

TECHNICAL PROGRAM

Live Streaming

Live sessions at Time Zone Santiago, Chile. UTC -3. English-Spanish interpretation available.

WEDNESDAY, OCTOBER 28

Inauguration Ceremony and Plenary Session 1

10:00 Words of Welcome

Carlos Barahona, Hydroprocess 2020 Executive Director; General Manager, Gecamin, Chile

10:20 Hydrometallurgists Role-Evolution

Cristian Caro, Conference Chair, Manager Metallurgical Modeling, Freeport-McMoRan, USA

10: 50 Mining Business in a Pandemic: Challenges and Learning Opportunities

Francisco Costabal, Vice President of Business Development and Administration South America, Freeport-McMoRan, Chile

11:30 Break

Authors Panel

12:00 Authors Panel

Session 1: Cyanidation, Leaching and Gold Recovery

12:30 Authors Panel

Session 2: Hydrometallurgy of Base Metals

Authors Panel

16:00 Authors Panel

Session 3: Leaching of Sulfide Minerals and Concentrates

16:30 Authors Panel

Session 4: Bioleaching Processes and Hydrometallurgy in Chloride Medium

17:00 Authors Panel

Session 5: Material Recycling and Metallurgical Waste Stabilization

17:30 End of the Day

THURSDAY, OCTOBER 29

Plenary Session 2

10:00 Welcome and Program Update

10:10 To be confirmed

10:45 **Development of Pressure Oxidation Technology to Process Bulk Cu/Mo Concentrates**

Christy Green, Manager of Reliability and Development, Technology Center, Freeport McMoRan Mining Company, USA

11:30 Break

Authors Panel

12:00 Authors Panel

Session 6: Solvent Extraction Processes

12:30 Authors Panel

Session 7: Innovation in Electrowinning Processes

13:00 Break

Panel Discussion

16:00 **Panel**

Innovation Technology: Opportunities and Challenges in Hydrometallurgy

Chair: Cristian Caro, Manager Metallurgical Modeling, Freeport-McMoRan, USA

Introductory Presentation:

Technology Development for Hydrometallurgical Processes in Codelco Chile

Felipe Lagno, Innovation Manager, North District, Codelco, Chile

Panelists:

- **Felipe Lagno**, Innovation Manager, North District, Codelco, Chile
- **Jorge Saenz-Diez**, Hydrometallurgical Manager – Copper Assets, Glencore, Chile
- **Gabriel Ocaranza**, Operations Manager, Minera Zaldívar, Antofagasta Minerals (To be confirmed)
- **Devesh Bajinath**, Vice President Technology, Minerals Americas, BHP, Chile (To be confirmed)

17:30 End of the Day

FRIDAY, OCTOBER 30

Plenary Session 3

10:00 Welcome and Program Update

10:10 Implementing an Operational Model of Excellence for the Optimization of Hydrometallurgical Plants

Reinaldo Mendoza, RMV Ingehidromet, Chile

10:50 Management of Hydrometallurgy in Grupo Mexico: Some Key Factors for Continuous Improvement

Juan Luis Reyes Bahena, Metallurgy Manager, Grupo Industrial Minera Mexico (Grupo Mexico), Mexico

11:30 Break

Authors Panel

12:00 Authors Panel

Session 8: New Materials and Technology Development

12:30 Authors Panel

Session 9: Modeling, Innovation and Optimization of Hydrometallurgical Operations

13:00 Conference Balance and Final Comments

Carlos Barahona, Hydroprocess 2020 Executive Director; General Manager, Gecamin, Chile

Fernando Valenzuela, Hydroprocess 2020 Program Director, Academic Director, Fac. of Pharmaceutical and Chemical Sciences, Universidad de Chile

On Demand

Pre-recorded presentations available from Monday, October 26 at 08:00 AM (UTC - 3).
Audio Available in English & Spanish.

Session 1: Cyanidation, Leaching and Gold Recovery

(A16) Gold Leaching from POX Residues of Copper Concentrate Using Various Lixiviants

Jiajia Wu, Junmo Ahn and Jaeheon Lee, Department of Mining and Geological Engineering, The University of Arizona, USA

(A46) Using Thiosulfate as Gold Leaching Agent in Brazilian Carbonaceous Ore: Batch Tests Analysis

Francisco Pedrosa, Institute for Technological Research, São Paulo State, Brazil; Fernando Barros, Amonex, Brazil Industry and Commerce; Arthur Chaves, Eliana Mano and Dimas Neto, Department of Mining and Petroleum Engineering, University of São Paulo, Brazil

(A64) Assessment of Cyanide Degradation of Native Bacteria in Gold Mining Tailing

Cecilia Demergasso, Dina Cautivo, Biotechnology Center, Universidad Católica del Norte, Chile; and Iván Cáceres, AustralGold, Chile

(A34) Characterization of Gold Minerals Inside 20 Tons Artisanal Miners Dump Trucks Before Processing

Anuar Anchelia, Universidad Peruana de Ciencias Aplicadas UPC, Peru

(A21) The SuCy Process: A More Efficient and Safer Technology to Recover Cyanide and Copper in Cyanidation Plants

Humberto Estay, Minghai Gim-Krumm, Michelle Quilaqueo, Gabriel Seriche, Simón Díaz-Quezada and Lorena Barros, Advanced Mining Technology Center (AMTC), Universidad de Chile; René Ruby-Figueroa and Ignacio Cortes, Universidad Tecnológica Metropolitana, Chile

Session 2: Hydrometallurgy of Base Metals

(A18) Variability Control in Carbonate Grades Fed to Heap Leaching from Mantoverde

José Olgúin, Rodrigo Guerra and Julio Flores, Mantos Copper, Mantoverde, Chile

(A20) Circular Economy in Mining: Processing of Cutting as Alternative of Environmental Remediation

Gerardo Zamora, Walter Blanco and Ruth Meza, Department of Metallurgy, Oruro Technical University, Bolivia

(A52) Safford Hydromet Expansion for the Lone Star Project

Kalli Ketel, Freeport-McMoran Mining Company, USA

(A29) Integral Management of the Hydrometallurgical Circuit in Molybdenum

Juan José Segura, Cristian Pizarro and Edgardo Cisternas, R&D Department, Molibdenos y Metales, Chile

(A69) Improving Predictability through Gangue Mineralogy Characterization at Minera Escondida

Ernesto Menacho, Sebastián Santacruz and Carlos Delgado, Minera Escondida, BHP, Chile

(A61) Advances in Heap Leaching of Refractory and Low-Permeability Ores

Stefan Robertson, Mintek, South Africa

Session 3: Leaching of Sulfide Minerals and Concentrate

(A02) Effect of Pretreatment on the Leaching of Chalcopyrite Concentrate

Víctor Quezada, Antoni Roca, Montserrat Cruells, Department of Materials Science and Physical Chemistry, Universidad de Barcelona, Spain; and Oscar Benavente, Department of Metallurgical and Mining Engineering, Universidad Católica del Norte, Chile

(A15) Comparative Studies of Chalcopyrite Leaching by Methanesulfonic Acid (MSA) with Alternative Oxidants

Junmo Ahn, Jiajia Wu and Jaeheon Lee, Department of Mining and Geological Engineering, The University of Arizona, USA

(A26) Petrographic-Mineralogical Contribution in the Leaching of Chalcopyrite with Sodium Persulfate

Diego Tamayo, Francisco Carrillo and Diego Martínez, Faculty of Metallurgy, Universidad Autónoma de Coahuila, Mexico

(A38) Chalcopyrite Dissolution: The End of a Long Waiting

Tihomir Domic and Esteban Domic, Nova Mineralis, Chile

(A39) Leaching of Copper Sulfides Using Glycine in Alkaline Solutions

Rosario Juyo and Juan Álvarez, Department of Chemical Engineering, Universidad Nacional de San Agustín, Peru; and Susan Flores, Department of Biotechnology Engineering, Universidad Católica de Santa María, Peru

Session 4: Bioleaching Processes and Hydrometallurgy in Chloride Medium

(A01) Variables that Affect LGSO Bioleaching Pad and How to Improve and Maintain Cu Recovery

Cristian Zamorano, Fernanda Vera, Iván Sánchez and Cristian Garrido, Fluor, Chile

(A51) Industrial Application of Assisted Bioleaching to Radomiro Tomic Low Grade Sulfide Ores

Mario Letelier, Francisco Arriagada, Arcadis, Chile; Felipe Lagno, North District, Codelco, Chile; and Cristian Hu, Radomiro Tomic Division, Codelco, Chile

(A25) Pretreatment and Leaching of Chalcopyrite Ore at 25 °C in an Acid-Chloride-Nitrate Media

Pía Hernández, Claudia Marchant and Monserrat Martínez, Department of Chemical Engineering and Mineral Processes, Universidad de Antofagasta, Chile

(A44) Migration of Traditional Leaching to Leaching in Chlorinated Medium - Costs and Impacts on Infrastructure

Sergio Aguilera and Guillermo Kelly, ChkIng Ingeniería, Chile

(A63) Pretreatment and Effect of Concentration of Cl⁻ Ions on the Leaching of Chalcopyrite Concentrate with an Iodide and Acid Media

César Castellón and María Taboada, Department of Chemical Engineering and Mineral Processing, Universidad de Antofagasta, Chile

Session 5: Material Recycling and Metallurgical Waste Stabilization

(A24) Zinc and Manganese Dissolution from Spent Alkaline Batteries

Cristian Serrano and Nicolás Ortega, Faculty of Engineering and Geological Sciences, Universidad Católica del Norte, Chile

(A35) Lithium, Cobalt and Nickel Dissolution from Spent Lithium-Ion Batteries

Cristian Serrano and Eduardo Mercado, Department of Metallurgical and Mining Engineering, Universidad Católica del Norte, Chile

(A67) Recovery of Metals from Lithium-Ion Batteries by Thermal Pretreatment and Organic Acid Leaching

Nathália Vieceli, Gabriele Lombardo, Burcak Ebin and Martina Petranikova, Department of Chemistry and Chemical Engineering, Industrial Materials Recycling and Nuclear Chemistry, Chalmers University of Technology, Sweden

(A30) Stabilization of Arsenical Industrial Waste Using Geopolymers

Juan José Segura, Christian Soto and Daniel Brito, R&D Department, Molibdenos y Metales, Chile

(A50) Arsenic Extraction from Copper Smelter Dust by Alkaline Leaching

Fernando Parada and Andrés Reghezza, Department of Metallurgical Engineering, Universidad de Concepción, Chile

(A31) Value Recovery from Leached Flue Dust

Ricardo Pezoa, Quentin Graaff, Nelson Parra and Marcelo Acuña, Business & Development Department, EcoMetales Limited, Chile

Session 6: Solvent Extraction Processes

(A22) New Mechanism Finding Offers More Alternatives to Control Nitration in Copper Solvent Extraction

Philippe Joly, Jack Bender, JJ Taute, Hector Yañez, Leonor Ardiles, Francisco Reyes, BASF, Chile / USA

(A58) ACORGA®CR60: A Proactive Solution for Problems of Crud and Silica Emulsions: Industrial Cases

David Acevedo, Rodrigo Zambra, Solvay, Chile; Juan Carlos Sánchez, Solvay, Peru; Edgar Ricce, Gunther Alhborn, Solvay, USA; Cristian Vásquez and Claudio Rivera, Minera Pampa Camarones, Chile

(A37) Development of Physical Barriers with New Materials, for the Reduction of Microdrops Drag in the Solvent Extraction Stage of the Copper Hydrometallurgical Industry

Juan Carlos López and Víctor Hernández, BBS, Chile; and Patrix Thierry, Thierry Präzisionslackiertechnik GmbH, Germany

(A43) Review of Chloride Mass Balance in Organic Washing Stage

Francisco Reyes, Héctor Yañez, Philippe Joly, Leonor Ardiles, BASF, Chile

Session 7: Innovation in Electrowinning Processes

(A09) Improving the Electrical Connections of a Cathode Electrode for Copper Production – A Case Study

Luis Marin, CSIRO Chile; David Molenaar, CSIRO, Australia; and A. Lopez, Cerro Negro, Chile

(A71) El Abra Open Top Capping in EW

Alfonso Bustos and Moises Tapia, SCM El Abra, Freeport-McMoRan, Chile

(A48) Effect of Electrowinning Parameters on Cathode Pre-Stripping

Ephrem Gebrehiwot, William Sanders and Scot Sandoval, Freeport-McMoran, USA

(A12) Mapping Stray Currents in a Tankhouse

David Molenaar, CSIRO, Australia; N. Kimlin, Glencore Technology, Australia; and Luis Marin, CSIRO Chile

Session 8: New Materials and Technology Development

(A13) Cyanide Ion Oxidation by Catalytic Action of Nickel Ferrites

Cristhian Feijoo, Ernesto de la Torre and Belén Lozada, Department of Extractive Metallurgy, Escuela Politécnica Nacional, Ecuador

(A19) A Direct Lithium Extraction Process using Hydrated Titanium Oxide

Michael Page, James Quinn and Karin Soldenhoff, Australian Nuclear Science and Technology Organization, Australia

(A27) Catalytic Oxidation of Ferrous Ion in Acid Medium with Active Aeration Using Activated Carbon Doped with Transition Metals

Ernesto de la Torre M. and D. Almeida, Universidad San Francisco de Quito, Ecuador; and Ernesto de la Torre C., Escuela Politécnica Nacional, Ecuador

(A49) Study on the Operational Variables that Influence the Electroosmotic Drainage Technique: Application to Leaching Gravels

Manuel Cánovas, Julio Valenzuela, Cristian Cuevas and Paul González, Department of Metallurgical and Mining Engineering, Universidad Católica del Norte, Chile

(A54) On the Quantum Extraction: A Single Process to Multiple Chemicals

Eduardo Patino, Onetiq Technology, Chile

Session 9: Modeling, Innovation and Optimization of Hydrometallurgical Operations

(A72) El Abra ROM and Sulfolix Reconstruction Model: ArcGIS and MineSight

Josefa Verdugo and Eugenia Castillo, SCM El Abra, Freeport-McMoRan, Chile

(A28) A Model for the Leaching Kinetics of Porous Ore Particles Undergoing Structural Changes

Francisco Rojas and Tomás Vargas, Department of Chemical Engineering, Biotechnology and Materials, Universidad de Chile; AMTC, Universidad de Chile

(A10) An In-situ Synchrotron XAS Study on the Evolution of Arsenic Species During Pressure Leaching

Miao Chen, Yi Yang, Yalong Ma and Warren Bruckard, CSIRO Mineral Resources, Australia

(A60) Deep Reading Muon Density Measurements for Novel 4D Leaching Heap Characterization

Tancredi Botto, Muon Vision, USA; Ricardo Repenning and Francisco Arrau, Muon Vision, Chile

(A70) Remote Sensing Methods for Surveying Copper Heap Leach Pads

Jingping He, Leon Duplessis, Isabel Barton, Mining and Geological Engineering Department, University of Arizona, USA; and Tyler Wolf, Freeport-McMoRan, USA

(A47) Development of Soft-Sensor Prototype and Application to Seawater-Nitrate Brine Systems

Aldo Fuentes and Jesús Casas, Department of Materials and Metallurgical Engineering, Universidad Técnica Federico Santa María, Chile

Session 10: Students Poster Presentations

(A68) Combining XMT and MLA to describe the structural evolution of agglomerated ores: the impact of chloride ions in the curing process

Luis Salinas-Farran and Stephen Neethling, Department of Earth Science and Engineering, Imperial College London, UK

(A62) Galvanic Leaching of Copper Anode Slime with Manganese(IV) Oxide in Sulfuric Acid and Catalytic Effect of Graphite

Kurniawan, Jae-chun Lee, Jonghyun Kim, Hyeon-Ji Jo, and Sookyung Kim, Mineral Resources Research Division, Korea Institute of Geoscience and Mineral Resources and University of Science and Technology, Korea

(A23) Calcium Arsenite Stabilization by Geopolymerization

Juan Rojas and Jesús Casas, Universidad Técnica Federico Santa María, Chile; and Ricardo Pezoa and Marcelo Acuña, EcoMetales, Chile

(A56) Development of a New Composite Material Based on Microfibrillated Cellulose (MFC) and Polyketone for Water Treatment

Pablo Gonzalez, Franck Quero, Fernando Valenzuela, Universidad de Chile and Rodrigo Araya, Universidad Tecnológica Metropolitana

(A17) Adsorption of La, Pr and Nd Ions Using Organophosphorus Extractants-Functionalized Nanoparticles

Lorena Molina, Carlos Basualto, José Gaete, Department, Food Science and Chemical Technology, Universidad de Chile; and Diego Venegas, Universidad de Santiago de Chile

(A55) Integrated Use of Adsorbents with Magnetic Properties for the Treatment of Acid Water

Alejandro Briso, Pontificia Universidad Católica de Chile; Geraldine Quintana, Centro de Desarrollo Urbano Sustentable, Chile, Viviana Ide, Carlos Basualto, Lorena Molina, Gonzalo Montes and Fernando Valenzuela, Universidad de Chile