The 176th ISIJ Meeting

Date

September 19 to 21, 2018

Venue

Tohoku University, Kawauchi Campus
(41 Kawauchi, Aoba-ku, Sendai, Miyagi, Japan 980-8576)
https://www.tohoku.ac.jp/en/about/map_directions.html

Sendai International Center, Exhibition Building ※Poster Session for Students ONLY
(Aobayama, Aoba-ku, Sendai, Miyagi, Japan 980-0856)
http://www.aobayama.jp/english/access/

Access

- **Tohoku University, Kawauchi Campus is a 3-minute walk from exit at South gate 1 or 2 of Kawauchi Station, Subway Tozai Line.**
- **Sendai International Center is a 3-minute walk from Sendai International Center Station, Subway Tozai Line.**

From Sendai Station to Kawauchi Station

Sendai Sta.→〈Subway Tozai Line/Yagiyama Zoological Park-bound Local train/6min.〉→Kawauchi Sta.

From Sendai Airport to Kawauchi Station

Sendai Airport→〈Sendai Airport access Line/17~25min.〉→Sendai Sta.
→〈Subway Tozai Line/Yagiyama Zoological Park-bound Local train/6min.〉→Kawauchi Sta.

From Sendai Station to Sendai International Center Station

Sendai Sta.→〈Subway Tozai Line/ Yagiyama Zoological Park-bound Local train /5min.〉
→Sendai International Center Station

From Sendai Airport to Sendai International Center Station

Sendai Airport→〈Sendai Airport access Line/17~25min.〉→Sendai Sta.
→〈Subway Tozai Line/ Yagiyama Zoological Park-bound Local train /5min.〉
→Sendai International Center Station

For more information, please visit the website of each facility.

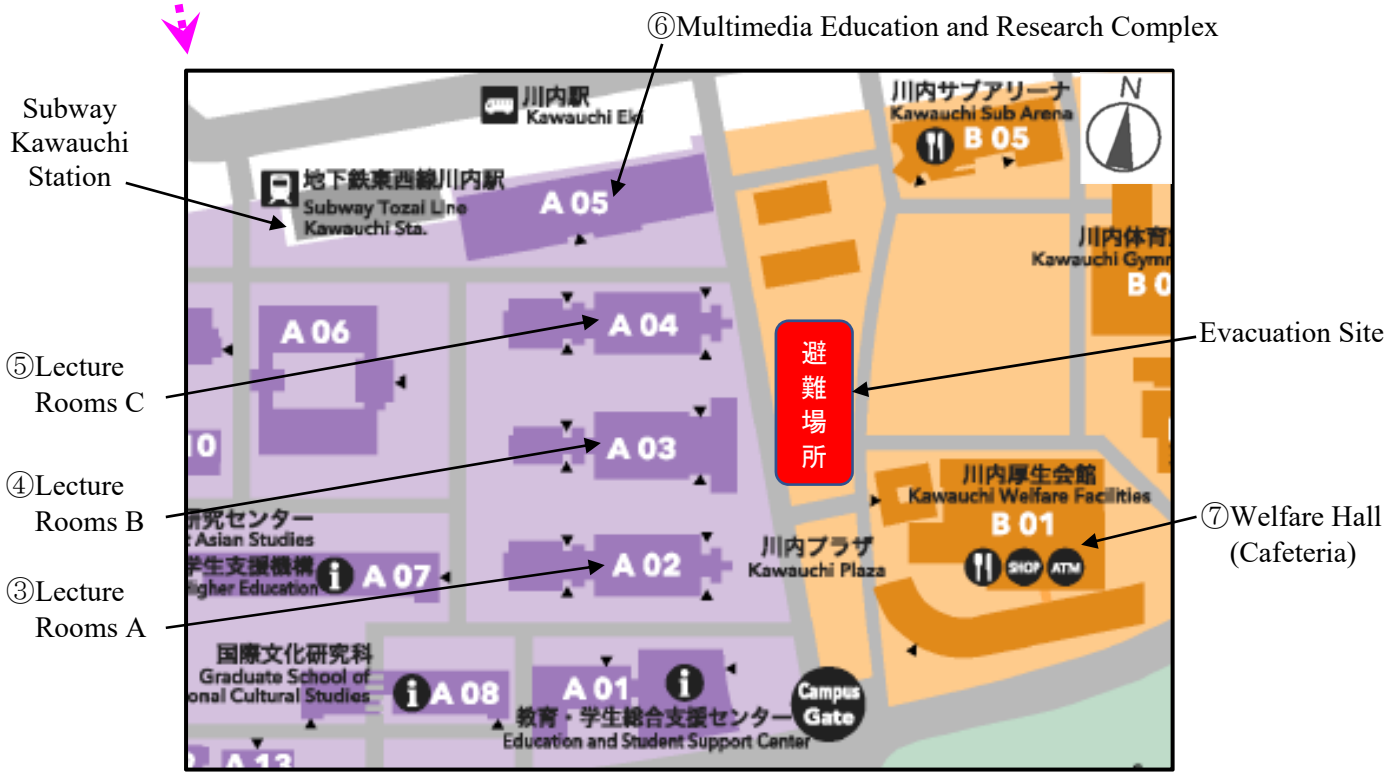
Banquet

1.Date: September 19, 2018 18:30～20:30
2.Vanue: Hotel Metropolitan Sendai, Grand Ballroom Chiyo (4th Fl.)
(1-1-1, Chuo, Aoba-ku, Sendai, Miyagi Japan 980-8477)
https://www.sendaimetropolitan.jp/en-gb
3.Fee: 10,000yen

Campus map

②Sendai International Center, Exhibition Building

①Hotel Metropolitan Sendai

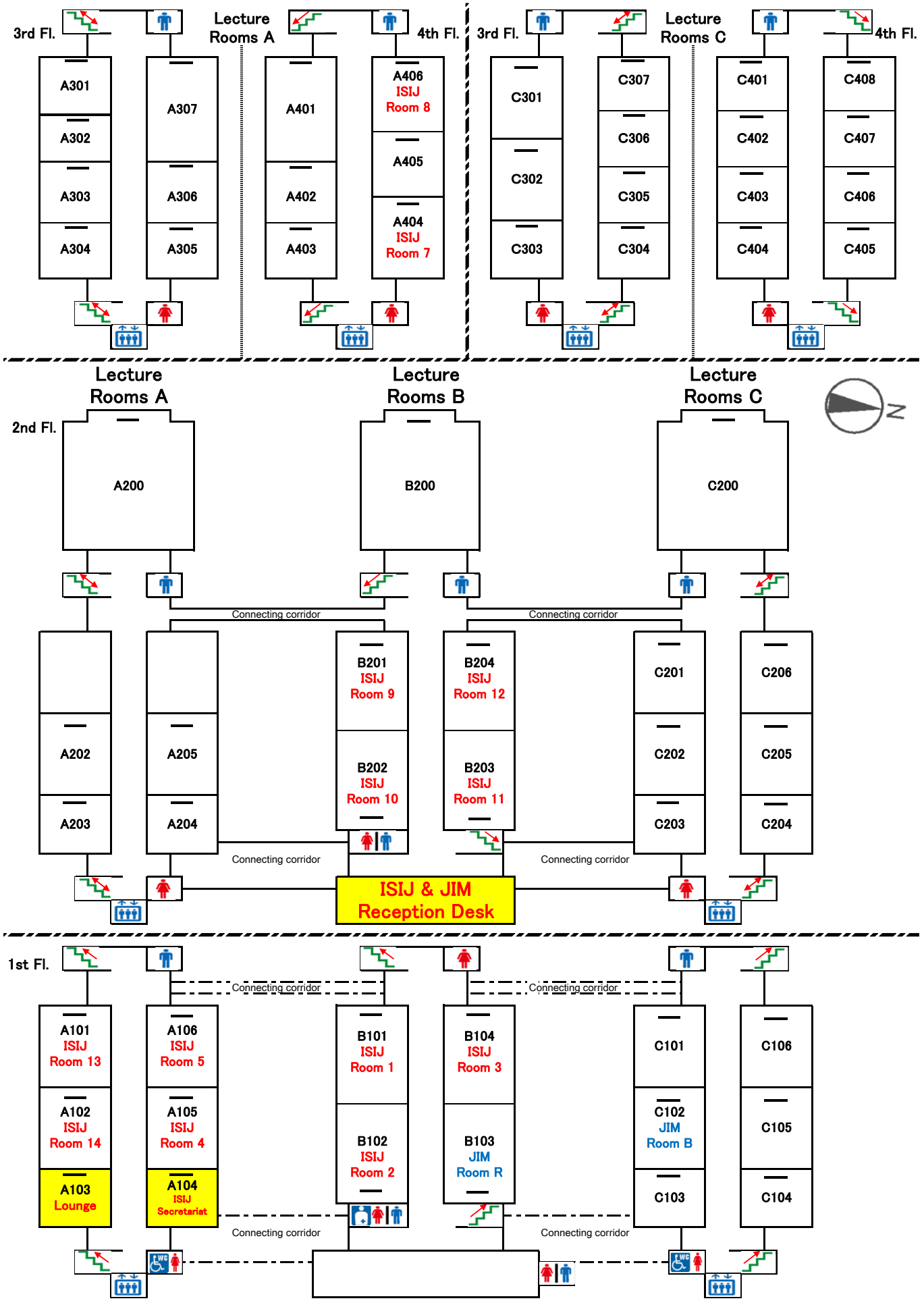


① Hotel Metropolitan Sendai: Banquet(Sept. 19, 2018)
② Sendai International Center, Exhibition Building: Poster Session for Students(Sept. 20, 2018)
③ Lecture Rooms A: ISIJ Secretariat, Session Room 4,5,13,14(1st Fl.), Session Room7,8 (4th Fl.)
④ Lecture Rooms B: ISIJ Reception Desk, Session Room 1-3(1st Fl.), Session Room 9-12(2nd Fl.)
⑤ Lecture Rooms C: JIM Session Room A-Q
⑥ Multimedia Education and Research Complex: Session Room 6,15(6th Fl.)
⑦ Welfare Hall: Cafeteria, Shop, ATM

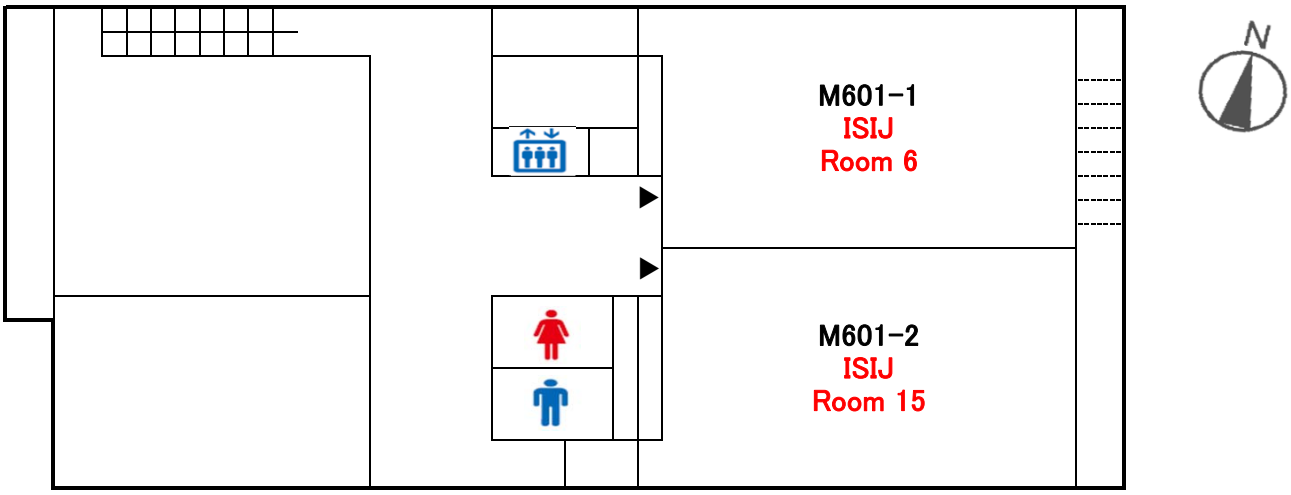
No smoking is allowed inside the campus.

ISIJ Session Room Map

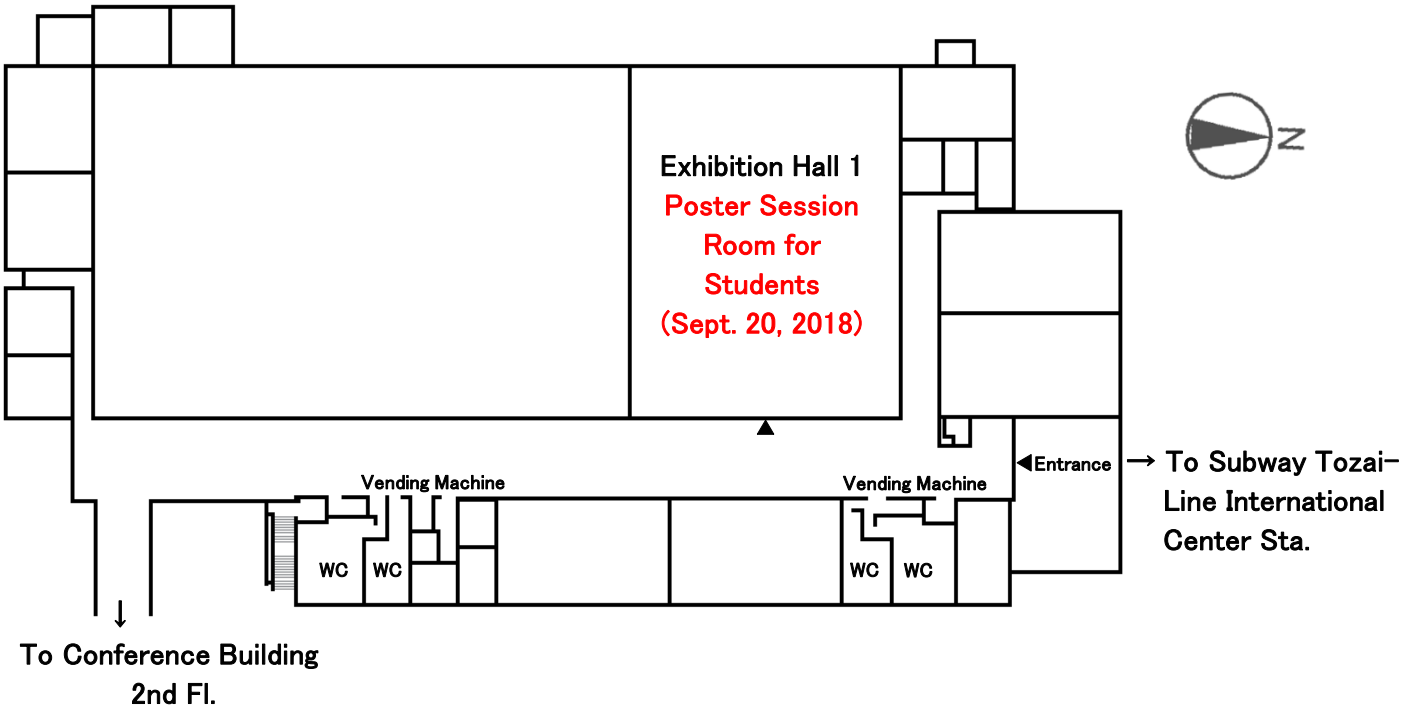
Tohoku Univ. Kawauchi Campus, Lecture Rooms A･B･C



Tohoku Univ. Kawauchi Campus
Multimedia Education and Research Complex 6th Fl.



Sendai International Center
Exhibition Building



The timetable the 176th ISIJ Meeting
(September 19–21, 2018 at Tohoku University, Kawauchi Campus)

Session Room	Sept. 19 (Wed.)		Sept. 20 (Thu.)			Sept. 21 (Fri.)	
	AM	PM	AM	PM		AM	PM
Session Room 1 Kawauchi Lecture Rooms B101	Energy-Environment-Dust processing in ironmaking processes [Int.1-16] (8:50-17:10)		Iron ore sintering technology toward solving resources and environmental problems (10:00-16:50) [1,000yen]			Blast furnace/COURSE 50 [65-70] (9:30-11:40)	Sintering 1・2 [71-76] (13:00-15:10)
Session Room 2 Kawauchi Lecture Rooms B102	---	Interim report of "Clean Cr steel production by slag, inclusion control" research group (13:00-17:30) [Charge-Free]	---	Coal and coke/Young engineer session of coke-making 1・2 [19-30] (12:30-16:50)		Fundamentals of reduction/ New iron source [77-84] (9:00-11:50)	Young engineer session of iron making [85-88] (13:00-14:20)
Session Room 3 Kawauchi Lecture Rooms B104	Thermodynamics/ Transport phenomena [1-8] (9:00-11:50)	Solidification and structure control 1・2/Continuous casting and solidification [9-18] (13:00-16:40)	Converter/Physico-chemical properties, reactions, and transport of multiphase interfaces in matrix of high temperature melts related to refining processes 1 [31-38] (9:00-11:50)	Physico-chemical properties, reactions, and transport of multiphase interfaces in matrix of high temperature melts related to refining processes 2・3 [39-48] (13:00-16:30)		---	---
Session Room 4 Kawauchi Lecture Rooms A105	---	---	Novel processing/ Introduction of research topics in novel processing forum [49-56] (9:00-11:50)	Application of direct observation method to novel processings/ Refractories [57-64] (13:30-16:20)		Slag and dust treatment/Slag [89-102] (9:30-12:00)	Elution from slag 1・2 [93-99] (13:00-15:30)
Session Room 5 Kawauchi Lecture Rooms A106	---	Value assessment with burden assessment for steel (13:00-17:00) [Charge-Free]	---	Present conditions and maintenance for aging infrastructure IV (13:20-17:00) [Charge-Free]		Cultural heritage [103-106] (10:00-11:20)	
Session Room 6 Multimedia Education and Research Complex M601-1	---	---	Advanced abnormality diagnoses based on area sensing technologies [D1-D5] (9:15-11:45)	Human-system shared control realizing high efficient and stable rolling [D6-D10] (13:00-15:45)	System [107-110] (16:00-17:20)	Instrumentation/Control [111-118] (9:00-11:50)	System model of resilience and its application [D11-D15] (13:00-14:50)
Session Room 7 Kawauchi Lecture Rooms A404	---	Cutting edge of research for weld metal 1・2 [119-127] (13:00-16:10)	Numerical simulation of leveling and straightening of metal [D16-D22] (9:00-12:00)	The technical session by young engineers of hot rolling 1・2/ Cooling and tribology [140-151] (13:00-17:20)		Current research and development in cold sheet metal forming simulation [D23-D27] (10:20-15:00)	
Session Room 8 Kawauchi Lecture Rooms A406	---	Control technology for free cutting-12/Modeling of various phenomena in metal forming and its application 1・2 [128-139] (13:00-17:20)	Argument on the history of ironmaking in the Tohoku where has taken the lead in the ironmaking technology in Japan (10:00-17:00) [2,000yen, Student: 1,000yen]			Deformation and forming/ Coating fabrication [152-157] (9:20-11:30)	Symposium on viscous flow processing of Fe-based metallic glass micro-particles (12:39-16:30) [Charge-Free]
Session Room 9 Kawauchi Lecture Rooms B201	Modeling and simulation/ Phase diagram [158-165] (9:10-12:00)	Machine structural steel [166-170] (13:00-14:40)	Heterogeneous structure control: Towards innovative development of metallic structural materials (9:30-16:45) [Charge-Free]			Surface technology 1・2 [263-270] (9:00-11:50)	Hot-dip coating/Mechanism of corrosion and corrosion protection [271-280] (13:00-16:30)
Session Room 10 Kawauchi Lecture Rooms B202	Diffusional transformation 1・2 [171-178] (9:00-11:50)	$\gamma-\alpha$ transformation/ Reversed transformation and eutectic transformation/ Recrystallization and grain growth [179-188] (13:00-16:40)	Hydrogen embrittlement 1・2 [198-204] (9:20-11:50)	Hydrogen embrittlement 3・4・5 [205-215] (13:00-17:00)		Hydrogen embrittlement 6・7 [281-286] (9:30-11:40)	---
Session Room 11 Kawauchi Lecture Rooms B203	New analytical approach for microstructural evolution (9:30-16:45) [Charge-Free]		Austenitic heat resistant steel 1・2 [216-223] (9:00-11:50)	Heat resistant alloy/ Ferritic heat resistant steel 1 [224-233] (13:30-17:00)		Ferritic heat resistant steels 2 [287-290] (9:00-10:20)	---
Session Room 12 Kawauchi Lecture Rooms B204	---	High-strengthening theory in high-temperature materials (13:00-17:15) [Charge-Free]	Strength and deformation behavior 1・2 [234-241] (9:00-11:50)	Strength and deformation behavior 3・4 [242-250] (13:00-16:10)		Interface migration in iron-family-metal-base alloys (9:00-12:20) [Charge-Free]	Subjects considering microstructure control and material properties using secondary phase and solute segregation (13:30-16:10) [Charge-Free]
Session Room 13 Kawauchi Lecture Rooms A101	---	Toughness/Fatigue 1・2 [189-197] (13:00-16:20)	Electrical steel [251-255] (10:00-11:40)	Stainless steels 1・2 [256-262] (14:00-16:30)		Aging and precipitation 1・2 [291-298] (9:00-11:50)	Investigation of bio-corrosion of structural materials ～diagnosis and analysis～ I [D28-D33] (13:20-16:20)
Session Room 14 Kawauchi Lecture Rooms A102	ISIJ and JIM joint session Titanium and its alloys 1・2 [J1-J10] (10:00-14:20)		---	ISIJ and JIM joint session Titanium and its alloys 3 [J11-J16] (15:30-17:30)		ISIJ and JIM joint session Titanium and its alloys 4・5・6 [J17-J30] (9:00-15:00)	
Session Room 15 Multimedia Education and Research Complex M601-2	Analytical and sample pretreatment techniques for on-site/on-line analysis [299-302] (10:30-11:50)	New functionalities of iron and steelmaking slags by biofilm coating and their evaluation and characterization I (13:00-15:50) [Charge-Free]	Precipitate and inclusion analysis/Crystal structure analysis [303-310] (9:00-11:50)	Elemental analysis/ Surface and state analysis [311-317] (14:10-16:40)		Monitoring and analysis methods for industrial processes [Int.17-30] (8:50-16:30)	
JIM Session Room B Kawauchi Lecture Rooms C102	ISIJ and JIM joint session Ultrafine grained materials - fundamental aspects for ultrafine grained structures- 1・2 [J31-J35] (10:00-11:50)	---	---	---		---	---
JIM Session Room R Kawauchi Lecture Rooms B103	---	ISIJ and JIM joint session Materials science of martensitic and bainitic transformations and its applications 1・2 [J36-J43] (14:10-17:00)	ISIJ and JIM joint session Materials science of martensitic and bainitic transformations and its applications 3・4・5・6・7 [J44-J63] (9:00-17:20)			ISIJ and JIM joint session Materials science of martensitic and bainitic transformations and its applications 8・9・10・11 [J64-J80] (9:00-16:10)	
	*Banquet (18:30-20:30 Hotel Metropolitan Sendai)		*Poster Session for Students (12:00-16:00 Sendai International Center, Exhibition bldg., Exhibition Hall 1) *ISIJ Beer Party (17:30-19:00 Cafeteria "Kawauchi no Mori Dining" in Kawauchi Campus)				

[ ]: Lecture Number
( ): Lecture Time
: Symposium: Please ask to each of symposium room desks directly

Program of the 176th ISIJ Meeting (September 19-21, 2018)

Instrumentation, Control and System Engineering

Processing for Quality Products

Current research and development in cold sheet metal forming simulation

Microstructure and Properties of Materials

Lecture No.
Discussion Sessions Title Speaker Page

Investigation of bio-corrosion of structural materials ~diagnosis and analysis~I

Program of the 176th ISIJ Meeting (September 19-21, 2018)

International Organized Sessions

High Temperature Processes / Environmental, Energy and Social Engineering

Energy-Environment-Dust processing in ironmaking processes

Session organizer : H. Nogami [Tohoku Univ.], T. Murakami [Tohoku Univ.], T. Usui [Osaka Univ.]

8:50-8:55

Opening Address: H. Nogami [Tohoku Univ.]

Chair: T. Usui [Osaka Univ.]

8:55-9:20

Int.-1 (Invited Lecture) Biogas: how we can reduce environmental impact in the iron and steel industry
Federal Univ. of Ouro Preto ○P. S. Assis, REDEMAT K. O. Calixto,
Federal Univ. of Ouro Preto M. E. Martins ・・・ 521

9:20-9:45

Int.-2 (Invited Lecture) Rising the efficiency of fossil and renewable energy carriers in the blast furnace
RWTH Aachen Univ. ○A. Babich・D. Senk ・・・ 524

9:45-10:10

Int.-3 Carbon requirement for ironmaking under carbon and hydrogen co-existing atmosphere
Tohoku Univ. ○H. Nogami ・・・ 526

10:10-10:35

Int.-4 Simultaneous carbonization and pulverization behaviors of biomass in the rapid carbonization process applying heat storage materials
Tohoku Univ. ○D. Maruoka・T. Nakamura・H. Sumikawa・T. Murakami・E. Kasai ・・・ 528

10:35-11:00

Int.-5 Improvements on coking process time and coke quality by coal moisture control
REDEMAT ○P. S. Assis・M. C. Carias, ENVIROX M. C. R. Oliveira, GERDAU G. L. R. Silva ・・・ 530

Chair: T. Murakami [Tohoku Univ.]

11:10-11:35

Int.-6 (Invited Lecture) Use of biochar and biogas as fuel for iron ore sintering in a small machine
Federal Fluminense Univ. ○J. A. Castro・E. M. Oliveira・M. F. Campos ・・・ 534

11:35-12:00

Int.-7 Effect of magnetite on initial melt formation in sintering process
Kyushu Univ. ○Z. Wang, OECD Nuclear Energy Agency H. Ogi,
Kyushu Univ. K. Ohno・T. Maeda・K. Kunitomo ・・・ 536

13:10-13:35

Int.-8 (Invited Lecture) Use of different particle size pellet feeds on granulation behavior in the sintering process
Federal Univ. of Minas Gerais ○M. C. Bagatini・R. A. Lopes Jr.・I. V. Flores・A. F. L. Oliveira ・・・ 538

13:35-14:00

Int.-9 Agglomeration of return fines of sinter for blast furnace raw materials
JFE ○Y. Ogasawara・T. Sato・J. Ishii・R. Murai・S. Watakabe ・・・ 540

14:00-14:25

Int.-10 (Invited Lecture) Modeling breakage and mechanical degradation of steelmaking materials during handling
Federal Univ. of Rio de Janeiro ○R. M. Carvalho・P. P. S. Cavalcanti・L. M. Tavares ・・・ 542

Chair: H. Nogami [Tohoku Univ].

14:35-15:00

Int.-11 (Invited Lecture) Kinetics of methane reforming for direct reduction of iron
Inst. Tech. Research ○T. R. Ribeiro, Univ. of Sao Paulo C. Takano, Univ. Center of FEI J. G. R. Poço,
Inst. Tech. Research J. B. F. Neto, Norwegian Univ. of Sci. Tech. L. Kolbeinsen, SINTEF E. Ringdalen ・・・ 546

15:00-15:25

Int.-12 Ethanol-assisted ironmaking of mild-dehydrated goethite-contained ore
Hokkaido Univ. ○A. Kurniawan・T. Akiyama・T. Nomura・K. Abe ・・・ 550

15:25-15:50

Int.-13 (Invited Lecture) Economic feasibility for reducing iron by electrolysis
Federal Fluminense Univ. ○M. F. Campos・J. A. Castro ・・・ 552

15:50-16:15

Int.-14 Evaluation of carbonization gas from coal and woody biomass and reduction rate enhancement of carbon composite iron oxide pellets by using semi-char and semi-charcoal
Osaka Univ. ○T. Usui・H. Konishi, JFE K. Ichikawa, Univ. of Toyama H. Ono,
Osaka Univ. H. Kawabata, Federal Univ. of Ouro Preto F. B. Pena・M. H. Souza・A. A. Xavier・P. S. Assis ・・・ 554

Process Evaluation and Material Characterization

Monitoring and analysis methods for industrial processes

Session organizer：Y. Deguchi [Tokushima Univ.], S. Kashiwakura [Tohoku Univ.]

15:20-15:40

Int.-28 Fundamental aspects of fiber-optic long-pulse laser-induced breakdown spectroscopy in air

Univ. of Hyogo ○A. Matsumoto ・・・ 584

15:40-16:00

Int.-29 Quantitative elemental measurement of steel samples using long and short DP-LIBS

Xi'an Jiaotong Univ. ○M. Cui, Tokushima Univ. Y. Deguchi・Y. Fujita・S. Tanaka, Xi'an Jiaotong Univ. Z. Wang, National Twaiwan Univ. of Science and Technology F. Shiou ・・・ 587

16:00-16:20

Int.-30 LIBS applications to steel and iron making processes

Tokushima Univ. ○Y. Deguchi・M. Cui・Y. Fujita・S. Tanaka, Xi'an Jiaotong Univ. Z. Wang, National Twaiwan Univ. of Science and Technology F. Shiou ・・・ 588

16:20-16:30

Closing Address: Y. Deguchi [Tokushima Univ.]

Program of the 176th ISIJ Meeting (September 19-21, 2018)

High Temperature Processes

Program of the 176th ISIJ Meeting (September 19-21, 2018)

Program of the 176th ISIJ Meeting (September 19-21, 2018)

Environmental, Energy and Social Engineering

Instrumentation, Control and System Engineering

Program of the 176th ISIJ Meeting (September 19-21, 2018)

Processing for Quality Products

Microstructure and Properties of Materials

Process Evaluation and Material Characterization

Crystal structure analysis

Elemental analysis

Surface and state analysis

Program of the 176th ISIJ Meeting (September 19-21, 2018)

ISIJ and JIM Joint Sessions

Ultrafine grained materials -fundamental aspects for ultrafine grained structures- 1

Ultrafine grained materials -fundamental aspects for ultrafine grained structures- 2

Materials science of martensitic and bainitic transformations and its applications 1

Materials science of martensitic and bainitic transformations and its applications 2

Materials science of martensitic and bainitic transformations and its applications 3

Materials science of martensitic and bainitic transformations and its applications 4

Materials science of martensitic and bainitic transformations and its applications 5

Materials science of martensitic and bainitic transformations and its applications 6

Materials science of martensitic and bainitic transformations and its applications 7

Materials science of martensitic and bainitic transformations and its applications 8

Materials science of martensitic and bainitic transformations and its applications 9

Materials science of martensitic and bainitic transformations and its applications 10

Materials science of martensitic and bainitic transformations and its applications 11