



UBC Extractive and Hydrometallurgy Chair
Short courses offered from October 7 & October 14, 2021

Session 1: Electrification – Raw Material Needs and Production (3.5 hours)

Organizer: Edouard Asselin

Date: Thursday October 7th, 2021 / Starts at 2 PM Vancouver Time

Registration: [Register Here](#) by October 5

Outline: The anticipated electrification of our economy will require significant new supplies of raw materials including copper, nickel, cobalt, manganese, lithium and REEs. This course will answer the following questions: (1) what are the anticipated global demands for these metals and what does the supply forecast look like? (2) how is lithium made and prepared for the battery market? (3) how is nickel processed from ore to mixed hydroxide precipitate (MHP)? and (4) how are intermediates such as MHP turned into battery materials?

Agenda:

Topic	Vancouver Time	Instructor
Materials for electrification: materials requirements for batteries, solar panels and wind turbines	2:00 – 3:00 PM	Ed Asselin, UBC
Production of Li for the battery market	3:00 – 4:00 PM	Norm Chow, Kemetco
Nickel processing: ore to MHP	4:00 – 4:45 PM	James Vaughan, UQ
Ni-Co intermediates to battery materials for electrification	4:45 – 5:30 PM	David Dreisinger, UBC

Session 2: The evolution of REE processes and an introduction to the circular economy (3 hours)

Organizer: Edouard Asselin

Date: Thursday October 14, 2021 / Starts at 2 PM Vancouver Time

Registration: [Register Here](#) by October 12

Outline: REE processes continue to evolve. The focus of the first presentation is on the extraction and separation technologies used in REE processing from primary resources. These principles may also be transferable to REE recycling technologies. In the second portion of this course, we present the circular economy and its theoretical and practical limits. Then, an overview of mineral processing techniques for separating metals from other battery components is presented. Finally, Li-ion battery recycling, from the used cell to raw materials, is discussed.

Agenda:

Topic	Vancouver Time	Instructor
A review of hydrometallurgical flowsheets considered in past and current REE projects	2:00 – 3:00 PM	Niels Verbaan, SGS
Limits of the circular economy	3:00 – 3:20 PM	Ed Asselin, UBC
Mineral processing techniques for battery recycling	3:20 – 4:05 PM	Marek Pawlik, UBC
Li-ion battery recycling: from used cells to battery materials preparation	4:05 – 5:00 PM	Thomas Bibienne, Hatch



Note:

- All sessions are free of charge; a zoom link will be sent to all who registered;
- All sessions will be recorded and made available to the Chair sponsors together with the course materials upon request;
- To learn more about us, check out our group website: <http://hydromet.group/team/>.