

# PGM THE 8TH INTERNATIONAL CONFERENCE

2-3 NOVEMBER 2022 - CONFERENCE  
4 NOVEMBER 2022 - TECHNICAL VISIT

VENUE - SUN CITY, RUSTENBURG, SOUTH AFRICA



## PGMs - Enabling a cleaner world



### Abstracts Received

#### Platinum group metals (PGMS) production prospect beyond covid-19 crisis in South Africa

L. Landu, T. Bungane, T. Mnisi, and C. Dubase, *Mintek, South Africa*

#### Review: Life-cycle assessment studies for the processing of platinum group and base metals

T. Goga and K.G. Harding, *University of the Witwatersrand, South Africa*

#### Process and transport cost reduction of PGM concentrates using chemical filtration aid

N. Mautsa<sup>1</sup>, R. Pretorius<sup>2</sup>, M. Mbonami<sup>1</sup>, B. Nel<sup>1</sup>, and J. Miller<sup>1</sup>, <sup>1</sup>*Kemira, South Africa* and <sup>2</sup>*Kemira, Germany*

#### The evolution of the mechanically agitated hopper in Anglo American platinum

N. Sukha<sup>1</sup>, C. Kruger<sup>2</sup>, and N. Kobe<sup>1</sup>, <sup>1</sup>*Anglo American Platinum* and <sup>2</sup>*Anglo American, South Africa*

#### Increasing the flotation recovery of <math><10 \mu\text{m}</math> PGE – a plant evaluation

M. Khumalo<sup>1</sup>, M. Sema<sup>1</sup>, C. Karageorgos<sup>2</sup>, and B. Lumsden<sup>1</sup>, <sup>1</sup>*Mogalakwena Complex, South Africa* and <sup>2</sup>*Ausmetec Pty Ltd, Australia*

#### A pilot scale study of the floatability and rejection of minerals in PGM tailing deposits when using different reagent combinations

S. Engelbrecht<sup>1</sup>, B. Greyvenstein<sup>2</sup>, L. Faustino<sup>1</sup>, and L. Mahlangu<sup>1</sup>, <sup>1</sup>*Clariant Southern Africa (Pty) Ltd* and <sup>2</sup>*Minprotech, South Africa*

#### UF7 Spiral: Ultrafine Processing Made Possible

R. Molehe and R. Ceko, *Multotec Process Equipment Pty, South Africa*

#### Part II: Investigating the recoveries and grades of individual platinum group and precious metals when alternative collector chemistries are used on UG2 ore

S. Engelbrecht<sup>1</sup>, B. Chaponda<sup>2</sup>, P. Jordaan<sup>3</sup>, L. Naude<sup>3</sup>, and L. Mahlangu<sup>1</sup>, <sup>1</sup>*Clariant Southern Africa (Pty) Ltd*, <sup>2</sup>*Sibanye Stillwater* and <sup>3</sup>*Minopex Pty Ltd, South Africa*

#### Understanding the lived experiences of women in management in the mining industry in South Africa

L.N. Miyen, *South Africa*

#### The Importance of reef widths and mining cut clarification as modifying factors an ongoing battle for clarity

A. Clay, S. Joubert, R. Kahn, B. Dilatlheng, and I. Matsheka, *EY, South Africa*

#### Improved gold regression for mineral resource definition data

S. Chetty, *Anglo American Platinum, South Africa*

#### PGM Slag Material Properties: A Review

N. Sweeten, T. Makgoale, W. Roos, H. Weitz, and J. Zietsman, *Ex Mente, South Africa*

#### Circular economy with reference to PGMs and ESG

S. Bullock, *Anglo American, South Africa*

#### Improving closed circuit grinding circuit capacities by revisiting grinding basics

Y. Reja, B. Zhang, and J.B.C. Makola, *Derrick Corporation, USA*

#### A new preconcentration technique for the determination of PGMs and gold by fire assay and ICP-OES

A. Masasire<sup>1,3</sup>, F. Rwere<sup>2</sup>, P. Dzomba<sup>3</sup>, and M. Mupa<sup>3</sup>, <sup>1</sup>*Siyanda Union Mine, South Africa*, <sup>2</sup>*Chinhoyi University of Technology* and <sup>3</sup>*Bindura University of Science Education, Zimbabwe*

#### Unki mine concentrator upgrade

T. Nyakudarika<sup>1</sup>, J. Kalala<sup>1</sup>, and R. Chatikobo<sup>2</sup>, <sup>1</sup>*DRA Projects* and <sup>2</sup>*Anglo American Platinum, South Africa*

#### Successful debottlenecking SABC section of a PGM concentrator

T. Nyakudarika<sup>1</sup>, J. Kalala<sup>1</sup>, and B. Gozhora<sup>2</sup>, <sup>1</sup>*DRA Projects* and <sup>2</sup>*Zimplats, South Africa*

#### Advances in PGM flotation using Clariant's specialty chemicals

L. Mahlangu, G. Zwane, J. Cloete, and S. Raju, *Clariant Southern Africa, South Africa*

#### Recovery of the ultra-fine chrome from the cyclone overflow and underflow to enhance the PGM Plant feed

T. Molefe and G. Duvenhage, *MetQ, South Africa*

#### Energy efficient secondary regrind mill for a PGM concentrator

T. Nyakudarika, P. Morgan, and H. Govender, *DRA Projects, South Africa*

#### Phase compositions and microstructures of the freeze linings formed in PGMs smelters

A.M. Nyembwe, R.D. Cromarty, and A.M. Garbers-Craig, *University of Pretoria, South Africa*

#### Changes in the phase chemistry of concentrate as it descends through the black top of a PGM smelter

O.R.L. Kao and A.M. Garbers-Craig, *University of Pretoria, South Africa*

#### Lime addition to PGM smelter slag whereby chemical degradation of magnesia-chromite bricks is limited

M.G. Khalane and A.M. Garbers-Craig, *University of Pretoria, South Africa*

#### Weathering of PGM concentrate and its effect on matte fall during smelting

L.S. Maphalala and A.M. Garbers-Craig, *University of Pretoria, South Africa*

#### Capital efficient upgrading of PGM concentrates

S. Dowling, S. Nicol, W. Hannemann, P. Bullock, and S. Nikolic, *Glencore Technology, Australia*

#### Investigating the amenability of a PGM-bearing Platreef ore to coarse particle flotation using the Hydrofloat™ technology

J. Taguta, *Mintek, South Africa*

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### Abstracts Received

#### Platinum Mining in the Circular Economy

J.M. Kruger, *Vuuma, South Africa*

#### Replacement of hand-held pyrometers with on-line thermal cameras on the tapping floor

A.S. Jawohir, K. van der Merwe, and H.P. Potgieter, *Anglo American Platinum Limited, South Africa*

#### The impact of electrode tip shape dynamics on furnace control - When sharpening your pencil does not give you your desired engineering solution

S. Shoko<sup>1</sup>, L.R. Nelson<sup>1</sup>, M. Siziba<sup>1</sup>, J. Visser<sup>3</sup>, and C. Mutevhe<sup>1</sup>, *<sup>1</sup>Anglo American Platinum Limited, Zimbabwe, <sup>2</sup>Anglo American Platinum Limited and <sup>3</sup>Anglo American PLC, South Africa*

#### Microstructures and thermal behaviour of Ti31.75V18.25Pt50 and Ti25V25Pt50 potential shape memory alloys

T. Motsai<sup>1,2</sup>, M.E. Makhatha<sup>2</sup>, S. Camagu<sup>1</sup>, C. Machio<sup>1</sup>, P. Daswa<sup>1</sup>, P.M. Radingoana<sup>1</sup>, and G.T. Motsi<sup>1,3</sup>, *<sup>1</sup>Council for Scientific and Industrial Research, <sup>2</sup>University of Johannesburg and <sup>3</sup>University of Pretoria, South Africa*

#### Recovery of ultra-fine chrome with spiral concentrators- Where are we?

A. Du Toit and T. Molefe, *MetQ, South Africa*

#### Lithological study of a contact-style Cu-Ni-PGE mineralization in the shallow Platreef setting: A geometallurgical approach

R. Moeletsi<sup>1</sup>, M. Yudovskaya<sup>2</sup>, and D. Chetty<sup>1</sup>, *<sup>1</sup>Mintek and <sup>2</sup>University of the Witwatersrand, South Africa*

#### The preparation of high surface area carbons from biomass modified with ionic liquids for the recovery of Pt in effluent systems

I. Tsotetsi and P.G. Ndungu, *University of Johannesburg, South Africa*

#### Dissolution study of sperrylite (PtAs<sub>2</sub>) in a cyanide-ferricyanide leach system

K. Shaik and J. Petersen, *University of Cape Town, South Africa*

#### Comparison of Denver and Leeds laboratory flotation cells: effect of particle size

M.P. Tshazi<sup>1</sup>, L.S.L. Filho<sup>2</sup>, and N. Naude<sup>1</sup>, *<sup>1</sup>University of Pretoria, South Africa and <sup>2</sup>Universidade de São, Brazil*

#### The influence of ternary alloying of Ti-Pt alloy by partially substituting Pt with Hafnium (Hf) varying Pt and Hf contents between 6.25-43.75%.

A.S. Ngoveni, M.E. Makhatha, and C. Marchio, *CSIR, South Africa*

#### Recovery of platinum group metals using ion exchange

E.K. Hardwick, L.B. Siwela, and J.G. Falconer, *Cwenga Technologies, South Africa*

#### Insights from dynamic models for an online flotation pulp sensor

E.C. Nienaber<sup>1</sup>, A.L. Haasbroek<sup>1</sup>, L. Auret<sup>1,2</sup>, and K.S. Brooks<sup>3</sup>, *<sup>1</sup>Stone Three, <sup>2</sup>Stellenbosch University and <sup>3</sup>University of the Witwatersrand, South Africa*

#### Integration of real-time, online, individual cyclone measurement at a large cooper concentrator: Challenges and lessons learned

J. Felix<sup>1</sup> and J. Viega<sup>2</sup>, *<sup>1</sup>Felix Project Management and Consulting Services C.C, South Africa and <sup>2</sup>CiDRA Minerals, Processing Inc., USA*

#### MagoSense: The innovative real time mill monitor for the mining industry

A. Bauristhene and B. de Haas, *Magotteaux International, Belgium*

#### Powder characterization of Pt84-Al11-Cr3-Ru2 superalloy manufactured by ultrasonic atomization

H. Möller<sup>1,2</sup>, V. Motsweni<sup>1</sup>, T. Żrodowski<sup>3</sup>, and T. Choma<sup>3</sup>, *<sup>1</sup>Mintek, <sup>2</sup>University of Pretoria, South Africa and <sup>3</sup>Warsaw University of Technology, Poland*

#### Making sense of model uncertainty in pyrometallurgy

J. Heyns, A. Bogaers, W. Roos, N. Sweeten, and J. Zietsman, *Ex Mente, South Africa*

#### Innovative developments for slag cleaning furnaces

G.J. Lotter, *Metix (SMS Group), South Africa*

#### Integrated flowsheet simulation of Platinum Group Metals recovery from spent auto catalyst

S.C. Louw<sup>1</sup> and M.A. Reuter<sup>2</sup>, *<sup>1</sup>Metix (SMS Group), South Africa and <sup>2</sup>SMS Group GmbH, Germany*

#### Real-time froth states decision support tool: Implementation and initial results

M.C. du Plessis<sup>1</sup>, A.L. Haasbroek<sup>1</sup>, E.C. Nienaber<sup>1</sup>, M.T. Munyai<sup>2</sup>, M. Molomo<sup>2</sup>, and L. Auret<sup>1,3</sup>, *<sup>1</sup>Stone Three, <sup>2</sup>Anglo American Platinum and <sup>3</sup>Stellenbosch University, South Africa*

#### The effect of hydrodynamic cavitation device on the performance of the PGM flotation

A. Singh<sup>1</sup>, M. Dlame<sup>2</sup>, and M. Safari<sup>1</sup>, *<sup>1</sup>GoldOre Pty Ltd, <sup>2</sup>Mintek, South Africa*

#### Safety information in 3D

R. Barnard, *Mineware Consulting, South Africa*

#### Akanani Project - Mine of the future (or tomorrow)

T. Hofmeyr<sup>1</sup>, G. du Toit<sup>1</sup>, and D. Tucker<sup>2</sup>, *<sup>1</sup>DRA Projects and <sup>2</sup>Sibanye Stillwater, South Africa*

#### Effect of alloying on the phase stability and elastic properties of L12 Pt3Cu crystal structure

T. Mathibeng<sup>1,3</sup>, H. Moller<sup>1,2</sup>, M. Phasha<sup>2</sup>, and A. Mwamba<sup>2</sup>, *<sup>1</sup>University of Pretoria, <sup>2</sup>Mintek and <sup>3</sup>South African Diamond and Precious Metals Regulator, South Africa*