

Schedule: Introduction to Hydrometallurgy 2022

Hybrid (Physical and Online) (Central European Time)

Tuesday 03-05-2022	Module 1: Fundamentals of hydrometallurgy	Lecturer
08:45-09:00	Welcome address by host	Mari Lundström/Aalto
09:00-09:45	Hydrometallurgy and its applications in metals production: an overview	Yongxiang Yang/TU Delft
09:45-10:30	Metal resources for hydrometallurgical extraction and recycling	Mari Lundström/Aalto
10:30-10:45	Coffee Break	
10:45-11:30	Leaching (atmospheric-, pressure-, bio-, organic lixivants)	Mari Lundström/Aalto
11:30-12:00	Exercise 1 (Leaching)	James Mwase/NTNU
12:00-13:15	Lunch Break	
13:15-14:00	Separation and solution purification -1: precipitation method	Lena Sundqvist/LTU
14:00-14:45	Separation and solution purification -2: solvent extraction and ion exchange	Lena Sundqvist/LTU
14:45-15:00	Coffee Break	
15:00-15:30	Exercise 2 (Separation)	James Mwase/NTNU
Wednesday 04-05-2022	Module 1: Fundamentals of hydrometallurgy	Lecturer
09:00-09:45	Metals recovery: cementation and hydrogen reduction	Yongxiang Yang/TU Delft
09:45-10:30	Metals recovery and refining: electrowinning and electro-refining	Jari Aromaa/Aalto
10:30-10:45	Coffee Break	
10:45-11:15	Exercise 3 (electrowinning and electro-refining)	James Mwase/NTNU
11:15-12:00	Solid - Aqueous interface properties in hydrometallurgy	Dimitris Panias/NTUA
12:00-13:15	Lunch Break	
	Module 2: Battery metals production	Lecturer
13:15-14:00	Application of hydrometallurgy in primary production of battery metals	To be announced
14:00-14:45	Application of hydrometallurgy in primary production of battery metals	To be announced
14:45-15:00	Coffee Break	
15:00-15:45	Application of hydrometallurgy in recycling of battery metals	Madeleine Scheidema/Outotec
15:45-16:30	Environmental impacts of hydrometallurgical battery recycling processes	Marja Rinne/Aalto

Online (Central European Time)

Tuesday 10-05-2022	Module 3: Application and practice	Lecturer
08:30-09:15	Application of hydrometallurgy in production of copper	Yongxiang Yang/TU Delft
09:30-10:15	Application of hydrometallurgy in alumina production: Bayer process	Efthymios Balomenos/Mytilineos
10:30-11:15	Application of hydrometallurgy in production of zinc	Dennis Kemperman/Nyrstar Budel
11:30-12:15	Extraction of copper in Boliden Finland (electrorefining)	Topias Härmä/Boliden Finland
12:15-13:30	Lunch Break	
13:30-14:15	Application of hydrometallurgy in production of nickel	Rauno Luoma/Nornickel
14:30-15:15	Basics of electrodeposition – redox replacement	Kirsi Yliniemi/Aalto
15:30-16:15	Application of hydrometallurgy in production of REEs	Dimitris Panias/NTUA
Wednesday 11-05-2022	Module 3: Application and practice	Lecturer
08:30-09:15	Application of hydrometallurgy in the recycling of PGMs	Anastasia-Maria Moschovi/Monolithos
09:30-10:15	Electrochemical recycling of REEs from NdFeB magnet wastes	Prakash Venkatesan/ULB
10:30-11:15	Application of hydrometallurgy in production of titanium dioxide (synthetic rutile)	James Mwase /NTNU
	Module 4: Laboratory demonstrations	
11:30-12:15	Sampling and materials characterization	Jafar Safarian /NTNU
12:15-13:30	Lunch Break	
13:30-14:00	Leaching and precipitation of Al tri-hydroxides from calcium-aluminate slags	James Mwase/NTNU
14:00-14:30	Extraction of lithium from primary resources	Simon Hellgren/LTU
14:30-15:00	Closing Remarks	Mari Lundström/Aalto