

Biomining '23 Draft papers



Technical Session 1

[Keynote Lecture: Biohydrometallurgy offers various process options for metal recovery from primary and secondary resources](#)

A. Schippers (Federal Institute for Geosciences and Natural Resources, Germany)

[Options for stirred-tank reactor and column bioleaching of nickel and cobalt from Brazilian laterite ores](#)

S.A. Hetz, S. Stankovic and A. Schippers (Federal Institute for Geosciences and Natural Resources, Germany)

[Characterisation of marine polymetallic nodules and development of a bioleaching protocol for extracting base and rare-earth metals](#)

A. Santos, A. Dybowska and R. Herrington (Natural History Museum, UK)

[Investigating the efficacy of *Bacillus mucilaginosus* in liberation and pre-concentration of PGMs locked in silicates](#)

N.G. Zulu, B.M. Thethwayo, M.S. Madiba and P.A. Olubambi (University of Johannesburg, South Africa)

[Continuous bioreactor processing of a nickel sulfide concentrate with moderately thermophilic bacteria and archaea](#)

P.R. Norris (University of Exeter, UK), R. Fitzpatrick (Camborne School of Mines, UK) and A.L. Santos (Bangor University, UK)

[Recovery of “pure” CuS nanoparticles using biogenic H₂S from a complex bioleach liquor](#)

G. Recio, P. Hernández, A. Segura and I. Nancucheo (Universidad San Sebastián, Chile)

[Continuous ferrous iron biooxidation in a packed-bed bioreactor at very extreme acidity conditions](#)

M.M. Pérez, B.P. Guerrero, P. Ramírez del Amo, N.I. González and A.M. Rojas (University of Seville, Spain)

[Adaptation of an iron oxidizing culture to extremely high Fe concentration by a programmed fed batch bioreactor](#)

B. Perdigones, P. Ramírez and A. Mazuelos (University of Seville, Spain)

Isolation of a halotolerant and iron oxidizing bacterium from Rio Tinto (Spain) with potential for seawater bioleaching

L. Castro, F. González, J.A. Muñoz (Complutense University of Madrid, Spain), C. Serrano-Pelejero and M. Carmona (Margarita Salas Centre for Biological Research-CSIC, Spain)

Technical Session 2

Carbon dioxide requirements and fixation by various mineral-sulfide oxidizing bacteria

P.R. Norris, M. MacLean, D.A. Clark and L. Laigle (University of Warwick, UK)

Bridging the temperature gap from thermotolerant mesophilic to moderate thermophilic conditions

D.X Makaula and G. Sibeko (Mintek, South Africa)

Changing REE leaching profiles by bioleaching with methylotrophs

J. Mackie, S. Gregory and M. Barnett (British Geological Survey, UK)

Utilization of a mesophilic consortium for arsenic removal from a copper smelter effluent

F. Vera-Espíndola, D. Jeison and E. González (Pontifical Catholic University of Valparaíso, Chile)

Evaluation of the structural stability and ARD prevention potential of hybrid MICP-co-disposed beds

I.A. Hajee, S.T.L. Harrison and A. Kotsopoulos (University of Cape Town, South Africa)

Zerovalent copper formation in an acid mine drainage biofilm—assessing the role of microbial activity

C.M. van der Graaf, S. Papaspyrou, A. Corzo (Facultad de Ciencias del Mar y Ambientales, Spain), L. Lajaunie (Universidad de Cádiz, Spain) and J.L. Ribas (Universidad de Sevilla, Spain)

Investigating froth flotation of municipal wastewater treatment plant biosolids for phosphorus separation

B. Johnson, S. Omelon, K. Waters and D. Frigon (McGill University, Canada)

Technical Session 3

Keynote Lecture: Technology metals for a green future: the role of biomining

K. Hudson-Edwards, D. Dew, F. Wall (University of Exeter, UK), C. Falagan Rodriguez (University of Portsmouth, UK), M. Barnett and S. Gregory (British Geological Survey, UK)

Project FuLIBatteR - future lithium-ion battery recycling for recovery of critical raw materials

K. Kremser, G.M Guebitz (University of Natural Resources and Life Sciences Vienna BOKU, Austria), A. Sieber, L. Lalropuia, S. Spiess, M. Haberbauer (K1-MET GmbH, Austria) and D. Ribitsch (Austrian Centre of Industrial Biotechnology, Austria)

A multi-step bio-based process for recovering valuable metals from spent lithium-ion batteries at no extreme pH and temperature

L. García, J. Morell, C. Lao, M. Solé and A.D. Dorado (Universitat Politècnica de Catalunya, Spain)

A pilot campaign: recovery of battery metals from low-grade mining residues via stirred tank bioleaching

M. Khoshkhoo and A. Sand (Boliden Mineral AB, Sweden)

Experiences from the commissioning of a bioleaching plant for the recovery of gold from printed circuit boards

J. Markowski, C. Abendroth (Brandenburg University of Technology, Germany), A. Lohse and A. Lapushynska (m&k gmbh, Germany)

The application of spent brewer's yeast as selective biosorbent for metal recovery from polymetallic waste streams

A. Sieber (K1-MET GmbH, Austria), L.R. Jelic, K. Kremser and G.M. Guebitz (University of Natural Resources and Life Sciences Vienna BOKU, Austria)

Bioleaching: zinc removal from metallurgical dusts with sulfur-oxidizing bacteria

R. Fröhholz, A.S. Conde, C. Habermaier, S. Spiess, M. Haberbauer (K1-MET GmbH, Austria) and L. Birklbauer (voestalpine Stahl GmbH, Austria)

Bioleaching of metals from automotive catalysts: Focus on magnetic separation and base metal removal using acidophilic bacteria

E. Pakostova (Coventry University, UK) and Neil Rowson (Bunting-Redditch, UK)

A high productivity bioprocess for obtaining metallic copper from printed circuit boards (PCBs)

N. Iglesias-González, P. Ramírez, A. Mazuelos (University of Seville, Spain) and A.D. Dorado (University of Seville & Universitat Politècnica de Catalunya, Spain)

Bioleaching of printed circuit boards in a continuous two-stage system including a re-circulating packed-bed reactor for improved regeneration of ferric ion

M.D. Maluleke, A. Kotsopoulos, E. Govender-Opitz and S.T.L. Harrison (University of Cape Town, South Africa)

Enrichment and adaptation of bioleaching consortia for recovery of critical metals from spent lithium-ion batteries

L. Lalropuia, S. Spiess (K1-MET GmbH, Austria), K. Kremser and G.M. Guebitz (University of Natural Resources and Life Sciences Vienna, Austria)

Evaluation of base metals recovery from low grade sulfidic residue ore in a laboratory and pilot scale study

C. Falagan, K. Hudson-Edwards, D. Dew (Camborne School of Mines, UK), V. Heikkinen (Terrafame Ltd, Finland) and A.-G. Guezennec (BRGM, France)

Bioleaching of black mass from spent LiBs – process parameters and microbiological follow-up

P. Malavasi and S. Gaydardzhiev (University of Liege, Belgium)

Technical Session 4

Bioleaching process development and optimization to recover critical raw materials from sulfidic mining wastes

D. Pino-Herrera, M. Beaulieu, C. Joulian, A.G. Guezennec and F. Bodenan (BRGM, France)

Biopolymer stabilization of bioleached mine residue to produce technosol

P.V. Morais, J.B Caldeira, R. Branco and A.A Correia (University of Coimbra, Portugal)

Comparison of two bioleaching protocols for extracting and recovering nickel from pyrrhotite waste

D.B. Johnson (Bangor & Coventry Universities, Natural History Museum, UK)

Metal recovery and remediation of mine water effluent from siderite deposit Nižná Slaná, eastern Slovakia

Z. Bártová, L. Hagarová, D. Kupka, I. Melnyk, V. Kyshkarova, E. Mačingová (Institute of Geotechnics of the Slovak Academy of Sciences, Slovakia) and J. Zeman (Masaryk University, Czech Republic)

Role of biohydrometallurgy for mine tailings repurposing and valorization

J. Lee (Colorado School of Mines, USA)

Pilot-scale demonstrations of innovative biohydrometallurgy for sustainable valorisation of mining waste: main outcomes from H2020-NEMO project

A.-G. Guezennec, A. Hubau, D. Pino-Herrera (BRGM, France), V. Heikkinen (Terrafame Ltd, Finland), D. Dew, C. Falagan, K. Hudson-Edwards (Camborne School of Mines, UK), M. Khoshkhoo, A. Sand (Boliden Mineral AB, Sweden) and J. Makinen (VTT, Finland)

Bioleaching of metal ions from basic oxygen furnace sludge and dust by *Acidithiobacillus ferrooxidans*

I.T. Kara, S.T. Wagland and F. Coulon (Cranfield University, UK)