**Biomining '20**

**Provisional Programme - subject to change**

**Sunday 7th June**

16.30-18.30  Welcoming wine and cheese function and pre-registration (accompanying guests welcome)

**Monday 8th June**

08.00  Registration desk opens. Tea, coffee and fruit juice

08.55  Welcome to Cornwall  
B.A. Wills (MEI, UK)

09.15  **Technical Session 1**  
Chairmen: TBA

09.15  **Keynote Lecture:** Limitations to the commercial application of biohydrometallurgy for the treatment of base metal ores and the rise of chloride heap leaching as a competitive technology  
D.W. Dew (Dewality Consultants Limited, UK)

09.45  Insights into heap bioleaching at the agglomerate-scale  
C.G. Bryan (BRGM, France) and A. Cox (Camborne School of Mines, UK)

10.00  Bioheapleaching in Boreal conditions - temperature profile inside the heaps and microbiology in elevated temperatures  
V. Heikkinen and M. Korte (Terrafame Ltd, Finland)

10.15  “How green was my biomining?”; a personal critique of the of the limitations and untapped potential of applying bioprocessing techniques for metal extraction and recovery  
D.B. Johnson (Bangor University, UK)

10.30  Coffee and poster viewing

11.15  Effect of pyrite presence on chloride tolerance of *Sulfobacillus thermosulfidooxidans* and chalcopyrite bioleaching  
D. Huynh, B. Monneron, S.R. Kaschabek and M. Schlömann (TU Bergakademie Freiberg, Germany)

11.30  Electrochemical consideration of galvanically assisted chalcopyrite bioleaching in the presence of pyrite  
C. Tanne and A. Schippers (Federal Institute for Geosciences and Natural Resources, Germany)

11.45  Bioleaching of complex sulfide concentrate  
J. Mäkinen, M. Salo, V. Miettinen, G. Pietek and P. Kinnunen (VTT Technical Research Centre of Finland Ltd, Finland)

12.00  Effect of nutrient concentration in bioleaching of a pyrrhotite-pyrite ore  
C. Falagan, K. Hudson-Edwards and D. Dew (Camborne School of Mines, UK)

12.15  Review on hydrometallurgy of sphalerite with an emphasis on biohydrometallurgy  
X. Meng, G. Qiu (Central South University, and Ministry of Education, China), H. Zhao (Central South University, Ministry of Education and State Key Lab of Mineral Processing, China) and S. Wang (Central South University, China)

12.30  Continuous bioreactor processing of a nickel sulfide concentrate with moderately thermophilic bacteria and archaea  
P.R. Norris, R. Fitzpatrick (University of Exeter, UK) and A.L. Santos (Bangor University, UK)
12.45  Recovery of nickel and chromium from the hydrometallurgical extraction of laterite through coupled biosorption and electro-dialysis
K. Folens, N.R. Nicomel, G. Du Laing, N. Boon (Ghent University, Belgium) and T. Hennebel (Ghent University and Umicore, Belgium)

13.00  Lunch

14.00  Technical Session 2
Chairmen: TBA

14.00  Optimising bioprocessing of Ni-Co laterite ores using sulfur-enhanced reductive bioleaching
A.L. Santos and D.B. Johnson (Bangor University, UK)

14.15  Sulfur-enhanced bioleaching of arsenic-rich cobalt concentrate, and biomineralisation of scorodite for immobilizing soluble arsenic
A.L. Santos and D.B. Johnson (Bangor University, UK)

14.30  Agglomerated whole ore biooxidation for sulfidic refractory gold ore
J. Ahn, J. Wu and J. Lee (University of Arizona, USA)

14.45  Biophydrometallurgical processing of platinum ores using acidophiles
S. Hedrich, A. Schippers (Federal Institute for Geosciences and Natural Resources, Germany), M. Junge (University Freiberg, Germany), M. Smart and S.T.L. Harrison (University of Cape Town, South Africa)

15.00  Selective leaching of divalent transition metals from silicate ore
R. Barthen, K. Valtonen and A.-M. Lakaniemi (Tampere University, Finland)

15.15  Alternate approach to bioleaching of Mn oxide ores with dissimilatory metal reducing bacteria
V. Aishvarya and N. Pradhan (CSIR-Institute Minerals and Material Technology, India)

15.30  Bioleaching of copper and cobalt from mine tailings (Taltal, Chile) in stirred tank reactors
R. Zhang and A. Schippers (Federal Institute for Geosciences and Natural Resources, Germany)

15.45  Bioleaching for recovery of heavy metals from waste incineration ashes and slags
K. Kremser, G.M. Guebitz (University of Natural Resources and Life Sciences, Austria), S. Thallner, S. Spieß, M. Haberbauer (KI-MET GmbH, Austria) and J. Kucera (Masaryk University, Czech Republic)

16.00  Coffee

17.30  Meet on seafront outside Falmouth Hotel for optional guided coastal walk, ending at Chain Locker pub by the inner harbour (accompanying guests welcome)

Tuesday 9th June

08.15  Registration desk opens. Tea, coffee and fruit juice

09.00  Technical Session 3
Chairmen: TBA

09.00  Influence of the presence of acidophilic micro-organisms on Co dissolution from a polymetallic ore
A. Hubau, C. Joulian, C. Gassaud and A.-G. Guezenneec (BRGM, France)

09.15  Bioleaching of uranium tailings as secondary sources for rare earth elements production
R. Gagné-Turcotte, N. Reynier, L. Coudert, C. Laviolette, R. Cameron and J.-F. Blais (UQAT, Canada)

09.30  Lead and silver recovery from bioleaching residues produced at different pH
J. Lorenzo-Tallafiego, N. Iglesias-González, A.R. García, R. Romero, A. Mazuelos, P. Ramírez del Amo and F. Carranza (University of Seville, Spain)

09.45  Sequential biotreatment of carbonaceous silver concentrate by Acidianus brierleyi and crude enzymes released from Phanerochaete chrysosporium
D.M.M. Flores, K.T. Konadu, K. Sasaki (Kyushu University, Japan) and S.T.L. Harrison (University of Cape Town, South Africa)

10.00  Microbial evolution from mine environment to continuous bioleaching process
M. Salo, M. Bomberg and J. Mäkinen (VTT Technical Research Centre of Finland Ltd, Finland)
Nutritional requirements of archaeal industrial biooxidation cultures for improved iron oxidation kinetics
M. Smart, C.J. Edward, Yi-Jou Chen, S.T.L. Harrison (University of Cape Town, South Africa), C. van Buuren and W. Olivier (Outotec Technology (Pty) Ltd, South Africa)

Application of microbial desulphurization and deashing on selected Waterberg coal samples used in South African power plants
S.S. Makgato, E.M. N. Chirwa (University of Pretoria, South Africa)

Coffee

Keynote lecture: Environmental applications of biotechnology in mining
A.H. Kaksonen, N.J. Boxall, Y. Gumulya and K.Y. Cheng (CSIRO, Australia)

Microbial removal of Pb(II) by a continuous upflow anaerobic sludge-blanket reactor (CUASBR)
J. Chimhundi, H.G. Brink and E.M.N. Chirwa (University of Pretoria, South Africa)

Recycling bioremediated cyanidation tailings wastewater within the biooxidation circuit for gold recovery: evaluation of the impact on process performance
C.J. Edward, M. Smart and S.T. L. Harrison (University of Cape Town, South Africa)

New insight into co-biosorption of heavy metals and toxic organic pollutants from wastewater by fungal pellets
N. Shen, K. Mohlauliand and E. Chirwa (University of Pretoria, South Africa)

Partial desalination of seawater for mining processes through a fluidized bed bioreactor filled with immobilized cells of Bacillus subtilis LN88B
D. Arias, G.H. Villca, L.A. Cisternas, R.I. Jeldres, M. Rivas (Universidad de Antofagasta, Chile), A. Pánico (Telematic University Pegaso, Italy) and G. González-Benito (University of Valladolid, Spain)

Lunch

Technical Session 4
Chairmen: TBA

Exploring microbial adaptation of immobilised microbial cells to improve microbial oxidation rates and metal tolerance in e-waste bioleaching systems
M.D. Maluleke, A. Kotsiopoulos, E. Govender-Opitz and S.T.L. Harrison (University of Cape Town, South Africa)

Bioleaching of printed circuit boards: a microbial ecotoxicology study
J. Anaya-Garzon (BRGM and PSL Research University, France), A. Hubau, C. Joulian, A.-G. Guezennec (BRGM, France) and V. Semetey (PSL Research University, France)

Dismantling of printed circuit boards by bioleaching solution
B. Monneron and M. Schlömann (TU Freiberg, Germany)

Selecting the appropriate particle size for characterisation of the acid rock drainage potential of waste rock using the biokinetic test
M.T. Golela, A. Opitz, O. Guseva, M Becker and S.T.L. Harrison (University of Cape Town, South Africa)

Conference summary and invitation to Biomining ’22
A.J. Wills (MEI, UK)
17.30  Farewell function and a chance to meet delegates from Sustainable Minerals ‘20
19.30  Accompanying guests welcome

POSTERS

Bio-inspired iron removal from silica sand
S. Kutschke, S. Schrader, C. Hintersatz, K. Pollmann (Helmholtz Institute Freiberg for Resource Technology, Germany)

An alternative method for extraction of low-grade metallic ore with the use of bioleaching
O.T. Enejoh and H.M. Yakkubu (Kogi State Polytechnic, Nigeria)

Rock phosphate solubilization applying mycogenic oxalic acid
G. de Oliveira Mendes (Universidade Federal de Uberlândia, Brazil, and University of Dundee, UK) and G.M. Gadd (University of Dundee, UK)

Genome assembly and annotation of the ferrous iron oxidizing *Alicyclobacillus halophilus* sp. nov., Strain S09, a novel halophilic bacterium isolated from the Cartagena-La Unión mining district, SE Spain
G. Haferburg, N.D. Huynh, M. Schlömann (TU Bergakademie Freiberg, Germany) and W. Sand (TU Bergakademie Freiberg and Universität Duisburg-Essen, Germany, Donghua University, China)

Innovative bioleaching approaches for the extraction of valuable and hazardous elements (As, Cd) from Cu-Zn, Zn-Pb and Cu-Zn-Pb tailings
C.B. Opara, S. Kutschke and K. Pollmann (Helmholtz Zentrum Dresden, Germany)

Non-ferrous metals recovery and production of iron and sulphur sub-products from a hydrometallurgical tailing
J. Lorenzo-Tallafigo, N. Iglesias-González, A.R. García, R. Romero, A. Mazuelos, P. Ramírez del Amo and F. Carranza (University of Seville, Spain)

Comparison of various metal analysis approaches in ashes and slags as novel resources for biohydrometallurgical applications
J. Kucera, T. Vaculovic and M. Mandl (Masaryk University, Czech Republic)

Aggregate for the recovery of gold from thin coatings by hydro-biotechnological methods
J. Markowski, F. Logsch (Brandenburgische Technische Universität Cottbus-Senftenberg, Germany), A. Lohse (m&k GmbH, Germany) and H. Wagner (Rhode and Wagner GmbH, Germany)

Evaluation of calcium and magnesium removal from seawater through biomineralization in tailings sedimentation tests
G. Villca, D. Arias, L.A. Cisternas and M. Rivas (Universidad de Antofagasta, Chile)

Formation of elemental selenium from microbial reduction of selenium oxyanions by *Pseudomonas stutzeri* NT-I
J.T. Tendenedzai, H.G. Brink and E.M.N. Chirwa (University of Pretoria, South Africa)

Improvement of zinc bioleaching from a zinc-bearing ore in the presence of starch and shredded newspaper as catalyst
A. Foroutan, S.B. Ghaziani, M.A.Z.H. Abadi, Y. Kianinia (Bama Mining Co., Iran) and M. Ghadiri (Ton Duc Thang University, Vietnam)

Biosorption of Pd (II) by genetically engineered *Saccharomyces cerevisiae* EBY100 for enhanced biosorption capacity
B.F. Mashangoane and E.M.N. Chirwa (University of Pretoria, South Africa)

Bioleaching of steel production by-products to strengthen a circular economy
S. Thallner, S. Spieß, M. Haberbauer (K1-MET GmbH, Austria) and L. Birklbauer (voestalpine Stahl Linz GmbH, Austria)

Insights into the metabolism of microbial Pb(II) precipitation through SEM-EDX analysis
C. Hörstmann, H.G. Brink, E.M.N. Chirwa and B. van Veenhuyzen (University of Pretoria, South Africa)

Kinetics of Pd (II) reduction and biocrystallisation by a pure culture of *Desulfovibrio desulfuricans*
K.B. Malunga, E.M.N. Chirwa and S.M. Tichapondwa (University of Pretoria, South Africa)

Understanding the growth and activity of mineral surface interacting microorganisms operated in a flow-through unsaturated column reactor
D.X. Makaula and S.T.L. Harrison (University of Cape Town, South Africa)
Development of a mathematical model to simulate heat balance in a stirred aerated industrial bioleaching pond reactor
C. Loubiere, Y. Menard, A.-G. Guezenne (BRGM, France) and E. Olmos (Université de Lorraine, France)

Biodegradation of cyanide by mixed cyanide-degrading bacterium
Xiao Yan, Jianlei Wang, Mingjiang Zhang, Xingyu Liu, Xinglan Cui and Jiankang Wen (GRINM Resources and Environment Tech. Co., Ltd, China)

Process design and optimisation of E-Waste bioleaching
A.R. Strauss, S.T.L. Harrison and A. Kotsiopoulos (University of Cape Town, South Africa)

Microbial diversity of acidophilic and psychrophilic microorganisms that catalyses dissimilatory oxido-reduction of iron from metal-rich acidic water in Antarctic
D. González, I. Nancuccheo (Universidad San Sebastián, Chile), G. Southam (University of Queensland, Australia) and A. Schwarz (Universidad de Concepción, Chile)

Effects of a biological-based reagent in copper sulfide flotiation process
P.A. Galleguillos, V.J. Zepeda, M. Guillen, M.B. Aguilera, E. Becerra (CICITEM, Chile), I. Nancuccheo (Universidad San Sebastián, Chile) and C.F. Escuti (Universidad Católica del Norte, Chile)

Effect of carbonaceous matters on bioleaching performance of Cu from chalcopyrite
S. Ryotaro, K.T. Konadu and K. Sasaki (Kyushu University, Japan)

Study of oxygen and carbon dioxide consumption and iron oxidation kinetics of Acidithiobacillus ferrivorans SS3 over a range of temperatures from 5-35°C
D. Kupka, Z. Bártová and L. Hagarová (Slovak Academy of Sciences, Slovakia)

Elimination of inorganic pollutants from acid mine drainage by selective sequential precipitation
A. Luptakova, E. Macingova and J. Jenčárová (Slovak Academy of Sciences, Slovakia)

Cu recovery from acid mine drainage with coupled energy generation
L.F. Leon-Fernandez, H.L. Medina, L. Rodríguez, J. Villaseñor and F.J. Fernández-Morales (University of Castilla-La Mancha, Spain)