### Program in Detail

#### October 6th (Tuesday)

**Room A - D**

<table>
<thead>
<tr>
<th>Time</th>
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<tr>
<td>9:00 - 9:10</td>
<td>Opening Remarks: Kazuki Morita (The University of Tokyo)</td>
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<td></td>
<td>Plenary Lectures</td>
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<td></td>
<td>Hiroshi Tomono (Nippon Steel &amp; Sumitomo Metal Corporation)</td>
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<tr>
<td>9:40 - 10:10</td>
<td>[EPL-2] Investigation on Non-Metallic Inclusions in Ultra-Low Oxygen Special Steels</td>
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<td>Xinhua Wang (University of Science and Technology Beijing)</td>
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<td>10:30 - 11:00</td>
<td>[EPL-3] Recent Technology Issues in the Steel Industry</td>
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<td>Sung-ho Park (POSCO)</td>
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<td>11:00 - 11:30</td>
<td>[EPL-4] Development of High Performance Steel Products in India through Technological innovations</td>
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<td>Sashi Shekhar Mohanty (Steel Authority of India Limited (SAIL))</td>
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<td>11:30 - 12:00</td>
<td>[EPL-5] Expectation of steel industry for vehicle light weighting and environmental changes around vehicle society</td>
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<td>Kiyoshihisa Mase (Toyototoru Corporation)</td>
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**Room A**

<table>
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<tr>
<th>Time</th>
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<tr>
<td>14:00 - 15:50</td>
<td>Ironmaking Technology 1</td>
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<tr>
<td></td>
<td>Chair: Michitaka Sato (JFE steel), Tianjun Yang (USTB)</td>
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<td></td>
<td>[IA-1] Longevity practice of Chinese blast furnace</td>
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<tr>
<td></td>
<td>Zhengjian Liu, Jianliang Zhang, Tianjun Yang* (School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing)</td>
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<td></td>
<td>[IA-2] Recent development of mid- and long-term CO₂ mitigation technology at JFE Steel</td>
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<td>Michitaka Sato* (Steel Research Laboratory, JFE Steel Corporation), Hidetoshi Matsuo, Kunihiko Ishii</td>
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<td>[IA-3] Recent improvements in understanding of the reactions in the FINEX® melter-gasifier</td>
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<td>Joorno Lee* (Korea University, Department of Materials Science and Engineering)</td>
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<tr>
<td>16:10 - 18:00</td>
<td>Ironmaking Technology 2</td>
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<td></td>
<td>Chair: Koji Saito (NSSMC), Sang-Ho Yi* (POSCO)</td>
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<td>[IA-4] Longevity practice of Chinese blast furnace</td>
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<td></td>
<td>Kazuki Morita, Seiji Nomura* (Nippon Steel &amp; Sumitomo Metal Corporation, Ironmaking Technical Div.)</td>
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<td>[IA-5] Recent development of FINEX® ironmaking technologies</td>
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<td>Sang-Ho Yi* (POSCO)</td>
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<td>[IA-6] The sleeping giant awakes: make in India drives the iron and steel industry</td>
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<td>Tapan Kumar Naha* (IIT Roorkee), Akhilesh Yamanaka, Kouji Takatani</td>
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<td>[IA-7] Energy saving of the ironmaking process based on the oxygen blast furnace</td>
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<td>Koichi Takahashi* (JFE Steel Corporation), Tahei Nouchi, Michitaka Sato</td>
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<td>[IA-8] Heat Flow Ratio Control Technology in a Blast Furnace by Pre-Heated Shaft Gas Injection</td>
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<td>Jun Ishii* (JFE Steel Corporation), Tahei Nouchi, Takeshi Maru, Hidetoshi Matsuo, Kikuo Sushi</td>
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**Room B**

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<tr>
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<tr>
<td>14:00 - 15:50</td>
<td>Thermodynamics 1</td>
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<tr>
<td></td>
<td>Chair: Yuanshi Sasaki (UNSW Australia), Kuo Chih Chou (UNIVERSITY OF SCIENCE &amp; TECHNOLOGY BEIJING)</td>
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<tr>
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<td>[IB-1] Recent development of study in metallurgical melts</td>
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<tr>
<td></td>
<td>Kuo Chih Chou* (University Of Science &amp; Technology Beijing), Qi Feng Shu, Li Jun Wang, Guo Hua Zhang, Zhi Yuan Chen</td>
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**Room C**

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<tr>
<td>14:00 - 15:40</td>
<td>Continuous Casting Technology 1</td>
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<tr>
<td></td>
<td>Chair: Hikuyi Shibata (Tokohu university), Wanlin Wang (Central South University School of Metallurgy and Environment)</td>
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<td>[6C-1] Solidification characteristics of medium and high manganese steels</td>
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<td></td>
<td>Jian YANG* (Baosteel Group Corporation), Yuran WANG, Ruihui WANG, Xiaotian JIANG, Jianjun ZHI</td>
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<td>[6C-2] Investigation of fluid flow characteristics in the thin slab cast mold using 1-to-1 scaled physical modelling</td>
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<td>Ravi Golin* (R&amp;D,Tata Steel India), Arunava Sengupta, Ravagandra Kriramurti, Suvankar Ganguly, S. K Agmag, Hitesh Shah</td>
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<td>16:10 - 17:30</td>
<td>Continuous Casting Technology 2</td>
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<tr>
<td></td>
<td>Chair: Jian Yang (Baosteel Group Corporation), Qing Liu (UNIVERSITY OF SCIENCE &amp; TECHNOLOGY BEIJING)</td>
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<td>[6C-3] Instability map for hot deformation behavior of low carbon steels</td>
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<td></td>
<td>Kang Hyoung Choo* (POSTECH), Hyeok Jeong, Jae Sang Lee, Kyo Sun Park, Seong Yeon Kim, Yang Hyoung Lee, Hyoong Seop Kim</td>
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Hidemasa Odo* (Osaka University), Minoru MURAKAMI, Jing ABOUSHI


Jean LEHMANN* (ArcelorMittal Global R&D), Chunlin CHEN

[6A-3] Al Deoxidation Equilibria in High-Mn and High-Al Alloyed Liquid Steels

Min-Kyu Paek* (McGill University), Yous-Bae Kang, In-Ho Jung, Jong-Jin Pak

[6A-4] Phase Equilibria and Activities of AIO₃ for the CaO-Al₂O₃-CeO₂ System at 1823 and 1873 K

Ryo Kitano* (The University of Tokyo), Makoto Ishii, Kazuki Morita

[6B-1] Recent progress in Japanese ironmaking technologies

Reinoud Van Laar* (Danieli Corus), Edo Engel

[6B-2] Longevity practice of Chinese blast furnace

Natsuo Ishiwata* (JFE steel Corporation), Yutaka Ujisawa, Yuki Nabeshima, Koji Saito

[6B-3] Al Deoxidation Equilibria in High-Mn and High-Al Alloyed Liquid Steels

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Ryo Kitano* (The University of Tokyo), Makoto Ishii, Kazuki Morita

[6B-5] Measurement of thermodynamic properties of tellurium in iron-based molten alloy using the transmutation method

Shun Ueda* (The University of Tokyo), Kazuki Morita

[6B-6] Sintering mechanism of silica-rich filler sands for sliding nozzle in a ladle

Yusuke Kobayashi* (Technical Research Center, Nippon Yakin Kogyo Co., Ltd.), Hidekazu Todoroki, Waki Nishijima, Fumiaki Kihara, Hiroshi Komatsubara

[6B-7] In-situ high temperature XRD analysis of gaseous reduction of magnetite doped with alumina

Yury Kapelyushik* (UNSW Australia), Jiangqiang Zhang, Sunkwane Jeon, Yusaku SASAKI, Oleg Ostrovski

[6B-8] The behavior of phosphorus during reduction and carburization of high phosphorus oolitic hematite with H₂ and CH₄

Henghui Wang* (State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology), Jian Yang, Guangqiang Li, Jianghua Ma

[6C-1] Recent development of mid- and long-term CO₂ mitigation technology at JFE Steel

Koichi Takahashi* (JFE Steel Corporation), Taihei Nouchi, Michitaka Sato

[6C-2] Recent update of FINEX® ironmaking technologies

Shinji Nagai* (NSSMC), Akihito Yamane, Sei Hiraki, Akihiro Yamanaka, Kouji Takatani

[6C-3] Recent update of FINEX® ironmaking technologies

Sang-Ho Yi* (POSCO), Yutaka Ujisawa, Yuki Nabeshima, Koji Saito

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[6C-7] Recent development of mid- and long-term CO₂ mitigation technology at JFE Steel

Koichi Takahashi* (JFE Steel Corporation), Hidetoshi Matsuo, Kunihiko Ishii

[6C-8] Recent development of mid- and long-term CO₂ mitigation technology at JFE Steel

Koichi Takahashi* (JFE Steel Corporation), Hidetoshi Matsuo, Kunihiko Ishii

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Koichi Takahashi (JFE Steel Corporation), Taihei Nouchi, Michitaka Sato

[6A-KL1] Recent development of mid- and long-term CO₂ mitigation technology at JFE Steel

Koichi Takahashi* (JFE Steel Corporation), Hidetoshi Matsuo, Kunihiko Ishii

[6C-IL2] Recent development of mid- and long-term CO₂ mitigation technology at JFE Steel

Koichi Takahashi* (JFE Steel Corporation), Taihei Nouchi, Michitaka Sato

[6C-IL1] Recent development of mid- and long-term CO₂ mitigation technology at JFE Steel

Koichi Takahashi* (JFE Steel Corporation), Taihei Nouchi, Michitaka Sato
14:00 - 15:30  Microstructure Analysis 1
Chair: Yoshihiko Adachi (Kagoshima University), Nack Joon Kim (POSTECH)

[6D-1] Understanding phase transformations in steels using modern electron microscopy techniques
Elena Pereloma* (1. School of Mechanical, Materials and Mechatronics Engineering, University of Wollongong, 2. Electron Microscopy Centre, University of Wollongong)

[6D-2] Roughness on three dimensional microstructures in low carbon low alloy lath martensite
Shigekazu Morito* (Shimane University), Yuji Shimabayashi, Tsuuke Hayashi, Anh Hoang Pham, Takuya Obha, Goro Miyamoto, Tadashi Funahara

[6D-3] Analysis of Elastic Strain Distribution in Pearlitic Steel by EBSD-Willkinson method
Nomitsu Koga* (Yokohama National University), Nobuo Nakada, Toshihiro Tsuchiya, Setsuo Takaki, Mayumi Ojima, Yoshihata Adachi

[6D-4] Biofilm formation on various plastics revealed by AFM
Nobumitsu Hirai* (National Institute of Technology, Suzuka College), Kar Mun Mah, Zihong Bao, Hideyuki Kanematsu, Hajime Iigaki

16:10 - 17:30  Microstructure Analysis 2
Chair: Kaneaki Tsuzuki (Kyushu University), Elena Pereloma (University of Wollongong)

[6D-5] Effect of Boron on the Oxide Scale Structure of an Fe-Cr-Ni alloy
Toki Yoshida* (NIPPON YAKIN KOGYO Co., Ltd.), Yutaka Kobayashi, Yuki Ikegami

[6D-6] Deformation mechanism of a strong and ductile nanotwinned steel investigated by transmission electron microscopy
Peng ZHOU* (The University of Hong Kong), Mingxin HUANG

[6D-7] Characterization of martensitic transformation in a newly developed FeCrMoVC cast alloy using micro- and nanoindentation experiments
Josefine Zeitig* (IFW Dresden, Institute of Complex Materials), Horst Wendrock, Julia Hufenbach, Thomas Gemming, Uta Kuehn, Juergen Eckert

[6D-8] Effect of acid soluble aluminium and sulphur content on microstructure and texture of hot-rolled grain-oriented silicon steel bands
Bowen Zhou* (State Key Laboratory of Refractories and Metallurgy, Wuhan University), Yingying Yue* (Northeastern University, China), Chengjun Liu, Peiyang Shi, Maofa Jiang

14:00 - 15:40  Stainless Steel 1
Chair: Yoshihiko Tsuchiya (Kyushu University), Tae-Ho Lee (Korea Institute of Materials Science (KIMS))

[6E-1] Development of Seawater Resistant Stainless Clad Steel Pate
Masahiro Jishu* (NIPPON YAKIN KOGYO CO., LTD.), Tomoyuki Yokota, Keizo Yabumoto, Takayuki Kobayashi, Yutaka Moriya, Takao Kitagawa

[6E-2] Effect of a/γ Interface Composition on the Intergranular Corrosion of a Duplex Stainless Steel
Takayuki Takei* (NIPPON YAKIN KOGYO CO., LTD.), Murotsune Yabe, Fu-Gao Wei

[6E-3] Consideration of effects of temperature on the growing process of stress corrosion cracking of 18-8 stainless steel in pure water based on electric circuit theory
Yasuo' Tsukaua" (Retired Person)

Takayuki Watanabe* (NIPPON YAKIN KOGYO CO., LTD.), Fu-Gao Wei, Kun Wang

[6E-5] Pickling Behavior of 430 Hot-Rolled Stainless Steel in HCl-based Solution
Yingying Yue* (Northeastern University, China), Chengjun Liu, Peiyang Shi, Maofa Jiang

16:00 - 18:00  Stainless Steel 2
Chair: Yoshihiko Tsuchiya (Kyushu University), Tae-Ho Lee (Korea Institute of Materials Science (KIMS))

Takuro Masumura* (Kyushu University), Kohei Fujino, Nobuo Nakada, Toshihiro Tsuchiya, Setsuo Takaki, Kazuhiko Adachi

[6E-7] Deformation induced martensitic transformation of Fe-23Cr-8.3Ni duplex stainless steel during cold rolling
Lin Xie* (School of Materials Science and Engineering, Chongqing University), Chao Li, Guilin Wu, Nobumitsu Tsuji, Xiaoxu Huang

[6E-8] Modeling of deformation mechanisms in Fe-19Cr-3Mn-0.15N-0.17C cast austenitic steel with TRIP/TWIP effects
Michael Hauser* (Institute of Iron and Steel Technology, TU Bergakademie Freiberg), Andreas Weiss, Javad Mola

[6E-9] Mechanical properties of microalaminated duplex stainless steel
Chao Li* (Chongqing University), Liu Xie, Tianlin Huang, Zongqiang Feng, Guilin Wu, Xiaoxu Huang

[6E-10] Development of heat resistant ferritic stainless steel conserving Mo
Tetsuyuki Nakamura* (UFE Steel), Hiroki Ota, Yasushi Kato

Kazunari Imakawa* (NISSSHIN STEEL CO., LTD.), Takeo Tomita, Sadayuki Nakamura, Manabu Oku

14:00 - 15:40  Surface Science & Corrosion 1
Chair: Arnaud Macadre (Kyushu University), Manabu Oku (Nisshin Steel Co., Ltd.)

[6F-1] Electrochemical reduction behavior of β-FeOOH on gold electrode
Kiyonobu Sugai* (Nippon steel & Sumitomo Metal Corporation), Takayuki Kamimura, Takashi Doi, Hideaki Miyukai, Takeo Kudo

[6F-2] Corrosion fatigue properties in the salt spray environment for steel sheet
Ikuru Tokuda* (Nippon Steel & Sumitomo Metal Corporation), Masamitsu Matsumoto, Koji Akiko

[6F-3] Sensor for tidal soil using the electrochemical reaction of sediment microbial fuel cell
Gento Nakagawa, Yuki Hishikawa* (National Institute of Technology, Suzuka College), Nobumitsu Hirai

[6F-4] The Development of High Performance Chromium-free Anti-fingerprint Chemical
Jinliang Sun* (Parker Surface Technologies (Shanghai) Co., Ltd.), Mingyu Lv, Wei Li

[6F-5] Influence of Si oxides on galvannealing reaction of Si-added steel sheets
Yoichi Makimizu* (UFE Steel Corporation), Yoshitsugu Suzuki, Hideaki Nagano, Naoto Yoshimi

16:10 - 17:30  Surface Science & Corrosion 2
Chair: Yusaku Tomio (Nippon Steel & Sumitomo Metal Corporation), Manabu Oku (Nisshin Steel Co., Ltd.)

[6F-6] The Development of Cr²⁺ Passivation Chemical for Hot-Galvanized
Mingyu Lv* (Parker Surface Technologies (Shanghai) Co., Ltd.), Wendi Ji, Wei Li

[6F-7] Development of highly-functional chromate-free coated steel sheets
Takeshi Matsuda* (UFE Steel Corporation), Akira Matsuzaki, Kazuki Tsuchimoto, Naoto Yoshimi

[6F-8] Evaluation of Thermal Barrier Property of Thermal Spray Coatings applied to the Piston
Masahiro Seikne* (Yamanashi University), Koji Sonoya, Masanobu Nakamura

[6F-9] Impinging jet characteristics and gas wiping capability of 3-slot gas nozzle
Genaro Takeda* (UFE Steel Corporation), Hideyuki Takahashi, Masaru Miyake, Naoki Nakata
Program in Detail - October 6th (Tuesday)

**Room I**

**14:00 - 15:20**

**Instrumental Analysis 1**
Chair: Kazuki WagaTsuka (Tohoku University), Shun Fujieda (Tohoku University)

**[6I-1]** The combinatorial experiment technique of materials’ genetic units reflection mapping characterized by high throughput original position statistic distribution analysis based on the inhomogeneous property of materials Haizhou Wang, Yunhai Jia, Lei Zhao* (1. Central Iron & Steel Research Institute (CISRI), 2. Beijing Key Laboratory of Metal Materials Characterization), Dongling Li, Zhenqian Zhong

**[6I-2]** Observation of mobile dislocations in very thick sample using HVEM tuned for ferritic steel
Katsuhiko Sano* (D & D corporation), Hideyuki Kanematsu, Nobumitsu Hirai, Hajime Ikegai, Sho Matsumura

**[6I-3]** Elemental analysis of slag and inclusion in steel using a portable analyzer
Susumu Imashuku* (Central Iron & Steel Research Institute), Ikuo Ohashi, Jun Kawai

**16:10 - 17:30**

**Instrumental Analysis 2**
Chair: Ryo Inoue (Akita University), Haizhou Wang (Central Iron & Steel Research Institute (CISRI))

**[6I-L]** Applications of laser-induced breakdown spectroscopy for analysis of steel materials
Gaku Kasahara, Chikage Abe, Shunsuke Kashikawara, Kazuaki WagaTsuka* (Institute for Materials Research, Tohoku University)

**[6I-4]** A study of eutectoid and pre-eutectoid Fe+Ox-Fe oxide scale on carbon steel
ChaoChu Huang* (China Steel Corporation, Taiwan), SzuNing Lin, ChunChao Shih, LungYu Cheng

**[6I-5]** Anti-biofouling silane based composite coating and its structural-analysis by FIB-SEM
Katsushi Kano* (D & D corporation), Hideyuki Kanematsu, Nobumitsu Hirai, Hajime Ikegai, Yoshitaka Tanaka

**[6I-6]** Analyses of biofilm on metallic materials by FTIR-ATR
Hideyuki Kanematsu* (National Institute of Technology, Suzuka College), Koki Kitayabu, Takeshi Kogo, Noriyuki Wada, Yoko Miura, Michiko Yoshitake

**Room G**

On October 6th (Tuesday)

**14:00 - 15:30**

**Energy and Water Saving and Emissions Reduction**
Chair: Eiji Yamasue (Kyoto Univ.), Kazuyo Matsubae (Tohoku Univ.)

**[6G-L]** Green development is the future direction of Chinese steel industry
Chunxia Zhang* (Central Iron & Steel Research Institute), Xiuping Li, Hailing Wang, Fangping Shangguan

**[6G-1]** Waste heat recovery from continuous casting slab using thermoelectric generator
Takashi Kuroki* (JFE Steel Corporation), Ryoa Murai, Hitoshiotsu Matsuno, Takeshi Kajihara, Hirokuni Hachimura, Ikufumi Sumi

**[6G-2]** The w-p analysis of comprehensive water consumption per ton steel in the steel industry
Tong yu Juan* (Northeastern University, China), Cai jiu ju, Lv zi qiang

**16:10 - 17:20**

**Resource Efficiency of Accompanying Elements**
Chair: Kazuyo Matsubae (Tohoku Univ.), Chunxia Zhang (Central Iron & Steel Research Institute)

**[6G-L]** Potential and bottleneck for recovery and recycling of phosphorus in steelmaking slag
Kazuyo Matsubae* (Tohoku University), Eiji Yamase, Takahiro Miki, Tetsuya Nagasaki

**[6G-1]** Potential of steelmaking slag as phosphorus resource in terms of total material requirement
Eiji Yamase* (Kyoto University), Kazuyo Matsubae, Hideyuki Okumura, Keisiti N Ishihara

**[6G-2]** The refinability of end-of-life superalloy products
Xin Lu* (Tohoku University), Takahiro MIKI, Tetsuya NAGASAKA

Program in Detail - October 7th (Wednesday)

**Room A**

**10:40 - 12:00**

**Reaction in Blast Furnace 2**
Chair: Joonho LEE (Korean University), Zhang Shu Hui (Hebei United University)

**[7A-9]** Reduction behaviour of calcium ferrite in the iron ore sinter under high hydrogen atmosphere and its effect on the disintegration
Yuuki Mochizuki* (Hokkaido University), Rochim Bakti Cahyono, Naoto Tsubouchi, Tomohiro Akiyama

**13:30 - 15:30**

**Reaction in Blast Furnace 3**
Chair: Taichi Murakami (Tohoku University), Tapan Kumar Naha (JSW STEEL LTD.)

**[7A-1]** The estimation of the factors influencing gas utilization ratio by using shaft inner reaction simulator
Shigeru Ueda* (Tohoku University), Tatsuya Kon, Hiroshi Nogami, Shin-ya Kitamura

**[7A-2]** Improvement of gas permeability of the dripping zone in blast furnace
Yongxiang Yang* (Delft University of Technology), Allert Adema, Yuko Enqvist, Rob Boom

**Room G**

**On October 7th (Wednesday)**

**9:00 - 10:10**

**Reaction in Blast Furnace 1**
Chair: Shigeru Ueda (Tohoku University), Min Dong Joon (Yonsei University)

**[7A-L]** The fundamentals for viscous behavior of ironmaking slag from a structural point of view
Dong Joon Min* (Yonsei University)

**[7A-1]** The estimation of the factors influencing gas utilization ratio by using shaft inner reaction simulator
Shigeru Ueda* (Tohoku University), Tatsuya Kon, Hiroshi Nogami, Shin-ya Kitamura

**[7A-2]** Improvement of gas permeability of the dripping zone in blast furnace
Shigeru Ueda* (Tohoku University), Tatsuya Kon, Hiroshi Nogami, Shin-ya Kitamura

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**[7A-2]** Improvement of gas permeability of the dripping zone in blast furnace
Yongxiang Yang* (Delft University of Technology), Allert Adema, Yuko Enqvist, Rob Boom

**16:10 - 18:00**

**Fluid Flow in Blast Furnace**
Chair: Shungs Natsui (Hokkaido University), Govind Gupta (Indian Institute of Science)

**[7A-L]** Fluid flow fundamentals and their applications in iron and steel making
Govind Sharan Gupta* (Indian Institute of Science, Smita Kamble

**[7A-13]** Particle-based Multiphase Flow Simulation for Low Carbon Ironmaking Design Shungs Natsui* (Hokkaido University), Tatsuya Kikuchi, Ryosuke O. Suzuki

**[7A-14]** Tackling the burden flow and the physical-chemical state in the cohesive zone of ironmaking blast furnaces through DEM-CFD simulation
Zhiyuan Chen* (Institute of Industrial Science, The University of Tokyo), Ziyou Yu, Xiaojun Hu, Kuo Chih Chou, Kazuki Morita

**[7A-15]** Development of Technique for Flow Analysis in Cohesive Zone of Blast Furnace Tatsuya Kono* (Tohoku University), Shungs Natsui, Shigeru Ueda, Nobuhito Maruka, Hiroshi Nogami

**[7A-16]** Development of Blast Furnace Raceway Modelling Using Large Eddy Simulation Dong-Jo Lee* (POSCO), Hong-Gye Sung
Program in Detail - October 7th (Wednesday)

**Room B**

**9:00 - 10:40**

**Refining 1**
Chair: Masakatsu Hasegawa (Kyoto University), Youn-Bae Kang (Tohoku University)

- **[7B-1]** Thermodynamics of Phosphorus in Fe-Cr-Cr-P
  Seok-Hyo Seo* (Hanyang University), Jung-Mook Kang, Kyung-Hyo Do, Jong-Jin Pak

- **[7B-2]** Kinetics of Simultaneous Removing Phosphorus and Vanadium from Hot Metal by Basic Slag
  Tao Zhang, Bing Xie* (College of Materials Science and Engineering, Chongqing University),
  Jiang Diao, Yuan Liu, Zhen Zhang, Hong-Yi Li

- **[7B-3]** Activity of Phosphorus Pentoxide and Tri-calcium Phosphate for the Solid
  Ming Zhong, Hirokazu Matsunaga* (The University of Tokyo), Fumitaka Tsukihashi

- **[7B-4]** Effect of flux composition on dephosphorization rate of molten steel
  Mitsuhiko Ohta* (Nippon Steel & Sumitomo Metal Corporation), Susumu Mukawa, Takayuki Nishi

- **[7B-5]** Behaviors of various oxygen sources during the desiliconization and
  dephosphorization of hot metal pre-treatment
  Min Oh Seok* (POSCO), Young-Jo Kang

**10:50 - 11:30**

**Refining 2**
Chair: Hirokazu Matsuura (Kyoto University), Youn-Bae Kang (Pohang University of Science and Technology)

- **[7B-6]** Experimental Study of the Ultra-low-carbon Steel Production by Argon Injection under
  Normal Atmosphere.
  Takeo Inomoto* (Nippon Steel & Sumitomo Metal Corporation), Michitaka Matsuo, Masataka Yano

- **[7B-7]** Possibility to use naphthene as a substitute for fluorin in steelmaking slags
  Masakatsu Hasegawa* (Kyoto University), Hiroshi Oizawa, Shuhei Kasahara, Yoshinaka Katsuya

- **[7B-8]** Vacuum steel refining - Cost savings and reductions of CO2 emissions through
  mechanical vacuum pumps
  Luis R Tokashiki* (Edwards Japan), Anke Teeuwsen, Guowei Deng

**11:30 - 13:00**

**Refining 3**
Chair: Kimihisa Ito (Waseda University), Hirokazu Matsuura (The University of Tokyo)

- **[8B-KL1]** Application of various simulators to the steelmaking processes
  Kimihisa Ito* (Waseda University)

- **[8B-1]** Desulfurization of Molten Steel by Passing the Steel Droplets through a Slag Layer
  Michella Alba, Sung-Hoon Jung, Min-Su Kim, Ji-Young Stee, Jeong-Do Seo, Youn-Bae Kang* (Pohang University of Science and Technology)

- **[8B-2]** The study of high-efficiency desulfurization of stainless steel during LF refining process
  Gwo-Yu Qian* (University of Science and Technology Beijing), Guoguang Cheng, Liuyi Li, Ye Li, Jianguo Zhang, Zhenghong Wang

- **[8B-3]** Influence of the formed phases in the slag in the steel dephosphorization
  Sabara Maria Rez Durao de Oliveira, Felipe Costa Brochezinho, Heitor Cristo Clém de Oliveira,
  Silas Gambarine, Jose Roberto de Oliveira* (Federal Institute of Espirito Santo)

**13:00 - 15:00**

**Oxygen Steelmaking**
Chair: Xu Gao (Tohoku university), In-Ho Jung (McGill University)

- **[7B-12]** Effect of CO2 and O2 mixed injection on the oxidation of carbon and vanadium in
  vanadium-containing hot metal
  Gan Wen* (Chongqing University), Yu Wang, Wei Long Du

- **[7B-13]** Analysis of reaction in the basic oxygen steelmaking (BOS) process considering
  contribution of metal droplets generation
  Naoto Sasaki* (Nippon Steel & Sumitomo Metal Corporation), Geoffrey Brooks,
  M Akbar Rhamdhani

- **[7B-14]** Novel two-step simulation for the dynamics of a gas jet-induced depression on a
  molten steel surface in a converter
  Makoto Ando* (JFE Steel Corporation) Shingo Sato, Daisuke Komagata

- **[7B-15]** Effect of Bath Oscillation by Jet Blowing on Behavior of Spitting Generation
  Shimeai Oto* (Nippon Steel & Sumitomo Metal Corporation), Tappei Tamura

**15:30 - 16:50**

**Room C**

**9:00 - 10:30**

**Inclusions 1**
Chair: Yoshiyuki Ueshima (Nippon Steel & Sumitomo Metal Corporation),
Guangqiang Li (Wuhan University of Science and Technology)

- **[B-KL1]** Recent topics of basic research on high-grade steel production
  Yoshiyuki Ueshima* (Nippon Steel & Sumitomo Metal Corporation), Toshiaki Mizoguchi,
  Norimasa Yamashita

- **[7C-1]** Enhancement of Collision Frequency among Non-Metallic Inclusions in Molten Steel by
  Inducing Horizontal Oscillating Motion Excited by Alternating Electromagnetic Force
  Asuka Maruyama* (Hokkaido University), Kazuhiro Iwaki

- **[7C-2]** Simulation of composition change in inclusions of Si-killed steel
  Sun-Joong Kim* (Tohoku University), Akifumi Harada, Masafumi Zee, Norifumi Asahara,
  Fu-xiang Huang, Shin-ya KITAMURA

- **[7C-3]** In-situ observation on the behaviors of various non-metallic inclusions on the
  surface of molten steel
  Youngji Kang* (Dong-A University), Du Sichen, Kazuki Morita

**10:30 - 11:00**

**Inclusions 2**
Chair: Kenichiro Naito (Nippon Steel & Sumitomo Metal Corporation), Youngjo Kang (Dong-A University)

- **[7C-L1]** Effect of inclusions’ behaviour on the microstructure of Al2Ti deoxidized and
  magnesium or calcium treated steel with different Al content
  Guangqiang Li* (1. State Kay Lab. of Refractories and Metalurgy, Wuhan University of
  Science and Technology, 2. Hubei Collaborative Innovation Center for Advanced Steels),
  Wan Zheng, Zhenhua Wu, Hirokazu Matsuura, Fumitaka Tsukihashi

- **[7C-4]** Phase relations of the Fe-MnSi-MnTe system
  Gaurav Tripathi* (The University of Tokyo), Kazuki Morita

- **[7C-5]** Influence of molten steel composition on dissolution behaviour of Mg from refractory
  Motoki Yagi* (Tohoku University), Koki Suzuki, Sun-Joong Kim, Xu Gao, Sigeru Ueda,
  Shinya KITAMURA

**11:00 - 12:00**

**Inclusions 3**
Chair: Sun-Joong Kim (Tohoku university), Jong-Jin Pak (Hanyang University)

- **[7C-6]** Optimizing the production of stainless and high-alloy steels
  Masashi Okawa* (Nippon Steel & Sumikin Koutetsu Wakayama Corporation)

- **[7C-7]** Characteristics of non-metallic inclusions in bearing steel modified with Mo refined
  by ESR process
  Liang Yang* (University of Science and Technology Beijing), Guoguang Cheng, Shijian Li,
  Min Zhao, Guiqing Feng

- **[7C-8]** Corrosion behavior of spinel refractory in high MnO containing slags
  Junmo Jeon* (Korea Polytechnic University), Kyuyong Lee, Yongsug Chung

- **[7C-9]** Thermodynamics of nitride and oxide formation in high alloy steel melts
  Masashi Oikawa* (Nippon Steel & Sumikin Koutetsu Wakayama Corporation)

**13:00 - 15:00**

**Inclusions 4**
Chair: Sjigu Euda (Hokkaido University), Lifeng Zhang (USTB)

- **[7C-10]** Effect of CeO2 on the Sulfide Capacity and Structure of MnO-SiO2-Al2O3-CeO2 System
  Se Ji Joong* (Hanyang University), Tae Sung Kim

- **[7C-11]** Kinetics of copper sulfide growth in low carbon steel
  Kentaro Urita* (Tokyo Institute of Technology), Yoshinobu Kobayashi, Rie Endo, Masahisa Suh

- **[7C-12]** Evolution behavior of TiN inclusions in solid steel at 1473 K
  MINOSANG L* (The University of Tokyo), Worrin CHOI, Hirokazu MATSUURA,
  Fumitaka TSUKIHASHI

- **[7C-13]** Removing more oxide inclusions and modifying their composition in 304 stainless steels
  which one is more important?
  Ying Xie, Lifeng Zhang* (University of Science and Technology Beijing)
Program in Detail - October 7th (Wednesday)

**Room D**

9:00 - 10:00  **Phase Transformation 1**  
Chair: Tadashi Furuhara (Tohoku University), Zhi-gang Yang (Tsinghua University)

- [7D-4L] Dynamic transformation behavior of a high carbon steel  
  Chiradeep Ghosh* (R&D Division, Tata Steel), John J Jonas

- [7D-4L] Diffusion/inegliblible diffusion of alloy elements on kinetics of phase transformation in steels  
  Chi Zhang, Hao Chen, Yuan Xia, Zhi-Gang Yang* (Tsinghua university, School of materials science and engineering), Zhen Yang

- [7D-1] Reverse transformation of austenite from martensinte in Fe-Mn-Si-C alloy during intercritical annealing  
  Takeshi Kaneshi.ta (Graduate Student, Tohoku University), Yasuki Yoshida, Zhen-qing Liu, Goro Miyamoto, Tadashi Furuhara

10:40 - 11:00  **Phase Transformation 2**  
Chair: Tadashi Furuhara, Zhi-gang Yang (Tsinghua University)

- [7D-4L] A model for strain-induced martensitic nucleation  
  Tae-Ho LEE* (Korea Institute of Materials Science (KIMS)), Heon-Young HA, Jun-Yun KANG, Joongil MOON, Chang-Hoon LEE, Seong-Jun PARK

- [7D-2] Understanding the transition of austenite to omega and ferrite at atomic scale  
  D H Ping* (National Institute for Materials Science)

- [7D-3] Phase transformation mechanism in Fe-Al-Mn-Ni-C base low-density steels comprising FCC and B2 phases during annealing of cold rolled sheet  
  Hansoo Kim* (POSTECH), Sang-Hoon Kim, Ateiza Zargaran, Nack J. Kim

13:30 - 15:10  **Microstructure Control & Alloy Design 1**  
Chair: Hansoo Kim (POSTECH), Dierk Raabe (Max-Planck-Institut fuer Eisenforschung (MPIE))

- [7D-6L] Design for high performance low alloyed steel with good combination of strength, toughness and ductility: a novel method  
  Chengjia Shang* (University of Science and Technology Beijing), Wenhao Zhou, Zhenja Xie

- [7D-4] Effect of martensite morphology on formability of ferrite-martensite dual phase steel  
  Jae-Hyung Kim* (POSTECH), Seok Hwan Jung, Chong Soo Lee

- [7D-5] Microstructure and mechanical properties of quenching and partitioning steels before and after prestraining and bake hardening treatment  
  Shu Yan* (The State Key Laboratory of Rolling & Automation, Northeastern University), Xianghui Liu, Wayne J Li, Shukun Mi

- [7D-6] Precipitation Strengthening by VC/Nb/VC Interphase Precipitation in Low-carbon Steels  
  Yongjie Zhang* (Tohoku University), Goro Miyamoto, Naoya Kamikawa, Kunio Shindo, Tadashi Furuhara

- [7D-5L] Microstructure and mechanical properties of multi-step super bainite steels  
  Wen Zhou, Cong Zhang, Xionglong Wang, Guohong Zhang, Kaiming Wu* (Wuhan University of Science and Technology)

15:40 - 17:30  **Microstructure Control & Alloy Design 2**  
Chair: Shigekazu Morito (Shimane University), Chengjia Shang (University of Science and Technology Beijing)

- [7D-5L] Segregation engineering enables nanostructured bulk steels by confined martensite-to-austenite reversion  
  Dierk Raabe* (Max-Planck-Institut fuer Eisenforschung)

- [7D-7] Toughening of Ultra-high Strength Low-Alloy Steels through Warm Tempforming  
  Yuji Kimura* (National Institute for Materials Science), Tadanobu Inoue

- [7D-8] Lightweight ferritic Fe-Al-Mn-Nb-C base steels: effect of Al content on the microstructure and mechanical properties  
  A Zargaran, Hansoo Kim, Nack Joon Kim* (POSTECH)

- [7D-9] Phase evolution during heating of cold rolled Fe-Al-Mn-C-Ni base austenitic lightweight steels  
  Sang-Heon Kim* (Graduate Institute of Ferrous Technology, POSTECH), Hansoo Kim, Nack J. Kim

- [7D-6L] Development of ultrafine grained high strength 10Mn steels by a compositional pinning technique  
  Yoon-Uk Heo, Dong Woo Suh, Dong-Hwi Kim, Hu-Chul Lee, Sung-Joon Kim* (POSTECH)

**Room E**

9:00 - 10:20  **Steel Sheet 1**  
Chair: Shoji Ahara (The University of Tokyo), Chong Soo Lee (POSTECH, GIFT)

- [7E-4L] Precipitation behaviour and its importance in interstitial free high strength steels  
  Pampa Ghosh* (Research and Development Division, Tata Steel), Ranjit Kumar Ray

- [7E-1] Study on Microstructures and Precipitation Behaviour of Ultrathin Continuous Annealed SPCC Steel  
  Renbo Song* (School of Materials Science and Engineering, University of Science and Technology Beijing), Wuyan Fan, Ruiwen Zheng, Jingfan Hu

- [7E-2] Effects of Martensite Substrate on Mechanical Properties of Dual Phase Steels  
  Toshio Murakami* (Kobe Steel Ltd.), Toshiyuki Nakata, Kenji Saito

- [7E-3] Effect of microstructure on tensile strength reduction in warm forming temperature in low alloy high strength TRIP steels  
  Elijah Kakiuchi* (Kobe Steel), Toshio Murakami, Naoki Mizuta, Tatsuya Asai

13:00 - 15:20  **Steel Sheet 2**  
Chair: Toshiaki Urabe (JFE Steel Corporation), Pampa Ghosh (Tata Steel Limited)

- [7E-4] Difference in age hardening behavior between carbon and nitrogen bearing ferritic steels  
  Satoshi Araki* (Kyushu University), Daich Nakada, Nobufumi Nakada, Toshihiro Tsuyukiya, Satsuki Takaki

- [7E-5] Effects of Alloying and Processing Temperature on the Microstructures and Mechanical Properties of S40Y Hot-rolled Dual Phase Steels  
  Yuan-Tsong Wang* (China Steel Corporation, Kaohsiung)

- [7E-6] Advance in Skin-Pass Milling in the Continuous Annealing Process  
  Marc Blumenau* (ThyssenKrupp Steel Europe AG), Udo Zecher, Christian Schmier, Teng Steinbrunner

- [7E-7] Mechanical Properties and Formability of Ultrathin Continuous Annealed SPCC Steel  
  Wuyan Fan* (School of Materials Science and Engineering, University of Science and Technology Beijing), Renbo Song, Ruiwen Zheng, Jingfan Hu

15:00 - 17:30  **Mechanical Properties 1**  
Chair: Shoji Ahara (The University of Tokyo), Chong Soo Lee (POSTECH, GIFT)

- [7E-1L] The Principle and Practice of High Performance Steels  
  Han Dong* (Central Iron & Steel Research Institute), Yuqing Weng

- [7E-8] Next generation ultrahigh strength steels for automotive hot stamping technologies  
  Tom Taylor* (Tata Steel Europe), Peter Evans, George Fourtakis

- [7E-9] Forming technologies with use of high strength steels for automotive parts  
  Toshiaki Urabe* (JFE Steel Corporation), Akihiko Pakiwa, Masato Usabu, Eiji Ikukita

- [7E-10] Effect of chemical composition on solidification cracking susceptibility in laser welding close to steel sheet ends,  
  Masatochi Tokunaga* (Nippon Steel & Sumitomo Metal Corporation), Hiroki Fujimoto, Masato Uchihara, Masanori Yasuyama, Yasunobu Miyazaki

- [7E-11] Effect of heat-affected zone softening on total elongation of spot welding in automotive ultra high strength hot stamping sheet  
  Akihiko Nagasaki* (National Institute of Technology, Nagano College), Yuki Shimizu, Junya Naito, Shun-Sato, Tomohiko Hijo

15:00 - 17:30  **Microstructure Control & Alloy Design 2**  
Chair: Shigekazu Morito (Shimane University), Chengjia Shang (University of Science and Technology Beijing)

- [7E-4L] Overview of the studies on microstructure-toughness relationships in steels  
  Shoji Ahara* (Department of Systems Innovation, The University of Tokyo)

- [7E-12] Effect of Si on Mechanical Properties and Tensile Deformation Behavior in Ferritic Steels  
  Yoshiyasu Kawasaki* (JFE Steel Corporation), Shinjiro Kaneko, Shusaku Takagi, Saiki Matsuo

- [7E-13] Study on fatigue crack growth behaviour of DP780 dual phase steels  
  Sheng Li* (University of Science and Technology Beijing), Yonglin Kang, Guoming Zhu, Shuang Kuang

- [7E-14] Effect of carbid size on ductile fractures in quenched steels  
  Satoshi Yoshimura* (Nippon Steel & Sumitomo Metal Corporation), Masanori Minagawa, Masaaki Fujoka

- [7E-6L] Understanding fracture toughness based on dislocation behaviors  
  Kenji Higa-shita* (Kyushu University), Masaki Tanaka
Room F

9:00 - 10:40 **Kinetics & Reaction**
Chair: Shin-ya Kitamura (Tokoh university), Hidekazu Todoroki (Nippon Yakin Kogyo Co., Ltd.)

- [7F-1] Dissolution Rate of SIO Gas in Molten Iron
  Joon Seok Oh* (Korea University), Jeongho Lee, Sukkwang Jung, Jongho Lee

- [7F-2] In-situ observation of Fe precipitation from Fe2O3 by Si based ceramics in TEM
  Nobuhiro Ishikawa* (National Institute for Materials Science), Takashi Kimura, Masaki Takeguchi, Takako Mizutani, Takashi Inami

- [7F-3] Kinetics of lime dissolution in steelmaking slags
  Elizaveta Cheremsina* (Chair of Ferrous Metallurgy, Montanuniversitaet Leoben), Johannes Schenk, Tamara Tapekener, Axel Sormann, Gerald Wimmer

11:00 - 12:10 **Casting Technology**
Chair: Hidekazu Todoroki (Nippon Yakin Kogyo Co., Ltd.), Dipak Mazumdar (Indian Institute of Technology)

- [7F-KL] An experimental and computational study of casting of large, round, steel ingots
  Soumava Chakraborty, Sachin Bhambure, Sanjay Patil, Dipak Mazumdar* (Indian Institute of Technology)

13:30 - 14:50 **Surface Science & Corrosion**
Chair: Nobumitsu Hirai (National Institute of Technology), Shigeki Ueta (Daido Steel Co., Ltd.)

- [7F-8] Effect of Anion-Species on Chloride Stress Corrosion Cracking of Stainless Steels in Hot Water
  Tomoki Saita* (Nishin Steel Co., Ltd.)

- [7F-9] Consideration of methods evaluating the growing process of APC-SCC and HE-SCC of steel in pure water based on electric circuit theory
  Yasuo Tanaka* (Retired person)

- [7F-10] Corrosion behavior of Cr-Al contained steel plates painted by inorganic zinc primer with artificial scratch in high chloride environments
  Makoto Nagasawa* (Nippon Steel & Sumitomo Metal Corporation), Nobuhiro Okada, Takeshi Tsuzuki

- [7F-11] Effect of prior cold rolling on the formation of micro surface asperity during subsequent tensile deformation in Ni-based alloy
  Yusaku Tomo* (Nippon Steel & Sumitomo Metal Corporation)

15:10 - 16:30 **Steel Plate**
Chair: Kazukuni Hase (JFE Steel Co.), Chiradeep Ghosh (Tata Steel Limited)

- [7F-IL] Recent thick plate technology for high performance steels
  Kazukuni Hase* (JFE Steel Corporation)

- [7F-12] New Steel Plates for LNG storage Tanks
  Takayuki Kagaya* (Nippon Steel & Sumitomo Metal Corporation), Hitoshi Furuya, Takahiro Kamo, Yasunori Takahashi, Hiroshi Nakama, Yoshikazu Ichinoh

- [7F-13] Development of abrasion-resistant steel with high toughness by microstructure refinement
  Naoki Takayama* (JFE Steel Corporation), Yuki Toji, Shinichi Miura, Koji Ueda, Akih Oomori, Nobuyuki Ishikawa, Kazukuni Hase, Yasuhiro Murata, Kiyoji Araki

- [7F-14] Energy Efficiency Improvements in Processing Lines
  Michel Renaud* (Drewer International S.A.), Jean-Pierre Crutzen, Jean-Marc Raick, Wei Song, Bin Zhi Ma, Yang Wang

16:50 - 17:50 **Steel Plate**
Chair: Kazukuni Hase (JFE Steel Co.), Chiradeep Ghosh (Tata Steel Limited)

- [7F-15] Research on Rolling Shifting and Bending Comprehensive Setting Technology of Coating DR Base Plate Rolling
  Shoumin Wu* (Baoshan Iron & Steel Co. Ltd), Huachang Chen

- [7F-16] Analysis of the continuous cooling transformation kinetic for fire-resistant steel
  H. H. Wang* (Wuhan University of Science and Technology), Z. P. Qin, K. M. Wu, L. Li, N. C. Wu

- [7F-17] Influence of Nb content on HAZ toughness in low alloy steel
  Naoto Fujiyama* (Nippon Steel & Sumitomo Metal Corporation), Hiroshi Morimoto, Tatsuya Kamagai

Room G

9:00 - 10:20 **Future Demand and Recycling of Steel**
Chair: Ichiro Daigo (The University of Tokyo), Tao Wang (Ritsumeikan University)

- [7G-1] The pending peak steel in China: Driving forces and implications
  Tao Wang* (Ritsumeikan University), Saji Hashimoto

- [7G-2] Quantitative Analysis for Crystallinity of Super-cooled Silicate Melt Characterized by Electrical Capacitance Measurement
  Yusuke Harada, Noritaka Saito* (Kyushu University), Kunihiko Nakashima

- [7G-3] Three approaches against copper contamination for automotive steel recycling in China
  Hiroki Hatayama* (National Institute of Advanced Industrial Science and Technology (AIST)), Ichiro Daigo, Kiyotaka Tahara

13:30 - 15:10 **High Temperature Properties**
Chair: Toshihiro Tanaka (Osaka University), Tobias Dubberstein (TU Bergakademie Freiberg)

- [7G-4] Surface tensions of Fe-Si-C alloys with high Si concentration
  Takeshi Yoshikawa* (The University of Tokyo)

- [7G-5] Molecular Dynamics Analysis of the Structure of Molten CaO-SiO2-P2O5-FeO Slag
  Jiang Diao* (Chongqing University), Lu Jiang, Zhen Zhang, Bing Xie, Hong-Yi Li

- [7G-6] Dissolution wetting and spreading phenomena between CaO-Al2O3 slag and Al2O3.
  Seo-jin Kim* (Korea Polytechnic University), Kyusung Lee, Yongmus Chung

- [7G-7] Dissolution of Fe-Al 3+ alloy in high concentration FeSO4
  Yuichiro Kim, Kazuki Monta* (The University of Tokyo)

15:30 - 17:10 **High Temperature Properties**
Chair: Noritsuka Saito (Kagoshima University), Yongsung Chung (Korea Polytechnic University)

- [7G-8] Capillary metallurgy and its application to the steelmaking process
  Toshihiro Tanaka* (Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University), Hiroki Goto, Masanori Suzuki, Masashi Nakamoto, Masahito Watanabe

- [7G-9] Effect of Mn-Ca and Mg-Ca Substitution on the Structure and Properties of Calcium Silicate Melts
  Joohyun Park* (Korea Polytechnic University)

- [7G-10] Surface tension of CaO-SiO2-Al2O3-Mgo Melt
  Sohei Sukenaga* (Tokoh university), Tomoyuki Higo, Hiroyuki Shibata, Noritaka Saito, Kunihiko Nakashima

- [7G-11] Sulphide capacities and Raman study of chromium bearing slag
  Lijun WANG* (University of Science and Technology Beijing), Ya-Xian WANG, Kuo-Chih CHOU

- [7G-12] Material Properties in High Temperature of TRIP/TWIP Steels relevant to Gas Atomization
  Tobias Dubberstein* (Institute of Iron and Steel Technology), Hans-Peter Heller
Program in Detail - October 7th (Wednesday)

Room H

9:00 - 9:40  Surface Property
Chair: Nobuki Yukawa (Nagoya University)

[7H-L1] Deformation of surface micro defects in plate and bar rolling
Nobuki Yukawa* (Nagoya University)

[7H-1] Roll coatings and wear debris formed in cold rolling
Hideo Sugii* (Nippon Steel & Sumitomo Metal Corp.), Nobuhide Tanino, Hiroshi Utsunomiya

10:40 - 11:20  Rolling Control
Chair: Noriyuki Suzuki (Nippon Steel & Sumitomo Metal Corp.)

[7H-L2] "STEEL" the best solution for the light weight auto body
Noriyuki Suzuki* (Nippon Steel & Sumitomo Metal Corp.)

[7H-2] Formation and mechanical property of bimodal microstructure in low-carbon steels by heavy-reduction thermomechanical controlled processing
Hyung-Won Park* (The University of Tokyo), Jun Yanagimoto

13:30 - 15:20  Oxide Scale
Chair: Hiroshi Utsunomiya (Osaka University)

[7H-KL2] Surface morphology of oxide scale in hot rolling process
Hiroshi Utsunomiya* (Division of Materials and Manufacturing Science, Graduate School of engineering, Osaka University), Takuma Yoneda, Tsubasa Nakagawa, Ryo Matsumoto

[7H-3] Blisters Formation Behaviour during Scale Formation of Steel
Yasumitsu Kondo* (Nippon Steel & Sumitomo Metal Corporation), Hiroshi Tanei, Kohei Ushoda, Muneyuki Maeda

[7H-4] Effects of Initial Scale Structure on Transformation Behaviour of FeO
Hiroshi Tanabe* (Nippon Steel and Sumitomo Metal Corporation), Yasumitsu Kondo

[7H-5] Development of high-temperature flow stress measuring method for oxide scale on carbon steel
Nobuki Yukawa* (Nagoya University), Kentaro Tsujii, Eiji Abe, Takashiki Ishikawa, Takashi Choda, Hideki Kakimoto

[7H-6] Influence of Heating Temperature and Si Content on the Amount of Oxide Scale in Si-doped Steel
Kohki Izumi* (Daido Steel), Kentaro Tsujii, Naohide Kamiya, Keisuke Inoue

16:10 - 16:50  Bar Steel Rolling
Chair: Jun Yanagimoto (The University of Tokyo)

Jun Yanagimoto* (Institute of Industrial Science, The University of Tokyo), Motoo Asakawa

[7H-7] Optimization of pipeline steel rolling processes at Heavy Plate Mill 5000 by the physical modelling
Andrey Chastukhin* (OMK, Vyksa Steel Works), Rinningen Dmitry

Room I

9:00 - 10:10  Quantum Beam Analysis (Stress and Strain)
Chair: Masato Ohnuma (Hokkaido University), Masao Kimura (High Energy Accelerator Research Organization (KEK))

[7I-KL1] Application of neutron scattering in steel research
Xun-Li Wang* (City University of Hong Kong), Bing Wang, Si Lan, Zhongwu Zhang

[7I-IL1] Residual stresses and crack propagation in thick steel welds
Wanchuck Woo* (Neutron Science Division, Korea Atomic Energy Research Institute), Vyacheslav Em, Gyu-Baek An

[7I-1] Residual stress/strain analysis in Fe-Ga alloy single crystal by X-ray diffraction
Shinki Tsubaki* (Tokyo City University), Muneyuki Imakita, Shun Fujieda, Yuusuke Onuki, Shigeru Suzuki

10:40 - 11:50  Quantum Beam Analysis (New Development and Instrumentation)
Chair: XunLi Wang (City University of Hong Kong), Wanchuck Woo (Korea Atomic Energy Research Institute)

[7I-KL2] Nano-size precipitates in steels characterized by Small-Angle Neutron and X-ray scattering
Masato Ohnuma* (Hokkaido University), D H Ping, Toshinori Ishida, Ryo-ichi Hashimoto, Michihiro Furusaka

[7I-2] Application of compact neutron system RANS with fast and slow neutron
Yoshie OTAKE* (RIKEN), Takenori Nakayama, Yoshimasa Ikeda, Atsushi Takataki, Masato Takamura, Yoshichika Seki, Masako Yamaoda, Takahashi Yoshio, Sheng Wang, Hideyuki Sunaga, Masayoshi Kumagai

Muneyuki Imakita* (Tokyo City University), Shinuki Tsukabi, Kentaro Oda

13:30 - 15:10  Chemical Analysis
Chair: Seiji Yokoyama (Toyohashi University of Technology), Daisuke Itabashi (Nippon Steel & Sumitomo Metal Corporation)

[7I-4] Determination of Valence of Iron Ion dissolved from Steelmaking Slag
Ryo Inoue* (Akita University), Rika Kimura, Shigeru Ueda, Takeshi Yamane

[7I-5] Precision test data processing TiO2 measured in iron ore
Hirotaka Shinjo* (Panzhihua Iron and Steel Research Institute Group Co., Ltd.)

[7I-6] Development of analytical method for precipitates in steel samples by using mistral desolvation hyphenated to ICP-MS
Daisuke Itabashi* (Nippon Steel & Sumitomo Metal Corporation), Kazumi Mizukami

[7I-7] Solubility of zinc oxide in aqueous solution of sulfuric acid
Seiji Yokoyama* (Toyohashi University of Technology), Kumpuga Bahati Thom, Junji Sasano, Masanobu Izaki

[7I-8] Quantitative chemical analysis of solid-solution Nb content in steel
Satoshi Kinoshita* (JFE Steel Corporation), Yoshokuni Ishida, Masao Inose, Masayasu Nagoshi
October 8th (Thursday)

Program in Detail

Room A

9:00 - 10:00  
Direct Reduction  
Chair: Shen Fengman (Northeastern University), Gou Gopal Roy (Indian Institute of technology)  
[8A-1]  
A new direct reduction technology of Ore-Coal composite with high temperature and tall pellets bed  
Fengman Shen* (Northeastern University), Xin Jiang, Qiuin Wen, Haiyan Zheng, Qingfeng Tan, Yongqiang Li  
[8A-2]  
Non-isothermal model to estimate the rate parameters and thermal efficiency for the reduction of iron ore-coal composite pellets in multi-layer bed at rotary hearth furnace  
Abhinav Gupta, Rachna Tripathi, Srinivas Mishra, Gou Gopal Roy* (Department of Metallurgical & Materials Engineering, Indian Institute of Technology), Prodip Kumar Sen  
[8A-3]  
A new process to efficiently recycle valuable elements from stainless steel dusts  
Eiki Kasai* (Graduate School of Environmental Studies, Tohoku University), Kazuya Fujino, Yoshinao Kobayashi, Rie Endo, Masahiro Susa  

10:20 - 12:00  
Fundamental of Sintering  
Chair: Eiki Kasai* (Tokyo Institute of Technology), Sungmo Jung (Postech)  
[8A-4]  
Assimilation behavior of quasi-particles comprising high alumina pisolith ore and ultrafine iron ores  
Ji-Won Jeon, Sung-Won Kim, In-Kook Suh, Sung-Mo Jung* (Pohang University of Science and Technology)  
[8A-5]  
Improvement of sintering characteristics by selective granulation of high Al2O3 iron ores and ultrafine iron ores  
Seung Wan Kim* (POSCO), Ji Won Jeon  

Sintering Process  
Chair: Eiki Kasai (Tohoku University), Haiyan Leng (Shanghai University)  
[8A-6]  
Utilization of iron bearing agglomeration agents in iron ore sintering process  
Eiki Kasai* (Graduate School of Environmental Studies, Tohoku University), Kazuya Fujino, Taichi Murakami  
[8A-7]  
Effect of fine coke combustion behavior in quasi-particle on temperature distribution of iron ore sintering process  
Ko-Ichiyo Omi, Hiroshi Og* (Kyushu University), Keigo Noda, Koki Nishioka, Takayuki Maeda, Masakata Shimizu, Kazuya Kunitomo  
[8A-8]  
Improvement of Iron Ore Granulation by Micro-Particles Addition  
Yasuhide Yamaguchi* (Nippon Steel & Sumitomo Metal Corporation), Shoji Kawachi, Chikashi Kamiyo, Masaru Matsumura, Seiji Nomura

Room B

9:00 - 10:20  
Continuous Casting: Mold Flux 1  
Chair: Soheil Jukanega (Tohoku University), Jung-Wook Cho (Pohang University of Science and Technology)  
[8B-1]  
Thermo-physical properties of novel Bi2O3 containing calcium-silicate based continuous casting mold fluxes  
IL Sohn* (Yonsei University Materials Science and Engineering), Jun-Yong Park, Se-Woong Park  
[8B-2]  
Effect of bubbles on the radiative heat transfer across mold flux  
Shunsuke Takahashi* (Tokyo Institute of Technology), Yoshinao Kobayashi, Rie Endo, Masahiro Susa  
[8B-3]  
A reaction mechanism between Al-containing steel and CaO-SiO2-type molten metal flux  
Min-Su Kim* (Graduate Institute of Ferrous Technology, Pohang University of Science and Technology), Min-Seok Park, Sin-Eon Kang, Joong-Ki Park, Youn-Bae Kang  

10:40 - 12:00  
Continuous Casting: Mold Flux 2  
Chair: Takeshi Yokosawa (The University of Tokyo), IL Sohn (Yonsei university)  
[8B-4]  
Effects of additions of silicon, aluminium and calcium silicide on heat transfer across mold fluxes for continuous casting of steel  
Min Wang* (Graduate of Tokyo Institute of Technology), Rie Endo, Yoshinao Kobayashi, Masahiro Susa  
[8B-5]  
Thermodynamic database for oxy-fluoride mold flux, CaO-MgO-NaO4-K2O-LiO-Al2O3-SiO2-ZrO2-F  
In-Ho Jung* (McGill University), Marie-Aline Van Ende, Dong-Geun Kim, Bikram Sonur, Sunyong Kwon  
[8B-6]  
Experimental Study of New Mold Flux with CaO-Al2O3-Li2O-Ce2O3 System for Heat-Resistant Steel Containing Cerium  
Jie Qi* (Northeastern University, China), Chengjun Liu, Chunting Li, Maofa Jiang  
[8B-7]  
Effect of cooling intensity and basicity on the crystallization ratio of mold flux film by experiment and simulation  
Lang Hu* (Chongqing University), Yu Wang, Congjing Zhang

13:30 - 14:30  
Continuous Casting: Mold Flux 3  
Chair: Yoshinao Kobayashi (Tokyo Institute of Technology), IL Sohn (Yonsei university)  
[8B-8]  
Non-isothermal melt crystallization of CaO-SiO2-CaF2 based commercial mold fluxes  
Jung-Woon Cho* (Pohang University of Science and Technology), Myung-Duk Seo, Seon-Hyo Kim  
[8B-9]  
Crystallography, Viscosity and Structure of Glassy CaO-Al2O3-B2O3 Based Fluorine-free Mould Fluxes  
Jiangling Li* (School of metallurgical and ecological engineering, University of science and technology Beijing), Gifeng Shu, Kuochou Chou  
[8B-10]  
Measurement and prediction of friction force between mold and solidified shell  
Tomoya Odagaki* (JFE Steel Corporation/Steel Research Laboratory), Norichika Aramaki, Yuji Miki

14:50 - 15:50  
Oxygen Steelmaking 2  
Chair: Shin-yu Kitamura (Tohoku university), Guoyu Qian (University of Science and Technology Beijing)  
[8B-11]  
A kinetic BOF process simulation model  
Marie-Aline Van Ende, In-Ho Jung* (McGill University)  
[8B-12]  
Estimation of Liquid Deformations in Steelmaking Process Using Smoothed Particle Hydrodynamics  
Mieko Nakano* (Waseda University), Kimihisa Ito  
[8B-13]  
Direct observation of oxide formation at bath surface by top blown oxygen in high Cr steel  
Xu Gao* (Institute of Multidisciplinary Research for Advanced Materials, Tohoku University), Ryosuke Mihara, Shin-yu Kitamura, Min Oh Seok
Program in Detail - October 8th (Thursday)

**Room E**

9:00 - 10:20 Mechanical Properties 2
Chair: Setsuo Takaki (Kyushu University), Shengci Li (University of Science and Technology Beijing)

- [8E-1] Effect of phase distribution on tensile behavior of ferrite-martensite dual phase steels with nano precipitation
  - Elango Chandiran* (Tohoku University), Yu Sato, Naoya Kamikawa, Tadashi Funahara

- [8E-2] Effect of Plastic Pre-Deformation on Transformation Plasticity Coefficient in a Three-Point Bending System
  - M. Arif Hamdani* (Tokyo University of Agriculture and Technology), Ryody Miyamoto, Shigeki Nagaki, Kenichi Obita

- [8E-3] Analysis of springback behaviour of steel sheets for cans assuming non-uniform stress distribution
  - Mikio Suto* (JFE Steel Corporation), Katsumi Kojima, Hiroki Nakamaru

10:40 - 12:10 Mechanical Properties 3
Chair: Naoki Yoshinaga (NIPPON STEEL & SUMITOMO METAL), Heung Nam Han (Seoul National University)

- [8E-4] Effect of grain size on the yielding behavior of polycrystalline ferritic steel
  - Setsuo Takaki* (Department of Materials Science and Engineering, Kyushu University International Institute for Carbon-Neutral Energy Research, Kyushu University), Toshitomo Tschiyama, Nobu Nakada, DaiChi Akama

- [8E-5] Quantitative analysis of yield point phenomena in hot-rolled low carbon steels
  - Hiroyuki Um* (POSTECH), Ji Yun Kang, Hyoseo Jeong, Kang Hyun Choi, Jaewon Bae, Jea-Sock Chung, Sang Hyun Lee, Hyeoung Seop Kim

- [8E-6] Effect of Ce on Microstructures and Mechanical Properties of Q690E Steel for Engineering
  - Ruifeng Dong* (Inner Mongolia University of Technology), Zetian Liu, Jun Gao

13:30 - 15:10 Mechanical Properties 4
Chair: Kenji Higashida (Kyushu University), Ruifeng Dong (Inner Mongolia University of Technology)

- [8E-7] Yielding and work hardening of α+γ and α′+γ interlath structures in an Fe-10Mn-3Al-0.2C based alloy
  - Yoon-Uk Hoo* (Pohang University of Science and Technology), Dong-Hwi Kim, Chang-Wan Hong, Nam-Hoe Heo, Sung-Joon Kim

- [8E-8] Formability of Twinning-Induced Plasticity Steels and the Effect of Dynamic Strain Aging
  - Jung Gi Kim* (Pohang University of Science and Technology), Seok Min Hong, Nozara Arjani, Seungmi Baek, Byoung Ho Park, Sun Kyu Kim, Kang-Geun Chin, Sunghak Lee, Hyeoung Seop Kim

- [8E-9] Influence of Tensile Strain on Young's Modulus in High-strength Cold-rolled Steel Sheets
  - Taro Kizu* (JFE Steel Corporation), Kenanure Okuda, Yasunobu Nagataki, Toshiaki Urabe, Kazushiro Seto

- [8E-10] Effect of defect types on mechanical response in steels
  - Ling ZHANG* (Chongqing University), Takahito Ohmura, Tianlin Huang

**Room F**

9:00 - 10:10 Hydrogen Embrittlement 1
Chair: Masatoshi Sakai (Hokkaido University), Xuejun Jin (Shanghai Jiao Tong University)

- [8F-1] Microstructural influence on the hydrogen embrittlement of high strength steels
  - Chong Soo Lee* (Pohang University of Science and Technology (POSTECH)), Junmo Lee, Jae Hyung Kim, Young Jin Kwon, Da Hee Shim

- [8F-2] Improved hydrogen embrittlement by quenching-partitioning-tempering treatment in high strength steels
  - Xuejun Jin* (Shanghai Jiao Tong University), Wei Li, Xuejun Jin (Shanghai Jiao Tong University)

10:40 - 11:40 Hydrogen Embrittlement 2
Chair: Masatoshi Sakai (Hokkaido University), Xuejun Jin (Shanghai Jiao Tong University)

13:30 - 15:00 Processing Technique
Chair: Toshihiro Kuwabara (Tokyo University of Agriculture and Technology), Beomsoo Kang (Pusan National University)

- [8F-3] Fabrication of aircraft winglet mold through multi-point dieless forming process
  - Beomsoo Kang* (Pusan National University), Jiwoo Park, Kwangho Kim

- [8F-4] Development of rolling technology for pipe steel grades at casting and rolling complex (OMK company)
  - Alexander Muntin* (Vyksa Steel Works), Leonid Efrohn, Nikolay Rybkin, Vitaly Naumenko, Dmitriy Ringhen, Alexey Chermonnov

- [8F-5] Effect of traditional TRIP on microstructure and mechanical properties of a cold-rolled MnAl TRIP-Aided steel
  - Yuqiang Zhang, Fei Peng, Xiaodong Tan, Yunbo Xu* (State Key Laboratory of Rolling and Automation, Northeastern University)

15:20 - 16:20 Processing Technique
Chair: Toshihiro Kuwabara (Tokyo University of Agriculture and Technology), Beomsoo Kang (Pusan National University)

- [8F-6] Multiaxial and in-plane reverse loading tests on steel sheets in support of material modelling and accurate sheet forming simulations
  - Toshihiro Kuwabara* (International Institute for Carbon-Neutral Energy Research), Nobu Nakada, Toshitomo Tschiyama, Setsuo Takaki

- [8F-7] Square cup deep drawing of pure titanium sheet
  - Yasunori Harada, Syuji Hattori* (University of Hyogo), Minoru Ueyama

- [8F-8] Influences of titanium/steel/titanium sheet in multistage deep drawing
  - Yasunori Harada, Syuji Hattori* (University of Hyogo), Minoru Ueyama

- [8F-9] Influence of titanium/steel/titanium sheet in multistage deep drawing
  - Yasunori Harada, Syuji Hattori* (University of Hyogo), Minoru Ueyama
Room G

9:00 - 10:20 Systems Technology
Chair: Isao Ono (Tokyo Institute of Technology)

[8G-1] Development of New Order Entry System for Plate Mills
Masanori Shioya* (Nippon Steel & Sumitomo Metal Corporation), Junichi Mori, Kuniharu Ito, Yasushi Mizutani, Kenji Torigai, Kentaroh Shiga, Ryo Kusumagawa

[8G-2] Workload Balance Optimization of Two Reverse Mills for Plate Rolling
Shunsuke Kobayashi* (Nippon Steel & Sumitomo Metal Corporation), Yasunori Kadoya, Shigemasa Nakagawa, Jiro Kojima, Yoshio Yanomori, Takeo Yazawa

[8G-3] Online Heat Pattern Estimation in a Shaft Furnace
Yoshinari Hashimoto* (JFE Steel), Kazuo Tsuda

10:40 - 11:50 Control and Energy Saving
Chair: Hiroyasu Shigemori (JFE Steel Corporation)

[8G-4] Total dynamic control of ironmaking plant energy circulation
Koji Tsumura* (The University of Tokyo)

[8G-5] Flexible and highly accurate thickness control system for tandem cold mills
Yoshinori Ni* (Toshiba Mitsubishi-Electric Industrial Systems Corporation), Atsuyoshi Andoh, Shigeru Suzuki

[8G-6] The most advanced power saving technology in EAF introduction to ECOCAT
Shunsuke Kimura* (Nippon Steel & Sumitomo Metal Corporation), Atsuyoshi Andoh, Shigeru Suzuki

13:30 - 15:00 Instrumentation
Chair: Masashi Iwamuro (The University of Tokyo)

[8G-7] Nondestructive testing and regulation residual stress of welded steel structure
Chunguang Xu* (Beijing Institute of Technology), Wentao Song, Qinxue Pan, Junfeng Wang, Huanxin Li, Shuai Liu

[8G-8] Surface-breaking superficial crack detection by use of high-frequency leaky surface acoustic wave
Takafumi Ozeki* (JFE Steel Corporation), Hajime Takada

[8G-9] System for measuring thickness of multiple layers using eddy current probe (Laboratory test results)
Junichi Ito* (JFE Steel Corporation)

[8G-10] Imaging measurement of the whole wall of high temperature coke oven chambers
Masato Sugura* (Nippon Steel & Sumitomo Metal Corporation), Michitaka Sakaida

Room I

9:00 - 10:50 Quantum Beam Analysis (XAFS and XRD)
Chair: Shigeru Suzuki (Tohoku University), Suzumu Imashuku (Kyoto University)

[8I-1] In-situ XRD observation of phase transformation of galvanized steel
Sung-Wook Jung* (Analysis & Assessment Center / RIST), Chang-Hwan Chang, Kwang-Soo Shin, Man-Kil Joo, Ilryoung Sohn

[8I-2] Continuous cooling transformation (CCT) diagram for iron ore sintering revealed by in situ quick X-ray diffraction and confocal laser microscope observations
Masao Kimura* (High Energy Accelerator Research Organization (KEK)), Shigeru Suzuki

[8I-3] Observation of reduction of calcium-ferrites and iron-ore sinters using synchrotron X-ray diffraction
Shigeo Sato* (Ibaraki University), Kazuaki Wagatsuna, Koizue Satoh, Hiromi Ogawa, Masayoshi Kumagai, Muneyuki Imatsu, Hitoshi Tashiro, Takahisa Shobu, Shigeru Suzuki