Abstracts received for Copper Cobalt Africa Conference 2018

**General and Economics**

Production output of primary copper in South Africa: Predicting future trends using the intensity of use theory  
M.J. Nong, P.J.K. Leeuw, and N.M. Cudjoe, University of the Witwatersrand, South Africa

Cost performance analysis of the global copper mining industry from 2007 to 2016  
T. Tholana and P.N. Neingo, University of the Witwatersrand, South Africa

Statistical analysis of copper price drivers over the last two decades  
P.N. Neingo and T. Tholana, University of the Witwatersrand, South Africa

Unraveling the hidden causes behind issues related to end-of-month metal accounting  
L. Lachance, S. Gariépy, and M. Cousineau, Ion Group, Canada

Outotec service portfolio and recent development in managing asset performance  
J. Lempainen and M. Lindeman, Outotec, Finland

Zambian women in copper mining  
E.M. Mvula, P.R.K. Chileshe, M.M. Daka, and T.P. Chanda, Copperbelt University, Zambia

Training of graduates for the mining industry in Zambia  
J. Kapobe, M. Vermaak, and S. Simukanga, Mopani Copper Mines and Zambian Higher Education Authority, Zambia

Training for life  
J. Kapobe, M. Milupi, A. Lemmer, C. Mazala, and R. Phiri, Mopani Copper Mines, Zambia

**Geology, Mineralogy and Geometallurgy**

An African Copperbelt-style district in Colombia: Insights from LWIR satellite imaging  
D. Forest and N. Pendock, N-Side Mining, South Africa

The fourth industrial revolution of underground geological mapping: the application of a 3D scanner  
M. Mpanza and H. Grobler, University of Johannesburg, South Africa

On-site process mineralogy applied at Kansanshi Copper Mine  
L. Little, A. Prinsloo, B. Hamilemba, B. Kaputula, and Chiza Siame, Kansanshi Mining, Zambia

Copper ore variability: benefits of advanced simulation  
M. Talikka and A. Remes, Outotec, Finland

The Opouwo cobalt deposit as part of the Steirland hydrothermal system, Kaoko Belt, Namibia  
K.D. Ndalulilwa and R.H. Ellmies, Gecko Exploration and Gecko Namibia, Namibia

Element mobility in the weathering environment and surface vectors to mineralisation—A case study from the Mashitu South Cu-Co deposit, Katanga, Democratic Republic of Congo  
G.M. Gigler and J.A. Kinnaird, University of the Witwatersrand, South Africa

**Mining**

Satellite synthetic aperture radar for mine and tailings dam monitoring  
N. Pendock, N-Side Mining, South Africa

Controlled blasting within moderate to highly weathered surface mine walls; a case study from Kansanshi Mining PLC  
N. Simbile, Kansanshi Mine, Zambia

Critical review of the applications of machine learning in mining operations  
B.I. Morena, University of the Witwatersrand, South Africa

The state of occupational safety in the South African mining industry: progress, successes and challenges  
K. Letsaalo and S. Phakathi, Chamber of Mines of South Africa, South Africa

Logistical inputs into the improvement of development advance rates  
S. Rupprecht, University of Johannesburg, South Africa

A ranking methodology to prioritise artisanal and small-scale mining projects  
S. Rupprecht, University of Johannesburg, South Africa

The assessment of the impacts of storage methods on yielding pencil props (Eucalyptus Grandis)  
S.M. Lubisi and M. Mpanza, University of Johannesburg, South Africa

Review of radar technologies for slope stability in open pit mines  
J. Oosthuizen, VBKOM Consulting, South Africa

Determination of an effective slope monitoring regime for mining a failed zone on the north wall of Nchanga Open Pit-Cut2  
C. Silwamba, S. Syamusana, and B. Siwakwi, Konkola Copper Mines, Zambia

**Comminution**

A case for high-chrome grinding media at a Zambian copper mine  
A. Bauristhene and D. Nel, Magotteaux (Pty) Ltd, South Africa

Assessing the benefits of automatic grinding control using PST technology for true on-line particle size measurement  
R. Maron, C. O’Keefe, and J. Sepulveda, CiDRA Minerals Processing, USA and J-Consultants, Chile

Converting of Lubambe Copper Mine ball mill from grate discharge type to an overflow  
A. Mhone, Lubambe Copper Mines, Zambia

Spiral gravity concentration of base metal samples  
F. Bornman, Multotec, South Africa

Beneficiation of a complex low-grade chalcopryite ore  
L. Mweene and S. Subramanian, Indian Institute of Science, India

The influence of the water balance and classifier choice on the energy efficiency of milling circuits  
**Flotation**
An empirical model of the recovery response of the copper sulphide flotation circuit at Kansanshi Mine
M. Lusamboa and F.K. Mulenga, *Kansanshi Mine, Zambia and University of South Africa, South Africa*
Multi-layered control improvement and optimisation of a copper flotation circuit
P.D. Knoblauch, *Mintek, South Africa*
Copper recovery from carbonaceous sulphide ore by flotation
R.S. Magwaneng, K. Haga, A. Batnasan, A. Shibayama, M. Kosugi, R. Kawarabuki, K. Mitsuhashi, and M. Kawata, *Akita University, Japan*
Evolution of the Kansanshi sulphide flotation circuit in response to declining ore quality
B. Ng’ambi, *Kansanshi Mining, Zambia*
Development of flotation reagent automated system
C. Ngulube and W. Munalula, *Kansanshi Mining, Zambia*
Flotation process metering of concentrate, slurry, air and water flows using non-intrusive fibre-optic sensing
D. Finfer and R. De Villiers, *Silixa Ltd, United Kingdom and Anglo American SA, South Africa*

**Pyrometallurgy**
Sonic injection in sulfide smelting: an update
J. Kapusta, *BBA Inc., Canada*
Operational experiences of Mufulira Isasmelt technology since inception

**Hydrometallurgy**
Advances in cobalt recovery and purification
C. Pawlik, *Mintek, South Africa*
Milling in acidic raffinate solution in copper-cobalt hydrometallurgical circuits: the next wave in copper-cobalt hydrometallurgy
S. Kumwenda and E. Mkhiize, *Senet, South Africa*
Recovery of cobalt using the Albinon Process
P. Rohner, O. Kloeber-Deane, and D. Turner, *Core Resources, Australia*
Innovative process design for oxide ores in the DRC
D. Alexander, C. van der Merwe, J. Kgomo, and R. Lumbule, *Eurasian Resources Group, DR Congo*
Further advances in design of copper–cobalt hydrometallurgical circuits
G. Miller and J. Scheepers, *Miller Metallurgical International, Australia and DRA Global, South Africa*
Review of selected flowsheets for producing high-purity cobalt products
J. Scheepers, E. Forner, and A.J. du Toit, *DRA, South Africa*
Urban mining – The pivotal role of hydrometallurgical approaches for recycling secondary source feeds
B. Currie, *Ausenco, Australia*

**Leaching**
Methodology to identify optimum leach, CCD configuration to maximize throughput and efficiency
E. Kamuchele, A. Prinsloo, R. Chibesa, C. Musonda, and J. Sirolezya, *Kansanshi Mining, Zambia*
Acid bake-leach process for recovering copper and cobalt from complex sulphide-oxide concentrates
P. Mwamba, *University of Zambia, Zambia*
Improving process efficiency in copper leaching circuits
N. Mautsa, M. Bower, B. Nel, and J. Miller, *Kemira, South Africa and United Kingdom*
Enhanced cobalt percolation leaching from DRC copper oxide ores by the use of reductant in agglomeration
P. Basson, M. Ndhlalose, D.N. Nxumalo, S.M.S. Radebe, and S.W. Robertson, *Mintek, South Africa*
Laboratory column heap leaching of cobalt using raffinate and sodium metabisulphite
P. Bwando, *BASF, DR Congo*
Robust leach pH control incorporating system linearization, feedforward, and TAC soft sensing
B. Maas, *Kansanshi Mining, Zambia*
More reliable tank slurry agitation via swirl flow
MesoThermTM bio-oxidation technology: a simple process for the treatment of base metal sulphide ores
C. van Buuren, M. Nicolle, and J. van Niekerk, *Outotec South Africa (Pty) Limited, South Africa*

**Solvent Extraction**
On-line analysis in solvent extraction process
L. Koresas, *Outotec, Finland*
Techno-economic evaluation of BASF’s new HT solvent-extraction reagent
J.J. Taute and S. Archer, *BASF and Senet, South Africa*
Management of mixing continuity in a solvent extraction plant with a leach solution of high silica at Ruashi Mining
Silica mitigation in copper solvent-extraction circuits
F. Crundwell, K. Sole, O. Dlamini, and G. Kruger, *CM Solutions, University of Pretoria, Market to Africa, South Africa*
Loaded organic washing to reduce electrolyte impurities
P. Bwando, *BASF, DR Congo*
Additive to mitigate crud formation in solvent extraction operations
B. Mbao, L. Cohen, L. Moya, M. Moser, and O. Tinkler, *Solvay, EMEA, Solvay, USA*
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**Ion Exchange and Membranes**
Niche applications for solvent-impregnated resins during production of high-purity base metal salts
V. Yahorava, V. Bazhko, and R. Leso, Mintek, South Africa

Metal removal from mine tailing leachates using fixed bed ion exchange columns
A.L. Riley, S.E. Pepper, A.J. Canner, E.L. Sexton, and M.D. Ogden, University of Sheffield, UK

Recovery of cobalt and nickel from acidic waste streams using phosphonic acid functionalised silica
J.T.M. Amphlett, S.E. Pepper, W. Peng, and M.D. Ogden, University of Sheffield, UK

Screening of chelating ion exchange resins for implementation in base metal recovery

Mass-transfer optimization for cobalt pertraction of recycled spent catalyst at Minemet South Africa
N. Mans, D. van der Westhuizen, D. Bruinsma, P. Cole, J. du Toit, E. Munnik, A. Coates, and H. Krieg, North-West University, Bruinsma Solutions, Peter Cole Metallurgical Services, DRA Global, and Minemet, South Africa

**Electrorefining and Electrowinning**
Mufullara Copper Refinery modernisation
M. Chooye, R. Patel, B. O’Rourke, and A. Pranowo, Mopani Copper Mines, Zambia and Glencore Technology, Australia

Advances in permanent cathode maintenance solutions
L. Nordlund and H. van der Walt, Outotec, Finland

Lead contamination of copper cathodes, direct electrowinning versus leach/solvent extraction/ electrowinning
G. Mitshabu, C. Tshula, D. Van Tan, and G. Tshibasu, BASF, Gécamines Luilu Refinery and Lubumbashi University, DR Congo

Electrochemical characterisation of cobalt electrowinning from dilute sulphate solutions
R. Wildenboer and R. Sandenbergh, University of Pretoria, South Africa

Design of a selection guide for copper electrowinning sizing: cell arrangement as a function of rectiformer size for varying throughputs
J. Scheepers, E. Forner, and A.J. du Toit, DRA, South Africa

**Tailings**
Dewatering tailings: Rapid water recovery by use of centrifuges
R. Klug, A. Rivadeneira, and N. Schwarz, Flottweg, Peru and Schwartz Global Consulting, South Africa

Improvement in tailings thickening at Kalumbila Minerals Limited Sentinel Mine
M. Bower and M. Kynkaanniem, Kalumbila Mine, Zambia

**Analytical**
Determination of MCM2 copper cathode sampling regime
O. Mahenga, D. Muma, B. Muleya, E. Musenge, and G. Bwalya, Mopani Copper Mines, Zambia

Determination of Cu, Fe, SiO2 and other analytes using ICP-OES after sodium peroxide fusion
O. Mahenga, D. Muma, B. Muleya, C. Mulenga, S. Chibwe, and J. Botha, Mopani Copper Mines, Zambia

Sequential and diagnostic copper leach analyses of low-grade ores and leach residues
H. Mnuculwane, Mintek, South Africa

**Projects**
The Kamoa-Kakuka copper project
S. Amos, Ivanhoe, DR Congo

Processing of Copperbelt historical copper smelter slag through the Chibuluma concentrator and future prospects for maximizing value recovery
B. Kalumba, A. Mwanza, and J. Sikamo, Chibuluma Mines, Zambia

Development of the extraction process for Kamoya copper–cobalt mine
H. Dong, Wanbao Mining Ltd., China

Fast-track projects in the DRC
A. Lathwood, Eurasian Resources Group, DR Congo

The Kipushi zinc project
S. Amos, Ivanhoe, DR Congo

Polymetalllic processing within a circular economy
P. van Staden and M. Gericke, Mintek, South Africa

The Mutoshi Project - Part I: Metallurgical testwork, process design and project delivery
P. Ilunga, D. Samal, and M. Nicolle, Chemicals of Africa SARL (CHEMAF) and Outotec South Africa (Pty) Limited, DR Congo, South Africa

Project evaluation: The drivers behind a mineral project’s value
B. Botha, VBKOM Consulting, South Africa

**Dewatering tailings: Rapid water recovery by use of centrifuges**
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