

## VIRTUAL TECHNICAL COURSES PRIOR TO HYDROPROCESS 2023

---

**MONDAY, NOVEMBER 06**  
**10:00 AM – 13:00 PM (UTC-3)**

**COURSE 1:**

**“INTRODUCTION TO BIOHYDROMETALLURGY AND TECHNOLOGY DEVELOPMENTS FOR COPPER CONCENTRATE PROCESSING”**

**Wenyang Liu**, Associate Professor, Department of Materials Engineering, University of British Columbia, Canada; and **David Dreisinger**, Professor, Department of Materials Engineering, University of British Columbia, Canada

Language: English

---

**MONDAY, NOVEMBER 06**  
**15:00 PM – 17:00 PM (UTC-3)**

**COURSE 2:**

**“URBAN MINING: FRIENDLY HYDROMETALLURGICAL ALTERNATIVES FOR ITS DEVELOPMENT”**

**Pía Hernández**, Academic, Department of Chemical and Mineral Processes Engineering, Universidad de Antofagasta, Chile

Language: Spanish

---

## VIRTUAL TECHNICAL COURSES PROGRAMS

---

### COURSE 1:

### Introduction to Biohydrometallurgy and Technology Developments For Copper Concentrate Processing

**When:** Monday, November 06, 2023

**Instructors:** **Wenyng Liu**, Associate Professor, Department of Materials Engineering, University of British Columbia, Canada; and **David Dreisinger**, Professor, Department of Materials Engineering, University of British Columbia, Canada

**Language:** English

**Time:** 10:00 AM – 13:00 PM (Chilean time zone)

**Description:** This course will first cover biohydrometallurgy and its industrial applications for extraction of copper, gold, nickel and cobalt, and then focus on technology developments for processing copper concentrates.

#### GENERAL OBJECTIVES

- Introduce biohydrometallurgy, including principles of bioleaching, microorganisms involved and metal ores suitable for bioleaching, and then focus on industrial applications of bioleaching for extraction of copper, gold, nickel and cobalt from ore and waste.
- Understand the current status of technology developments for treatment of copper concentrates focusing on autoclaving processes.

## CONTENTS AND PROGRAM

09:55 - 10:00	Welcome and Introduction to the Course	Wenying Liu
10:00 - 10:50	Introduction to Biohydrometallurgy and Industrial Applications of Bioleaching	Wenying Liu
10:50 - 11:00	Questions and Discussion: 1	
11:00 - 11:50	Industrial Applications of Bioleaching (continued): Copper, Gold, Nickel and Cobalt	Wenying Liu
11:50 - 12:00	Questions and Discussion: 2	
12:00 - 12:50	Technology Developments for Treatment of Copper Concentrates	David Dreisinger
12:50 - 13:00	Questions and Discussion Module 3	
13:00 - 13:10	Conclusions and Closure of the Course	Wenying Liu and David Dreisinger

### LECTURER(S) BIOGRAPHY:

**Wenying Liu** is an Associate Professor at the Department of Materials Engineering, The University of British Columbia (UBC). Her research focuses on developing sustainable hydrometallurgical processes for metal extraction from ores and managing contaminant release from mine waste materials. She has worked closely with government agencies and the private sector on a range of projects, such as copper heap bioleaching, refractory gold ore leaching, and chalcopyrite heap leaching, arsenic management.

She has been an active member of MetSoc since 2017 and serves on the Hydrometallurgy Section Committee and the MetSoc Awards Committee. She was the recipient of the 2021 MetSoc Brimacombe Award. Wenying obtained a PhD degree in Mineral Processing from the University of Queensland in Australia.

**David Dreisinger** completed his B.A.Sc. and Ph.D. in Metallurgical Engineering at Queen's University at Kingston. Since 1984, David has worked at the University of British Columbia in Vancouver, Canada. Since 1992, David has held the position of Professor and Chair, Industrial Research Chair in Hydrometallurgy. As Chair of Hydrometallurgy, Dr. Dreisinger has had the opportunity, with his students and colleagues, to conduct research in the hydrometallurgy of base, precious and rare metals. The results of research have been documented in over 330 papers and 24 US Patents.

David has worked closely with industry to commercialize technology. Developments in copper include the Mount Gordon Process, the Sepon Copper Process and the El Boleo Process. David is currently working on commercialization of the PLATSOL Process, the SALT process, the INCOR Lead Process and the Search Minerals Rare Earth Extraction Process. He is also a Fellow of CIM and the Canadian Academy of Engineering.

## COURSE 2:

### Urban Mining: Friendly Hydrometallurgical Alternatives for Its Development

**When:** Monday, November 06, 2023

**Instructors:** **Pía Hernández**, Academic, Department of Chemical and Mineral Processes Engineering, Universidad de Antofagasta, Chile

**Language:** Spanish

**Time:** **15:00 PM – 17:00 PM** (Chilean time zone)

**Description:** Electrical and electronic equipment waste is increasing every day due to the accelerated development of technology and the economic development of countries. These wastes have polluting components in their structure, but also valuable elements. The REP law (law 20.920) enacted in Chile in 2016, considers these wastes among its priority products, and we are now waiting for the decree of collection and recovery goals to be met. Globally, there has been development in the treatment and recovery of these wastes. Environmentally friendly alternatives are being developed considering a circular economy approach, aspects to be reviewed in this course.

#### GENERAL OBJECTIVES

- Introduce the topic of urban mining and REP law through the review of concepts and theoretical aspects to promote knowledge of possible innovative process ideas.
- Present friendly alternatives of processes that are developed worldwide with a future look to be implemented in Chile.

## CONTENTS AND PROGRAM

Time	Presentation	Presenter
10:00 - 10:50	Part 1: General Aspects of Urban Mining: Reality in Chile	Pía Hernández
10:50 - 11:00	Questions and Discussion: 1	
11:00 - 11:45	Part 2: Innovations in Hydrometallurgical Processes for WEEE Treatment	Pía Hernández
11:45 - 11:55	Questions and Discussion: 2	
11:55 - 12:00	Conclusions and Closure of the Course	Pía Hernández

### LECTURER(S) BIOGRAPHY:

**Pía Hernández** is an Industrial Civil Engineer in Chemistry, with a Master and PhD in Mineral Process Engineering. She is currently an Academic at the Department of Chemical and Mineral Processes Engineering at the Universidad de Antofagasta, Chile. Her research areas are focused on leaching of chalcopirite in saline media (chlorides and nitrates), and she is currently studying the recovery of metals from electrical-electronic waste and mining waste, focusing on the use of environmentally friendly solvents. She is part of the Center for Circular Economy in Industrial Processes at the Universidad de Antofagasta.