

Limpopo Branch Event 2024

Embracing the 'Mine of the Future'
through Adoption and Implementation
of 4IR/5IR technological innovations

Cajori Hotel, 39 Palm Street, Phalaborwa, Limpopo



SAIMM
THE SOUTHERN AFRICAN INSTITUTE
OF MINING AND METALLURGY
LIMPOPO BRANCH

130
Years
OF TECHNICAL EXCELLENCE

FINAL PROGRAMME

Friday 8 November 2024

- 07:00-08:00 **Registrations and Early Morning Refreshments**
- 08:00-08:05 **Safety Brief**
Venue Official
- 08:05-08:20 **Welcome and Opening Address**
S. Zulu, *Branch Chairperson, Siyanda Bakgatla Platinum Mine, South Africa*
- 08:20-08:35 **SAIMM Presidential Address**
T.M. Mmola, *SAIMM Office Bearers*
- 08:35-08:45 **Introduction of Committee Members**
S. Zulu, *Branch Chairperson, Siyanda Bakgatla Platinum Mine, South Africa*

Session 1:

Session Chair: L.E. Mualusi, *Palabora Mining Company, South Africa*

Session Co-chair: T. Sicetsha, *Mudiwa Platinum Mine, South Africa*

- 08:45-09:00 **Heat transfer through siceraria cucurbitaceae lagenaria material: A python coding approach**
S.G. Bhongoza, T. Matamela, M. Ramaboea, and A.F. Mulaba-Bafubiandi, *University of Johannesburg, South Africa*
- 09:00-09:15 **Enhancing flotation process efficiency through data-driven insights: A comprehensive approach**
K. Machaba, M. Facela, E. Mualusi, D. Zambukere, and R. Moagi, *Palabora Mining Company, South Africa*
- 09:15-09:30 **Effects of stemming length and inter-hole delay timing on rock fragmentation and crusher throughput at a typical quarry**
S.A. Madanda and F. Mulenga, *University of South Africa, South Africa*
- 09:30-09:45 **Safety for future mines in South Africa: Navigating through an interplay of factors affecting the adoption of the fourth industrial revolution**
L.A. Maseko, *University of South Africa, South Africa*
- 09:45-10:00 **Effect of electrochemical potential on the copper metal recovery of the floatation plant at Palabora Mining Company**
K. Mashilo, E. Mualusi, K. Machaba, T. Moklapa, and R. Moagi, *Palabora Mining*

Company, South Africa

- 10:00-10:15 **Assessment of interest shown by Phalaborwa mining community to advance educational level at a university to embrace the mine of the future**
A.A. Mkonde, I.P. Dikgwatlhe, and L.N. Makhanya, *University of South Africa, South Africa*

- 10:15-10:30 **Sponsor Presentation**
K. Bateman *WilSum Minerals (Pty) Ltd, South Africa*

- 10:30-10:45 **Sponsor Presentation**
N. Sosibo, *AECI, South Africa*

- 10:45-11:00 **Mid-morning refreshments**

Session 2:

Session Chair: M. Hayane, *Marula Platinum Mine, South Africa*

Session Co-chair: N. Tsajoa, *Siyanda Bakgatla Platinum Mine, South Africa*

- 11:00-11:15 **Computational simulation of copper solvent extraction: Modelling and validation**
K. Mudzanani, S. Ramatsoma, and T. Phadi, *Mintek, South Africa*
- 11:15-11:30 **Flotation reagents development and application: A case study**
M. Lusambo, and L. Hoffmann, *Kemtec Africa, South Africa*
- 11:30-11:45 **Phasing in the diploma in mining engineering at the University of South Africa to produce mining practitioners of the future – a historical reflection**
F. Mulenga, *University of South Africa, South Africa*
- 11:45-12:00 **Application of stemming plugs for the reduction of air blast induced during surface mine blasting**
T. Mushwana and F. Mulenga, *University of South Africa, South Africa*
- 12:00-12:15 **Optimization of base metals sulfides bio flotation process using particle swarm optimization-artificial neural networks**
N.G. Zulu, M.J. Mvita, and B. Thethwayo, *University of Johannesburg, South Africa*

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12:15-12:30	Managing cave-induced seismic hazards at Palabora Block Cave Mine (Lift II) B.B. Makgate ¹ , F. Mulenga ² , V.C. Madanda ² , T.S. Mtshali ¹ , T. Chauke ² , and N.M. Chiloane ² , ¹ Palabora Mining Company, South Africa and ² University of South Africa, South Africa	15:00-15:15	From automation to autonomous systems: The next generation of mining R.G. Thage, <i>University of South Africa, South Africa</i>
12:30-12:45	SAG mill grinding media stress evaluation – a DEM approach M.M. Bwalya ¹ , O.S. Samukute ¹ , and N. Chimwani ² , ¹ University of the Witwatersrand and ² University of South Africa, South Africa	15:15-15:30	Perspective of mine surveyors on the adoption of new technologies and coding skills in the mining industry L.L. Yende and T. Chauke, <i>University of South Africa, South Africa</i>
12:45-13:00	Sponsor Presentation V. Manyathi, <i>Tega Industries, South Africa</i>	15:30-15:45	Announcement of Best Technical Presentations L. Masutha, <i>Palabora Mining Company, South Africa</i>
13:00-13:15	Sponsor Presentation L. Hoffmann, <i>Kemtec Africa, South Africa</i>	15:45-16:00	Tokens of Appreciations T. Kgarabjang, <i>University of Limpopo, South Africa</i>
13:15-14:15	Lunch	16:00-16:15	Vote of Thanks and Closure S. Zulu, <i>Siyanda Bakgatla Platinum Mine, South Africa</i>
Session 3: Session Chair: L. Pheme, <i>Modikwa Platinum Mine, South Africa</i> Session Co-chair: P. Kupa, <i>Bokoni Platinum, South Africa</i>			
14:15-14:30	Impact of the elutriator on PGMs' in the scavenger recleaner concentrate stream P. Nkgadime and R. Malatsi, <i>SIMA Operations (Pty) Ltd, South Africa</i>	Technical Presentations Evaluation Committee B. Hlatshwayo, <i>Glencore Alloys, South Africa, Committee Chairperson</i> J. Modipe, <i>SIMA Operations, South Africa</i> Z. Matsimbi, <i>Bokoni Platinum Mine, South Africa</i> T. Sisetsha, <i>Modikwa Platinum Mine, South Africa</i> R. Khumalo, <i>Palabora Mining Company, South Africa</i> R. Malatsi, <i>SCI Operations, South Africa</i> W.K. Banda, <i>Chairperson, Young Professionals Council, South Africa</i>	
14:30-14:45	Impact of residual mining subsidence on road infrastructure in Merriespruit, Free State Province, South Africa P.P. Pule, F. Mulenga, P. Dikgwatlhe, and F. Lugoma, <i>University of South Africa, South Africa</i>		
14:45-15:00	Drone inspection in confined space using computer vision D.L. Zambukere and L.E. Mualusi, <i>Palabora Mining Company, South Africa</i>		