

2022 Korea-Finland Sustainable and Circular Economy Symposium

November 6 - 7, 2022

Solo Sokos Hotel Turun Seurahuone
Humalistonkatu 2
20100 Turku, Finland



THEME

Developing Tomorrow's Material and Energy Cycles

- ✓ Discussion of science and technology policies and latest trends on the sustainability and circular economy of materials
- ✓ Promoting increased collaboration between Korean and Finnish industries and institutions

Topics include:

- Pyrometallurgical and hydrometallurgical aspects of improved recycling technologies
- Adaptive materials recovery & extraction processes
- Energy efficiency improvement in process engineering
- Advances in green steel research and development
- Waste heat recovery and other industrial energy efficient technologies
- Waste management and valorization
- Emission control including CO₂ capture and storage

HOST

Embassy of the Republic of Korea in Finland
&
The Society of Korean Scientists and Engineers in Finland (KOSES)

HONORARY SPEAKERS



Ambassador Joonho Cheon, Embassy of the Republic of Korea in Finland



Prof. Leena Hupa, Åbo Akademi University

ORGANIZERS

- Dr. Min-Kyu Paek, *Research Institute of Industrial Science and Technology (RIST)*
- Dr. Fiseha Tesfaye, *Metso Outotec Finland Oy*
- Prof. Leena Hupa, *Åbo Akademi University*

PARTICIPATING COMPANIES AND INSTITUTIONS

Metso:Outotec

ELMERY
PRECIOUS METALS PRECISION



서울대학교
SEOUL NATIONAL UNIVERSITY

SK innovation

RIST
재단 포항산업과학연구원
법인 Research Institute of Industrial Science & Technology

Åbo Akademi University

utt
université de technologie
Troyes

posco 부산물자원화법인
PNR

KOSES
핀란드 한인과학기술인 협회
The Society of Korean Scientists and Engineers in Finland

fortum

posco



A!
Aalto University

Fraunhofer
IWKS

UNIVERSITY OF TURKU

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SCHEDULE

8:00 – 9:00 **Registration coffee & breakfast**

9:00 – 9:10 **Prof. Leena Hupa** (Åbo Akademi University), *welcoming address*

SESSION 1 **R&D in KOREA (Chair: Dr. Min-Kyu Paek, RIST)**

9:10 – 9:30 **Prof. In-Ho Jung** (Seoul National University), *EAF process vs. ESF process using low grade DRI for Greener Steel Production: Energy Balance and Process Analysis (Online)*

9:30 – 9:50 **Dr. Kangmin Kim** (POSCO, Low-Carbon Process R&D Center Iron & Steel Process Engineering Research Group), *Fe-containing by-products recycling process of POSCO*

9:50 – 10:10 **Dr. Songhak Yoon** (Fraunhofer IWKS, Energy materials, Germany), *Sustainable future with Li-ion battery recycling*

10:10 – 10:30 ☕ **Coffee break**

10:30 – 10:50 **Prof. Junbeum Kim** (University of Technology of Troyes, President of EKC, France), *Emerging waste and recycling issues (Online)*

10:50 – 11:10 **Dr. Chanwoo Kim** (SK Innovation), *Green R&D strategy of SK innovation*

11:10 – 11:30 **Prof. Jeong Whan Han** (Inha University, Former President of Korean Institute of Metals and Materials), *Post combustion behavior in steelmaking converter process*

11:30 – 13:00 🍱 **Lunch break**

SESSION 2 **R&D in FINLAND (Chair: Dr. Fiseha Tesfaye, Metso Outotec Finland Oy, Åbo Akademi)**

13:00 – 13:05 **Ambassador Joonho Cheon** (Embassy of the Republic of Korea in Finland), *congratulatory address*

13:05 – 13:25 **Prof. Ari Jokilaakso** (Aalto University), *Finnish industry – academia collaboration in metallurgical R&D*

13:25 – 13:45 **Mr. Lauri Pesonen** (Director of Sales Development, Metso Outotec), *Recovery of valuable metals from secondary sources*

13:45 – 14:05 **Dr. Petteri Halli** (ELMERY Oy), *Selective chemical-free extraction of metals and/or alloys from metallurgical waste and process streams*

14:05 – 14:30 ☕ **Coffee break and** 📷 **Photo time**

14:30 – 14:50 **Prof. Daniel Lindberg** (Aalto University), *The use of alternative reductants in pyrometallurgical processing*

14:50 – 15:10 **Ms. Sonja Nurmi** (Aalto University), *BATCircle2.0 Finland-based circular ecosystem of battery metals*

15:10 – 15:30 **Prof. Oskar Karlström** (University of Turku), *The opportunity of chemistry in the circular economy*

15:30 – 15:50 ☕ **Coffee break**

15:50 – 16:10 **Dr. Emil Vainio** (Åbo Akademi University), *Recovery of valuable metals from waste incinerator ashes*

16:10 – 16:30 **Dr. Juho Lehmusto** (Åbo Akademi University), *Characterization of a magnesia-chromia refractory material: Reactivity and reaction mechanisms in flash smelter gas atmosphere*

16:30 – 16:40 **Prof. Yong Se Kim** (University of Turku), *Finland-Asia network of sustainable experience design education*

16:40 – 17:00 **Prof. Lauri Holappa** (Aalto University), *Challenges and prospects of steelmaking towards the year 2050*

17:00 – 17:45 CLOSING REMARKS & POSTER SESSION

17:05 – 17:45  **Poster Session: 10 posters with timely topics** ⬇️

SESSION 3

Posters (Chairs: Ms. Polina Sinitsyna, Åbo Akademi University, and Mr. Junmo Jeon, Aalto University)

- ☰ Niklas Jylhävuori et al. (Åbo Akademi University): The fate of valuable metals from e-waste in secondary copper smelting
- ☰ Lassi Klemettinen et al. (Aalto University): LA-ICP-MS technique for characterization of metallurgical samples
- ☰ Nina Bruun et al. (Åbo Akademi University): Amino acids reduce the corrosion of mild steels by used cooking oils
- ☰ Anna Klemettinen et al. (Aalto University): Towards process integration in battery metals recycling
- ☰ Jayasree Biswas et al. (Aalto University): Cobalt extraction from spent black mass by sulfation roasting
- ☰ Junmo Jeon, et al. (Aalto University): Thermal diffusivities of SiC, Al₂O₃-Cr₂O₃, and MgO-Cr₂O₃ refractories measured by Laser Flash Apparatus, LFA
- ☰ Desmond Attah-Kye et al. (Aalto University): Hydrogen as Carbon-free Reducing Agent in Non-Ferrous Metallurgy
- ☰ Arttu Saarnisaari et al. (Metso Outotec): Unlocking the value of e-waste using Metso Outotec's proven technologies
- ☰ Min-Kyu Paek (RIST): Development of thermodynamic database for the thermoelectric material production

18:30 – 22:00



BANQUET, Solo Sokos Hotel Turun Seurahuone, Downtown Turku

