

# Sustainable Minerals '20



Industry Associates



Media Partner

#SustainableMinerals20

**Provisional Programme- subject to change**

## Tuesday 9th June

- 16.00-17.15 Registration Desk Open  
17.30-19.30 Welcome function  
Accompanying guests welcome

## Wednesday 10th June

- 08.00 Registration desk opens. Tea, coffee and fruit juice
- 09.00 Welcome to Cornwall  
J. Wills (MEI, UK)
- 09.15 *Technical Session 1*  
Chairmen: TBA
- 09.15 **Keynote Lecture: Mining and complexity: a new look at old concepts**  
A. Littleboy (Sustainable Minerals Institute, University of Queensland, Australia)
- 09.45 **Technology and data-driven approach for sustainability in mineral extraction – A conceptual framework**  
F.S. Desta and M.W.N. Buxton (Delft University of Technology, The Netherlands)
- 10.00 **Analysing environmental management and stakeholders in the mining industry using Game Theory**  
B.C Collins and M. Kumral (McGill University, Canada)
- 10.15 **Mining, sorting and the circular economy**  
D. Schwaab, I. Hartwig and M. Robben (TOMRA Sorting GmbH, Germany)
- 10.30 **The MIREU Project: Overview and work in Cornwall**  
R. Halkes, F. Wall, A. Sweeney (Camborne School of Mines, UK), A. Mitchell (Camborne School of Mines and Wardell Armstrong International, UK) and A. Allen (Wardell Armstrong International, UK)
- 10.45 Coffee and poster viewing
- 11.30 **Keynote Lecture: Process simulation for improving life cycle assessment in the minerals industry**  
L.M. Tavares and J.S. Segura (Universidade Federal do Rio de Janeiro, Brazil)
- 12.00 **Life cycle assessment as a design tool to recover value from gold mine tailings: a Witwatersrand, South Africa case study**  
K. Cairncross and M. Tadie (Stellenbosch University, South Africa)

- 12.15 **Linking CAD models to process simulation for product recyclability estimation**  
M. Heibeck (Helmholtz Institute Freiberg for Resource Technology, Germany), A. Filippatos, N. Modler (Technische Universität Dresden, Germany) and M. Reuter (Helmholtz Institute Freiberg, and Technische Universität Bergakademie Freiberg, Germany)
- 12.30 **Selective recycling of gold from printed circuit boards residues**  
I.F.F. Neto and H.M.V.M. Soares (University of Porto, Portugal)
- 12.45 Lunch
- 14.00 Technical Session 2  
*Chairmen: TBA*
- 14.00 **Towards sustainable mineral processing: microwave pretreatment of ores**  
E.R. Bobicki, D. Boucher, J. Forster (University of Toronto, Canada), C. Pickles and A. Olmsted (Queen's University, Canada)
- 14.15 **Breakage characteristics of incinerator bottom ash in the HV pulse power process**  
A. Weh, A. Mosaddeghi (SELFRAG AG, Switzerland) and D. Parvaz (Lightning Machines Ltd, UK)
- 14.30 **Energy efficiency improvement in tumbling mills by replacement of standard grinding media with Relo (Reuleaux tetrahedron-shaped) grinding media**  
P. Bodurov, V. Genchev, N. Kolev (Relo-B Ltd, Bulgaria) and B. Simpson (Wardell Armstrong International Ltd, UK)
- 14.45 **Effect of additives on the efficient use of energy in dry grinding of magnetite**  
V. Chipakwe, T. Karlkvist, J. Rosenkranz and S.C. Chelgani (Luleå University of Technology, Sweden)
- 15.00 **Recovery of fine metal fractions from lithium-ion battery waste using froth flotation**  
T. Rinne and R. Serna-Guerrero (Aalto University, Finland)
- 15.15 **Predicting the fate of diethylenetriamine in the management of pyrrhotite tailings**  
X. Tian, E. Furnell and E.R. Bobicki (University of Toronto, Canada)
- 15.30 **The performance and biomass retention of a biological sulphate reducing, lactate-supplemented, up-flow anaerobic packed bed reactor**  
T. Hessler, S.T.L. Harrison and R.J. Huddy (University of Cape Town, South Africa)
- 15.45 **Metal recovery process for multi-metal pregnant leachate solution from bioleaching**  
J. Mäkinen, G. Pietek, V. Miettinen (VTT Technical Research Centre of Finland Ltd, Finland)
- 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)

#### Thursday 11th June

- 08.15 Registration desk opens. Tea, coffee and fruit juice
- 09.00 *Technical Session 3*  
Chairmen: I. Demers (UQAT, Canada)
- 09.00 **Keynote Lecture: 'The war on waste' How could the mining industry respond?**  
A. Parbhakar-Fox (Sustainable Minerals Institute, University of Queensland, Australia)
- 09.30 **The driving factors for handling mine waste**  
C. Olsen (FLSmidth, USA) and R.D. Croce (FLSmidth, Brazil)
- 09.45 **Bioremediation of thiocyanate-contaminated gold mine process water**  
R. Huddy, F. Kadzinga, S.T. Harrison (University of Cape Town, South Africa) and J. Banfield (University of California-Berkeley, USA, and University of Melbourne, Australia)

- 10.00 **Native herbaceous plant species on tailings storage facilities on the Zambian Copperbelt how phytomining potential**  
Lee Mudenda S.T.L. Harrison (University of Cape Town, South Africa) and S. Syampungani (Copperbelt University, Zambia)
- 10.15 **Phytoremediation of chromium(VI) in wastewater using *Chrysopogon zizanioides* (vetiver grass)**  
F.F. Masinire, D.O. Adenuga, S.M. Tichapondwa and E.M.N. Chirwa (University of Pretoria, South Africa)
- 10.30 Coffee
- 11.15 **Evaluating microbial effects on quality and productivity of Fabricated Soils (FabSoils) produced with ultrafine coal waste and malt residue**  
J. Weiler (Universidade Federal do Rio Grande do Sul, Brazil), J.R. Amaral Filho, M. Smart and S.T.L. Harrison (University of Cape Town, South Africa)
- 11.30 **Application of field-portable XRF (pXRF) to evaluate the reprocessing potential of pegmatite tailings for rare metals**  
S. Lohmeier and B.G. Lottermoser (RWTH Aachen University, Germany)
- 11.45 **Thermodynamic database development to calculate rare earth element recovery in waste material: current progress**  
A.J. Gerbino, P. Wang and J. Lu (OLI Systems, Inc., USA)
- 12.00 **Opportunities and challenges in co-disposing mine wastes to prevent acid rock drainage**  
A. Kotsiopoulos, D. Mjonono and S.T.L. Harrison (University of Cape Town, South Africa)
- 12.15 **Estimation of acid mine drainage potential of sulphide tailings based on mineralogical characterisation data**  
C. Mafra, H. Bouzahzah, Stoyan Gaydardzhiev (University of Liege, Belgium) and L. Stamenov (Dundee Precious Metals, Bulgaria)
- 12.30 **Heavy metal recovery from acid mine drainage by sorption/desorption approach**  
R. Barthen, A.-M. Lakaniemi (Tampere University, Finland), M.L.K. Sulonen (University of Surrey, UK), R. Jain (Helmholtz Institute Freiberg for Resource Technology, Germany) and S. Peräniemi (University of Eastern Finland, Finland)
- 12.45 Lunch
- 14.00 *Technical Session 4*  
Chairmen: TBA
- 14.00 **Spent mushroom compost as an agent for successive alkalinity- and acidity-producing systems for treatment of hydrometallurgical leachates**  
M. Dabrowska, P. Stasiuk and L. Drewniak (University of Warsaw, Poland)
- 14.15 **Studies on a continuous pelletisation-flocculation process of iron-hydroxide-containing water in a Taylor-Couette reactor**  
F. Logsch, C. Glaser, H. Hintze, C. Fernandez-Rojas (Brandenburg University of Technology, Germany), M. Leiker and R. Heiduschke (P.U.S. Produktions- und Umwelt Service GmbH, Germany)
- 14.30 **Recovery of indium, gallium and germanium from industrial wastes**  
M. Reiber, R. Hofmann, R. Vostal, C. Thölke and M. Bertau (Freiberg University of Mining and Technology, Germany)
- 14.45 **Recovery and extraction of precious metals (Cu, In and Ge) from Industrial wastes**  
P. Dubey, T.R. Sreekrishnan, R. Jain (Indian Institute of Technology, India), K.N. Pollmann and S. Kutschke (Helmholtz Zentrum Dresden, Germany)
- 15.00 **Recovery of Ga, In and Ge from industrial wastewater using immobilized desferrioxamine B**  
R. Jain (Helmholtz Institute Freiberg for Resource Technology, Germany, and Indian Institute of Technology, India), S. Fan and Katrin Pollmann (Helmholtz Institute Freiberg for Resource Technology, Germany)

- 15.15 Coffee
- 16.00 **Graphite: a critical and essential mineral for E-Mobility**  
A. Vanderbruggen and M. Rudolph (Helmholtz-Institute Freiberg for Resource Technology, Germany)
- 16.15 **Sewage sludge utilisation: the hunt for recoverable phosphate-phases**  
 A.C. Guhl, B. Schulz and M. Bertau (Freiberg University of Mining and Technology, Germany)
- 16.30 **Environmental behavior of desulfurized legacy tailings and iron oxyhydroxide role in contaminant attenuation**  
 A. Baatti, I. Demers and M. Kongolo (UQAT, Canada)
- 16.45 **Geopolymers from secondary raw materials – An economical alternative to classic concrete?**  
 M. Kraft, P. Fröhlich and M. Bertau (Freiberg University of Mining and Technology, Germany)
- 17.00 **Valorization of marly by-product from sedimentary phosphate deposit in the synthesis of geopolymers: effect of calcination temperature on microstructure and mechanical properties**  
S. Mabroum, R. Hakkou (Mohammed VI Polytechnic University, Morocco and Cadi Ayyad University, Morocco), Y. Taha (UM6P, Morocco), M. Benzaazoua (UMP6, Morocco and UQAT, Canada) and N. Semlal (OCP SA Group, Morocco)
- 17.15 Conference summary and invitation to Sustainable Minerals '22  
 A.J. Wills (MEI, UK)
- 17.30 Cornish cream tea  
 Accompanying partners welcome

## POSTERS

### **Separation of aluminum and stainless steel scraps using vibrating mixed-size ball bed**

K. Yoo (Korea Maritime & Ocean University, South Korea)

### **Use of field-portable XRF (pXRF) for the rapid screening of gallium in smelting slags, Tsumeb, Namibia**

B.G. Lottermoser, S. Lohmeier (RWTH Aachen University, Germany) and D. Gallhofer (University of Graz, Austria)

### **Switchable biopolymers for clay mitigation in flotation and dewatering operations**

N. Molaei and E.R. Bobicki (University of Toronto, Canada)

### **Repurposing of inactive mine tailings to reduce environmental impacts and maximize value recovery – two preliminary case studies**

L. Chapou, M. Perrin, M. Jouini, L. Coudert and I. Demers (UQAT, Canada)

### **Impact of freeze-thaw and salinity on the leaching potential of flotation tailings from rare earth deposit material**

S. Costis, J.-F. Blais, K. Mueller, E. Cecchi (INRS-ETE, Canada), L. Coudert and C.M. Neculita (UQAT-RIME, Canada)

### **Alkaline leaching of nickel from electric arc dust using monosodium glutamate as lixiviant**

E. Prasetyo (Indonesian Institute of Sciences, Indonesia)

### **Selective chemical leaching of critical metals from zinc process wastes**

A. Gupta, T.R. Sreerishnan, Z.A. Shaikh and R. Jain (Indian Institute of Technology, India)

### **Immobilization of toxic elements in red mud geopolymers**

S. Hippmann, M. Kraft and M. Bertau (Freiberg University of Mining and Technology, Germany)

### **The effect of water recycling and microbial load on the flotation of a PGM bearing ore**

M. Smart, V. Wabatagore, K. Corin and S.T.L. Harrison (University of Cape Town, South Africa)

**Effect of hydraulic residence time on microbial community dynamics within the hybrid linear flow channel reactor**

T. Marais, R. Huddy and S.T.L. Harrison (University of Cape Town, South Africa)

**Application of “organic aqua regia” for the artisanal small-scale gold mining process**

A. Yoshimura, Y. Matsuno (Chiba University, Japan), O. Fadina and M.M. Veiga (University of British Columbia, Canada)

**The role of mining engineering education for a sustainable raw materials use**

A. Hutwalker, A. Binder and O. Langefeld (Clausthal University of Technology, Germany)

**Two-stage froth flotation for coal recovery and desulfurization: opportunities to coal processing waste valorization**

J.R. Amaral Filho, A. Kotsiopoulos, J. Broadhurst and S.T.L. Harrison (University of Cape Town, South Africa)

**A simple and fast frother concentration measuring tool for control of flotation process and water reuse**

H. Park and L. Wang (University of Queensland, Australia)

**Acid rock drainage (ARD) prevention through biohydrometallurgical processing of pyrite from South African coal waste**

M. Gcayiya, J.R. Amaral Filho, A. Kotsiopoulos, M. Smart and S.T.L. Harrison (University of Cape Town, South Africa)

**Technologies for mapping of critical metals: applications for exploration, geometallurgy and geoenvironmental characterisation**

N. Fox and A. Parbhakar-Fox (University of Queensland, Australia)

**Infrared-based monitoring of kaolin calcination to increase resource efficiency**

A. Guatame-Garcia and M. Buxton (Delft University of Technology, The Netherlands)

**Limestone utilization efficiency in hydrometallurgical processing and acid mine drainage solution reactions**

E. Hoummady, H. Lambert and C.A. du Plessis (Lhoist Research & Development, Belgium)

**The interdependence of sulphide surfaces and elemental sulphur in promoting self-heating**

F. Rosenblum, O. Kokkilic, J.A. Finch and K.E. Waters (McGill University, Canada)

**Extraction of rare earth elements from monazite-bearing secondary raw material**

L. Brückner, D. Goldmann (Clausthal University of Technology, Germany) and T. Elwert (Qingdao University, China)

**Metals recovery from mining effluents by means of microbial electrolysis cells**

L.F. Leon-Fernandez, H.L. Medina, L. Rodríguez, J. Villaseñor and F.J. Fernández-Morales (University of Castilla-La Mancha, Spain)

**Opportunities for recovering rare earth elements as by-products of the Nb production at the Boa Vista Fresh Rock mine in Catalão, Brazil**

J.L. Antoniassi, L. Pereira, J. Gutzmer, H. Kahn (Helmholtz-Institut Freiberg für Ressourcentechnologie, Germany), C. Ulzen, D. Goldmann and A.C. Silva (Technische Universität Clausthal, Germany)