

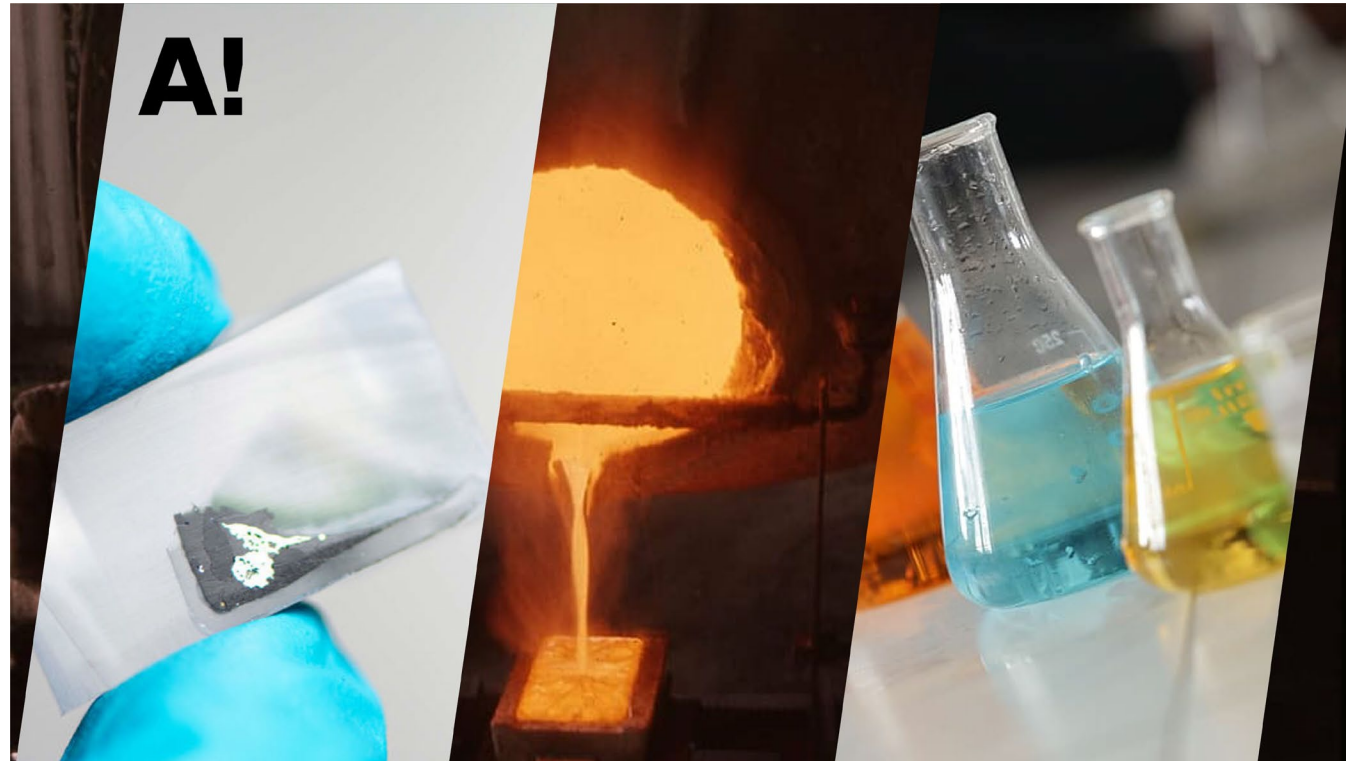
INTERNATIONAL PROCESS METALLURGY SYMPOSIUM

in honor of Professor Ari Jokilaakso

Metallurgy as a tool for challenges in circular economy



Aalto University
School of Chemical
Engineering



31 October - 1 November 2023

**Aalto University School of Chemical Engineering
Department of Chemical and Metallurgical Engineering
Espoo, Finland**

Tuesday 31.10.2023, am

Time	Room	Keynote Session / Chair: Prof. Rodrigo Serna
08:00	Main Lobby	Registration + Coffee
08:55	Lumituuli	Opening words, Prof. Rodrigo Serna (Aalto University, Finland)
09:00		Koen Binnemans (KU Leuven, Belgium) <i>The 12 Principles of Circular Hydrometallurgy</i>
09:30		Pia Kåll (CapMan, Finland) <i>Investor view on circular economy</i>
10:00		Kalle Härkki (Resand, Finland) <i>Circular economy</i>
10:30		Provost Kristiina Mäkelä (Aalto University, Finland) <i>Aalto University – shaping a sustainable future</i>
11:00	Sief	L U N C H

Tuesday, 31.10.2023, pm

Time	Session 1 – Metals and materials for the energy transition Room: Lumituuli Chair: Prof. Mari Lundström, Co-chair: Marja Rinne	Session 2 – Mineral Processing Room: Kaleva, Chair: Dr. Anna Klemettinen, Co-chair: Gulsah Tas
12:00	Session Keynote Pekka Peljo (Turku University, Finland) <i>Energy storage by abundant metals</i>	Session Keynote Jouko Nieminen (GTK, Finland) <i>GTK Outokumpu facilities expansion project</i>
12:30	Patrik Granvik (Aalto University, Finland) <i>Metals and critical factors for the green transition</i>	Jussi Leveinen (Aalto University, Finland) <i>Characterization of Li-bearing minerals in pegmatites by LIBS</i>
12:50	Pyry Hannula (FMG, Finland) <i>Latest activities in Finland based energy metals</i>	Lev Filippov (University of Lorraine, France) <i>Near zero waste processing route for the Li and CRM (Ta, Nb, W, Sn) recovery from rare metals granite</i>
13:10	Markus Kivimäki (Keliber, Finland) <i>Finland based primary Li-production</i>	Ottomar Brussee (Boliden, Sweden) <i>Toward zero-carbon mineral processing</i>
13:30	Peik Ekman (Fortum Battery Recycling Oy, Finland) <i>Industrial battery recycling</i>	Nathalie Kupka (Metso, Finland) <i>The new Concorde flotation cell by Metso-Outotec</i>
13:50	COFFEE BREAK	
14:20	Giuseppe Granata (KU Leuven, Belgium) <i>Hhydrometallurgical processing of chalcopryrite via Iodide-assisted leaching: development and techno-economic assessment</i>	Clayton Bhondayi (Nouryon, Sweden) <i>Low-tox Collectors for Lithium and Iron Ore Flotation</i>
14:40	Martina Petranikova (Chalmers University, Sweden) <i>More sustainable recovery of metals from Li-ion batteries via combined metallurgy</i>	Rodrigo Serna (Aalto University, Finland) <i>Understanding the flotation of lithium-ion battery materials using tomography for the characterization of froth</i>
15:00	Kerli Liivand (National Institute of Chemical Physics and Biophysics, Estonia) <i>Valorization of graphite from LIB batteries</i>	Ted Nuorivaara (GTK, Finland) <i>Sustainable frother formulations for mineral processing</i>
15:20	Kerstin Forsberg (KTH, Sweden) <i>Role of crystallization in energy materials recovery</i>	Saija Luukkanen (University of Oulu, Finland) <i>Impact of grinding conditions of floatability of sulphide ores</i>
15:40	Michalis Konsolakis , (Technical University of Crete, Greece) <i>Ni- and Co-based catalysts for energy transition and environmental sustainability</i>	Pablo Brito-Parada (Imperial College London, United Kingdeom) <i>Positron Emission Particle Tracking for Froth Flotation - Recent Developments in Tracers and Instrumentation</i>
16:20	Radically creative moments by Ari Jokilaakso Room: KALEVA	
18:00	SYMPOSIUM DINNER @ FAT LIZARD Dinner reception is full ~850m away from the venue center Dinali	

Wednesday, 1.11.2023, am

Time	Session 3 – Circular economy of metals Room: Lumituuli, Chair: Prof. Rodrigo Serna, Co-chair: Tommi Rinne	Session 4 – Carbon neutral metallurgy Room: Kaleva, Chair: Prof. Daniel Lindberg, Co-chair: Fabiola Lasar
08:30	Session Keynote Markus Reuter (SMS Group, Germany) <i>Digital Twinning & Exergy of Circular Economy Systems: Examples from industry</i>	Session Keynote Esa Peuraniemi (Boliden Harjavalta Oy, Finland) <i>Technological solutions and their challenges</i>
09:00	Sami Virolainen (LUT University, Finland) <i>Process options to recover lithium from primary and secondary sources</i>	Jarmo Lilja (SSAB, Finland) <i>Transition of SSAB's Nordic strip production to fossil-free mini-mill based operation</i>
09:20	Eero Jokinen (Kuusakoski, Finland) <i>What's in the horizon for the recycling industry</i>	Yongxiang Yang (TU Delft, the Netherlands) <i>Assessment of energy requirements for future green ironmaking processes</i>
09:40	Simon Michaux (GTK, Finland) <i>An evolution of the circular economy</i>	Timo Fabritius (University of Oulu, Finland) <i>Role of hydrogen in future steelmaking</i>
10:00	COFFEE BREAK	
10:20	Songhak Yoon (Fraunhofer IWKS, Germany) <i>Li-ion battery recycling by direct regeneration process</i>	Longgong Xia (Central South University, China) <i>The flash reaction behavior of goethite residue in Kivcet process---in honor of Prof. Ari Jokilaakso</i>
10:40	Nima Emami (Turku University, Finland) <i>Designing battery recycling processes with the aid of machine learning</i>	Safoura Babanejad (Luleå University of Technology, Sweden) <i>Sustainable Recycling of Spent Lithium-ion Batteries An In-situ Approach for Recovery and Alloying of Valuable Metals</i>
11:00	Jyri Hanski (VTT, Finland) <i>Insights into circular economy potential of lithium by dynamic material flow analysis</i>	Desmond Attah-Kyei (Aalto University, Finland) <i>Biochar reductants in non-ferrous metallurgy</i>
11:20	Minerva Vierunketo (Aalto University, Finland) <i>A new circularity parameter combining mass and energy preservation</i>	Sunjoong Kim (Chosun University, Republic of Korea) <i>Utilization of renewable carbon resources for reduction of mill-scale from industry</i>
11:40	Bart Verrecht (Umicore, Belgium) <i>Towards sustainable battery recycling – an industry perspective</i>	Fiseha Tesfaye (Åbo Akademi, Finland) <i>Developments on pyrometallurgical recycling of metals and the journey to carbon net-zero</i>
12:00	L U N C H	

Wednesday, 1.11.2023, pm

Time	Session 6 – Refining of primary raw materials Room: Lumituuli, Chair: Dr. Ben Wilson, Dr. Jayasree Biswas	Session 7 – Modeling and digitalization Room: Kaleva, Chair: Prof. Ari Jokilaakso, Co-chair: Dr. Lassi Klemettinen,
13:00	Session Keynote Oluf Bøckman (Nikkelverk, Norway) <i>Nikkelverk process – and current status</i>	Session Keynote In-Ho Jung (Seoul National University, Republic of Korea) <i>Coupling of Thermodynamics Database and Reaction Kinetics for Process Simulation: Case study - AOD Process</i>
13:30	Mari Lundström (Aalto University, Finland) <i>History of Finnish primary metals refining industry – paving the way towards metal intensive energy transition</i>	Ville-Valtteri Visuri (University of Oulu, Finland) <i>Narrowing down the sources of process variation in hot metal desulfurization through modelling</i>
13:50	Herman Potgieter (Wits University, Republic of South Africa) <i>Recovery of tin from post consumer waste</i>	Jyrki Pitkälä (Outokumpu Stainless, Sweden) <i>Nitrogen control in AOD Converter</i>
14:10	Dmitry Sukhomlinov (Aalto University, Finland)	Zhihong Peng (CSU, China) <i>The symmetry in the metallurgical processes</i>
14:30	Yun Li (Central South University, China) <i>Bath smelting reduction of molten high-zinc oxides</i>	Patrice Chartrand (Ecole Polytechnique de Montreal, Canada)
14:50	COFFEE BREAK	
15:20	Petteri Halli (Elmery, Finland) <i>Towards more sustainable metallurgy</i>	Kostas Komnitsas (Technical University Crete, Greece) <i>Towards a greener nickel industry: A life cycle assessment case study</i>
15:40	Sami Myllymäki (Jervois, Finland) <i>Cobalt recycling and integration into primary production</i>	Saeed Rahimpour (Aalto University, Finland) <i>Impact of Critical Materials Circularity on Sustainability of Renewable Energy</i>
16:00	Sami Kinnunen (AFRY, Finland) <i>Hydrometallurgical production of copper and nickel</i>	Xingbang Wan (CSU, China) <i>Thermodynamic and CFD Analysis of recycling Cu-As-containing filter cake waste and black copper sludge by feeding them back into FSF</i>