University of QLD)
09:50 – 10:10	Tracking indium in sulfidic mine waste and acid mine drainage environments	Olivia Mejías (University of QLD)
10:10 – 10:40	<b>Morning tea</b>	
10:40 – 11:00	Thermodynamics of critical mineral systems	Joël Brugger (Monash University)
11:00 – 11:30	<b>KEYNOTE:</b> The critical mineral potential of the world-class Olympic Dam Cu-U-Au-Ag deposit, South Australia 1. Ore to metal department: where do the critical metals go during processing of Cu-U-Au-Ag	Kathy Ehrig (BHP Olympic Dam)
11:30 – 12:00	The critical mineral potential of the world-class Olympic Dam Cu-U-Au-Ag deposit, South Australia 2. Natural and anthropogenic mineralogy	Nigel Cook (University of Adelaide)
12:00 – 12:20	A nanoscale vision of trace element distributions in critical minerals using atom probe tomography	Steven Reddy (Curtin University)
12:20 – 13:20	<b>Lunch</b>	
13:20 – 13:40	LIBS automated techniques for the mineralogical and elemental characterisation of critical mineral deposits	Rowena Duckworth (AXT Pty Ltd)
13:40 – 14:00	Latest advancements on automated mineralogy for critical minerals	Leonardo Salazar (Thermo Fisher Scientific)
14:00 – 14:20	Critical minerals in north Queensland mineral deposits	Vladimir Lisitsin (Geological Survey of QLD)
14:20 – 14:40	Chemical and temporal evolution of the Mary Kathleen Complex	Antony Burnham (Australian National University)
14:40 – 15:00	REE characterisation and reprocessing potential of the Mary Kathleen tailings, QLD	Nathan Fox (University of QLD)
15:00 – 15:30	<b>Afternoon tea</b>	
15:30 – 15:50	The behaviour of REE-bearing minerals during in situ weathering	Laura Morrissey (University of SA)
15:50 – 16:10	Identifying exodermic conditions to host ionic REEs in the Gawler Craton	Rupert Verco (Cobra Resources)
16:10 – 16:30	Mineralogy and origin of REE enrichment in the clay hosted Koppamurra deposit, South Australia	Stefan Löhr (University of Adelaide)
16:30 – 16:50	Clay-hosted rare earth element mineralisation in the Esperance District of Western Australia	David Crook (OreSource Pty Ltd & Mount Ridley Mines Ltd)
17:00 – 18:00	<b>POSTER SESSION</b>	
	<i>See next page for list of posters</i>	
19:30 – 22:00	<b>Conference Dinner: Ayers House, North Terrace</b>	

## Thursday 25<sup>th</sup> May: Theme 3. Processing

Time	Title	Presenter
09:20 – 09:40	Communion trends for sustainable critical minerals processing	Mark Drechslar (CBSM Mining Services)
09:40 – 10:00	Biomining critical minerals from low-grade ores and wastes	Anna Kaksonen (CSIRO)
10:00 – 10:20	Visible light fluorescence sensing for increased efficiency in lithium mineral processing	Tom Payten (University of Adelaide)
10:20 – 10:50	<b>Morning tea</b>	
10:50 – 11:10	Critical mineral hydrometallurgical process innovations	James Vaughan (University of QLD)
11:10 – 11:50	<b>KEYNOTE:</b> Application of the boycott effect in fine and coarse particle flotation	Kevin Galvin (University of Newcastle)
11:50 – 12:10	Recent research and development studies of nickel and cobalt extraction from Australian lateritic ores	Jonas Addai-Mensah (University of SA)
12:10 – 12:30	Kalkaroo Deposit - A critical minerals treasure trove	Chris Giles (Havilah Resources)
12:30 – 13:30	<b>Lunch</b>	
13:30 – 13:50	Copper and cobalt recovery from mineral wastes	Pavel Spiridonov (University of SA)
13:50 – 14:10	Cobalt Blue's Broken Hill demonstration plant – Update on the COB process development	Aaron Einthal (Cobalt Blue)
14:10 – 14:30	Sustainable recovery of Cu-Co critical minerals	Clement Lartey (University of SA)
14:30 – 14:50	Elizabeth Creek: Unlocking copper and cobalt production in the Gawler Craton	Matthew Weber (Coda Minerals)
14:50 – 15:30	<b>Afternoon tea</b>	
15:30 – 15:50	Repurposing of mining tailings for rare earth element mineral recovery	George Abaka-Wood (University of SA)
15:50 – 16:10	Rare earth production from an Australian clay hosted deposit	Jess Page (Australian Rare Earths Ltd)
16:10 – 16:30	A review of magnetic separation of rare earth minerals	Zahra Rezaee (University of SA)
16:30 – 16:50	Sustainable processing of battery critical minerals: focus on lithium & nickel	Jacques Eksteen (Curtin University)
16:50 – 17:00	Conference wrap-up	Carl Spandler (University of Adelaide)
<b>Close of technical program</b>		

## Friday 26<sup>th</sup> May: Field trip to Brukunga and Kapunda

LIST OF POSTERS	
A brief review on extraction of critical battery metals from ores: Challenges and opportunities	Gertrude Acquah (University of SA)
Production mineralogy: Magnesite deposit at Prospect Ridge; north-western Tasmania	Alfredina Appiah (University of Tasmania)
Understanding the entrainment behaviour of silicate minerals in pentlandite flotation	Linda Ayedzi (University of SA)
Where are South Australia's carbonatites?	Mitchell Bockmann (Geological Survey of SA)
Unravelling South Australia's critical mineral pegmatites	Georgina Gordon (Geological Survey of SA)
Secondary prospectivity of South Australia's mine waste: Review	Laura Jackson (University of QLD)
Indium-bearing minerals and textures of drill core samples from Baal Gammon mine: An application of laser-induced breakdown spectroscopy	Olivia Mejias (University of QLD)
A sticky situation: Understanding and manipulating Si-gel formation from gangue mineral dissolution during <i>in-situ</i> leaching	Mareike Rosemann (Monash University)
Towards the development of macronutrients supply chain based on lunar resources	Manuel Varon Hoyos (University of Adelaide)
REE in phosphorites of the Georgina Basin, QLD	Diana Zivak (University of Adelaide)