



HEAVY MINERALS 2019

5–6 August 2019

The Vineyard, Cape Town, South Africa

The Southern African Institute of Mining and Metallurgy

in collaboration with the Zululand Branch is organising

The Eleventh International

HEAVY MINERALS CONFERENCE

'Renewed focus on Process and Optimization'

Preliminary Programme

Day 1 – Monday 5 August 2019

- 08:30–09:30 **Registration & Morning Refreshments**
09:30–09:35 **Emergency Procedures Presentation**
09:35–09:40 **Welcoming Address**
J. Selby, *Conference Chairperson, Independent Consultant South Africa*
09:40–09:55 **Presidential Address**
A.S. Macfarlane, *SAIMM Presidential and Mandela Mining Precinct*

Session 1 – Session Chairperson: B. Malan, Multotec

- 09:55–10:35 **Keynote: Learning from Kwale to build Toliara – touchpoints in project development**
C. Bwye, *Base Resources, Kenya*
10:35–10:55 **A techno-economic evaluation of the mining and processing of heavy mineral sands from the Brahmaputra River Basin, Bangladesh**
A. Rahman^{1,2,3}, M.I. Pownceby², J. Tardio², N. Haque², and M.N. Zaman¹
¹Bangladesh Council of Scientific and Industrial Research (BCSIR) Bangladesh, ²CSIRO Mineral Resources, Australia and ³RMIT University, Australia
10:55–11:15 **River system hosted heavy mineral deposits**
N.C. Steenkamp, *Independent Geological and Geotechnical Consultant South Africa*
11:15–11:35 **Mid-morning Refreshments**

Session 2 – Session Chairperson: C. Mienie, Spectrum Chemical

- 11:35–11:45 **Sponsor Presentation - Mineral Technologies**
11:45–12:05 **DC furnace smelting of ilmenite and chromite: Future opportunities in a region of great potential**
H.J. Oterdoom^{1,2} and J.H. Zietsman^{2,3}, ¹SMS Group, ²University of Pretoria and ³Ex Mente Technologies, South Africa
12:05–12:30 **Reduction sequence and mechanism of carbothermic reduction of low grade titanium ore: South African ilmenite as a case study**
T. Mojisola^{1,2}, M.M. Ramakokovhu², P.A. Olubambi¹, W.R. Matizamhuka³, R.M. Manamela², and A. Mahlangu², ¹University of Johannesburg, ²Tshwane University of Technology and ³Vaal University of Technology, South Africa
12:30–12:50 **An electrochemical study and thermodynamic quantification of pre-oxidized ilmenite metastable phases**
M.M. Ramakokovhu¹, T. Mojisola², R.K.K. Mbaya¹, P.A. Olubambi², B.D. Baloyi¹, and L. Malaka¹, ¹Tshwane University of Technology and ²University of Johannesburg, South Africa
12:50–13:10 **A literature review and interpretation of the properties of high-TiO₂ slags**
H. Kotzé, *Consensi, South Africa*
13:10–14:00 **Lunch**

Session 3 – Session Chairperson: W. Erasmus, Multotec

- 14:00–14:45 **Keynote:**
W. van Niekerk, *Tronox, USA*
14:45–15:05 **Detailed mineralogical leucosene characterization: A base for physical beneficiation to improve rutile recoveries**
A. Delaporte^{1,2}, S.B. Blancher¹, A. Perroton¹, and T. Wallmach¹
¹Eramet Ideas and ²University of Bourgogne Franche-Comté, France
15:05–15:25 **Land capability versus land use in mine closure planning**
L. Vedral¹, J. Lake², R. Brown³, and R. Hattingh¹
¹Sierra Rutile Limited, ²SRK Consulting and ³Iluka Resources
15:25–15:45 **A new and novel method of operating rotary magnetic separators: applied to industrial mineral sands**
M.J. Flanagan, *MagQuip, South Africa*
15:45–16:05 **Mid-afternoon Refreshments**

Session 4 – Session Chairperson: H. Burger, Tronox

- 16:05–16:15 **Sponsor Presentation- Iluka**
16:15–16:35 **Technological developments in processing Australian mineral sand deposits**
M.I. Pownceby, W.J. Bruckard, and G.J. Sparrow, *CSIRO Mineral Resources, Australia*
16:35–16:40 **Conference Close**
17:30–23:00 **Dinner at Kirstenbosch Botanical gardens - Moyo restaurant**

Day 2 – Tuesday 6 August 2019

- 08:30–09:30 **Registration & Morning Refreshments**
09:30–09:35 **Emergency Procedures Presentation**
09:35–09:40 **Welcoming Address**
J. Selby, *Conference Chairperson, Independent Consultant South Africa*

Session 5 – Session Chairperson: N. Barkhuysen, Derrick Solutions

- 09:45–10:20 **Keynote: Do heuristics influence the mineral sands mining landscape**
R. Hattingh, *Iluka, Australia*
10:20–10:40 **Design of sidewall lining/cooling systems for AC or DC ilmenite smelting furnaces**
H. Joubert¹ and H. Kotzé², ¹Tenova Pyromet and ²Consensi Consulting, South Africa
10:40–11:00 **Improving furnace start-ups with computational modelling: The key to refractory lining integrity**
H. Weitz¹, W.A. Roos¹, D.J. Fourie², P.A. Strydom³, and J.H. Zietsman¹
¹Ex Mente, South Africa, ²Advanced Metal Industries Cluster Company, Saudi Arabia and ³Tronox, South Africa
11:00–11:20 **Mid-morning Refreshments**

Session 6 – Session Chairperson: B. Malan, Multotec

- 11:20–11:40 **Flowsheet development aimed at producing crude ilmenite from a waste stream by rejecting almandine garnet**
M. Gerber¹, J. Grobler¹, and H. Burger², ¹Light DeepEarth (Pty) Ltd and ²Tronox, South Africa
11:40–12:00 **Future-proofing mineral sand mining through advances in mobile dry mining methods**
M. Urquart, P. Dunn, T. Lawson, and J. Agenbag, *Downer Group, South Africa*
12:00–12:20 **Heavy mineral deposits: From exploration to model**
N.C. Steenkamp, *Consulting Geologist and Geotechnical Engineer, South Africa*
12:20–12:40 **A geometallurgical approach to enhance the gravity beneficiation of a Sr deposit**
A. Perroton, T. Wallmach, S.B. Blancher, and G. Rameau, *Eramet Ideas, France*
12:40–13:30 **Lunch**

Session 7 – Session Chairperson: J. Selby, Independent Consultant

- 13:30–13:50 **In-truck ore grade detection using apparent density measurements**
F-A. Consuegra, M. Fillion, G. Fortin, J. Giroux, D. Horth, D. Michaud, *Rio Tinto, Fer et Titane Inc., Sorel-Tracy and Havre St-Pierre, Canada*
13:50–14:10 **Broadening the application of gravity concentrators with a new spiral for 3 mm heavy minerals**
M.C. Diketane, H.S. Baloyi, and M.C. Tjabadi, *Multotec, South Africa*
14:10–14:30 **Online spiral grade control**
A.M. Russell, *Mintek, South Africa*
14:30–14:40 **Conference End**
14:40–15:00 **Mid-afternoon Refreshments**

Day 3 – Wednesday 7 August 2019 (Technical Visit)

- 08:00–08:15 **Meet at the Vineyard reception**
08:15–10:15 **Delegates transfer departs for Tronox, Namakwa Sands, Saldanha Bay (2-hour travel)**
10:15–10:30 **Arrival Tronox Introduction**
10:30–12:00 **Introduction**
Safety Induction
Site background and unit operations (Namakwa Sands)
Sort out and check PPE
12:00–14:30 **Lunch followed by Site visit**
14:30 **Depart for Cape Town**