

BATTERY MATERIALS CONFERENCE 2022

24-25 AUGUST 2022

MISTY HILLS CONFERENCE CENTRE,
MULDERSDRIFT, JOHANNESBURG



FINAL PROGRAMME

Day 1 – 24 August 2022

- 07:30–09:00 **Registration Opens & Early Morning Refreshments**
- 09:00–09:10 **Welcome and Opening Address**
P. van Staden, *Conference Chairperson*
- 09:10–09:15 **Safety Briefing**
Venue Official
- 09:15–09:30 **SAIMM Presidential Address**
Z. Botha, *Exxaro, South Africa*

SESSION 1: Sustainability and climate change

Session Chair - P. van Staden, *Mintek*

- 09:30–10:00 **Keynote Address: Supply chain criticality for the battery materials markets**
N.R. Backeberg, *Project Blue, South Africa*
- 10:00–10:20 **Building a sustainable future for critical battery materials based on carbon neutrality**
X. Lin, X. Wang, G. Liu, W. Li, N. Chang, B. Wu, X. Yang, C. Liu, H. Wu, and H. Fu, *Botree Cycling, China*
- 10:20–10:40 **The application of low carbon footprint vapor metallurgical processes to the extraction and refining of high purity vanadium and value co-products**
D. Terekhov¹, C. van der Linde¹, and E. Nel²,
¹TCM Research Limited and ²Vanadium Resources Limited, *South Africa*
- 10:40–11:00 **Mid-Morning Refreshments**

SESSION 2: Value chain

Session Chair: K. Sole, *University of Pretoria*

- 11:00–11:30 **Keynote Address: Opportunities to develop the lithium-ion battery value chain in SA**
G. Montmasson-Clair, *Trade & industrial Policy Strategies, South Africa*

- 11:30–12:00 **Keynote Address: South Africa's new vehicle energy dilemma: Lessons for the material supply chain**
J. Barnes, *B&M Analysts, South Africa*

- 12:00–12:20 **A Southern African perspective of battery materials**
E. Müller and R. Sandenbergh, *Mintek, South Africa*

- 12:20–13:20 **Lunch**

SESSION 3: Recycling

Session Chair: E. Muller, *Mintek*

- 13:20–13:45 **Keynote Address: Process flow alternatives for LIB recycling**
B. Friedrich, *RWTH Aachen University, Germany*
- 13:45–14:05 **The role of diluents in battery recycling processes**
D. Bien, *Exxon, Germany*
- 14:05–14:25 **Hydrometallurgical recovery of cobalt, nickel, lithium and manganese from spent lithium ion batteries**
E.K. Hardwick, L.B. Siwela, J.G. Falconer, M.E. Mathibela, and W. Rolfe, *Cwenga Technologies, South Africa*
- 14:25–14:45 **Possibilities and limits of a sustainable recycling concept for lithium batteries**
N. Wiczorek, J. Hobohm, and G. Chryssos, *Foundation GRS Batteries GRS Service GmbH, Germany*
- 14:45–15:05 **Chemical and microtextural investigation of black mass originating from the LiB recycling process**
M. Dadé, T. Wallmach, and O. Laugier, *Eramet Ideas*
- 15:05–15:25 **Day 1 wrap-up and close**
- 15:25 **Networking Cocktail Function**

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FINAL PROGRAMME

Day 2 – 25 August 2022

- 07:30–09:00 **Registration Opens & Early Morning Refreshments**
- 09:00–09:10 **Welcome and Opening Address**
P. van Staden, Conference Chairperson
- 09:10–09:20 **Safety Briefing**
Venue Official

SESSION 4: Advanced cathode materials for mobile and stationary applications

Session Chair: R. Sandenbergh, *University of Pretoria*

- 09:20–09:50 **Keynote Address: Towards the sustainable production of battery cathode materials**
J.J. Eksteen, *Curtin University, Australia*
- 09:50–10:10 **The use of transition metal (manganese, nickel, cobalt, titanium) oxides as electrode materials for lithium-ion battery**
M. Kebede and M. Modibedi, *CSIR, South Africa*
- 10:10–10:25 **Mid-Morning Refreshments**
- 10:25–10:45 **Dissolution of black mass from Li-ion batteries by reductive leaching with copper**
V.H.K. Lukka, N. Bussa, A. Jana, and C.R. Borra, *IIT-Kharagpur, India*
- 10:45–11:05 **Li-ion battery recycling, a SADC 20 year regional cooperation future: 2023-2043**
M. Mathe¹, N. Palaniandy¹, M. Kebede², M. Modibedi², M. Gericke³, and B. Xakalashé³,
¹Unisa, ²CSIR and ³Mintek

SESSION 5: Processing

Session Chair: M. Mathe, *UNISA*

- 11:05–11:25 **Selective nickel precipitation efficiency from cobalt in citrate media with DMG after lithium solvent extraction**
T. Punt, S.M. Bradshaw, A.P. van Wyk, and G. Akdogan, *Stellenbosch University, South Africa*

- 11:25–11:45 **Hydro-pyro integration for the leaching of cobalt and nickel from converted nickel pig iron matte**
N.A. Barcza¹, L.J. Erasmus¹, and P.J. van Staden²,
¹Independent Consultant and ²Mintek, South Africa

11:45–12:45 **Lunch**

- 12:45–13:05 **Separation of manganese from cobalt by solvent extraction: Application to the recycling of spent cathode material from lithium-ion batteries**
K.C. Sole, L. Siwela, and N. Khuzwayo, *University of Pretoria, South Africa*

- 13:05–13:25 **Battery materials research conducted at Mintek towards energy storage and resource efficiency**
B. Xakalashé, E. Muller, X. Goso, G. Tawane, S. Nkosi, S. Tsebe, U. Hall, E. Matinde, S. Mokoena, R. Hassanalizadeh, P. Doubra, F. Jantjies, N. Mhlanga, C. Mokwana, M. Raphulu, M. Gericke, and R. Sandenbergh, *Mintek, South Africa*

- 13:25–13:45 **Production of stable manganese cathodes from highly contaminated advanced electrolyte – an experimental case study**
R. Hassanalizadeh, P. Doubra, C. Mokwana, and E. Muller, *Mintek, South Africa*

13:45–14:00 **Mid-Afternoon Refreshments**

SESSION 6: Advanced battery technologies

Session Chair: B. Xakalashé, *Mintek*

- 14:00–14:30 **Keynote Address:**
D. Sadoway, *Massachusetts Institute of Technology, USA*
- 14:30–14:50 **New improved nanofiber material for the recovery of metals from spent lithium-ion batteries**
J. Mukaba, O. Perea, B.J. Bladergroen, and L. Petrik, *University of the Western Cape, South Africa*
- 15:20 **Day 2 wrap-up and close of conference**