

# COOLIT 2023

## International Symposium on CO<sub>2</sub>-Lean Ironmaking Technology : Road to Green Steel

**June 25 - 28, 2023**

1F Grand Ballroom,  
Hilton Gyeongju,  
Korea

Hosted by

Graduate Institute of Ferrous &  
Energy Materials Technology (GIFT)

*Value Creating University*

**POSTECH**

POHANG UNIVERSITY OF SCIENCE AND TECHNOLOGY

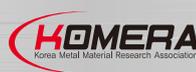
Organized by

**KIM<sup>+</sup>** THE KOREAN INSTITUTE OF  
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June 25 - 28, 2023 | 1F Grand Ballroom, Hilton Gyeongju, Korea



## Symposium Topic

- **Strategies and efforts for reaching green steel production**
- **Innovative advances in current ironmaking technology**
  - Low carbon raw materials
  - H<sub>2</sub> bearing gas injection to blast furnace
  - Oxygen blast furnace with CCU
- **H<sub>2</sub>-based direct reduction technology**
  - Fluidized bed/Shaft based DR production technology
  - Electric Smelting/Arc Furnace (ESF/EAF)

## Organizing Committee

**Chair** Sung-Joon Kim (POSTECH)  
**Co-Chair** Dong-Joon Min (Yonsei U.)  
SeDon Choo (KIM, POSCO)

### Committee

Youn-Bae Kang (POSTECH)      Young Joo Kim (KOMERA)  
Sung-Mo Jung (POSTECH)      Sang-Ho Yi (POSCO, POSTECH)  
Joo Hyun Park (Hanyang U.)      Hyeong Jin Kim (Hyundai Steel)  
In-Ho Jung (Seoul U.)      Il Sohn (Yonsei U.)  
Joonho Lee (Korea U.)      Yongsug Chung (Tech U. of Korea)  
Yongjo Kang (Dong-A U.)

## Invited Speakers

David Leigh (Rio Tinto, Australia)  
Dong-Joon Min (Yonsei University, Korea)  
Hyeong Jin Kim (Hyundai Steel Company, Korea)  
Il Sohn (Yonsei University, Korea)  
Jian Pan (Central South University, China)  
Jianliang Zhang (University of Science and Technology Beijing, China)  
Joo Hyun Park (Hanyang University, Korea)  
Junjie Sun (Baosteel, China)  
Myoung-Kyun Shin (POSCO, Korea)  
Nigel Tame (BHP, Australia)  
P. Chris Pistorius (Carnegie Mellon University, USA)  
Paul Zulli (University of Wollongong, Australia)  
Sakamoto Mitsuru (KOBE STEEL, LTD., Japan)  
Shigeru Ueda (Tohoku University, Japan)  
Shoji Ushio (Nippon Steel Corporation, Japan)  
Sung-Mo Jung (Pohang University of Science and Technology, Korea)  
Tom Honeyands (Newcastle University, Australia)  
Woong-Seong Chang (Office of Strategic R&D Planning, Korea)  
Yasuo Kishimoto (JFE Steel Corporation, Japan)  
Zulfiadi Zulhan (Institut Teknologi Bandung, Indonesia)

## Participants Registration Available From



Mark Your Calendar!

from  
**MAY 8**



[www.coolit.or.kr](http://www.coolit.or.kr)

## Program at A Glance

June 25 (Sun)

Welcome Function

June 26 (Mon)

Technical Sessions  
Banquet

June 27 (Tue)

Technical Sessions

June 28 (Wed)

Plant Tour  
(POSCO & POSTECH)

# Symposium Program

## Day 0 - 6.25(Sun) / Hilton Gyeongju 1F Pine Room

Time	
17:30~18:30	Welcome Function

## Day 1 - 6.26(Mon) / Hilton Gyeongju 1F Grand Ballroom

Time	Session	Session chair	Program	Speaker
09:00~09:30	Opening		Welcome message	
09:30~09:50			Towards Low-GHG Emissions from Energy Use in Iron & Steel Sector	Woong-Seong Chang (Office of Strategic R&D Planning, Korea)
09:50~10:00			Photo	
10:00~10:35	Session1	Sang-Ho Yi (POSCO, POSTECH)	Technological Approach to Carbon Neutrality in Korea's Steel Industry	Dong-Joon Min (Yonsei University, Korea)
10:35~11:10			JFE Steel's Initiatives toward Carbon Neutrality and the Challenges of Steelmaking Technology in the Carbon Neutral Steelmaking Process	Yasuo Kishimoto (JFE Steel Corporation, Japan)
11:10~11:45			Efficiency Increase & Technological Innovation: Accelerate the Development of a New Pattern of Low-carbon Green Ironmaking	Jianliang Zhang (University of Science and Technology Beijing, China)
11:45~11:50			Summary & Discussion	
11:50~13:30	<b>Lunch / 1F Grand Ballroom</b>			
13:30~14:05	Session2	Joo Hyun Park (Hanyang U.)	Lower emissions steel production: challenges to overcome through R&D	Paul Zulli (University of Wollongong, Australia)
14:05~14:40			Demonstrating Pathways to a Green End State: BHP's Steel Decarbonisation Program	Nigel Tame (BHP, Australia)
14:40~15:15			Ferronickel and Iron Production with Low CO <sub>2</sub> Emissions	Zulfiadi Zulhan (Institut Teknologi Bandung, Indonesia)
15:15~15:20			Summary & Discussion	
15:20~15:40	<b>Coffee break / B1</b>			
15:40~16:15	Session3	Sung-Mo Jung (POSTECH)	The Research Progress of HyCROF	Junjie Sun (Baosteel, China)
16:15~16:50			Strategy for Carbon Neutrality in the KOBELCO Group	Sakamoto Mitsuru (KOBELCO STEEL, LTD., Japan)
16:50~17:25			Ironmaking using raw sustainable biomass and microwave energy	David Leigh (Rio Tinto, Australia)
17:25~17:30			Summary & Discussion	
18:00~	<b>Banquet / 1F Grand Ballroom</b>			

Day 2 - 6.27(Tue) / Hilton Gyeongju 1F Grand Ballroom				
Time	Session	Session chair	Program	Speaker
09:00~09:35	Session4	Youn-Bae Kang (POSTECH)	Electric Smelting Furnace for Alternative Hot Metal Production from Australian Iron Ores	Tom Honeyands (Newcastle University, Australia)
09:35~10:10			Hyundai Steel's Pathway to Green Steel: Developing a Flexible and Hybrid Production System through Innovative Technologies	Hyeong Jin Kim (Hyundai Steel Company, Korea)
10:10~10:15			Summary & Discussion	
10:15~10:35	<b>Coffee break / B1</b>			
10:35~11:10	Session4	Youn-Bae Kang (POSTECH)	Refining Process and Slag Properties for Green Steel	Shigeru Ueda (Tohoku University, Japan)
11:10~11:45			Challenges in electric steelmaking technology for reduction of CO <sub>2</sub> emissions	Joo Hyun Park (Hanyang University, Korea)
11:45~11:50			Summary & Discussion	
11:50~13:30	<b>Lunch / 1F Grand Ballroom</b>			
13:30~14:05	Session5	In-Ho Jung (Seoul U.)	Reaction challenges in hydrogen reduction	P. Chris Pistorius (Carnegie Mellon University, USA)
14:05~14:40			Update on the development of hydrogen-based ironmaking process at POSCO	Myoung-Kyun Shin (POSCO, Korea)
14:40~15:15			Evaluation of Iron Ore Fines for Hydrogen Reduction in Fluidized Bed	Shoji Ushio (Nippon Steel Corporation, Japan)
15:15~15:20			Summary & Discussion	
15:20~15:40	<b>Coffee break / B1</b>			
15:40~16:15	Session5	Yongjo Kang (Dong-A U.)	Recent progress and prospect of low-carbon and hydrogen metallurgy in Chinese steel industry	Jian Pan (Central South University, China)
16:15~16:50			Critical perspectives in the utilization of H-DRI from ironmaking to steelmaking : Following our dream	Il Sohn (Yonsei University, Korea)
16:50~17:25			Technological Pathway of Ore Reduction by H <sub>2</sub> toward Carbon Neutral Steel Production in 2050	Sung-Mo Jung (Pohang University of Science and Technology, Korea)
17:25~17:30			Summary & Discussion	
17:30~17:40	<b>Closing</b>		Closing address	

Day 3 - 6.26(Wed) / POSTEC, POSCO (Pohang)	
Time	
09:00~11:30	POSTECH tour
12:00~13:00	<b>Lunch</b>
13:00~16:00	POSCO Plant tour