

## Biohydrometallurgy '12



### Provisional Programme

Subject to changes. All changes are highlighted and alerted at  
[www.min-eng.com/biohydromet12/updates](http://www.min-eng.com/biohydromet12/updates)

#### Sunday 17<sup>th</sup> June

16.30-18.00 Registration, wine and cheese reception. Accompanying partners welcome

#### Monday 18<sup>th</sup> June

08.00 Registration opens

09.00 **Introduction to Cornwall and to Biohydromet '12**  
B.A. Wills (MEI, UK) and C. Bryan (Curtin University, Australia)

09.20 *Technical Session 1*  
Chairmen: P. Thompson (FLSmidth, USA) and S. Neethling (Imperial College, UK)

09.20 **Keynote Lecture: Talvivaara Nickel Mine – from a project to a mine**  
M. Riekkola-Vanhanen (Talvivaara Mining Company Plc, Finland)

09.50 **A novel energy efficient process for the extraction of platinum group metals through a sequential stage high temperature heap bioleach and subsequent high temperature cyanide heap leach utilising solar heat**  
J.J. Eksteen (Lonmin, South Africa), J.M. Mwase, J. Petersen (University of Cape Town, South Africa), S.M. Bradshaw, N.Mpinga and C.A. Snyders (University of Stellenbosch, South Africa)

10.10 **Why Zijinshan copper bioheapleaching plant works efficiently at low microbial activity – a study of leaching kinetics of copper sulfide and its implications**  
R.M. Ruan, G. Zou, S.P. Zhong, S.J. Zhao, B. Chan (Zijin Mining Group Co. Ltd, China) and D.Z. Wang (Central South University, China)

10.30 Coffee

11.20 **The use of nitric acid digests as a predictive tool for estimating bacterial heap leaching recoveries**  
J. Fewings and S. Seet (Western Areas NL, Australia)

11.40 **Two-stage combined biological and chemical leaching of a refractory gold-bearing ore**  
I.I. Spasova, M.V. Nicolova, P.S. Georgiev and S.N. Groudev (University of Mining and Geology, Bulgaria)

12.00 **Influence of Mg<sup>2+</sup> on column bioleaching of chalcopyrite with carrollite**  
Xue Liu, Jiankang Wen, BiaoWu and Shuang Liu (General Research Institute for Nonferrous Metals, China)

12.20 **Mesophilic bioleaching of chalcopyrite concentrate mixed with limestone**  
Yuandong Liu, Guanzhou Qiu, Xueduan Liu and Xinxing Liu (Central South University, China)

12.20 **Extraction of zinc from low grade zinc oxide ores using bacteria**  
M. Meshkini, M. Irannajad, A. Azadmehr (Amirkabir University of Technology, Iran) and A. Abasi Rohallahi (University of Tehran, Iran)

- 12.40 Lunch
- 14.00 **Technical Session 2**  
Chairman: S. Hedrich (Bangor University, UK)
- 14.00 **The influence of *Acidithiobacillus ferrooxidans* and solution pH on galvanic assisted leaching of chalcopyrite concentrates**  
Su Nee Tan, N.A.S. Webster and Miao Chen (CSIRO Process Science and Engineering, Australia)
- 14.20 **Effects of pH, temperature and solids loading on microbial community structure during batch culture on a polymetallic ore**  
H.R. Watling, D.M. Collinson (CSIRO Process Science and Engineering, Australia), D.W. Shiers (A.J. Parker Centre, Australia), C.G. Bryan and E.L.J. Watkin (Curtin University, Australia)
- 14.40 **Bioleaching of nickel sulphide out of nickel-bearing flotation residue**  
L.G.S. Sobral, F.H. Rodrigues, C.E.G. de Souza, D. M. de Oliveira (Centre for Mineral Technology, Brazil), A.S. Rocha and R.V. Cannoni (Votorantim Metais S.A., Brazil)
- 15.00 **Column bioleaching of chalcopyrite at different temperatures and its community structure**  
Chen Bowei, Wu Biao, Liu Xingyu and Wen Jiankang (National Engineering Lab of Biohydrometallurgy, China)
- 15.20 Coffee
- 16.10 Optional Guided Coast Path Walk, ending with a beer at the Chain Locker Pub, Old Falmouth. Accompanying partners welcome

**Comment [O1]:** Timetable changes 17/5

## Tuesday 19<sup>th</sup> June

- 09.00 **Technical Session 3**  
Chairmen: M.L. Torem (Pontifical Catholic University of Rio de Janeiro, Brazil) and W.S. Dunbar (University of British Columbia, Canada)
- 09.00 **Keynote Lecture: High temperature bioleaching**  
P.R. Norris (University of Warwick, UK)
- 09.30 **Detecting numbers and activities of microorganisms and functional traits in bioleaching and bioprecipitation processes**  
I.J.T. Dinkla and M.J.C. Henssen (Bioclear BV, The Netherlands)
- 09.50 **Evolution of the microbial population in BIOX<sup>®</sup> reactors**  
R.P. van Hille, S.T.L. Harrison, N. van Wyk (University of Cape Town, South Africa)
- 10.10 **Substrate utilisation by selected *Archaea* found in high-temperature bioleaching reactors**  
D.W. Shiers (A.J.Parker Centre, Australia), D.E. Ralph (Murdoch University, Australia), C.G. Bryan (Curtin University, Australia) and H.R. Watling (CSIRO Process Science & Engineering, Australia)
- 10.30 Coffee
- 11.10 **Investigation and *in situ* visualisation of thermophilic microbial interfacial interactions with metal-sulfides in a heap simulated environment**  
C.-J. Africa, R.P. van Hille, S.T.L. Harrison (University of Cape Town, South Africa) and W. Sand (University of Duisburg-Essen, Germany)

**Comment [O2]:** Timetable changes 17/5

- 11.30 **Determining the effect of acid stress on thermophilic microbial colonization in a low grade ore heap leach environment**  
O.V. Tupikina, S. Minnaar, R.P. van Hille, N. van Wyk, S.T.L. Harrison (University of Cape Town, South Africa), G.F. Rautenbach and D. Dew (BHP Billiton, South Africa)
- 11.50 **Adhesion to sulphide minerals by wild-type and of Cu- and Zn-adapted cells of *Acidithiobacillus ferrooxidans***  
A. Vilinska (Columbia University, USA) and K.H. Rao (Luleå University of Technology, Sweden)
- 12.10 **The isolation of fungi from low-pH, high ionic strength uranium mine process water**  
X. Vázquez-Campos, A.S. Kinsela, B.A. Neilan, R.N. Collins and T.D. Waite (University of New South Wales, Australia)
- 12.30 **Selective recovery of metals from mine water using novel biomineralization technologies**  
S. Hedrich and D.B. Johnson (Bangor University, UK)
- 12.50 Lunch
- 14.00 **Technical Session 4**  
Chairman: S. Gaydardzhiev (University of Liege, Belgium)
- 14.00 **Fundamental aspects of copper and zinc removal from aqueous solutions using a gram positive strain**  
D.M. Veneu (Center for Mineral Technology, Brazil), M.L. Torem and G.A.H. Pino (Pontifical Catholic University of Rio de Janeiro, Brazil)
- 14.20 **Simultaneous oxidation and immobilization of arsenite from refinery waste water by thermoacidophilic iron-oxidizing archaeon, *Acidianus brierleyi***  
N. Okibe, M. Koga, K. Sasaki and T. Hirajima (Kyushu University, Japan)
- 14.40 **Composition of the solution phase during phytoremediation of acidic mine waste**  
S. Karlsson, A. Grandin, V. Sjöberg (Örebro University, Sweden) and K. Turnau (Jagellonian University, Poland)
- 15.00 **A novel low H<sub>2</sub>S emission sulfidogenic bioreactor using activated sludge as carbon source to treat acid mine drainage: pilot scale study**  
L. Xingyu, Wenjiankang (General Research Institute for Nonferrous Metals, China), Z. Gang, W. Xiaoqiang, Zoulaichang and R. Renman (Zijin Mining Group Co. Ltd, China)
- 15.20 **The use of landfill leachate as a carbon source in a sulfidogenic fluidized bed reactor for the treatment of acid mine drainage**  
E. Sahinkaya (Istanbul Medeniyet University, Turkey), N. Dursun (Harran University, Turkey) and A.H. Kaksonen (CSIRO Land and Water, Australia)
- 15.40 Coffee
- 16.30 Coaches depart for Eden Project

**Comment [O3]:** Timetable changes 17/5

## Wednesday 20<sup>th</sup> June

- 09.00 *Technical Session 5*  
Chairmen: D.Dew (Consultant Bioleaching, UK) and R.P. van Hille (University of Cape Town, South Africa)
- 09.00 **Keynote Lecture: Microbial attachment, colonisation and activity as key steps in establishing the desired microbial community for attaining a well functioning heap**  
S.T.L. Harrison (University of Cape Town, South Africa)
- 09.30 **New approach for assessing the rate of mineral conversion in large particles in the course of heap leaching**  
Y. Ghorbani, J. Petersen, M. Becker, A. Mainza and J.-P. Franzidis (University of Cape Town, South Africa)
- 09.50 **The effect of particle porosity on liquid holdup in heap leaching**  
I.M.S.K. Iankoon and S. Neethling (Imperial College, UK)
- 10.10 **Statistical analysis of bioleaching copper, cobalt and nickel from polymetallic concentrate originating from Kamoya deposit in the DR of Congo**  
G. Nkulu, S. Gaydardzhiev (University of Liege, Belgium) and E. Mwena (Gecamines, DR Congo)
- 10.30 Coffee
- 11.00 **A comparative XANES study of the chalcopyrite sulfide species evolution during bioleaching at low and high temperatures**  
Y. Yang and M. Chen (CSIRO Process Science and Engineering, Australia)
- 11.20 **Phase distribution identification in the column leaching of low grade ores using MRI**  
M.A. Fagan, A.J. Sederman (University of Cambridge, UK), M.L. Johns (University of Western Australia, Australia) and S.T. L. Harrison (University of Cape Town, South Africa)
- 11.40 **Fundamental studies in the flotation of apatite-quartz system using a *Rhodococcus opacus* strain as a biocollector**  
A.G. Merma, M.L. Torem and J.J. Vallejos Morán (Pontifical Catholic University of Rio de Janeiro, Brazil)
- 12.00 **Using a novel experimental system to investigate the growth and colonisation of low grade sulphidic ores by acidophilic chemoautotrophs**  
E. Govender, C.G. Bryan and S.T.L. Harrison (University of Cape Town, South Africa)
- 12.20 **Beyond bacteria**  
W.S. Dunbar, R.T.A. MacGillivray and S. Curtis (University of British Columbia, Canada)
- 12.40 Lunch
- 14.00 *Technical Session 6*  
Chairman: C. Bryan (Curtin University, Australia)
- 14.00 **A novel biorefinery: biorecovery of precious metals from spent automotive catalyst leachates into new catalysts effective in metal reduction and in the hydrogenation of 2-pentyne**  
S.M. Taylor, A.J. Murray, J.Zhu, J. Wood and L.E. Macaskie (University of Birmingham, UK)
- 14.20 **Evaluation of cyanide producing microorganisms to recover gold from low-grade ore**  
Doyun Shin, Jinki Jeong, Jae-chun Lee (Korea Institute of Geoscience & Mineral Resources, Republic of Korea) and B.D. Pandey (National Metallurgical Laboratory, India)
- 14.40 **Desulphurisation and demetallation of Indian lignite by *Bacillus cereus***  
R.T. Wilson, J. Wright, V. Kunduveetil, Senthil and G. Pennathur (SRM University, India)

- 15.00 **Bioleaching of noble metals from Kazakhstan's refractory raw materials**  
G. Semenchenko (The Center of Earth Sciences, Kazakhstan)
- 15.20 **Assessment of bacterial and fungal mediated bioleaching of alkaline materials towards alteration and solubilisation of mineral phases**  
Yi Wai Chiang, J.A. Martens, B. Meesschaert, R.M. Santos (Katholieke Universiteit Leuven, Belgium), T. Van Gerven, M. Annick, K. Ghyselbrecht (Katholieke Hogeschool Brugge Oostende, Belgium) and M.L.T. Mattos (Brazilian Agricultural Research Corporation, Brazil)
- 15.40 **From Wii to WEEE: a review of the application of biohydrometallurgy to electronic wastes**  
C.G Bryan, E.L.J. Watkin (Curtin University, Australia), S.T.L. Harrison (University of Cape Town, South Africa) and A.H. Kaksonen (CSIRO Land and Water, Australia)
- 16.00 Closing Remarks  
P. d'Hugues (BRGM, France) and S.T. Harrison (University of Cape Town, South Africa)
- 16.15 Invitation to Biohydromet '14  
A.J. Wills (MEI, UK)
- 16.20 Coffee

#### Poster Presentations (Late entries)

**A novel sulfite oxidase mined from metagenome microarray of acid mine drainage**  
Xue Guo, Zhimin Dai, Huaqun Yin and Xueduan Liu (Central South University, China)

**Acid mine drainage sediment: a reservoir for isolation bioleaching microbes**  
Jianping Xie (Central South University, China)

**Response of an acidophilus mixed culture to cadmium stress**  
Huidan Jiang, Huaqun Yin, Yili Liang, Ying Xu, Hongwei Liu and Xueduan Liu (Central South University, China)

**Comparative study of fluoride-tolerance of five typical bioleaching microorganisms**  
Qian Li, Liyuan Ma, Yunhua Xiao, Runlan Yu, Huaqun Yin, Yili Liang, Huidan Jiang, Ying Xu, Min Tang, Hongwei Liu, Guanzhou Qiu and Xueduan Liu (Central South University, China)

**Study of biological extraction kinetics of heavy metals from spent catalyst using thermophilic bacteria**  
F. Gerayeli, F. Ghojavand, S. Yaghmaei (Sharif University of Technology, Iran) and S.M. Mousavi (Tarbiat Modares University, Iran)

**Immobilization of arsenic during bioleaching of nickel concentrate through pH control**  
A. Venho, M. Peltola and J. Puhakka (Tampere University of Technology, Finland)

Comment [O4]: accepted 1/5

**Refractory gold liberation by ultrafine grinding and atmospheric oxidation**  
A. Senchenko, A. Aksenov and A. Vasiliev ("TOMS", Russia)

Comment [O5]: accepted 2/5