

Program in Detail

October 6th (Tuesday)

Room A - D

- 9:00 - 9:10 **Opening Remarks:** Kazuki Morita (The University of Tokyo)
- Plenary Lectures**
Chair: Kazuki Morita (The University of Tokyo), Tadashi Furuhashi (Tohoku University)
- 9:10 - 9:40 **[6PL-1] Outlook for Further Development of the Asian Steel Industry**
Hiroshi Tomono (Nippon Steel & Sumitomo Metal Corporation)
- 9:40 - 10:10 **[6PL-2] Investigation on Non-Metallic Inclusions in Ultra-Low Oxygen Special Steels**
Xinhua Wang (University of Science and Technology Beijing)
- 10:30 - 11:00 **[6PL-3] Recent Technology Issues in the Steel Industry**
Sung-ho Park (POSCO)
- 11:00 - 11:30 **[6PL-4] Development of High Performance Steel Products in India through Technological innovations**
Sashi Shekhar Mohanty (Steel Authority of India Limited (SAIL))
- 11:30 - 12:00 **[6PL-5] Expectation of steel industry for vehicle light weighting and environmental changes around vehicle society**
Kiyoshiba Mase (Toyota Motor Corporation)

Room A

- 14:00 - 15:50 **Ironmaking Technology 1**
Chair: Michitaka Sato (JFE steel), Tianjun Yang (USTB)
- [6A-KL1] Longevity practice of Chinese blast furnace**
Zhengjian Liu, Jianliang Zhang, Tianjun Yang* (School of Metallurgical and Ecological Engineering, University of Science and Technology Beijing)
- [6A-IL1] Recent development of mid- and long-term CO₂ mitigation technology at JFE Steel**
Michitaka Sato* (Steel Research Laboratory, JFE Steel Corporation), Hidetoshi Matsuno, Kunihiko Ishii
- [6A-IL2] Recent improvements in understanding of the reactions in the FINEX[®] melter-gasifier**
Joonho Lee* (Korea University, Department of Materials Science and Engineering)
- [6A-1] CO₂ Ultimate Reduction in Steelmaking Process (COURSE50 Project)**
Natsuo Ishiwata* (JFE steel Corporation), Yutaka Ujisawa, Yuki Nabeshima, Koji Saito
- [6A-2] Modern Blast Furnace Design**
Reinoud Van Laar* (Danieli Corus), Edo Engel
- 16:10 - 18:00 **Ironmaking Technology 2**
Chair: Koji Saito (NSSMC), Sang Ho Yi (POSCO)
- [6A-KL2] Recent progress in Japanese ironmaking technologies**
Koji Saito, Seiji Nomura* (Nippon Steel & Sumitomo Metal Corporation, Ironmaking Technical Div.)
- [6A-IL3] Recent update of FINEX[®] ironmaking technologies**
Sang-Ho Yi* (POSCO)
- [6A-IL4] The sleeping giant awakes: make in India drives the iron and steel industry**
Tapan Kumar Naha* (JSW Steel Ltd.), Saravanan M
- [6A-3] Energy saving of the ironmaking process based on the oxygen blast furnace**
Koichi Takahashi* (JFE Steel Corporation), Taihei Nouchi, Michitaka Sato
- [6A-4] Heat Flow Ratio Control Technology in a Blast Furnace by Pre-Heated Shaft Gas Injection**
Jun Ishii* (JFE Steel Corporation), Taihei Nouchi, Takeshi Sato, Ryota Murai, Hidetoshi Matsuno, Ikuhiro Sumi

Room B

- 14:00 - 15:50 **Thermodynamics 1**
Chair: Yasushi Sasaki (UNSW Australia), Kuo Chih Chou (UNIVERSITY OF SCIENCE & TECHNOLOGY BEIJING)
- [6B-KL1] Recent development of study in metallurgical melts**
Kuo Chih Chou* (University Of Science & Technology Beijing), Qi Feng Shu, Li Jun Wang, Guo Hua Zhang, Zhi Yuan Chen

- [6B-1] Removal of Impurities in Molten Iron by Using Immiscibility of Iron and Ca-Alloy**
Hideki ONO* (Osaka University), Minoru MURAKAMI, Jingo ABOSHI
- [6B-2] Applications of the Generalized Central Atom model to liquid steel production**
Jean LEHMANN* (ArcelorMittal Global R&D), Chunlin CHEN
- [6B-3] Al Deoxidation Equilibria in High-Mn and High-Al Alloyed Liquid Steels**
Min-Kyu Paek* (McGill University), Youn-Bae Kang, In-Ho Jung, Jong-Jin Pak
- [6B-4] Phase Equilibria and Activities of AlO_{1.5} for the CaO-AlO_{1.5}-CeO_{1.5} System at 1823 and 1873 K**
Ryo Kitano* (The University of Tokyo), Makoto Ishii, Kazuki Morita

16:10 - 17:30

Thermodynamics 2

- Chair: Hideki Ono (Osaka University), Xinhua Wang (UNIVERSITY OF SCIENCE & TECHNOLOGY BEIJING)
- [6B-5] Measurement of thermodynamic properties of tellurium in iron-based molten alloy using the transpiration 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 Kirihara, Hiroshi Komatsubara
- [6B-7] In-situ high temperature XRD analysis of gaseous reduction of magnetite doped with alumina**
Yury Kapelyushin* (UNSW Australia), Jianqiang Zhang, Sunkwang Jeon, Yaushi 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

Room C

- 14:00 - 15:40 **Continuous Casting Technology 1**
Chair: Hiroyuki Shibata (Tohoku university), Wanlin Wang (Central South University School of Metallurgy and Environment)
- [6C-IL1] Solidification characteristics of medium and high manganese steels**
Jian YANG* (Baosteel Group Corporation), Yunan WANG, Ruizhi WANG, Xiaofang JIANG, Jianjun ZHI
- [6C-1] Investigation of fluid flow characteristics in the thin slab cast mold using 1-to-1 scaled physical modelling**
Ravi Golani* (R&D, Tata Steel India), Arunava Sengupta, Raghavendra Krishnamurthy, Suvankar Ganguly, S. K Ajmani, Hitesh Shah
- [6C-2] Fluid flow and inclusion transport during the solidification process in CSP mold**
Changping Nie, Xiaofeng Zhang, Bao Wang, Yuhu Sun, Qing Liu* (University of Science and Technology Beijing)
- [6C-3] Deformation Behavior Analysis of Void during Reduction of Steel**
Shinji Nagai* (NSSMC), Akihito Yamane, Sei Hiraki, Akihiro Yamanaka, Kouji Takatani
- [6C-4] Instability map for hot deformation behavior of low carbon steels**
Kang Hyun Choi* (POSTECH), Hyeok Jae Jeong, Jae Sang Lee, Kyo Sun Park, Seong Yeon Kim, Sang Hyun Lee, Hyoung Seop Kim
- 16:10 - 17:30 **Continuous Casting Technology 2**
Chair: Jian Yang (Baosteel Group Corporation), Qing Liu (UNIVERSITY OF SCIENCE & TECHNOLOGY BEIJING)
- [6C-IL2] Initial solidification of molten steel-what is happened in the mold**
Wanlin Wang* (Central South University, School of Metallurgy and Environment), Haihui Zhang
- [6C-5] Development of EMBR/EMS Multifunction Mold**
Nobuhiro Okada* (Nippon Steel & Sumitomo Metal Corporation), Koji Takatani, Kozo OHTA, Noriaki Baba, Masayuki Kawamoto
- [6C-6] Numerical Simulation of the Multiphase Flow in the Tundish System**
Shupeii Liu, Jieyu Zhang* (Shanghai University), Bo Wang, Guozhi Zhou
- [6C-7] Multi-phase analysis of steel-air-slag system during ladle change-over process in CC tundish steelmaking process**
Irfanul Haque Siddiqui, Pradeep Kumar Jha* (IIT Roorkee)

Program in Detail - October 6th (Tuesday)

Room D

14:00 - 15:30

Microstructure Analysis 1

Chair: Yoshitaka Adachi (Kagoshima University), Nack Joon Kim (POSTECH)

[6D-KL1] 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-1] Roughness on three dimensional microstructures in low carbon low alloy lath martensite

Shigekazu Morito* (Shimane University), Yuji Shimabayashi, Taisuke Hayashi, Anh Hoang Pham, Takuya Ohba, Goro Miyamoto, Tadashi Furuhashi

[6D-2] Analysis of Elastic Strain Distribution in Pearlitic Steel by EBSD-Wilkinson Method

Norimitsu Koga* (Yokohama National University), Nobuo Nakada, Toshihiro Tsuchiyama, Setsuo Takaki, Mayumi Ojima, Yoshitaka Adachi

[6D-3] Biofilm formation on various plastics revealed by AFM

Nobumitsu Hirai* (National Institute of Technology, Suzuka College), Kar Mun Mah, Zhihong Bao, Hideyuki Kanematsu, Hajime Ikegai

16:10 - 17:30

Microstructure Analysis 2

Chair: Kaneaki Tsuzaki (Kyushu University), Elena Pereloma (University of Wollongong)

[6D-4] Effect of Boron on the Oxide Scale Structure of an Fe-Cr-Ni alloy

Toki Yoshida* (NIPPON YAKIN KOGYO Co., Ltd.), Yutaka Kobayashi, Yuji Ikegami

[6D-5] Deformation mechanism of a strong and ductile nanotwinned steel investigated by transmission electron microscopy

Peng ZHOU* (The University of Hong Kong), Mingxin HUANG

[6D-6] Characterization of martensitic transformation in a newly developed FeCrMoVC cast alloy using micro- and nanoindentation experiments

Josephine Zeisig* (IFW Dresden, Institute of Complex Materials), Horst Wendrock, Julia Hufenbach, Thomas Gemming, Uta Kuehn, Juergen Eckert

[6D-7] Effect of acid soluble aluminum 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 of Science and Technology), Chengyi Zhu, Guangqiang Li, Yong Fu

Room E

14:00 - 15:40

Stainless Steel 1

Chair: Toshihiro Tsuchiyama (Kyushu University), Tae-Ho Lee (Korea Institute of Materials Science (KIMS))

[6E-1] Development of Seawater Resistant Stainless Clad Steel Plate

Keiichiro Kishi* (JFE Steel Corporation), Tomoyuki Yokota, Keizo Yabumoto, Takayuki Kobayashi, Yutaka Moriya, Takao Kitagawa

[6E-2] Effect of α/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

Yasoji Tsukaue* (Retired Person)

[6E-4] Kinetics of σ -Phase Precipitation and its Effect on Corrosion Resistance and Toughness of Duplex Stainless Steels

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: Toshihiro Tsuchiyama (Kyushu University), Tae-Ho Lee (Korea Institute of Materials Science (KIMS))

[6E-6] Effects of Carbon and Nitrogen Additions on Mechanical Stability of Metastable Austenitic Stainless Steel

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

[6E-7] Deformation induced martensitic transformation of Fe-23Cr-8.5Ni duplex stainless steel during cold rolling

Lin Xie* (School of Materials Science and Engineering, Chongqing University), Chao Li, Guilin Wu, Nobuhiro Tsuji, Xiaoxu Huang

[6E-8] Modeling of deformation mechanisms in Fe-19Cr-3Mn-4Ni-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 microlaminated duplex stainless steel

Chao Li* (Chongqing University), Lin Xie, Tianlin Huang, Zongqiang Feng, Guilin Wu, Xiaoxu Huang

[6E-10] Development of heat resistant ferritic stainless steel conserving Mo

Tetsuyuki Nakamura* (JFE Steel), Hiroki Ota, Yasushi Kato

[6E-11] Thermal Fatigue Properties of Cu and Nb bearing Ferritic Stainless Steels

Kazunari Imakawa* (NISSHIN STEEL Co.,LTD.), Takeo Tomita, Sadayuki Nakamura, Manabu Oku

Room F

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 Sugae* (Nippon steel & Sumitomo Metal Corporation), Takayuki Kamimura, Takashi Doi, Hideaki Miyuki, Takeo Kudo

[6F-2] Corrosion fatigue properties in the salt spray environment for steel sheet

Ikumi Tokuda* (Nippon Steel & Sumitomo Metal Corporation), Masamitsu Matsumoto, Koji Akioka

[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 for 55%-Al-Zn Alloy

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* (JFE 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 Cr³⁺ Passivation Chemical for Hot-Galvanized

Mingyu Lv* (Parker Surface Technologies (Shanghai) Co.,Ltd), Wenqi Ji, Wei Li

[6F-7] Development of highly-functional chromate-free coated steel sheets

Takeshi Matsuda* (JFE Steel Corporation), Akira Matsuzaki, Kazuaki Tsuchimoto, Naoto Yoshimi

[6F-8] Evaluation of Thermal Barrier Property of Thermal Spray Coatings applied to the Piston

Masashi Sekine* (Yamanashi University), Keiji Sonoya, Masanobu Nakamura

[6F-9] Impinging jet characteristics and gas wiping capability of 3-slot gas nozzle

Gentarō Takeda* (JFE Steel Corporation), Hideyuki Takahashi, Masaru Miyake, Naoki Nakata

Program in Detail - October 6th (Tuesday)

Room G

- 14:00 - 15:30 **Energy and Water Saving and Emissions Reduction**
Chair: Eiji Yamasue (Kyoto Univ.), Kazuyo Matsubae (Tohoku Univ.)
- [6G-KL1] **Green development is the future direction of Chinese steel industry**
Chunxia Zhang* (Central Iron & Steel Research Institute), Xiuping Li, Haifeng Wang, Fangqing Shangguan
- [6G-1] **Waste Heat Recovery from Continuous Casting Slab using Thermoelectric Generator**
Takashi Kuroki* (JFE Steel Corporation), Ryota Murai, Hidetoshi Matsuno, Takeshi Kajihara, Hirokuni Hachiuma, Ikuhiro Sumi
- [6G-2] **The w-p analysis of comprehensive water consumption per ton steel in the steel industry**
Tong yong juan* (Northeastern University, China), Cai jiu ju, Lv zi qiang
- [6G-3] **Particulate Matter Emission Evaluating Indices of Iron and Steel Industry**
Wen-qiang Sun* (Northeastern University), Ge Zhang, Xiao-ling Li, Liang Zhao, Jiu-ju Cai
- 16:10 - 17:20 **Resource Efficiency of Accompanying Elements**
Chair: Kazuyo Matsubae (Tohoku Univ.), Chunxia ZHANG (Central Iron & Steel Research Institute)
- [6G-KL2] **Potential and bottleneck for recovery and recycling of phosphorus in steelmaking slag**
Kazuyo Matsubae* (Tohoku University), Eiji Yamasue, Takahiro Miki, Tetsuya Nagasaka
- [6G-IL1] **Potential of steelmaking slag as phosphorus resource in terms of total material requirement**
Eiji Yamasue* (Kyoto University), Kazuyo Matsubae, Hideyuki Okumura, Keiichi N Ishihara
- [6G-4] **The refinability of end-of-life superalloy products**
Xin LU* (Tohoku University), Takahiro MIKI, Tetsuya NAGASAKA

Room I

- 14:00 - 15:20 **Instrumental Analysis 1**
Chair: Kazuaki Wagatsuma (Tohoku University), Shun Fujieda (Tohoku University)
- [6I-IL1] **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-1] **Quantification Method of Mn Interfacial Segregation using Aberration Corrected STEM-EELS**
Takafumi Amino* (Nippon Steel & Sumitomo Metal Corporation)
- [6I-2] **Observation of mobile dislocations in very thick sample using HVEM tuned for ferritic steel**
Katsumi Yamada* (JFE Steel), Haruo Nakamichi, Kaoru Sato, Kazunori Yasunaga, Takeshi Daio, Sho Matsumura
- [6I-3] **Elemental analysis of slag and inclusion in steel using a portable analyzer**
Susumu Imashuku* (Kyoto University), Issei Ohtani, Jun Kawai
- 16:10 - 17:30 **Instrumental Analysis 2**
Chair: Ryo Inoue (Akita University), Haizhou Wang (Central Iron & Steel Research Institute (CISRI))
- [6I-IL2] **Applications of laser-induced breakdown spectrometry for analysis of steel materials**
Gaku Kasahara, Chikage Abe, Shunsuke Kashiwakura, Kazuaki Wagatsuma* (Institute for Materials Research, Tohoku University)
- [6I-4] **A study of eutectoid and pre-eutectoid Fe₃O₄-Fe oxide scale on carbon steel**
ChaoChi 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**
Katsuhiko Sano* (D & D corporation), Hideyuki Kanematsu, Nobumitsu Hirai, Hajime Ikegai, Toshihiro 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

Program in Detail - October 7th (Wednesday)

October 7th (Wednesday)

Room A

- 9:00 - 10:10 **Reaction in Blast Furnace 1**
Chair: Shigeru Ueda (Tohoku University), Min Dong Joon (Yonsei University)
- [7A-KL1] **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**
Hyuk Kim* (R&D center, Hyundai-steel), Jong hyup Lee
- [7A-2] **Improvement of gas permeability of the dripping zone in blast furnace**
Shigeru Ueda* (Tohoku University), Tatsuya Kon, Hiroshi Nogami, Shin-ya Kitamura
- 10:40 - 12:00 **Reaction in Blast Furnace 2**
Chair: Joonho LEE (Korea University), Zhang Shu Hui (Hebei United University)
- [7A-3] **Reduction Process of Iron Oxide with Hydrogen at Low Temperature**
Zhiyuan Chen* (Institute of Industrial Science, The University of Tokyo), Ziyou Yu, Xiaojun Hu, Kuo Chih Chou, Kazuki Morita
- [7A-4] **Effect of Titanium Compounds on Melting Properties of the Medium-Titanium Slag**
lyu qing, liu xiao jie* (North China University of Science and Technology), sun yan qin, qie ya na, lan chen chen, li jian peng
- [7A-5] **State of the art pulverized coal (PC) injection technology**
Pierre MAHOWALD* (Paul Wurth S.A., Luxembourg), Ben MULLER, Louis SCHMIT
- [7A-6] **Study on the Effect of Chlorine on the Metallurgical Properties of Sinter**
Zhang Shu hui* (Hebei United University), Lan Chen Chen, Lu Qing, Sun Yan qin, Dong Xiao xu
- 13:30 - 15:30 **Reaction in Blast Furnace 3**
Chair: Taichi Murakami (Tohoku University), Tapan Kumar Naha (JSW STEEL LTD.)
- [7A-7] **Thermochemical modelling of the alkali balance in blast furnaces**
Anton Pichler* (Montanuniversitaet), Johannes Schenk, Franz Hauzenberger, Christoph Thaler, Hugo Stocker
- [7A-8] **Reduction Behavior of Calcium Ferrite in the Iron Ore Sinter under High Hydrogen Atmosphere and its Effect on the Disintegration**
Taichi Murakami* (Tohoku University), Takeyuki Kodaira, Eiki Kasai
- [7A-9] **Reduction behaviour and crushing strength of carbon-containing iron ore sinters prepared from COG tar**
Yuuki Mochizuki* (Hokkaido University), Rochim Bakti Cahyono, Naoto Tsubouchi, Tomohiro Akiyama
- [7A-10] **Investigation on Carbon-Deposition Behaviors of the Reduction of Sinter**
Wei Wang* (Wuhan University of Science and Technology), Donghai Zhang, Xiangwei Li, Hangyu Zhu, Kun Cao, Zhengliang Xue
- [7A-11] **Ironmaking process using carbon deposition by chemical vapor infiltration (CVI)**
Rochim Bakti Cahyono* (Hokkaido University), Takahiro Nomura, Tomohiro Akiyama
- [7A-12] **Blast Furnace Visualization Technologies**
Zhengkai Gao* (University of Science and Technology Beijing), Tianjun Yang, Jianliang Zhang, Yong Gao
- 16:10 - 18:00 **Fluid Flow in Blast Furnace**
Chair: Shungo Natsui (Hokkaido University), Govind Gupta (Indian Institute of Science)
- [7A-KL2] **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**
Shungo Natsui* (Hokkaido University), Tatsuya Kikuchi, Ryosuke O. Suzuki
- [7A-14] **Tacking the burden flow and the physical-chemical state in the cohesive zone of ironmaking blast furnaces through DEM-CFD simulation**
Yongxiang Yang* (Delft University of Technology), Allert Adema, Yuko Enqvist, Rob Boom
- [7A-15] **Development of Technique for Flow Analysis in Cohesive Zone of Blast Furnace**
Tatsuya Kon* (Tohoku Univesity), Shungo Natsui, Shigeru Ueda, Nobuhiro Maruoka, 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 (POSTECH)

[7B-1] Thermodynamics of Phosphorus in Fe-C_{sat}-Cr-P

Seok-Hyo Seo* (Hanyang University), Jung-Mock Jang, 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, Xuan Liu, Zhen Zhang, Hong-Yi Li

[7B-3] Activity of Phosphorus Pent-oxide and Tri-calcium Phosphate for the Solid

Ming Zhong, Hiroyuki Matsuura* (The University of Tokyo), Fumitaka Tsukihashi

[7B-4] Effect of flux composition on dephosphorization rate of molten steel

Mitsuhiro 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

11:00 - 12:00 **Refining 2**

Chair: Hiroyuki Matsuura (The University of Tokyo), Jose Roberto de Oliveira (Federal Institute of Espirito Santo)

[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 nepheline as a substitute for fluorspar in steelmaking slags

Masakatsu Hasegawa* (Kyoto University), Hiroshi Ozawa, Shuhei Kasahara, Yoshitaka Katahira

[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

13:30 - 15:00 **Refining 3**

Chair: Kimihisa Ito (Waseda University), Hiroyuki Matsuura (The University of Tokyo)

[7B-KL1] Application of various simulators to the steelmaking processes

Kimihisa Ito* (Waseda University)

[7B-9] Desulfurization of Molten Steel by Passing the Steel Droplets through a Slag Layer

Michela Alba, Sung-Hoon Jung, Min-Su Kim, Ji-Young Seol, Jeong-Do Seo, Youn-Bae Kang* (Pohang University of Science and Technology)

[7B-10] The study of high-efficiency desulphurization of stainless steel during LF refining process

Guoyu Qian* (University of Science and Technology Beijing), Guoguang Cheng, Liuyi LI, Yu LI, Jianguo Zhang, Chengshun Wang

[7B-11] Influence of the formed phases in the slag in the steel dephosphorization

Sabata Marla Reis Durao de Oliveira, Felipe Costa Broseghini, Heitor Cristo Clem de Oliveira, Silas Gambarine, Jose Roberto de Oliveira* (Federal Institute of Espirito Santo)

15:30 - 16:50 **Oxygen Steelmaking 1**

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

Gang Wen* (Chongqing University), Yu Wang, Wei tong 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

Shimpei Ono* (Nippon Steel & Sumitomo Metal Corporation), Teppei Tamura

Room C

9:00 - 10:30 **Inclusions 1**

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

[7C-KL1] Recent topics of basic research on high-grade steel production

Yoshiyuki Ueshima* (Nippon Steel & Sumitomo Metal Corporation), Toshiaki Mizoguchi, Norimasa Yamasaki

[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), Kazuhiko Iwai

[7C-2] Simulation of composition change in inclusions of Si-killed steel

Sun-Joong Kim* (Tohoku University), Akifumi Harada, Masafumi Zeze, Norifumi Asahara, Fuxiang Huang, Shin-ya Kitamura

[7C-3] In-situ observation on the behaviors of various non-metallic inclusions on the surface of molten steel

Youngjo Kang* (Dong-a University), Du Sichen, Kazuki Morita

11:00 - 12:00 **Inclusions 2**

Chair: Kenichiro Naito (Nippon Steel & Sumitomo Metal Corporation), Youngjo Kang (Dong-a University)

[7C-IL1] Effect of inclusions' behaviour on the microstructure of Al-Ti deoxidized and magnesium or calcium treated steel with different Al content

Guangqiang Li* (1. State Key Lab. of Refractories and Metallurgy, Wuhan University of Science and Technology, 2. Hubei Collaborative Innovation Center for Advanced Steels), Wan Zheng, Zhenhua Wu, Hiroyuki Matsuura, Fumitaka Tsukihashi

[7C-4] Phase relations of the FeS-MnS-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

13:30 - 15:00 **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 Oikawa* (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, Guiping Feng

[7C-8] Corrosion behavior of spinel refractory in high MnO containing slags

Junmo Jeon* (Korea Polytechnic University), Kyuyong Lee, Yongsug Chung

[7C-KL2] Thermodynamics of nitride and oxide formation in high alloy steel melts

Jong-Jin Pak* (Department of Materials Engineering, Hanyang University, ERICA), Jung-Mock Jang, Min-Kyu Paek, Youn-Bae Kang

15:30 - 16:50 **Inclusions 4**

Chair: Shigeru Ueda (Hokkaido University), Lifeng Zhang (USTB)

[7C-9] Effect of Ce₂O₃ on the Sulfide Capacity and Structure of MnO-SiO₂-Al₂O₃-Ce₂O₃ System

Se Ji Jeong* (Hanyang University), Tae Sung Kim

[7C-10] Kinetics of copper sulfide growth in low carbon steel

Kentaro Urata* (Tokyo Institute of Technology), Yoshinao Kobayashi, Rie Endo, Masahiro Susa

[7C-11] Evolution behavior of TiN inclusions in solid steel at 1473 K

MINGGANG LI* (The University of Tokyo), Wonjin CHOI, Hiroyuki MATSUURA, Fumitaka TSUKIHASHI

[7C-IL2] Removing more oxide inclusions and modifying their composition in 304 stainless steels - which one is more important?

Ying Ren, 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 Furuhashi (Tohoku University), Zhi-gang Yang (Tsinghua University)
- [7D-IL1] **Dynamic transformation behavior of a high carbon steel**
Chiradeep Ghosh* (R&D Division, Tata Steel), John J Jonas
- [7D-IL2] **Diffusion/negligible 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), Zenan Yang
- [7D-1] **Reverse transformation of austenite from martensite in Fe-Mn-Si-C alloy during intercritical annealing**
Takeshi Kaneshita* (Graduate Student, Tohoku University), Yasuki Yoshida, Zhen-qing Liu, Goro Miyamoto, Tadashi Furuhashi
- 10:40 - 11:40 **Phase Transformation 2**
Chair: Tadashi Furuhashi (Tohoku University), Zhi-gang Yang (Tsinghua University)
- [7D-IL3] **A model for strain-induced martensitic nucleation**
Tae-Ho LEE* (Korea Institute of Materials Science (KIMS)), Heon-Young HA, Jun-Yun KANG, Joonoh 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-Heon Kim, Alireza 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-IL4] **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, Zhenjia 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), Xianghua Liu, Wayne J Liu, Shukun Miu
- [7D-6] **Precipitation Strengthening by VC/NbC/TiC Interphase Precipitation in Low-carbon Steels**
Yongjie Zhang* (Tohoku University), Goro Miyamoto, Naoya Kamikawa, Kunio Shinbo, Tadashi Furuhashi
- [7D-IL5] **Microstructure and mechanical properties of multi-step super bainite steels**
Wen Zhou, Cong Zhang, Xinglong 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-KL1] **Segregation engineering enables nanostructured bulk steels by confined martensite-to-austenite reversion**
Dierk Raabe* (Max-Planck-Institut fuer Eisenforschung)
- [7D-7] **Toughening of Ultrahigh Strength Low-Alloy Steels through Warm Tempforming**
Yuuji 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-IL6] **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: Yoshihiro Terada (Tokyo Institute of Technology), Kaiming Wu (Wuhan University of Science and Technology)
- [7E-IL1] **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, Ruwen Zheng, Jingfan Hu
- [7E-2] **Effects of Martensite Substructure on Mechanical Properties of Dual Phase Steels**
Toshio Murakami* (Kobe Steel Ltd.), Toshiya 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
- 10:40 - 12:00 **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 Akama, Nobuo Nakada, Yoshihiro Tsuchiyama, Setsuo Takaki
- [7E-5] **Effects of Alloy and Processing Temperature on the Microstructures and Mechanical Properties of 540Y Hot-rolled Dual Phase Steels**
Yuan-Tsung Wang* (China Steel Corporation, Kaohsiung)
- [7E-6] **Advance in Skin-Pass Milling in the Continuous Annealing Process**
Marc Blumenau* (ThyssenKrupp Steel Europe AG), Udo Zocher, Christian Schmidt, Joerg Steinebrunner
- [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, Ruwen Zheng, Jingfan Hu
- 13:30 - 15:20 **Steel Sheet 3**
Chair: Toshio Murakami (KOBEL STEEL, LTD.), Young-Kook Lee (Yonsei University)
- [7E-KL1] **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 Fourlaris
- [7E-9] **Forming technologies with use of high strength steels for automotive parts**
Toshiaki Urabe* (JFE Steel Corporation), Akinobu Ishiwatari, Masaki Urabe, Eiji Iizuka
- [7E-10] **Effect of chemical composition on solidification cracking susceptibility in laser welding close to steel sheet ends.**
Masatoshi 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 steel sheet**
Akihiko Nagasaka* (National Institute of Technology, Nagano College), Yuki Shimizu, Junya Naito, Shinji Sato, Tomohiko Hojo
- 15:50 - 17:30 **Mechanical Properties 1**
Chair: Shuji Aihara (The University of Tokyo), Chong Soo Lee (POSTECH, GIFT)
- [7E-IL2] **Overview of the studies on microstructure-toughness relationships in steels**
Shuji Aihara* (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, saiji matsuoka
- [7E-13] **Study on fatigue crack growth behaviour of DP780 dual phase steel**
Shengci Li* (University of Science and Technology Beijing), Yonglin Kang, Guoming Zhu, Shuang Kuang
- [7E-14] **Effect of carbide size on ductile fractures in quenched steels**
Masahide Yoshimura* (Nippon Steel & Sumitomo Metal Corporation), Masanori Minagawa, Masaaki Fujioka
- [7E-IL3] **Understanding fracture toughness based on dislocation behaviors**
Kenji Higashida* (kyushu University), Masaki Tanaka

Program in Detail - October 7th (Wednesday)

Room F

9:00 - 10:40 Kinetics & Reaction

Chair: Shin-ya Kitamura (Tohoku 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, Joonho 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, Takuto Mizutani, Takashi Inami

[7F-3] Kinetics of lime dissolution in steelmaking slags

Elizaveta Cheremisina* (Chair of Ferrous Metallurgy, Montanuniversitaet Leoben), Johannes Schenk, Tamara Tappeiner, Axel Sormann, Gerald Wimmer

[7F-4] Influence of oxidizing atmosphere in nuclear reactor on reaction between B₄C and austenitic stainless steel

Ryosuke Sasaki* (Tohoku University), Shigeru Ueda, Sun-Joong Kim, Xu Gao, Shin-ya Kitamura

[7F-5] Deviation Behavior from Sieverts Law in Nitrogen Dissolution to Molten High Alloys

Hidekazu Todoroki* (Nippon Yakin Kogyo Co., Ltd.), Yusuke Kobayashi, Natsuki Shiga

11:00 - 12:10 Casting Technology

Chair: Hidekazu Todoroki (Nippon Yakin Kogyo Co., Ltd.), Dipak Mazumdar (Indian Institute of Technology)

[7F-KL1] An experimental and computational study of casting of large, round, steel ingots

Soumava Chakraborty, Sachin Bhambure, Sanjay Patil, Dipak Mazumdar* (Indian Institute of Technology)

[7F-6] Prediction of δ ferrite content in TYPE304 austenitic stainless steel slab by multi-phase field method.

Takafumi Kawagoe* (NISSHIN STEEL CO.,LTD.), Junichi Katsuki

[7F-7] Predication of shrinkage porosity for steel ingot using a novel applicable criterion

Chaojie Zhang* (University of Science and Technology Beijing), Wei Jiang, Ying Wen, Zhifang Ru, Min Wang, Yanping Bao

13:30 - 14:50 Surface Science & Corrosion 3

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

Tomoaki Saida* (Nisshin 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

Yasoji Tsukaue* (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), Noburiho 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 Tomio* (Nippon Steel & Sumitomo Metal Corporation)

15:10 - 16:30 Steel Plate 1

Chair: Kazukuni Hase (JFE Steel Co.), Chiradeep Ghosh (Tata Steel Limited)

[7F-IL1] 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, Hironori Wakamatsu, Toshimichi Nagao, Kazushi Ohnishi

[7F-13] Development of abrasion-resistant steel with high toughness by microstructure refinement

Naoki Takayama* (JFE Steel Corporation), Yuki Toji, Shinichi Miura, Keiji Ueda, Akio Oomori, Nobuyuki Ishikawa, Kazukuni Hase, Yasuhiro Murota, Kiyomi Araki

[7F-14] Energy Efficiency Improvements in Processing Lines

Michel Renard* (Drever International S.A.), Jean-Pierre Crutzen, Jean-Marc Raick, Wei Song, Bin Zhi Ma, Yang Wang

16:50 - 17:50 Steel Plate 2

Chair: Kazukuni Hase (JFE Steel Co.), Chiradeep Ghosh (Tata Steel Limited)

[7F-15] Research on Roll 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 Q420FRE

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 Kumagai

Room G

9:00 - 10:20 Future Demand and Recycling of Steel

Chair: Ichiro Daigo (The University of Tokyo), Tao Wang (Ritsumeikan University)

[7G-IL1] The pending peak steel in China: Driving forces and implications

Tao Wang* (Ritsumeikan University), Seiji Hashimoto

[7G-1] Contamination Behavior of Impurities in Steel Recycling Systems

Ichiro Daigo* (The University of Tokyo), Chihiro Murayama, Yoshikazu Goto

[7G-2] Evaluation of a performance of steel recycling systems restricted by copper contamination

Ryo Matsuhashi* (The University of Tokyo), Ichiro Daigo, Yoshikazu Goto

[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 1

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 System

Jiang Diao* (Chongqing University), Lu Jiang, Zhen Zhang, Bing Xie, Hong-Yi Li

[7G-6] Quantitative Analysis for Crystallinity of Super-cooled Silicate Melt Characterized by Electrical Capacitance Measurement

Yusuke Harada, Noritaka Saito* (Kyushu University), Kunihiko Nakashima

[7G-7] Dissolutive wetting and spreading phenomena between CaO-Al₂O₃ slag and Al₂O₃.

Seon-jin Kim* (Korea Polytechnic University), Kyuyong Lee, Yongsug Chung

[7G-8] Effect of alkali cation and borate structure on thermal conductivity in the R₂O-B₂O₃ (R = Li, Na, K) melt

Youngjae Kim, Kazuki Morita* (The University of Tokyo)

15:30 - 17:10 High Temperature Properties 2

Chair: Noritaka Saito (Kyushu University), Yongsug Chung (Korea Polytechnic University)

[7G-IL2] 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* (Hanyang University)

[7G-10] Surface tension of CaO-SiO₂-Al₂O₃-MgO Melts

Sohei Sukenaga* (Tohoku 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-IL1] 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* (Idemitsu Kosan Co., Ltd.), Nobuhide Tanino, Hiroshi Utsunomiya
- 10:40 - 11:20 **Rolling Control**
Chair: Noriyuki Suzuki (Nippon Steel & Sumitomo Metal Corp.)
- [7H-IL2] "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] Blister Formation Behaviour during Scale Formation of Steel**
Yasumitsu Kondo* (Nippon Steel & Sumitomo Metal Corporation), Hiroshi Tanei, Kohsaku Ushoda, Muneyuki Maeda
- [7H-4] Effects of Initial Scale Structure on Transformation Behaviour of FeO**
Hiroshi Tanei* (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), Kenta Kanai, Eiji Abe, Takashi 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), Kenta Tsujii, Naohide Kamiya, Keisuke Inoue
- 16:10 - 16:50 **Bar Steel Rolling**
Chair: Jun Yanagimoto (The University of Tokyo)
- [7H-IL3] User-friendly 3D FEM Simulation System for Bar and Wire Rod Rolling Processes**
Jun Yanagimoto* (Institute of Industrial Science, The University of Tokyo), Motoo Asakawa
- [7H-8] Optimization of pipeline steel rolling processes at Heavy Plate Mill 5000 by the physical modelling**
Andrey Chastukhin* (OMK, Vyksa Steel Works), Ringinen 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 Imafuku, Shun Fujieda, Yusuke 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, Ryu-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 Taketani,
Masato Takamura, Yoshichika Seki, Masako Yamada, Takao Hashiguchi, Sheng Wang,
Hideyuki Sunaga, Masayoshi Kumagai
- [7I-3] Advanced x-ray stress/strain analysis methods for ultimate textured materials using x-ray area detector**
Muneyuki Imafuku* (Tokyo City University), Shinki Tsubaki, 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**
xu ben ping* (Panzhuhua 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 Kinoshiro* (JFE Steel Corporation), Tomoharu Ishida, Masao Inose, Masayasu Nagoshi

October 8th (Thursday)

Room A

- 9:00 - 10:00 **Direct Reduction**
 Chair: Shen Fengman (Northeastern University), Gour Gopal Roy (Indian Institute of technology)
- [8A-IL1] A new direct reduction technology of Ore-Coal composite with high temperature and tall pellets bed**
 Fengman Shen* (Northeastern University), Xin Jiang, Qiulin Wen, Haiyan Zheng, Qingfeng Tan, Yongqiang Li
- [8A-IL2] 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, Gour Gopal Roy* (Department of Metallurgical & Materials Engineering, Indian Institute of Technology), Prodip Kumar Sen
- [8A-1] Carbothermic reduction of iron ore/coal composite pellets under different temperature-time paths**
 Hao Hsun Chang* (National Cheng Kung University), In Gann Chen, Shih Hsien Liu, Ke Miao Lu, TSUNG YAN HUANG, JIA SHIAN SHIAU, GUAN JOU CHEN, Po Ting Lai, JIE YI CHEN
- 10:20 - 12:00 **Fundamental of Sintering**
 Chair: Miyuki Hayashi (Tokyo Institute of Technology), Sungmo Jung (Postech)
- [8A-IL3] Assimilation behavior of quasi-particles comprising high alumina pisolitic ore and ultrafine iron ores**
 Ji-Won Jeon, Sung-Wan Kim, In-Kook Suh, Sung-Mo Jung* (Pohang University of Science and Technology)
- [8A-2] Liquidus composition on the FeO_x rich region of the FeO_x-CaO-SiO₂**
 Yoshitaka Katahira* (Tokyo Institute of Technology), Miyuki Hayashi, Takashi Watanabe
- [8A-3] Application of DSC to study liquid phase formation in iron ore sintering**
 Haibin Zuo, Cong Wang* (State Key Laboratory of Advanced Metallurgy, University of Science and Technology Beijing), Guang Wang, Qingguo Xue
- [8A-4] Dual Flux Iron Ore Pellets: Quality and Microstructure**
 Srinivas Dwarapudi* (Tata Steel), Chandra Sekhar, Indrajit Paul, YGS Prasad, Ujjal Chakraborty
- [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
- 13:30 - 14:30 **Sintering Process**
 Chair: Eiki Kasai (Tohoku University), Haiyan Leng (Shanghai Univeristy)
- [8A-IL4] 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-6] Effect of fine coke combustion behavior in quasi-particle on temperature distribution of iron ore sintering process**
 Ko-ichiro Ohno, Hiroshi Ogi* (Kyushu University), Keigo Noda, Koki Nishioka, Takayuki Maeda, Masakata Shimizu, Kazuya Kunitomo
- [8A-7] Improvement of Iron Ore Granulation by Micro-Particles Addition**
 Yasuhide Yamaguchi* (Nippon Steel & Sumitomo Metal Corporation), Shinji Kawachi, Chikashi Kamijo, Masaru Matsumura, Seiji Nomura
- 14:50 - 15:50 **Recycle and Recovery Technology**
 Chair: Takashi Orimoto (NSSMC), CHU Mansheng (Northeastern University)
- [8A-IL5] A novel process to efficiently recycle valuable elements from stainless steel dusts**
 MANSHENG CHU* (Northeastern university), Sok Chol Ri
- [8A-8] Innovative solutions for granulation of bf slags**
 Horst KAPPES* (Paul Wurth S.A., Luxembourg), Marc SCHWEITZER, Daniel MICHELS
- [8A-9] Microwave synthesis of TiFe hydrogen storage alloy from titanium oxide and iron oxide**
 Zhigang Yu, Haiyan Leng* (Shanghai University), Qian Li, Kuo-Chih CHOU

Room B

- 9:00 - 10:20 **Continuous Casting: Mold Flux 1**
 Chair: Sohei Sukenaga (Tohoku university), Jung-Wook Cho (Pohang University of Science and Technology)
- [8B-IL1] Thermo-physical properties of novel B₂O₃ containing calcium-silicate based continuous casting mold fluxes**
 IL SOHN* (Yonsei University Materials Science and Engineering), Jun-Yong Park, Se-Woong Park
- [8B-1] Effect of bubbles on the radiative heat transfer across mould flux**
 Shunsuke Takahashi* (Tokyo Institute of Technology), Yoshinao Kobayashi, Rie Endo, Masahiro Susa
- [8B-2] A reaction mechanism between Al-containing steel and CaO-SiO₂-type molten mold flux**
 Min-Su Kim* (Graduate Institute of Ferrous Technology, Pohang University of Science and Technology), Min-Seok Park, Sin-Eon Kang, Joong-Kil Park, Youn-Bae Kang
- [8B-3] Valence change of iron ions in mould flux for reduction of radiative heat transfer**
 Yoshinao Kobayashi* (Tokyo Institute of Technology), Ryota Maehashi, Rie Endo, Masahiro Susa
- 10:40 - 12:00 **Continuous Casting: Mold Flux 2**
 Chair: Takeshi Yoshikawa (The University of Tokyo), IL Sohn (Yonsei university)
- [8B-4] Effects of additions of silicon, aluminium and calcium silicide on heat transfer across mould 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-Na₂O-K₂O-Li₂O-Al₂O₃-SiO₂-ZrO₂-F**
 In-Ho Jung* (McGill University), Marie-Aline Van Ende, Dong-Geun Kim, Bikram Konar, 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, Chunlong 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* (ChongQingUniversity), 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-Wook Cho* (Pohang University of Science and Technology), Myung-Duk Seo, Seon-Hyo Kim
- [8B-9] Crystallization, 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), Qifeng Shu, Kuo-chih 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-ya 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-ya Kitamura, Min Oh Seok

Program in Detail - October 8th (Thursday)

Room C

- 9:00 - 10:20 **Electrical Steelmaking**
Chair: Youngjo Kang (Dong-a University), Hong-Yi Li (Chongqing University)
- [8C-1] **Optimization Results of applying Dynamic Control for the EAF Chemical Energy using Tenova Goodfellow EFSOP® Technology at Kanto Steel, Japan**
Hamzah Alshawarghi* (Tenova Goodfellow Inc.), Armando Vazquez
- [8C-2] **Mechanisms of the selective chlorination and evaporation reactions of noble elements contained in EAF dust**
GUODONG SUN* (The University of Tokyo), Hiroyuki Matsuura, Fumitaka Tsukihashi
- [8C-3] **Reduction Behavior of FeO in EAF Slags by Aluminothermic Process**
Jung Ho Heo* (Hanyang University)
- [8C-4] **Application of EAF for melting ferro-alloy to stainless steel making shop in Yawata Works**
Naoki Kaneko* (Nippon Steel and Sumitomo Metal Corporation), Katsuhiko Kato, Yasuhiro Tanaka
- 10:40 - 11:40 **Utilization of Slag**
Chair: Fumitaka Tsukihashi (The University of Tokyo), Joohyun Park (Hanyang University)
- [8C-5] **Extraction of vanadium and chromium from the vanadium slag with high chromium content**
Hong-Yi Li* (Chongqing University), Kang Wang, Hai-Xing Fang, Bing Xie
- [8C-6] **Reduction of FeO by Al for Environmentally-kindly Metallurgical Process**
Jaehong Lee* (Korea University), Joon Seok Oh, Joonho Lee
- [8C-7] **Effects of MnO and B₂O₃ addition on mineralogical phases of CaO-Al₂O₃-MgO-SiO₂-CrOx slag**
Qifeng shu* (university of science and technology Beijing), Qingyun Luo, Kuochih Chou
- 13:30 - 14:50 **Coking and Utilization of Coke**
Chair: Ryuichi Ashida (Kyoto University), Jianlinag Zhang (USTB)
- [8C-8] **Paul Wurth modern top and stamp charging technology**
Antonio ESPOSITO* (Paul Wurth Italia S.p.a.), Maurizio BISOGNO, Fabrizio STROBINO
- [8C-9] **State-of-the-art coke oven machines**
Alessandro MOLINARI* (Paul Wurth Italia S.p.a.), Giovanni SIRI, Fabrizio STROBINO
- [8C-10] **Effect of variable process conditions on the reactivity, strength and structural features of blast furnace cokes**
Anrin Bhattacharyya* (Montanuniversitaet Leoben), Gerd Rantitsch, Johannes Schenk, Christoph Thaler, Hugo Stocker
- [8C-11] **Utilization of Semi-coke in Ironmaking Technologies in China**
Jianliang Zhang* (University of Science and Technology Beijing), Kejiang Li, Bing Gao, Zhe Wang, Youyuan Jiang, Donghua Huang, Xian Jia, Zhengjian Liu, Tianjun Yang
- 15:10 - 16:10 **Fundamental of Coke**
Chair: Seiji Nomura (NSSMC), Anrin Bhattacharyya (Montanuniversitaet Leoben)
- [8C-12] **Production of metallurgical coke utilizing low-rank coals upgraded by mild solvent treatment**
Ryuichi Ashida* (Kyoto University), Kazumi Iwase, Kouichi Miura
- [8C-13] **Effects of Poly-aromatic Hydrocarbons Addition on Dilatation and Fluidity of Coal in the Thermoplastic Phase**
Hideyuki Hayashizaki* (Advanced Technology Research Laboratories, Nippon Steel & Sumitomo Metal Corporation), Yuji Fujioka, Koji Kanehashi, Kazuya Uebo
- [8C-14] **Effects of blended coal thermoplastic and dilatation behaviour on coke pore**
Sadayoshi Aizawa* (Nippon Steel & Sumitomo Metal Corporation), Yusuke Hayashi, Kazuya Uebo, Seiji Nomura, Takashi Arima

Room D

- 9:00 - 10:20 **Microstructure Control & Alloy Design 3**
Chair: Toshihiro Tsuchiyama (Kyushu University), Sung-Joon Kim (POSTECH)
- [8D-1] **A revolutionary process for developing {100}-textured electrical steels and their magnetic properties**
Nam-Hoe Heo* (GIFT, POSTECH), Sung Joon Kim
- [8D-2] **Magnetic field effect on growth of Fe₃C in carbon coated iron during heat treatment**
Matahiro Komuro* (Hitachi, Ltd.) Masafumi Nojima, Kazuya Shinagawa
- [8D-3] **Inhibitor precipitation and magnetic properties of CGO/CSP**
Weimin Mao* (Department of Materials, University of Science and Technology Beijing), Ping Yang
- [8D-4] **The preparation of sintered Fe-6.5wt.%Si soft magnetic core with SiO₂ coated Fe-6.5wt.%Si particles**
Zhaoyang Wu* (State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology), Xi'an Fan, Guangqiang Li, Jian Wang, Zhanghua Gan
- 10:40 - 12:20 **Simulation & Modeling**
Chair: Toshiyuki Koyama (Nagoya University),
Guangqiang Li (Wuhan University of Science and Technology)
- [8D-IL1] **Bridging phase-field microstructure modeling and image-based mechanical property calculation**
Toshiyuki Koyama* (Nagoya Institute of Technology)
- [8D-IL2] **Bayesian-neural network approach to prediction of stress-strain curve**
Yoshitaka Adachi* (Department of Mechanical Engineering, Graduate School of Science and Engineering Kagoshima University), Sunao SADAMATSU
- [8D-5] **Mesoscopic grain growth simulations of austenitic stainless steels with pinning particles using phase-field method**
Akira Seki* (Nippon Steel & Sumitomo Metal Corporation), Masayoshi Sawada, Kazuhiko Adachi
- [8D-6] **First-principles study on the interaction of Mn with oxide inclusions in Al-Ti-Mg killed steels**
Yanhui Hou, Guangqiang Li* (The State Key Laboratory of Refractories and Metallurgy, Wuhan University of Science and Technology), Muxing Guo, Nele Moelans
- [8D-7] **Simulation of stud arc welding process and statement of the microstructure and residual stress**
Hadi Soltanzadeh* (Bauhaus University Weimar-Germany), Joerg Hildebrand
- 13:30 - 14:30 **Steel Bar & Wire 1**
Chair: Atsushi Inada (KOBEL STEEL, LTD.), Kyung-Tae Park (Hanbat National University)
- [8D-IL3] **Developments and future challenges on special steel wire rod and bar**
Atsushi Inada* (Research & Development laboratory, KOBEL STEEL, LTD.)
- [8D-8] **Kinetics and formation mechanisms of intragranular ferrite nucleation in the V-N microalloyed 600MPa high strength rebars**
Jing Zhang* (University of Science and Technology Beijing), Changrong Li
- [8D-9] **Development of High Performance Pearlitic Rail (SP3) with High Wear Resistance and Rolling Contact Fatigue Resistance for Heavy Haul Railways**
Minoru Honjo* (JFE Steel Corporation), Tatsumi Kimura, Katsuyuki Ichimiya, Kazukuni Hase, Mineyasu Takemasa, Ryo Matsuoka
- 15:10 - 16:10 **Steel Bar & Wire 2**
Chair: Atsushi Inada (KOBEL STEEL, LTD.), Kyung-Tae Park (Hanbat National University)
- [8D-10] **Plastic deformation of cold-drawn pearlitic steel at low homologous temperatures**
Byung-Ho Choi, Kyung-Tae Park* (Dept. Mater. Sci. Eng., Hanbat National University)
- [8D-11] **Effects of Mo content and austenitizing temperature on hardenability of Mo-B steels**
Kyohei Ishikawa* (Nippon Steel & Sumitomo Metal Corporation), Hirofumi Nakamura, Masaaki Fujioka, Ryuichi Homma, Manabu Hoshino
- [8D-12] **Effect of microshot peening on surface characteristics and fatigue strength of spring steel**
Yasunori Harada* (University of Hyogo), Syusei Tanaka, Masanori Nakatani

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Room E

- 9:00 - 10:20 **Mechanical Properties 2**
Chair: Setsuo Takaki (Kyushu University), Shengci Li (University of Science and Technology Beijing)
- [8E-IL1] **Mechanism of an extremely superior deep drawability found in electro-deposited pure iron and its recrystallization texture formation**
NAOKI YOSHINAGA* (Nippon Steel & Sumitomo Metal Corporation, Sheet & Coil Research Lab., Steel Research Laboratories), Natsuko Sugiura, Kohsaku Ushioda
- [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 Furuhashi
- [8E-2] **Effect of Plastic Pre-Deformation on Transformation Plasticity Coefficient in a Three-Point Bending System**
M. Arif Hamdam* (Tokyo University of Agriculture and Technology), Ryota Miyamoto, Shigeru Nagaki, Kenichi Oshita
- [8E-3] **Analysis of springback behaviour of steel sheets for cans assuming non-uniform stress distribution**
Mikito 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-KL1] **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), Toshihiro Tsuchiyama, Nobuo Nakada, Daichi Akama
- [8E-4] **Quantitative analysis of yield point phenomena in hot-rolled low carbon steels**
Ho Yong Um* (POSTECH), Ji Yun Kang, Hyeok Jae Jeong, Kang Hyun Choi, Jaewung Bae, Jea-Sook Chung, Sang Hyun Lee, Hyoung Seop Kim
- [8E-5] **Measurement and analysis of the Bauschinger effect of a steel tube subjected to axial preloading followed by biaxial stretching**
Daisaku Yanaga* (Nippon Steel & Sumitomo Metal Corporation), Kouichi Kuroda, Satoshi Yaita, Toshihiko Kuwabara
- [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-IL2] **Analysis of mechanical behavior in nitrogen-added duplex stainless steels by nano-indentation and in-situ neutron diffraction**
Heung Nam Han* (Department of Materials Science and Engineering and Center for Iron and Steel Research in RIAM, Seoul National University), Yong Min Kim, Ji-Yeon Koh, Keunho Lee, Tae-Ho Lee, Wan Chuck Woo
- [8E-7] **Yielding and work hardening of $\alpha+\gamma$ and $\alpha'+\gamma$ interlath structures in an Fe-10Mn-3Al-0.2C based alloy**
Yoon-Uk Heo* (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, Nozar Anjabin, Seungmi Baek, Byoung Ho Park, Sung Kyu Kim, Kwang-Geun Chin, Sunghak Lee, Hyoung Seop Kim
- [8E-9] **Influence of Tensile Strain on Young's Modulus in High-strength Cold-rolled Steel Sheets**
Taro Kizu* (JFE Steel Corporation), Kaneharu Okuda, Yasunobu Nagataki, Toshiaki Urabe, Kazuhiro 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 Sakairi (Hokkaido University), Xuejun Jin (Shanghai Jiao Tong University)
- [8F-KL1] **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 Hye Shim
- [8F-1] **Hydrogen embrittlement evaluation criteria for ultra-high strength steels**
Shusaku Takagi* (JFE Steel corporation), Satoshi Terasaki, Kaneaki Tsuzaki, Tadanobu Inoue, Fumiyo Minami
- [8F-IL1] **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 Sakairi (Hokkaido University), Xuejun Jin (Shanghai Jiao Tong University)
- [8F-IL2] **Recent research progress in creation of hydrogen-passive surfaces on steels to prevent of hydrogen embrittlement**
Masatoshi Sakairi* (Hokkaido University)
- [8F-IL3] **Hydrogen embrittlement of Fe-18Mn-0.6C-xSi TWIP steels**
Young-Kook Lee* (Yonsei University), Sang-Min Lee, Il-Jeong Park
- [8F-2] **Effect of grain size and solute hydrogen on the tensile properties and fracture behaviour of an austenitic steel**
Arnaud Macadre* (International Institute for Carbon-Neutral Energy Research), Nobuyuki Nakada, Toshihiro Tsuchiyama, Setsuo Takaki
- 13:30 - 15:00 **Processing Technique**
Chair: Toshihiko Kuwabara (Tokyo University of Agriculture and Technology), Beomsoo Kang (Pusan National University)
- [8F-KL2] **Fabrication of aircraft winglet mold through multi-point dieless forming process**
Beomsoo Kang* (Pusan National University), Jiwoo Park, Kwangho Kim
- [8F-3] **Influence of phase transformation on the forming properties of manganese-boron steel 22MnB5 while cooling according to industrial press hardening processes**
Peter Birnbaum* (TU Chemnitz IWP), Dirk Landgrebe, Verena Krausel
- [8F-4] **Development of rolling technology for pipe steel grades at casting and rolling complex (OMK company)**
Alexander Muntin* (Vyksa Steel Works), Leonid Efron, Nikolay Rybkin, Vitaliy Naumenko, Dmitriy Ringinen, Alexey Chervonnyy
- [8F-5] **Effect of traditional TRIP on microstructure and mechanical properties of a cold-rolled MnAl TRIP-Aided steel**
Yujuan Zhang, Fei Peng, Xiaodong Tan, Yunbo Xu* (State Key Laboratory of Rolling and Automation, Northeastern University)
- 15:20 - 16:20 **Processing Technique**
Chair: Toshihiko Kuwabara (Tokyo University of Agriculture and Technology), Beomsoo Kang (Pusan National University)
- [8F-IL4] **Multiaxial and in-plane reverse loading tests on steel sheets in support of material modelling and accurate sheet forming simulations**
Toshihiko Kuwabara* (Tokyo University of Agriculture and Technology)
- [8F-6] **Formability of titanium/steel/titanium sheet in multistage deep drawing**
Yasunori Harada, Syuji Hattori* (University of Hyogo), Minoru Ueyama
- [8F-7] **Square cup deep drawing of pure titanium sheet**
Yasunori Harada, Minoru Ueyama* (University of Hyogo), Syuji Hattori

Program in Detail - October 8th (Thursday)

Room G

- 9:00 - 10:20 **Systems Technology**
Chair: Isao Ono (Tokyo Institute of Technology)
- [8G-IL1] A Scheduling Algorithm for Multi-Stage Job-Shop Scheduling Process with Crane Handling**
Takashi Tanizaki* (Kinki University)
- [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 Torikai, Kentaroh Shiga, Ryuusei Matsunaga
- [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), Kazuro Tsuda
- 10:40 - 11:50 **Control and Energy Saving**
Chair: Hiroyasu Shigemori (JFE Steel Corporation)
- [8G-KL1] Total dynamic control of ironmaking plant energy circulation**
Koji Tsumura* (The University of Tokyo)
- [8G-4] Flexible and highly accurate thickness control system for tandem cold mills**
Toshihiro Nii* (Toshiba Mitsubishi-Electric Industrial Systems Corporation), Atsuyoshi Andoh, Shigeharu Hamada, Yukichi Nobukuni
- [8G-IL2] The most advanced power saving technology in EAF introduction to ECOARC™**
Yasuhiro Sato* (JP Steel Plantech Co.), Takayoshi Nagai, Toshiaki Sugawara, Mitsuhiro Fujimoto
- 13:30 - 15:00 **Instrumentation**
Chair: Hirohisa Yamada (Nippon Steel & Sumitomo Metal Corporation)
- [8G-KL2] 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-5] Surface-breaking superficial crack detection by use of high-frequency leaky surface acoustic wave**
Takafumi Ozeki* (JFE Steel), Hajime Takada
- [8G-6] System for measuring thickness of multiple layers using eddy current probe (Laboratory test results)**
Junichi Yotsuji* (JFE Steel Corporation)
- [8G-7] Imaging measurement of the whole wall of high temperature coke oven chambers**
Masato Sugiura* (Nippon Steel & Sumitomo Metal Corporation), Michitaka Sakaida

Room I

- 9:00 - 10:50 **Quantum Beam Analysis (XAFS and XRD)**
Chair: Shigeru Suzuki (Tohoku University), Susumu Imashuku (Kyoto University)
- [8I-KL1] 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-1] Analysis of reduction process of calcium-ferrites by in situ XRD and XAFS**
Reiko Murao* (Advanced Technology Research Laboratories, Nippon Steel & Sumitomo Metal Corporation), Masao Kimura
- [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)), Reiko Murao
- [8I-3] Observation of reduction of calcium-ferrites and iron-ore sinters using synchrotron radiation: in situ observation of reduction kinetics and its heterogeneous behavior**
Masao Kimura* (High Energy Accelerator Research Organization (KEK)), Reiko Murao, Yasuo Takeichi, Noriaki Ohta, Kengo Naomi

- [8I-4] In situ measurements of X-ray absorption spectra during transformation of green rust in aqueous solution containing phosphate ions**
Shun Fujieda* (Institute of Multidisciplinary Research for Advanced Materials, Tohoku University), Kozo Shinoda, Shigeru Suzuki

- 11:10 - 12:10 **Quantum Beam Analysis (Applied Materials)**
Chair: Muneyuki Imafuku (Tokyo City University),
Reiko Murao (Nippon Steel & Sumitomo Metal Corporation)

- [8I-5] Microstructural characterization of Cu-added transformation induced plasticity steels**
Yu Yasuda, EuiPyo Kwon, Shigeo Sato, Shun Fujieda, Kozo Shinoda, Shigeru Suzuki* (Tohoku University)
- [8I-6] Size distribution of precipitates in age-hardenable electromagnetic stainless steels determined using small angle X-ray scattering**
Kozue Satoh* (Institute for Materials Research, Tohoku University), Shigeo Sato, Masato Ohnuma, Tatsuya Naruse, Yonghwan Kim, Takashi Ebata, Shigeru Suzuki, Kazuaki Wagatsuma
- [8I-7] Characterization of dislocations of cold-drawn pearlitic steels using synchrotron X-ray diffraction**
Shigeo Sato* (Ibaraki University), Kazuaki Wagatsuma, Kozue Satoh, Hiromi Ogawa, Masayoshi Kumagai, Muneyuki Imafuku, Hitoshi Tashiro, Takahisa Shobu, Shigeru Suzuki