PRELIMINARY TECHNICAL PROGRAM

Time Zone Santiago, Chile. GMT-4. English-Spanish interpretation available

FRIDAY, AUGUST 2

Virtual Technical Courses 1 | Free Access for Registered to the Conference

09:30 – 13:30 **SELECTION OF GEOMETALURGICAL SAMPLES**
Adam Johnston, Chief Metallurgist, Transmin Metallurgical Consultants, United Kingdom and Peru.

Virtual Technical Courses 2 | Free Access for Registered to the Conference

16:00 – 18:00 **APPLICATIONS OF HYPERSPECTRAL IMAGING IN GEOMETALLURGY**
Pia Lois-Morales, Assistant Professor, Department of Mining Engineering, Universidad de Chile and **Alejandro Ehrenfeld**, Researcher, Advanced Mining Technology Center - AMTC, Universidad de Chile

MONDAY, AUGUST 5

Virtual Technical Courses 3 | Free Access for Registered to the Conference

16:00 – 20:00 **SAMPLING ACROSS THE GEOMETALLURGY VALUE CHAIN**
Mark Noppé, Director and **Nathan Fox**, Senior Research Fellow, WH Bryan Mining Geology Research Centre, SMI, The University of Queensland; **Lizette Verster**, Senior Research Fellow, Julius Kruttschnitt Mineral Research Centre, SMI, The University of Queensland and **Percy Madrid**, Senior Process Consultant, JK Tech, The University of Queensland, Australia.

TUESDAY, AUGUST 6

Virtual Technical Courses 4 | Free Access for Registered to the Conference

10:00 – 13:10 **AN INTRODUCTION TO DATA SCIENCE FOR MINERAL PROCESSING**
Nathalie Risso, Assistant Professor and **Victor Tenorio**, Professor of Practice, Department of Mining and Geological Engineering (MGE), University of Arizona, USA

Virtual Technical Courses 5 | Free Access for Registered to the Conference

15:00 – 17:00 **IMPORTANCE OF PHYSICOCHEMISTRY IN THE FLOTATION PROCESS**
Leopoldo Gutiérrez, Professor, Department of Metallurgical Engineering, Universidad de Concepción, Chile

WEDNESDAY, AUGUST 7

Technical Sessions

08:30 – 17:30 **Technical Sessions**

The Technical Sessions will start on Wednesday, August 7 in the morning. Authors will be notified of the date and time on which they will be presenting throughout the month of July.

Inaugural Ceremony

18:00 **Words of Welcome**

Mimy Mackenzie, Conference Manager, Gecamin, Chile
Leopoldo Gutiérrez, Procemin-Geomet 2024 Co-Organizer; Professor, Department of Metallurgical Engineering, Universidad de Concepción, Chile
Pia Lois-Morales, Procemin-Geomet 2024 Co-Organizer; Assistant Professor, Department of Mining Engineering, Universidad de Chile
Dennis Vega, Procemin-Geomet 2024 Co-Organizer; Energy, Water and Emissions Processing Leader, SMI-ICE Chile
Nathalie Risso, Procemin-Geomet 2024 Co-Organizer; Assistant Professor, Mining and Geological Engineering Department, University of Arizona, USA
Mauricio Torem, Procemin-Geomet 2024 Co-Organizer; Head, Mineral Processing Research Group, Pontificia Universidad Católica Do Rio de Janeiro, Brazil

Opening Talk
Marcela Oyarzún, Procemin-Geomet 2024 Chair; Corporate Director of Geometallurgy, Codelco, Chile

19:30 – 21:00 **Welcome Reception**

THURSDAY, AUGUST 8

Plenary Session 1

11:00 **Title to be Confirmed**
Speaker to be Confirmed

11:30 **Desafíos y Oportunidades de una Gestión Integrada Geología, Mina y Planta**
Claudia Domínguez, Operations Manager, Andina Division, Codelco, Chile

12:00 **Short Break**

Plenary Session 2

12:20 **Standardizing Geometallurgical Tools for Enhanced Mining Operations at Newmont**
Ben Odegard, Regional Geometallurgist, Newmont, USA

12:50 **The Development of Magnets Provides Process Improvements in Magnetite Processing**
George Mandarakas, Global Product Manager Mining Division, Steinert Germany; Karl-Heinz Becker and Johan van Zyl, Steinert Australia and Germany

FRIDAY, AUGUST 9

Plenary Session 3

11:00 **Advanced Process Control System Applied for Different Types of Ore Feed to the Concentrator Plant**
Marinka Silva, Process Control Engineer, Ministro Hales Division, Codelco, Chile; Pablo Bustos, Ministro Hales Division, Codelco, Chile; Leonardo Andrades, Codelco, Chile and Sebastián Pulgar, Kairos Mining, Chile

11:30 **Sustainability and Innovation in Comminution**
Bjorn Nielsen, Vice President, Stirred Mills and HPGR, Metso, Australia

12:00 **Mineral Processing for Sustainable Growth: A Vale Experience**
Keila Gonçalves, Process Development Manager, Vale, Brazil

RECEIVED PAPERS

(79 papers as of July 2)

Represented Countries (16): Australia, Brazil, Canada, Chile, China, Finland, Germany, Mexico, Netherlands, Peru, South Africa, Spain, Switzerland, Turkey, United Kingdom and USA

GEOMET: Applied Mineralogy (3 papers)

(A05) Use of Micro-XRF for Mineralogical Characterization Purporses in West Sossego Deposit: Vale Base Metals
Camila Torres, Giseli Ramos, Axel Torres and Marcos Alvim, Vale Base Metals, Brazil

(A25) Characterization of Cobalt in Pyrite in El Teniente, an Automated Mineralogy Approach
Felipe Martínez, SGS, Chile and Carolina Becerra, El Teniente Division, Codelco, Chile

(A52) Influence of Actinolite on Iron Recovery in Sinter Feed Production, Los Colorados Mine, Chile
Paulina Salgado, Esme Tristram and Gerardo Saavedra, Mina Los Colorados, Compañía Minera del Pacífico, Chile

GEOMET: Case Studies and Industrial Practices (4 papers)

(A06) A Case Study on the Application of Geometallurgy in a Zinc-lead Mine
Bruna Costa, Kawina Araujo and Fernando Villanova, Nexa Resources, Brazil; Jorge Renzo, Lucas Pereira, Pedro Casagrande and Douglas Mazzinghy, Federal University of Minas Gerais, Brazil

(A09) Evaluation of High and Low Chrome Balls Wearing in Griding Process and its Impact on Flotation in Salobo Mine Plant
Olegário Júnior, Ana Silveira and Jorge Arce, Vale Base Metals, Brazil

(A15) Copper concentrate quality traceability in Salobo Mine
Ricardo Nunes Melo, Suellen Ferreira, Mário Freitas, André Menezes and Jorge Arce, Vale Base Metals, Brazil

(A29) HIGmill OPEX optimization at Ero Brazil's Concentrator
Alline Ferreira da Cunha, Camila Lira da Cunha Andrade and Mateus Gomes Silva, Ero Brazil; Andres Paz, Swiss Tower Mills Minerals, Australia; Johan Steyn, Baikun Wang and Hanqing Li, King's Beads, China

GEOMET: Geometallurgical Characterization and Modelling (10 papers)

(A08) Reconciliation of Copper Metallurgical Recovery, Comparing of Long- and Short-Term Models in Salobo Deposit
Giseli Ramos, Lucas Almeida, Cleive Ribeiro, Camila Torres, Axel Torres and Marcos Alvim, Vale Base Metals, Brazil; Elisabeth Fonseca, Center for Mineral Development, Vale, Brazil

(A11) Metallurgical and Mineralogical Characterization of Ore Stockpiles at Bingham Canyon Mine
Michael Kassela and Laura Hughes, Rio Tinto, USA

(A17) Ore Characterization of Underground Skarn Blended with Open Pit Ore from the Bingham Canyon Mine
Stanton Nelson and Isaac Boadi, Rio Tinto Kennecott, USA

(A23) A Holistic Review of Geometallurgical Modelling Techniques: Current Practices and Emerging Trends
Christian Yepez, Angelina Anani and Sefiu Adewuyi, University of Arizona, USA

(A27) Drilling Energy of Blast Holes and its Geostatistical Relationship to Predict Rock Hardness
Carlos Cisterna, Matías Alzamora and Francisco Rojas, Caserones, Lundin Mining, Chile

(A28) Occurrence of Cobalt and its Association with Iron Mineralization in the Bronce Sur Deposit, Atacama Region
Cassandra Contreras, Helmholtz Institut Freiberg for Resource Technology, Germany and Osvaldo Gómez, Compañía Minera del Pacífico, Chile

(A43) Comminution Circuit Definition and Throughput Modeling Using Gaussian Sequential Simulation
Sergio García, Felipe Bernal and Johny Bonilla, Norte Abierto, Chile

(A44) Improving the understanding of Cerro Casale Deposit from Speciation Deportment
Sergio García and Felipe Bernal, Norte Abierto, Chile

(A61) Semi-Supervised Learning Model for Recognizing Geometallurgical Domains Based on Self-Organizing Maps: Case Study in a Porphyry Copper Mine
Daniel Baeza and Andrés Rivera, GEA, Chile; Mauricio Garrido, Minera Antucoya, Antofagasta Minerals, Chile and Brian Townley, Department of Geology and Advanced Mining Technology Center, Universidad de Chile

(A67) Determination of Geometallurgical Domains using Multiple Indicator Kriging
Carlos Chinchay and Rossio Garcia, Datamine, Peru

GEOMET: Testing and Prediction of Process Performance: Crushing, Grinding, Flotation, Leaching, Sedimentation (3 papers)

(A01) Exploring the Challenges of Marked Ball Wear Tests in Grinding Media Product Development: A Case Study
Paul Shelley and Hamid Pourasiabi, Molycop, USA

(A42) Standardization of Flotation Testwork Information according with Variability Samples Requirements
Sergio García, Norte Abierto, Chile

(A48) Advancing Orebody Knowledge with High-Resolution Rock Strength Measurement using the Minpraxis Tester
Gonzalo Pizarro and Bern Klein, Norman B. Keevil Institute of Mining Engineering, University of British Columbia, Canada; Stefan Nadolski, Minpraxis Solutions, Canada

GEOMET: Mineral Sampling (1 paper)

(A53) Sampling Strategies: A Methodological Approach for Representative Sample Selection
Nicolás Vercellino and Osvaldo Gómez, Compañía Minera del Pacífico, Chile and Israel Solís, Universidad de Chile

GEOMET: Technology and Software for Data Analysis and Geometallurgy Development (5 papers)

(A07) Exploratory Data Analysis for Geometallurgy: Tools Applied on a Zinc-Lead Mine Case Study
Bruna Costa, Thiago Nunes and Fernando Tartarotti, Nexa Resources, Brazil; Gustavo Oliveira, Fernando Brandão, Claudio Schneider, Pedro Campos and Douglas Mazzinghy, Federal University of Minas Gerais, Brazil

(A22) Standardizing Geometallurgical Tools for Enhanced Mining Operations at Newmont *(PLENARY)*
Ben Odegard, Newmont, USA

(A51) Sensitivity and Risk Analysis in Resource Estimation with Automated Workflows
Julian Ortiz, Camborne School of Mines, University of Exeter, United Kingdom and Advanced Predictive Modeling Technology, Canada and Sebastian Avalos, Advanced Predictive Modeling Technology, Canada

(A80) Predictive Insights for Geometallurgical Characterization using Advanced Machine Learning Techniques
Monica Alva, Universidad de Chile and Christiam Vásquez, Cía. Minera Antamina, Peru

(A82) Unlocking Mining Potential: Geometallurgical Integration with Seequent Solutions
Julia Oliveira, Ignacio Escudero and Alicia Zuñiga, Seequent, Chile

GEOMET: Production Planning and Scheduling (1 paper)

(A72) Environmental Impact Reduction through Life Cycle Assessment incorporation into Mine Planning
Victor Balboa, José Ojeda, Giovana García and Dennis Vega, Sustainable Mineral Institute International Centre of Excellence, University of Queensland, Chile

PROCEMIN: Automatic Control, Expert Systems and Data Analysis (7 papers)

(A10) Estimating Recovery Losses Due to Coarse Material using CYCLONEtrac PST Technology and Machine Learning
Rodrigo Bruna, Alejandro Ramos, Robert Maron and Alejandro Jaque, CiDRA Minerals Processing, Chile and USA

(A14) Advanced Process Control System Applied for Different Types of ore Feed to the Concentrator Plant
Marinka Silva and Pablo Bustos, Ministro Hales Division, Codelco, Chile; Leonardo Andrades, GPTA, Codelco, Chile; Sebastián Pulgar, Kairos Mining, Chile *(PLENARY)*

(A21) Advanced Process Control System: Total Fill Level Control in SAG mill
Rafaela Andretta, Gonzalo Iriarte and Juan Fernando Morales, Andritz, Chile

(A30) Iron Ore Flotation Monitoring Integrating Operational Variables and Froth Image Analysis
Tiago Caixeta, Cássio Costa and Neymayer Lima, Vale, Brazil; Thiago Euzébio, Helmholtz-Zentrum Dresden-Rossendorf, Germany and Antônio Peres, Federal University of Minas Gerais, Brazil

(A36) Optimization and Control in Grinding with Digital Twin at Minera Los Pelambres
Robert von Loebenstein, Andritz, Chile

(A70) Stretching the Limits: Very Large GMDs in Mining
Vanesa García, Jesus Perez, Maarten van de Vijfeijken, Roland von Kaenel, Daniel Bermudez and David Casado, ABB, Chile, Spain and Switzerland

(A74) SAG Digital Twin: Strategy for Throughput Optimization
César Moscoso, ME Elecmetal, Chile and Alvaro Rendón, ECN Automation, Mexico

PROCEMIN: Conminution: Crushing, Grinding, SAG, HPGR (6 papers)

(A03) The Effect of Grinding Operating Stability on Flotation Recovery
Percy Madrid, JKTech Pty, Australia

(A12) Relationship between the Number of Tested Samples and the Estimation of SAG Milling Capacity Variability
Leonardo Lara and Marcos Bueno, Geopyörä Oy, Finland; Homero Delboni, University of São Paulo, Brazil

(A46) A Comparative Study Between HPGR and SAG Alternatives for a New Comminution Project
Alessio Arata and Alejandro Martínez, RMES Analytics, Chile; Matías Raby and Marcelo Figueroa, The Boston Consulting Group, Chile

(A65) Increased Processing Capacity in SAG Mills using Pre-Crushing with Sizer
Ignacio Tapia and Pablo Fuenzalida, MMD Mineral Sizing, Chile

(A79) Study of HPGR Operational Stability for a Copper Deposit with Diverse Metallurgical Characteristics
Felipe Navarrete and Matias Castillo, Weir, Chile and Renato Oliveira, Weir, Netherland

(A81) Estimation of Power Draw in SAG Mills: Integration of Machine Learning Models in Long-Term Mining Planning
Carlos Delgado, Rodrigo Gutierrez and Reina Valdes, Minera Escondida, BHP, Chile; Francisco Soto, Gabriel Berkowitz, Alberto Garcia and Vicente Rojas, Empirica, Chile

PROCEMIN: Flotation: Fundamentals, Reagents and Industrial Applications (16 papers)

(A13) Evolution of Reagents in Salobo
Ernani Delano, Olegario Júnior, Rafael Oliveira, Ana Lidia, Rosiane Aquino, Renan Sousa, Antônio Fernandes and Sebastião Adenilson, Vale Base Metals, Brazil

(A20) On the Fundamentals of Electroflotation of Itabiritic Iron ore Fines using a Green Surfactant
Carolina Simões, Ronald Rojas, Matheus Silva, Antonio Merma, Marcelo Camarate and Mauricio Torem, Department of Chemical and Materials Engineering, PUC of Rio de Janeiro and Flavia Silvas, Vale Institute of Technology, Brazil

(A38) Optimizing Bubble Size Distributions in Highly Concentrated Flotation Applications
Sebastian Maaß, SOPAT GmbH, Germany; Robert Panckow, Department of Process Engineering, Berlin Institute of Technology, Germany; Kerstin Eckert, Department of Mineral Processing, Helmholtz Institute Freiberg for Resource Technology, Germany and Jenni Sweet, Anglo American, South Africa

(A41) An AFM Image Study of the Adsorption of Collectors on Chalcocite
Jinhong Zhang, Department of Mining and Geological Engineering, University of Arizona, USA

(A45) Innovative Flotation Strategies for the Treatment of Altered Cu-Mo Minerals
Marco Orellana, Innova-met Ingeniería, Chile and Rodrigo Giménez, Nouryon Chemicals, Chile

(A55) Effect of Catalyzed MBS on Low-Grade Copper Sulfide Flotation in Seawater
Felipe Varela, Daniel Salgado and Mario Cornejo, Molycop, Chile

(A56) Novel Alternatives to Improve Copper Recovery for Low Floatability Ores and Presence of Clays
Patricio Zarate, Miguel Arends and Fabiola Rojas, Clariant, Chile

(A57) On the Definition of Flotation Times to Estimate Potential Recoveries and Average Flotation Rates
Alex Esteban and Luis Vinnett, D. of Chemical and Environmental Engineering, U. Técnica Federico Santa María, Chile; Francisca Justel, D. of Metallurgical and Materials Engineering, U. Técnica Federico Santa María, Chile and Kristian Waters, D. of Mining and Materials Engineering, McGill University, Canada

(A66) Innovative Methodology for Classifying and Selecting Flotation Collectors for Mixed Collector Formulations
Cristian Saavedra, Patricio Zarate, Michael Mallea and Wagner Silva, Clariant, Chile and USA

(A68) Assessment of a Novel Frother Chemistry for Industrial Flotation Processes
Juan P. Vergara-Meruane, Miguel Maldonado and Ignacio Ramos, Department of Metallurgical Engineering, Universidad de Santiago de Chile; Jose Martínez, Department of Earth Science & Engineering, Imperial College London, United Kingdom; Nicolás Miranda, Minera Caserones, Lundin Mining, Chile and Ricardo Rubio, Syensqo, Cytec, Chile

(A69) Novel Frothers for Coarse Particle Recovery and Efficient Cleaner Operations
Tarun Bhambhani, Connor McMillan, Esau Arinatwe, Ricardo Rubio and Carmina Quintanar, Syensqo, Chile and USA

(A71) Flotation of Quartz and Hematite Using Mixed Fatty Acid Collectors of Vegetable Origin
Matheus Silva, Carolina Simões, Ronald Rojas, Rodrigo Souza and Mauricio Torem, D. of Chemical and Materials Engineering, P. Catholic University of Rio de Janeiro, Brazil and Flavia Silvas, Vale Institute of Technology, Brazil

(A77) Characterization of Industrial Flotation Banks: A Novel froth Recovery Approach
Paulina Vallejos and Juan Yianatos, Department of Chemical and Environmental Engineering, Universidad Técnica Federico Santa María, Chile; Dominique Betancourt, Caroline Izart and Rodrigo Grau, Metso, Finland

(A78) Enhanced Flotation Recovery Process for Complex Copper and Copper-Gold Ores using MillART
Barun Gorain, Ore2Metal, Canada; Janaki Ram Adapa, Anil Nistala and Antonio Rubio, Vega Industries, Chile

(A83) Use of Intermediate Waters from the Selective Mo Plant as a Replacement for Fresh Water
Santiago Honores and Julio Giampaoli, Chuquicamata Division, Codelco, Chile; Juan Huidobro, Andrés Lobos, Rodolfo Moya, Daniela Campos and Aldo Collari, El Teniente Division, Codelco, Chile

(A84) Experiences in Flotation Bank Optimization by Controlling the Gas Flowrate Distribution Profile
Cesar Gomez, COG Technologies, Canada; Ignacio Ramos and Miguel Maldonado, Metallurgical Engineering Department, Universidad de Santiago de Chile

PROCEMIN: New Processing Technologies (8 papers)

(A04) Representative, Real Time Conveyed Flow Elemental Measurement for Process Improvement
Henry Kurth and Claudio Ramon, Scantech International Pty, Australia

(A19) Flotation of Coarse Particles from Antofagasta Region in a Novel Flotation Device
Cagri Emer, Risto Aho, Manuel Barrueto, Marly de Avila Carvalho and Antti Rinne, Metso, Turkey, Finland and Chile

(A33) The Flowsheet of the Future: Optimizing Energy Efficiency and Minimizing Water Usage
Fisher Wang and Evgeny Zhmarin, Swiss Tower Mills Minerals, Switzerland; Erich Dohm and Drew Hobert, Eriez Flotation, USA; Serhat Onol, Weir Minerals, Netherlands and Alejandro Tapia, Swiss Tower Mills Minerals, Chile

(A34) Dry Grinding of Ores with the Vertical Roller Mill
Caroline Woywadt and André Cruz, Gebr. Pfeiffer, Germany and Brazil

(A39) Limiting Fine Copper Losses in the Tailings: Examples with the Concorde Cell
Alejandro Yáñez, Nathalie Kupka, Manuel Barrueto and Antti Rinne, Metso Finland and Chile

(A59) Recovery of Coarse and Low Liberated Cu Sulphides in Complex Associations using HydroFloat
Matías Zanetta-Aroca, Maximiliano Caro, Felipe Valdés, Arnoldo Ávila and Maximiliano Meléndez, Eriez, Chile

(A64) Full Dry Iron Ore Comminution and Beneficiation Circuit with HPGR and Air Classifiers
Renato Oliveira and Serhat Onol, Weir Minerals, Netherlands

(A76) The Development of Magnets Provides Process Improvements in Magnetite Processing *(PLENARY)*
George Mandarakas, Karl-Heinz Becker and Johan van Zyl, Steinert Australia and Germany

PROCEMIN: Operation and Plant Management (2 paper)

(A50) Nightshift GPS Failures Avoidance on Bridges, Stackers and Bucket wheels, due to Scintillation
Gabriel Ibarra, Geocom, Chile

(A85) Quicklime Specific Consumption on Mineral Processing of Sulfide Copper ores: An Operational Strategy to Optimize it
Eric Schmidt and Sebastián Collao, Quicklime Applied Research Center, Cbb Cales, Chile

PROCEMIN: Modeling, Design, Optimization and Control of Mineral Processes (5 papers)

(A32) Gamma Function Applied to Mineral Processing
Alex Rey, Metallurgical Consultant, Chile

(A40) Operational Performance Increase Through Jaw Crusher Current Control
Robson Duarte, Alexandre Fonseca, Kaike Albuquerque and Arley Silva, Vale, Brazil; Saulo Matos, Universidade de São Paulo, Brazil and Thomas Pinto, Instituto Tecnológico Vale and Universidad Federal de Minas Gerais, Brazil

(A58) Ero Caraíba Leads: Brazil's first Jameson Cell and Latin America's first Rougher Scalper Jameson Cell
Admar Lage and Mateus Gomes, Ero Copper, Brazil; Ryan Jones and Christian Pasten, Glencore Technology, Australia and Chile

(A62) The Mixing Effect on Scale-Up Factor of Jameson Cells
Matías Benítez, Paulina Vallejos, Juan Yianatos and Luis Vinnett, Department of Chemical and Environmental Engineering, Universidad Técnica Federico Santa María, Chile

(A73) Low Cost/High Reward Plant Optimization
Kathy Adams, Adam House and Bernardo Baqueiro, Paterson and Cooke, USA

PROCEMIN: Sold-Liquid Separation and Tailings Retreatment (6 papers)

(A18) Electrochemical Recovery of Critical Raw Materials from Tailings in the RAWMINA Project
Guillermo Pozo, Carmen del Rio, Cecilia Agustín, Javier Antoñanzas and Enrique Ipiñazar, Tecnalia, Spain

(A24) ROXIA TP16 gives Outstanding Performance at Metal Refinery
Matti Luoma, Roxia, Finland

(A26) Use of "Contacted Water" in Concentrator Plants Generated from Tailings Pond Water and Fresh Seawater
Juan P. Lagos, Soniangela Pérez and Rafael Venegas, Wood PLC, Chile

(A49) Radflow Feedwell: New Step on Thickening
Alex Krassnokutski, Krassno Consulting, South Africa; Malcolm Gillespie, Roytec Global, South Africa and Diego Rubio, Roytec Global, Chile

(A54) Demystifying Tailings Flocculation: Examining Some Assumptions and Misconceptions
Claudia Castillo, Independent consultant, Chile; Phillip Fawell and Chris Solnordal, CSIRO Mineral Resources, Australia and Heather Kaminsky, Northern Alberta Institute of Technology, Canada

(A63) CIL Cyanidation Tailings Filtration Plant for Dry Stacking
Fernando Zeballos and Félix Vargas, Compañía de Minas Buenaventura, Peru

PROCEMIN: Processing of Precious Metals, Industrial and Ferrous Minerals (1 paper)

(A37) A Study of the Impact of Acid Mist Suppressant on the Physical Property of Copper EW Solution
Jinhong Zhang, Therese Roa, Jiayue He and Nathalie Risso, Department of Mining and Geological Engineering, University of Arizona, USA

PROCEMIN: Minerals Economy and Material Recycling (1 paper)

(A47) Ceramic Foams from Mine Tailings and Slag: A Mechanism for Reducing the Environmental Impact
Cristian Salazar, Romina Murga and Daniel Zuluaga, Universidad de Talca, Chile and Lina Uribe, Departamento de Ingeniería Civil de Minas, Universidad de Talca and CRHIAM, Universidad de Concepción, Chile

Poster Session (20 posters)

(01) Geometallurgical Characterization of Particles from X-Ray Microtomography and Impact Testing
Diego Mora, Department of Geology, Universidad de Chile and Pia Lois-Morales, Department of Mining Engineering, Universidad de Chile

(02) Using DEM to Address Mineralogical and Textural Variability in Comminution
Sebastián Samur, Department of Mining Engineering, Universidad de Chile; Pia Lois-Morales and Kimie Suzuki, Advanced Mining Technology Center (AMTC), Universidad de Chile

(03) Non-Random Model to Simulate Particle Distribution and Copper Sulphide Liberation
Ignacio López and Pía Lois-Morales, Department of Mining Engineering, Universidad de Chile and Gonzalo Díaz, Advanced Mining Technology Center (AMTC), Universidad de Chile

(04) Application of Deep Learning for SAG Mill Optimization in Mine-to-Mill: Copper Mine Case
Diego Cortez, Department of Mining Engineering, Universidad de Chile; Pía Lois, Advanced Mining Technology Center (AMTC) and Department of Mining Engineering, Universidad de Chile; Alonso Pinto, Magotteaux, Chile and Claudio Gajardo, Enaex, Chile

(05) Quantification of Microtextural Variability and its Relationship with Strength and Energy Parameters
Nicolas Rojas-Saez, Department of Mining Engineering, Universidad de Chile; Sergio Moraga, Advanced Mining Technology Center (AMTC), Universidad de Chile and Pia Lois-Morales, Department of Mining Engineering and Advanced Mining Technology Center (AMTC), Universidad de Chile

(06) Effect of Anionic Polyacrylamides on the Flotation of Sulfide Minerals
Ginna Jiménez, Department of Metallurgical Engineering, Universidad de Concepción, Chile and Leopoldo Gutiérrez, Water Research Center for Agriculture and Mining (CRHIAM) and Department of Metallurgical Engineering, Universidad de Concepción, Chile

(07) Impact of a Residual Anionic Polyacrylamide and its Mechanical Degradation Level on Chalcopyrite Flotation
Felipe Arcos, Department of Metallurgical Engineering, Universidad de Concepción, Chile and Leopoldo Gutiérrez, Water Research Center for Agriculture and Mining (CRHIAM) and Department of Metallurgical Engineering, Universidad de Concepción, Chile

(08) Ultra-Flocculation to Increase the Productivity in Cu-Mo Concentrator Plants and Reduce Water Consumption
Ailynne Rojas and Leopoldo Gutiérrez, Department of Metallurgical Engineering, Universidad de Concepción, Chile

(09) Design and Simulation of a Reactor for the Agglomeration of Fine Minerals with Agglomerating Reagent
Pablo Cabrera and Leopoldo Gutiérrez, Department of Metallurgical Engineering, Universidad de Concepción, Chile

(10) Foaming Properties of Lignosulfonates in the Flotation Process
Jhon Chique, D. of Metallurgical Engineering, Universidad de Concepción, Chile and Leopoldo Gutiérrez, Water Research Center for Agriculture and Mining (CRHIAM) and D. of Metallurgical Engineering, Universidad de Concepción, Chile

(11) Study of the Impact of an Anionic Polyacrylamide on the Flotation of Bornite
Camilo Cuervo, D. of Metallurgical Engineering, Universidad de Concepción, Chile and Leopoldo Gutiérrez, Water Research Center for Agriculture and Mining (CRHIAM) and D. of Metallurgical Engineering, Universidad de Concepción, Chile

(12) The Effect of Anionic Polyacrylamides on the Flotation of Chalcopyrite in Seawater
Angie Rodríguez, D. of Metallurgical Engineering, Universidad de Concepción, Chile and Leopoldo Gutiérrez, Water Research Center for Agriculture and Mining (CRHIAM) and D. of Metallurgical Engineering, Universidad de Concepción, Chile

(13) Metallurgical Copper Recovery Prediction using Conditional Quantile Regression based on a Copula Model
Danyeli Acosta, Karen Lagunas and Heber Hernández, E. de Ingeniería Civil en Minas, Universidad Central de Chile

(14) Ore Liberation Size Modeling by ML Algorithms Applied to Rock Hardness and Compositional Data
Victor Castañeda, Francisca Justel, Karem Tello and Yahaira Barrueto, Metallurgical and Materials Engineering Department, Federico Santa María Technical University, Chile and Mauricio Araya, Valparaíso Scientific and Technological Center, Chile

(15) Analysis of XRT and Laser sensed Li-bearing particles for an Ore sorting processing
Valentina Chacana, D. of Geology, Universidad de Chile; Pia Lois-Morales, D. of Mining Engineering and Advanced Mining Technology Center (AMTC), Universidad de Chile; Priscila Esteves, Anthony Sarubbi and Lucas Napoli, Steinert, Brazil

(16) Mineralochemical Characterization of Copper Slags in Chile: In Situ Study of Valuable Elements and Impurities
Marcela Díaz and Germán Velásquez, Instituto de Geología Económica Aplicada (GEA), Universidad de Concepción, Chile and Stefano Salvi, Géosciences Environnement Toulouse (GET), Université de Toulouse, France

(17) Real-Time Characterization of Flotation Feed ore Based on Slurry Properties at Codelco DMH
Javiera Inostroza and Miguel Maldonado, Departamento de Ingeniería Metalúrgica, Universidad de Santiago, Chile and Pablo Bustos, Ministro Hales Division, Codelco, Chile

(18) The use of Polystyrene Nanoparticles as a Collector in the Flotation of Copper Sulfides in the Presence of Kaolinite
Romina Murga, Universidad de Talca; Camila Opazo, D. of Mining Engineering, Universidad de Talca; John Amalraj, I. of Natural Resources Chemistry, Universidad de Talca; Leopoldo Gutiérrez, D. of Metallurgical Engineering and Water Research Center for Agriculture and Mining (CRHIAM), Universidad de Concepción and Lina Uribe, D. of Mining Engineering, Universidad de Talca and Water Research Center for Agriculture and Mining (CRHIAM), Universidad de Concepción, Chile

(19) Study of Mixtures of Recycled Vegetable Oil and Biosolids as Collectors for Flotation of CuFeS2
Daniel Zuluaga and Lina Uribe, D. de Ingeniería de Minas, Universidad de Talca and Centro de Recursos Hídrico para la Agricultura y la Minería (CRHIAM), Universidad de Concepción, Chile; Carlos Moraga, D. de Ingeniería de Minas, Universidad de Talca, Chile; Lorenzo Reyes-Bozo, Facultad de Ingeniería, Universidad Autónoma de Chile

(20) Effect of Sintering Time on Ceramic Foams Based on Mine Tailings using Glycerine as a Foaming Agent
Cristian Salazar, D. of Mining Engineering, Universidad de Talca, Chile and Lina Uribe, D. of Mining Engineering, Universidad de Talca and Water Research Center for Agriculture and Mining (CRHIAM), Universidad de Concepción, Chile

PAPERS DISTRIBUTION

Mining Companies	(32 papers)

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Antamina, Peru (1)
Antofagasta Minerals, Minera Antucoya (1)
BHP, Minera Escondida, Chile (1)
Cbb Cales, Chile (1)
Codelco, Chile
Codelco, Chuquicamata Division, Chile
Codelco, El Teniente Division, Chile (2)
Codelco, Ministro Hales Division, Chile (1)
Compañía de Minas Buenaventura, Peru (1)
Compañía Minera del Pacífico, Chile (3)
Ero Copper, Brazil (2)
Lunding Mining, Caserones, Chile (2)
Newmont Mining Corporation, USA (1)
Nexa Resources, Brazil (2)
Norte Abierto, Chile (3)
Ore2Metal, Canada (1)
Rio Tinto, USA (2)
Vale, Brazil (7)

Engineering and Consulting Companies (9 papers)

Advanced Predictive Modeling Technology, Canada
COG Technologies, Canada (1)
ECN Automation, Mexico
Empirica, Chile
Geocom, Chile (1)
Geopyörä Oy, Finland (1)
Independent consultant, Chile
Innova-Met Ingeniería, Chile (1)
Krassno Consulting, South Africa
Metallurgical Consultant, Chile (1)
Minpraxis Solutions, Canada
Paterson and Cooke, USA (1)
RMES Analytics, Chile (1)
Roxia, Finland (1)
SGS, Chile
The Boston Consulting Group, Chile
Wood PLC, Chile (1)

Supplier Companies (24 papers)

ABB, Chile, Spain and Switzerland (1)
Andritz, Chile (2)
CiDRA Minerals Processing, Chile and USA (1)
Clariant, Chile and USA (2)
Datamine, Peru (1)
Eriez, Chile and USA (1)
GEA, Chile
Gebr. Pfeiffer, Germany and Brazil (1)
Glencore Technology, Australia and Chile
JKTech Pty, Australia (1)
Kairos Mining, Chile
King's Beads, China
ME Elecmetal, Chile (1)
Metso, Turkey, Finland and Chile (2)
MMD Mineral Sizing, Chile (1)
Molycop, USA (2)
Nouryon Functional Chemicals, Chile
Roytec Global, Chile and South Africa (1)
Scantech International Pty, Australia (1)
Seequent, Chile (1)
SOPAT GmbH, Germany
Steinert Australia and Germany (1)
Swiss Tower Mills Minerals, Australia, Switzerland and Chile (1)
Syensqo, Cytec, Chile and USA (1)
Vega Industries, Chile
Weir Minerals, Chile and Netherlands (2)

Universities and Research Centers	(14 papers)

Berlin Institute of Technology, Germany
Center for Mineral Development, Vale, Brazil
CSIRO Mineral Resources, Australia (1)
Federal University of Minas Gerais, Brazil
Helmholtz Institut Freiberg for Resource Technology, Germany
Imperial College London, United Kingdom
McGill University, Canada
Northern Alberta Institute of Technology, Canada
Pontifical Catholic University of Rio de Janeiro, Brazil (2)
Sustainable Mineral Institute International Centre of Excellence, Chile (1)
Tecnalia, Spain (1)
Universidad de Chile
Universidad de Concepción, (CRHIAM), Chile
Universidad de Santiago de Chile
Universidad de Talca, Chile (1)
Universidad Técnica Federico Santa María, Chile (3)
University of Arizona, USA (3)
University of British Columbia, Norman B. Keevil Institute of Mining Engineering, Canada (1)
University of Exeter, Camborne School of Mines, United Kingdom (1)
University of São Paulo, Brazil
Vale Institute of Technology, Brazil