

THURSDAY 4 AUGUST 2011

| PLENARY 1 | | | | | Chair: SM Bradshaw | | | | |
|-----------------------------------|------|---|--|--|-----------------------------------|------|--|------------------------------------|--|
| 08:30 - 09:15 | PL01 | Acid Mine Drainage and Radioactivity within the Witwatersrand Goldfields | M Liefferink | Federation for a Sustainable Environment | | | | | |
| SESSION 1 GENERAL | | | | | | | | | |
| 09:20 | OR01 | Tools to design a flexible circuit - what is available and what is needed | M Powell | Julius Kruttschnitt Mineral Research Centre, Australia | | | | | |
| 09:40 | OR02 | The Importance of Gas-Liquid Mass Transfer in Industrial Leaching Operations | F Crundwell | CM Solutions | | | | | |
| 10:00 | OR03 | The first year of research at PEPT Cape Town: an overview | A Buffler, I Govender | University of Cape Town | | | | | |
| 10:20 | TEA | | | | | | | | |
| SESSION 2A FLOTATION | | | | | SESSION 2A HYDROMETALLURGY | | | | |
| Chair: J Sweet | | | | | Chair: J Petersen | | | | |
| <i>(Parallel with Session 2B)</i> | | | | | <i>(Parallel with Session 2A)</i> | | | | |
| 10:50 | OR04 | Investigating the phenomenon of synergism between flotation reagents - a case study | KC Corin, CT O'Connor, J Bezuidenhout | University of Cape Town | 10:50 | OR08 | The challenge of rare earth elements in zinc solvent extraction with D2EHPA | E Alberts, C Dorfling | Stellenbosch University |
| 11:10 | OR05 | A modelling framework to determine the value proposition of microwave treatment of mineral ores | E Charikinya, SM Bradshaw, A Ali | Stellenbosch University | 11:10 | OR09 | Comparative Review of Analytical, deterministic and numerical Modelling of the Leaching of Mineral Ores | EK Ngoy, AF Mulaba-Bafubiandi | University of Johannesburg |
| 11:30 | OR06 | Contact angle measurements and flotation study in the Pentlandite-Serpentine System | M Alvarez-Silva, GI Dávila-Pulidob, A Uribe-Salasb, JA Finch | McGill University, Canada | 11:30 | OR10 | Behaviour of acid Ion Exchange Resins in strong Electrolytes | A Nesbitt, M Maloka, J Petersen | Tibsen Technologies, University of Cape Town |
| 11:50 | OR07 | Mixed thiol collectors in pure mineral systems | D Castelyn, CT O'Connor, B McFadzean | University of Cape Town | 11:50 | OR11 | Developing a solvent extraction process for the extraction of cobalt (II) and iron (II) from nickel (II) solutions with nickel salts of Cyanex 272 | MC Olivier, C Dorfling, JJ Eksteen | Stellenbosch University, Lonmin |

| SHORT ORAL PRESENTATIONS (with POSTER) | | | | | SHORT ORAL PRESENTATIONS (with POSTER) | | | | |
|--|------|--|---|---|--|------|--|--|--|
| 12:10 | SP01 | Investigating the effect of energy input on flotation kinetics in an oscillating grid flotation cell | <i>W Massey, DA Deglon, MC Harris</i> | <i>University of Cape Town</i> | 12:10 | SP08 | Reaction mechanism and leaching kinetics of Rh and Ru dissolution during the pressure leaching of first stage leach residue | <i>C Dorfling, G Akdogan, SM Bradshaw, JJ Eksteen</i> | <i>Stellenbosch University, Lonmin</i> |
| 12:17 | SP02 | Froth flotation of nickel sulphide ores using thiol collectors and their mixtures | <i>W Ngobeni, G Hangone, D Ikhu- Omoregbe</i> | <i>Cape Peninsula University of Technology</i> | 12:17 | SP09 | Mathematical and Computer Modelling of the Chloride Assisted Leaching of Covellite. Pore Diffusion Phenomena | <i>A Cherkaev, P Basson, J Petersen</i> | <i>University of Cape Town</i> |
| 12:24 | SP03 | Investigating the role of pulp chemistry on the floatability of a Cu-Ni Sulfide ore | <i>KC Corin, J Mishra, CT O'Connor</i> | <i>University of Cape Town</i> | 12:24 | SP10 | Numerical Modelling of Particulate Suspension Rheology | <i>E Smuts, DA Deglon, CJ Meyer</i> | <i>University of Cape Town</i> |
| 12:31 | SP04 | Tracking the motion of particle-bubble aggregates in flotation using PEPT | <i>N Ngoepe, AN Mainza, I Govender, DJ Bradshaw</i> | <i>University of Cape Town, JKMRRC, University of Queensland, Australia</i> | 12:31 | SP11 | The effect of the iron endpoint during Peirce Smith converting on the leaching characteristics of PGE containing Ni-Cu-S converter matte | <i>RF van Schalkwyk, JJ Eksteen, E Thyse, G Akdogan</i> | <i>Stellenbosch University, Lonmin</i> |
| 12:38 | SP05 | The relative adsorption of guar gum on pure minerals | <i>SS Mhlanga, B McFadzean, CT O'Connor</i> | <i>University of Cape Town</i> | 12:38 | SP12 | Synthesis and metal complexation capability of Molecularly imprinted multi-walled carbon nanotube-composite materials for silver recovery from aqueous solutions | <i>MEH Ahamed, XY Mbianda, AF Mulaba- Bafubiandi, L Marjanovic</i> | <i>University of Johannesburg</i> |
| 12:45 | SP06 | The effect of frother type and dosage on valuable and gangue mineral recovery | <i>JG Wiese, PJ Harris</i> | <i>University of Cape Town</i> | 12:45 | SP13 | Heap leaching of platinum group metals from a low-grade ore concentrate | <i>J Mwase, J Petersen, JJ Eksteen</i> | <i>University of Cape Town, Lonmin</i> |
| 12:52 | SP07 | Comparison of Various Turbulence Models for CFD Simulation of Hydrocyclones | <i>M Karimi, G Akdogan, SM Bradshaw, C Aldrich</i> | <i>Stellenbosch University</i> | 12:52 | SP14 | Reductive leaching of ilmenite in hydrochloric acid | <i>S Fani, TF Madzimbamuto, TV Ojumu</i> | <i>Cape Peninsula University of Technology</i> |

| 13:00 | | LUNCH | | | 13:00 | | LUNCH | | |
|------------|------|---|--|---|------------|------|--|---|---|
| SESSION 3A | | COMMINUTION (Parallel with Session 3B) | | Chair: A Mainza | SESSION 3B | | PHYSICAL PROCESSES (Parallel with Session 3A) | | Chair: G Akdogan |
| 14:00 | OR12 | Confined bed breakage of microwave treated and untreated ores | AY Ali, SM Bradshaw | Stellenbosch University | 14:00 | OR17 | Commissioning of Nimura dense media separation plant in DR CONGO – an operator's account | S Sondashi Betachem | |
| 14:20 | OR13 | Incorporating the influence of the lifter profile in tumbling mill models using data from the PEPT system | H Brodner, A Mainza, I Govender, M Powell | University of Cape Town, Julius Kruttschnitt Mineral Research Centre, Australia | 14:20 | OR18 | A new approach to quantifying solids concentration homogeneity in Rushton-agitated slurry reactors using radial and axial concentration profiles | STL Harrison, JJ Cilliers, R Stevenson | University of Cape Town, Royal School of Mines, London, UK |
| 14:40 | OR14 | Inference of underflow cut sizes in hydrocyclones by use of multivariate image analysis | FDL Uahengo, C Aldrich | Stellenbosch University | 14:40 | OR19 | Experimental investigation into the classification of iron ore in a batch jig | N Naude, L Lorenzen, AV Koleshnikov, C Aldrich | Stellenbosch University |
| 15:00 | OR15 | Energy distribution analysis for grinding media mills | DVV Kallon, I Govender, AN Mainza | University of Cape Town | 15:00 | OR20 | CFD Simulation of a Mechanically Stirred Tank using Multiple Reference Frames Technique | M Karimi, G Akdogan, SM Bradshaw | Stellenbosch University |
| 15:20 | OR16 | Hardness, Breakage and Batch Grindability Characteristics of Granulated Nickel Converter Matte | E Thyse, G Akdogan, JJ Eksteen | Stellenbosch University, Lonmin | 15:20 | OR21 | Estimation of particle size fractions with texture modelling methods | G Jemwa, C Aldrich | Stellenbosch University |

| SHORT ORAL PRESENTATIONS (with POSTER) | | | | | SHORT ORAL PRESENTATIONS (with POSTER) | | | | |
|--|--|--|---|--|--|--|--|--|--|
| 15:40 | SP15 | Simulation of tumbling mill experiments using the Discrete Element Method | <i>L Bbosa, A Mainza, I Govender, M Powell</i> | <i>University of Cape Town, Julius Kruttschnitt Mineral Research Centre, Australia</i> | 15:40 | SP20 | Influence of Ultrasound on the precipitation of gypsum from water super-saturated with calcium sulphate (as obtained during water recovery from AMD) | <i>LD Steynberg</i> | <i>Stellenbosch University</i> |
| 15:47 | SP16 | Evaluation of applicators for high power treatment of crushed mineral ores | <i>SM Bradshaw, R Marchand, A Ali</i> | <i>University of Stellenbosch</i> | 15:47 | SP21 | Sources of contamination of crystal products in EFC | <i>ST Reddy, DA Deglon, AE Lewis</i> | <i>University of Cape Town</i> |
| 15:54 | SP17 | Characterising grinding media motion inside an M4 IsaMill™ using PEPT | <i>AP van der Westhuizen, I Govender, A Mainza, H de Waal</i> | <i>University of Cape Town, Xstrata Technologies</i> | 15:54 | SP22 | Application of hyperspectral remote sensing techniques in the management of ARD from South African mine tailings | <i>C Mielke¹, C Rogaß², JL Broadhurst³, M Bcker³, J-P Franzidis³, MJ de Wit⁴</i> | <i>University of Cape Town</i> |
| 16:01 | SP18 | A GPGPU implementation of the discrete element method applied to modeling the environment in the positron emission particle tracking experiment using CUDA | <i>M Hromnik, SM Wheaton, I Govender</i> | <i>University of Cape Town</i> | 16:01 | SP23 | Effect of pH on bioleaching of low grade chalcopyrite containing high silicates in column reactors | <i>MO Tshilombo, TV Ojumu</i> | <i>Cape Peninsula University of Technology</i> |
| 16:08 | SP19 | The influence of a change in pulp rheology on hydrocyclone classification | <i>J Waters, A Mainza, I Govender</i> | <i>University of Cape Town</i> | 16:08 | SP24 | Use of cloned strain of Bacillaceae bacterium for improved bio-uptake of nickel from metallurgical solutions | <i>E Fosso-Kankeu, AF Mulaba-Bafubiandi, G Tlou, L Piater</i> | <i>University of Johannesburg</i> |
| 16:15-17:15 | FORMAL POSTER SESSION (Conference Foyer) | | | | 16:15-17:15 | FORMAL POSTER SESSION (Conference Foyer) | | | |

FRIDAY 5 AUGUST 2011

PLENARY 2

Chair: CT O'Connor

| | | | | | | | | | |
|-----------------------------------|------------|--|---|---|------------|------|---|--|--------------------------------|
| 08:30 - 09:15 | PL02 | Recent and possible future developments in hydrometallurgy <i>MJ Nicol</i> | | | | | | | |
| SESSION 4A PYROMETALLURGY | | | | SESSION 4B BIO-PROCESSING | | | | | |
| (Parallel with Session 4B) | | | | (Parallel with Session 4A) | | | | | |
| | | | | Chair: S Harrison | | | | | |
| 09:20 | OR22 | Physical and numerical modelling of mixing and mass transfer in a Peirce-Smith Converter | <i>DK Chibwe, G Akdogan, C Aldrich</i> | <i>Stellenbosch University</i> | 09:20 | OR25 | Effect of thiocyanate and cyanide concentration on the biodegradation ability of a mixed microbial consortium under different incubation temperatures | <i>A van Zyl, STL Harrison, RP van Hille</i> | <i>University of Cape Town</i> |
| 09:40 | OR23 | Numerical modelling of multiphase flow in a one-fifth scale bottom blown Creusot-Loire Uddeholm (CLU) converter. | <i>T Nyashanu, G Akdogan, RH Eric</i> | <i>Stellenbosch University, University of Witwatersrand</i> | 09:40 | OR26 | An investigation of the microbial growth kinetics of <i>Acidithiobacillus ferrooxidans</i> on whole ore as a function of physicochemical conditions | <i>E Govender, CG Bryan, STL Harrison</i> | <i>University of Cape Town</i> |
| 10:00 | OR24 | A Thermo-Chemical Study of Granulated Nickel Converter Matte | <i>E Thyse, G Akdogan, P Taskinen, JJ Eksteen</i> | <i>Stellenbosch University</i> | 10:00 | OR27 | Investigation of bioleaching on coarse sphalerite ore particles by a mixed culture of mesophilic chemolithotrophs in saturated leach reactors | <i>Y Ghorbani et al</i> | <i>University of Cape Town</i> |
| 10:20 | TEA | | | 10:20 | TEA | | | | |

| SESSION 5A ENVIRONMENTAL (Parallel with Session 5B) | | | Chair: J Broadhurst | | SESSION 5B MODELLING & CONTROL (Parallel with Session 5A) | | | Chair: C Aldrich | |
|---|-------|--|--|---|---|-------|--|---|-------------------------------|
| 10:50 | OR28 | Mineral carbonation of Merensky Reef PGM tailings in South Africa: A kinetic investigation | J Vogeli, DL Reid, M Becker, J Broadhurst, FJ Doucet, M Atanasova, J-P Franzidis | University of Cape Town, Council for Geoscience | 10:50 | OR33 | Process monitoring with restricted boltzmann machines | J Moody, C Aldrich | Stellenbosch University |
| 11:10 | OR29 | Integrated Mine Waste Management: Possibilities for Coal Waste Deposits in Santa Catarina, Brazil | JR do Amaral Filho, IAS de Brum, G Miltzarek, CH Sampaio, CH Schneider, IAH Schneider | Universidade Federal do Rio Grande do Sul | 11:10 | OR34 | Neural Networks and prediction tools for cation-exchange process | J Kabuba, AF Mulaba Bafubiandi, K Battle | University of Johannesburg |
| 11:30 | OR30 | Sulphur deportment and related impacts during coal preparation in South Africa: A focus on acid rock drainage | L Kotelo, JL Broadhurst, M Becker STL Harrison, J-P Franzidis | University of Cape Town | 11:30 | OR35 | Numerical Modelling of an Autoclave | H Appa, DA Deglon, C Meyer | University of Cape Town |
| 11:50 | OR31 | Characterisation of sulphide oxidation in a passive acid mine drainage (AMD) treatment system | N Mooruth, RP van Hille | University of Cape Town | 11:50 | OR36 | Policy gradient neurocontrol of grinding circuits | SL Hunter, C Aldrich | Stellenbosch University |
| 12:10 | OR32 | A methodology for the improved management of energy efficiency and greenhouse gas emissions within South Africa's mineral industry | O Johnston, B Cohen, J Broadhurst | University of Cape Town | 12:10 | OR37 | Characterization of dynamic process behaviour with Bispectral Coclustering | C Aldrich, L Auret | Stellenbosch University |
| 12:30 | LUNCH | | | | 12:30 | LUNCH | | | |

| SESSION 6 | | GENERAL | | Chair: R Beck |
|------------------|----------------|--|--|-----------------------------------|
| 13:30 | OR38 | A study of froth behaviour in PGM flotation cells | <i>V Ross</i> | <i>Lonmin</i> |
| 13:50 | OR39 | An investigation into the effects of increasing ionic strength of plant water on valuable mineral and gangue recovery in a platinum bearing ore from the Merensky reef | <i>MS Manono, K Corin, JG Wiese</i> | <i>University of Cape Town</i> |
| 14:10 | OR40 | Characterisation of the effect of alteration on the PPM platinum ore and evaluation of selected strategies to improve metallurgical performance | <i>M Ramonotsi</i> | <i>Pilanesberg Platinum Mines</i> |
| 14:30 | OR41 | Metallurgical Optimisation of Milling-Flotation Circuits | <i>N du Preez</i> | <i>CM Solutions</i> |
| 14:50 | OR42 | Mitigating acid rock drainage risks while recovering low-sulphur coal from ultrafine colliery wastes using froth flotation | <i>CK Mbamba, STL Harrison, J-P Franzidis and J Broadhurst</i> | <i>University of Cape Town</i> |
| 15:10 | CLOSING | | | |

POSTER PRESENTATIONS

| | | | |
|-------------|---|--|--|
| PP01 | Automatic Rock Size Estimation using Mean Shift and Watershed | <i>A Amankwah, CA Aldrich</i> | <i>Stellenbosch University</i> |
| PP02 | Bio-oxidation kinetics of <i>Leptospirillum ferriphilum</i> attached to a defined solid substrate | <i>P Duku, J Petersen, S Pienaar, STL Harrison</i> | <i>University of Cape Town</i> |
| PP03 | Ion exchange for the recovery of Cu, Ni and Co from sulphate solutions | <i>CJ Liebenberg, C Dorfling, G Akdogan, SM Bradshaw, JJ Eksteen</i> | <i>Stellenbosch University, Lonmin</i> |
| PP04 | The extraction of PGMs from cyanide leach solutions by granular activated carbon | <i>CN Mpinga, SM Bradshaw, G Akdogan, JJ Eksteen</i> | <i>Stellenbosch University, Lonmin</i> |
| PP05 | An Initial Electrochemical Study into the Bioleaching of Chalcopyrite | <i>M Namane, J Petersen, STL Harrison, J-P Franzidis</i> | <i>University of Cape Town</i> |

| | | | |
|-------------|---|---|---|
| PP06 | Modelling of a batch jig with computational fluid dynamics and discrete element methods | <i>N Naude, L Lorenzen, AV Koleshnikov, C Aldrich</i> | <i>Stellenbosch University</i> |
| PP07 | The influence of the mineralogy of Co-Cu oxide ores on the dissolution behaviours of cobalt and copper bearing minerals | <i>MJ Ndolomingo, AF Mulaba-Bafubiandia, XY Mbianda</i> | <i>University of Joahhnesburg</i> |
| PP08 | The effect of the level of acidity experienced during agglomeration on microbial growth and activity in bioleaching. | <i>E Ngoma, STL Harrison</i> | <i>University of Cape Town</i> |
| PP09 | Developing an Ion Exchange Process for the Recovery of Precious Metals from an Pregnant Alkaline Cyanide Leach Solution | <i>E Schoeman</i> | <i>Stellenbosch University</i> |
| PP10 | The effect of pH on the jarosite accumulation in the packed-bed column system | <i>M Wanjiya, TV Ojumu</i> | <i>Cape Peninsula Univesity of Technology</i> |
| PP12 | Investigation into the effect of different milling procedures on the flotation of a bulk sulphide ore | <i>T Khonthu, J Wiese and C T O'Connor</i> | <i>University of Cape Town</i> |