

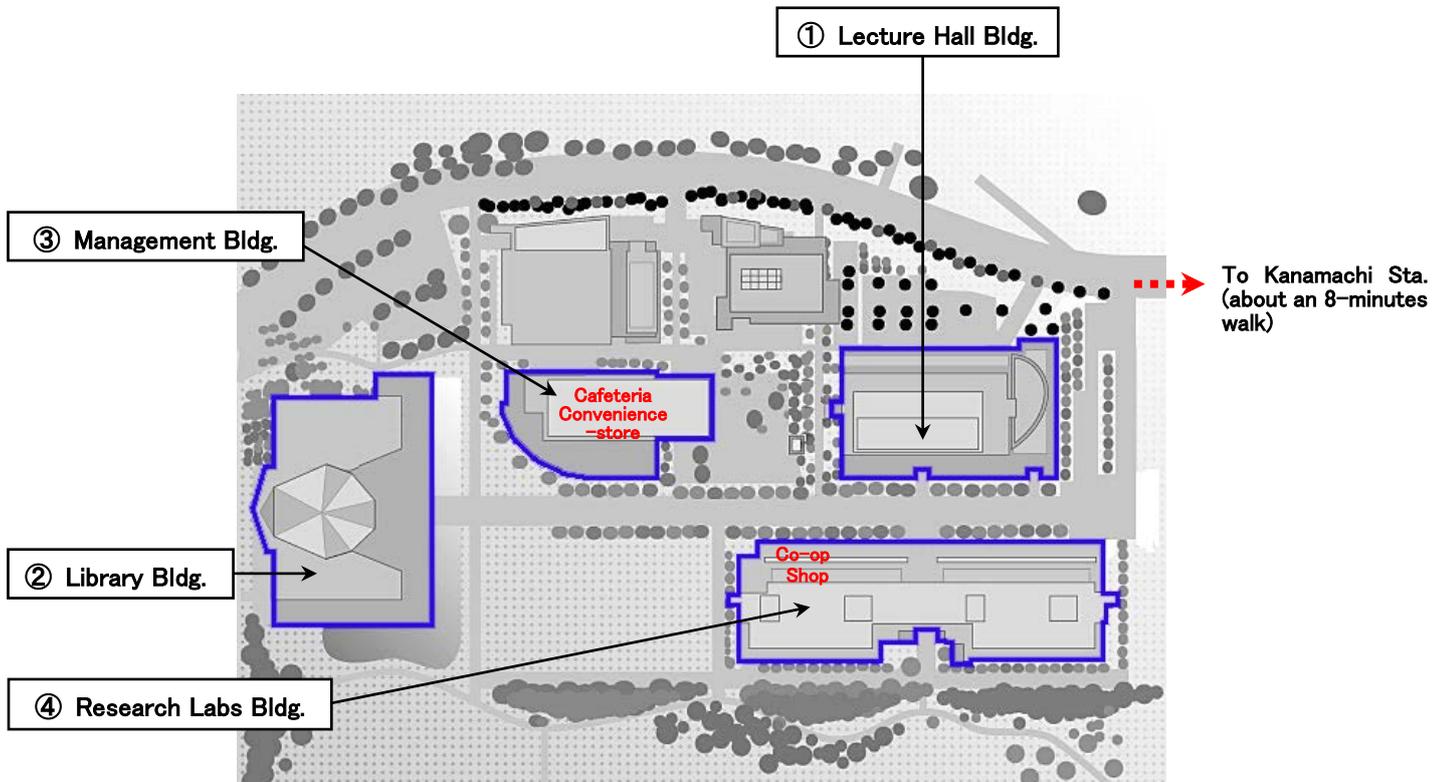
The 171st ISIJ Meeting

1. Date: March 23 to 25, 2016
2. Venue: Tokyo University of Science, Katsushika Campus
6-3-1 Niijuku, Katsushika-ku, Tokyo 125-8585, Japan
3. Access: Located an 8 minutes' walk from Kanamachi Station, accessible via the JR Joban Line (local service), which goes through to the Tokyo Metro Chiyoda Line and Keisei Kanamachi Line.



- From Narita Airport
 - Take the Keisei Honsen/main Line to Keisei-Takasago Station. Transfer to the Keisei Kanamachi Line and take it to Keisei-Kanamachi Station.
 - (Travel time: about 89 minutes.)
- From Haneda Airport
 - Take the Tokyo Monorail to Hamamatsu-cho Station. Transfer to the JR Yamanote Line and take it to Nishi-Nippori station. Transfer to the Tokyo Metro Chiyoda Line and take it to Kanamachi Station.
 - (Travel time: about 74 minutes.)
 - Take the Keikyu Line to Sengakuji Station. Transfer to the Toei Asakusa Line and take it to Keisei-Takasago Station (via Oshiage Station). Transfer to the Keisei Kanamachi Line and take it to Keisei-Kanamachi Station.
 - (Travel time: about 80 minutes.)
- From Tokyo Station
 - Take the JR Yamanote Line to Nishi-Nippori Station. Transfer to the Tokyo Metro Chiyoda Line and take it to Kanamachi Station.
 - (Travel time: about 33 minutes.)
- From Ueno Station
 - Take the JR Joban Line (rapid service) to Kita-Senju Station. Transfer to the JR Joban Line (local service) and take it to Kanamachi Station.
 - (Travel time: about 30 minutes.)
- From Shinjuku Station
 - Take the JR Yamanote Line to Nishi-Nippori Station. Transfer to the Tokyo Metro Chiyoda Line and take it to Kanamachi Station.
 - (Travel time: about 40 minutes.)

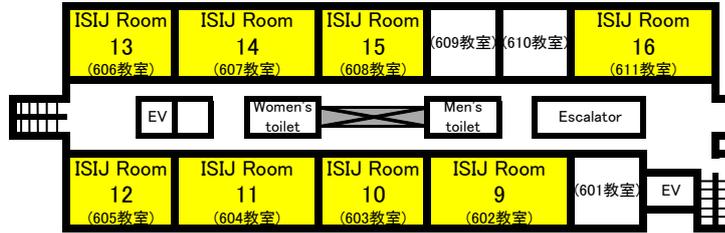
Map of Tokyo University of Science (Katsushika Campus)



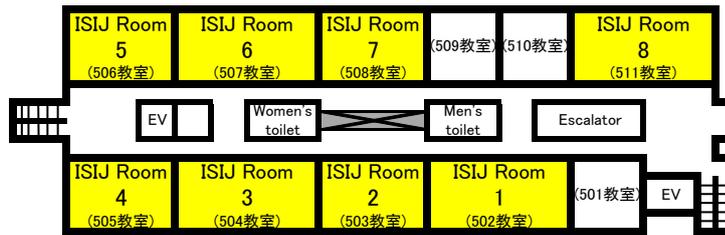
- ① Lecture Hall Building: ISIJ Reception Desk(2nd Fl.),
ISIJ-Session Room 1-16(5-6th Fl.),
- ② Library Building: Ceremony of Conferment of the Honorary Membership
and Prize Awarding, Special Lecture Meeting
(3rd Fl.; Mar. 23(Wed), 14:00-17:00),
Poster Session for Students (3rd Fl.; Mar. 24(Thu), 12:00-15:00)
- ③ Management Building: Cafeteria(1st Fl.),
Convenience-store(1st Fl.),
Banquet (2nd Fl.; Mar. 23(Wed), 18:00-20:00, 7,000yen),
ISIJ Beer Party (2nd Fl.; Mar. 24(Thu), 17:30-19:00, 1,000yen)
- ④ Research Labs Building: Co-op Shop(1st Fl.)

ISIJ Session Room Map (Lecture Hall Building)

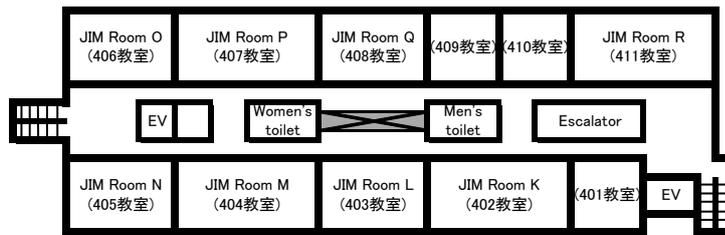
6th Floor



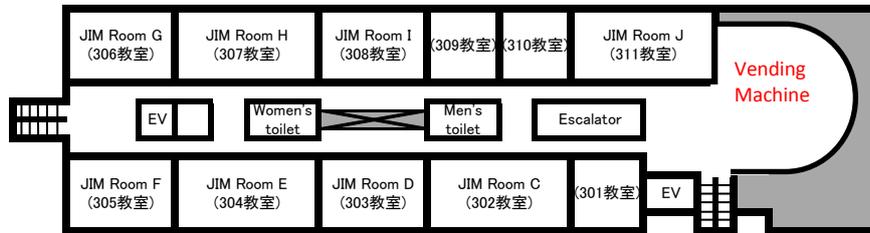
5th Floor



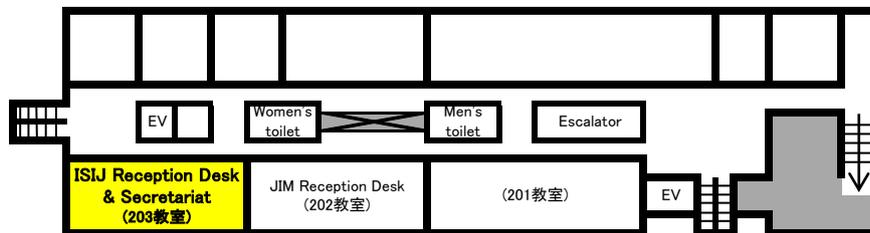
4th Floor



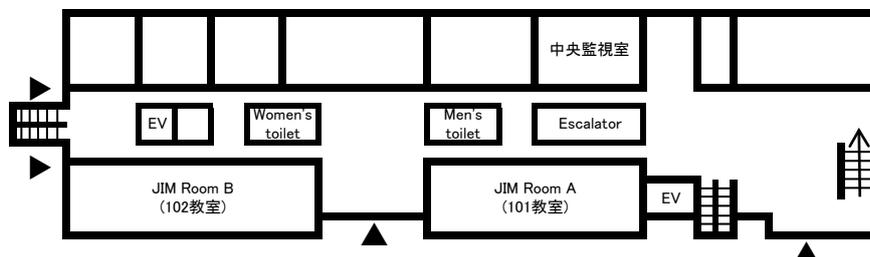
3rd Floor



2nd Floor



1st Floor



The timetable the 171st ISIJ Meeting
(March 23–25, 2016 at Tokyo University of Science, Katsushika Campus)

	March 23 (Wed)		March 24 (Thu)		March 25 (Fri)	
	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.
Session Room 1 Lecture Hall Bldg. 5th Fl. Room502	Young engineer session of iron making 1•2 [1–7] (9:10–11:40)	---	Processes of iron ore treatment for increasing resource flexibility [D1–9] (9:30–17:00)		Reaction between non-metallic inclusion, and sulfide and nitride in solid state steels (9:00–14:30)[Charge-free]	
Session Room 2 Lecture Hall Bldg. 5th Fl. Room503	Thermodynamics 1•2 [8–15] (9:00–11:50)	---	Control of formation reaction of inclusion in molten steel 1•2 [22–28] (9:30–12:00)	Young engineer session of coke-making 1•2/ Coal and coke [29–39] (13:00–17:00)	Physical phenomena under the imposition of electromagnetic vibration (9:00–12:45)[Charge-free]	Novel processing 1•2 [73–78] (13:30–15:40)
Session Room 3 Lecture Hall Bldg. 5th Fl. Room504	Transport phenomena 1•2 [16–21] (9:30–11:40)	---	Hot metal treatment• Converter/Secondary refining [40–47] (9:10–12:00)	Inclusion/ Property of cast metals [48–55] (13:30–16:20)	Slag treatment/Refractory [79–85] (9:20–11:50)	Blast furnace/Sintering [86–92] (13:00–15:30)
Session Room 4 Lecture Hall Bldg. 5th Fl. Room505	---	---	Development and research in mould flux with current problems [56–60] (10:00–11:40)	Development in research work of physico-chemical properties for pyro-metallurgy 1•2•3 [61–72] (13:00–17:20)	---	Solidification and structure control [93–97] (13:30–15:10)
Session Room 5 Lecture Hall Bldg. 5th Fl. Room506	---	---	Instrumentation 1•2 [120–127] (9:10–12:00)	Instrumentation 3/ Control and system [128–134] (13:30–16:00)	---	---
Session Room 6 Lecture Hall Bldg. 5th Fl. Room507	Fatigue damage on surface hardened alloy steels for machine structural use (9:00–17:00)[Charge-free]		Sheet forming•Ductile behavior/Current status of production and application technologies of steel tube and its secondary products [135–141] (9:30–12:00)	Advances in material modeling for the forming simulations of steel sheets [D10–19] (13:00–17:20)	Scale•Cooling [151–154] (10:20–11:40)	Current research and development in plate rolling [D20–25] (13:00–16:25)
Session Room 7 Lecture Hall Bldg. 5th Fl. Room508	---	---	---	Joining•Bonding/ Facilities•Simulation [142–150] (13:20–16:30)	Manufacturing technology of high quality and high functional bar and wire [155–159] (10:20–12:00)	---
Session Room 8 Lecture Hall Bldg. 5th Fl. Room511	Eco-technology for iron and steelmaking system with energy and material recycling 1•2•3 [98–106] (9:00–12:20)	---	Effective utilization of slag and energy [107–109] (10:30–11:30)	---	Approach of green reduction process for low-carbon ironmaking 1•2 [110–116] (9:30–12:00)	Approach of green reduction process for low-carbon ironmaking 3 [117–119] (13:00–14:00)
Session Room 9 Lecture Hall Bldg. 6th Fl. Room602	Hydrogen embrittlement 1•2 [160–167] (9:00–11:50)	---	Hydrogen embrittlement 3•4 [186–193] (9:00–11:50)	Hydrogen embrittlement 5•6 [194–200] (13:30–16:00)	Hydrogen embrittlement 7•8 [254–260] (9:30–12:00)	---
Session Room 10 Lecture Hall Bldg. 6th Fl. Room603	Strip steels [168–172] (10:20–12:00)	---	Creation of hydrogen-passive surfaces on steels to prevent of hydrogen embrittlement V (9:30–17:00)[Charge-free]		Structural steel 1•2 [261–267] (9:00–11:30)	---
Session Room 11 Lecture Hall Bldg. 6th Fl. Room604	Strength•Deformation behavior 1•2 [173–181] (9:00–12:10)	Effect of grain size on mechanical properties of stainless steel (13:00–16:35)[Charge-free]	Stainless steels 1 [201–204] (10:00–11:20)	Stainless steels 2•3 [205–212] (13:00–15:50)	Strength•Deformation behavior 3•4 [268–274] (9:20–11:50)	Strength•Deformation behavior 5 [275–279] (13:00–14:40)
Session Room 12 Lecture Hall Bldg. 6th Fl. Room605	Aging•Precipitation [182–185] (10:00–11:20)	---	Light elements in steels – Fundamentals, microstructure formation, and mechanical properties (9:00–12:15)[1,000yen]	Ferritic heat resistant steels 1•2/Heat resistant alloys [213–222] (13:20–17:10)	Plate steels and forged steels [280–283] (10:40–12:00)	---
Session Room 13 Lecture Hall Bldg. 6th Fl. Room606	ISIJ–JIM Joint Session Ultrafine grained materials 1•2 [J22–26] (10:00–11:55)	---	Electrical steels 1•2 [223–229] (9:00–11:30)	Surface technology/ Chemical property [230–237] (13:00–15:50)	Mechanical property and modeling/ Microstructure formation 1 [284–291] (9:00–11:50)	Microstructure formation 2•3 [292–299] (13:00–15:50)
Session Room 14 Lecture Hall Bldg. 6th Fl. Room607	Advances in quantum beam analysis for metallography (9:20–15:30)[Charge-free]		Inverse transformation/ TRIP steel [238–245] (9:00–11:50)	Martensite transformation/ Martensite•Bainite transformation [246–253] (13:30–16:20)	---	---
Session Room 15 Lecture Hall Bldg. 6th Fl. Room608	Analytical instruments and sample pretreatment methods available for on-site analysis [300–303] (10:30–11:50)	Speciation of free-MgO in steelmaking slag (13:30–16:30)[Charge-free]	Phase interface science to elucidate the interaction of material and microorganism (10:00–15:50)[500yen]		(Int.)Interdisciplinary workshop on metal artifacts and indigenous technologies in India and Japan [Int.15–24] (9:00–16:15)	
Session Room 16 Lecture Hall Bldg. 6th Fl. Room611	(Int.)Forefront of materials research with quantum beam 1 [Int.1–7] (9:00–12:35)	---	Surface and state analysis/ Crystal structure analysis [304–310] (9:00–11:30)	(Int.)Forefront of materials research with quantum beam 2 [Int.8–14] (13:00–17:00)	Elemental analysis 1•2 [311–318] (9:00–11:50)	---
JIM-Session Room D Lecture Hall Bldg. 3rd Fl. Room303	---	---	ISIJ–JIM Joint Session Titanium and titanium alloys 1•2•3•4•5•6 [J1–21] (9:00–17:40)		---	---
JIM-Session Room Q Lecture Hall Bldg. 4th Fl. Room408	---	---	---	---	ISIJ–JIM Joint Session Fundamentals and application of microwave processing 1•2•3 [J27–34] (9:00–12:00)	---
	Ceremony of conferment of the honorary membership and prize awarding, Special lecture meeting (14:00–17:00 at Hall, Library Bldg, 3rd Fl.) Banquet (18:00–20:00 at Cafeteria, Management Bldg, 2nd Fl.) [7,000yen]		Poster Session for Students (12:00–15:00 at Foyer, Library Bldg, 3rd Fl.) ISIJ Beer Party (17:30–19:00 at Cafeteria, Management Bldg, 2nd Fl.) [1,000yen]			

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

Board Meeting:
Instrumentation, Control and System Engineering March 24 (Thu.) 13:00–13:30 Room5
Processing for Quality Products March 24 (Thu.) 12:00–13:00 Room7

Program of the 171st ISIJ Meeting (March 23-25, 2016)

High Temperature Processes

Lecture No. Discussion Sessions	Title	Speaker	Page
Processes of iron ore treatment for increasing resource flexibility			
9:30-10:05			
D1	Sintering process for increasing resource flexibility	T. Murakami	• • • 1
10:05-10:40			
D2	Effect of ultrafine powder of hematite and magnetite on granulation characteristics of iron oxide	T. Maeda	• • • 3
10:40-11:15			
D3	Effect of magnetite (Fe ²⁺ source) on initial liquid formation in sintering process	H. Ohgi	• • • 5
11:15-11:50			
D4	Effective utilization of oxidation heat of iron containing agglomeration agent for iron ore sintering process	K. Fujino	• • • 7
13:00-13:35			
D5	Influence of attached fine ore on combustion of cokes	Y. Oba	• • • 9
13:35-14:10			
D6	Determination of liquidus lines in the Fe-rich region and FeO _{1.33} activity measurements in the liquid phase on the FeOx-CaO-SiO ₂ -Al ₂ O ₃ system under oxygen partial pressures between 10 ⁻⁶ and 10 ⁻² atm	M. Hayashi	• • • 11
14:10-14:45			
D7	Numerical simulation of sintering process -Effect of melting volume on sinter cake pore structure-	T. Umekage	• • • 13
15:00-15:35			
D8	Sinter material packed bed design by separate granulation	M. Matsumura	• • • 15
15:35-16:10			
D9	Effects of coke breeze positioning on the sintering behavior	Y. Iwami	• • • 17
Advances in material modeling for the forming simulations of steel sheets			
13:00-13:50			
D10	Theories of elasto-plasticity: Physical phenomena and modeling	M. Kuroda	• • • 19
13:50-14:10			
D11	Prediction of deformation behavior in BCC metal using crystal plasticity analysis	T. Hama	• • • 21
14:10-14:30			
D12	Numerical biaxial tensile test of IF steel sheet using homogenized crystal plasticity finite element method and experimental validation	A. Yamanaka	• • • 22
14:30-14:50			
D13	Multiaxial stress tests on steel sheets in support of material modelling and accurate sheet forming simulations	T. Kuwabara	• • • 23
15:00-15:20			
D14	Plane strain tensile test by using difference of tensile loads	H. Takizawa	• • • 25
15:20-15:40			
D15	Effect of differential work hardening model on hole expanding test	Y. Matsui	• • • 27
15:40-16:00			
D16	Simulation for rupture of steel pipe under bending deformation by finite element analysis	M. Mitsuya	• • • 31
16:00-16:20			
D17	Prediction of large-strain uniaxial stress-strain curve of sheet metal from in-plane stretch bending test using inverse analysis	G. Capilla	• • • 35
16:20-16:40			
D18	Influence of the Bauschinger effect on spring back in a hat bending	Y. Maeda	• • • 38
16:40-17:00			
D19	Work-hardening behavior of Cold rolled interstitial-free steel sheet and Dual phase high strength steel sheet under Two-stage tension/compression strain path	S. Shirakami	• • • 42

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Current research and development in plate rolling

13:10-13:40

D20 Trends in plate cooling technology

Y. Serizawa . . . 46

13:40-14:10

D21 (Invited Lecture) Development of new generation plate leveler

T. Aoyama . . . 50

14:10-14:40

D22 Plan view pattern control method on plate rolling

M. Horie . . . 54

14:50-15:20

D23 Development of the high accurate gauge meter and crown models in the plate rolling

T. Suzuki . . . 57

15:20-15:50

D24 The progress and future outlook of plate production technology

T. Yazawa . . . 61

15:50-16:15

D25 FE analysis of bulge profile in the hot rolling of ultra-low carbon steel

J. Yanagimoto . . . 65

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International Organized Sessions

Forefront of materials research with quantum beam 1

9:00-9:05

Opening Address Y. Otake [RIKEN]

9:00-12:35 Chairpersons: J. Ilavsky [Argonne National Labo.], Y. Otake [RIKEN]

9:05-9:45

Int.-1 (Keynote Lecture) Structure, phase stability, and deformation behaviors of high entropy alloys

City Univ. of Hong Kong ○X. Wang

. . . 67

9:45-10:10

Int.-2 Compact neutron source and its industrial applications

RIKEN ○Y. Otake

. . . 69

10:10-10:35

Int.-3 Nondestructive measurement of texture of steel sheets with compact neutron source "RANS"

RIKEN ○Y. Ikeda · M. Takamura, Tokyo City Univ. M. Kumagai, Kyoto Univ. T. Hama · Y. Oba,
JAEA H. Suzuki

. . . 70

10:45-11:15

Int.-4 (Invited Lecture) Precipitation processes in beta-titanium alloys

Northwestern Univ. ○J. Coakley, Imperial College London D. David, Hokkaido Univ. M. Ohnuma

. . . 71

11:15-11:40

Int.-5 Large-area mapping of crystalline microstructural information by pulsed neutron Bragg-edge transmission imaging

Hokkaido Univ. ○H. Sato

. . . 75

11:40-12:05

Int.-6 Elemental analysis by means of PGA at RANS

RIKEN ○Y. Wakabayashi · T. Kobayashi · Y. Otake

. . . 77

12:05-12:35

Int.-7 (Invited Lecture) Structure and microstructure of dispersoids in 9Cr-ODS steels

International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI)

○K. Suresh · R. Vijay · M. Ramakrishna · G. Sundararajan

. . . 80

Forefront of materials research with quantum beam 2

13:00-17:00 Chairpersons: X.L. Wang [City U. of Hong Kong], E. Shin [KAERI]

13:00-13:40

Int.-8 (Keynote Lecture) Extended range Ultra Small-angle X-ray, Small-angle, and Wide-angle scattering for materials characterization

Argonne National Laboratory ○J. Ilavsky, NIST F. Zhang · L. Levine · A. Allen

. . . 81

13:40-14:05

Int.-9 Anomalous magnetic anisotropy induced in severely deformed ultra-low carbon steel characterized by small-angle neutron scattering

Kyoto Univ. ○Y. Oba, Toyohashi Univ. of Tech. N. Adachi · Y. Todaka · K. Yamamoto,
Kyoto Univ. M. Sugiyama

. . . 82

14:05-14:45

Int.-10 (Keynote Lecture) SANS analysis of nanoparticles in high-manganese TWIP steel

Korea Atomic Energy Research Institute ○E. Shin · W. Woo, Yonsei Univ. M. Kang

. . . 83

14:55-15:20

Int.-11 Neutron imaging with RANS, RIKEN compact neutron source

RIKEN ○A. Taketani · Y. Otake · H. Sunaga, PSI M. Yamada, Kobe Steel T. Nakayama

. . . 84

15:20-15:50

Int.-12 (Invited Lecture) Industrial applications of neutron diffraction in Japan and activities of Ibaraki prefectural government

Ibaraki Prefectural Government ○M. Hayashi

. . . 86

15:50-16:10

Int.-13 Characterization of austenite by quantum beam diffraction

NIMS ○Y. Tomota · N. Sekido

. . . 87

16:10-16:30

Int.-14 Microstructural characterization of steels by compact neutron source

Hokkaido Univ. ○M. Ohnuma · M. Furusaka, JFE Steel H. Nakamichi, Kobe Steel T. Murakami

. . . 88

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16:30-16:55

Discussion about "Collaboration with Industry" Discussion Leader M. Ohnuma [Hokkaido Univ.]

16:55-17:00

Closing Remark Y. Tomota [NIMS]

Interdisciplinary workshop on metal artifacts and indigenous technologies in India and Japan

9:00-9:05

Opening Address M. Tanaka [Tokyo Univ. of the Arts]

9:00-16:15

Chairpersons: K.Mizumoto [Tokyo Univ. of the Arts], V.Tripathi [Banaras Hindu Univ.],
T.Nakanishi [Kyushu Univ. Museum], S.Srinivasan [National Institute of Advanced Studies],
T.Nagae [Univ. of Toyama], M.B.Rajani [National Institute of Advanced Studies],
T.Sasada [Ehime Univ.], S.Krishnan [Indian Institute of Science]

9:05-9:40

Int.-15 (Invited Lecture) Bronze and high-tin bronze traditions in southern India: comparative insights with southeast Asia
National Institute of Advanced Studies ○S. Srinivasan . . . 89

9:40-10:10

Int.-16 Microstructural observation of copper and iron objects from megalithic sites in Nagpur division
Univ. of Toyama ○T. Nagae, Nagpur Univ. P. Trivedi, Archaeological Institute of Kashihara
Y. Shimizu · T. Sugiyama, Kansai Univ. A. Uesugi, Tokyo Univ. of the Arts M. Tanaka . . . 90

10:10-10:40

Int.-17 Creation of high precision stable lead isotope ratio database and its application for pre-modern metal production in Japan
Kyushu Univ. Museum ○T. Nakanishi, The Research Institute for Humanity and Nature S. Ki-Cheol . . . 94

10:50-11:25

Int.-18 (Invited Lecture) Tracing geo-spatial location of iron and steel industry of Tipu Sultan
National Institute of Advanced Studies ○M. Rajani · E. Gupta · S. Das . . . 95

11:25-11:55

Int.-19 Characterization of iron sand utilized to Japanese classic iron-making "Tatara"
Inazumi PE Office ○T. Inazumi, Miyoshi Hyudoki Museum H. Tanii,
Chiba Institute of Technology K. Terashima . . . 98

11:55-12:30

Int.-20 (Invited Lecture) Micro-textural aspects of ores and archaeo-metallurgical debris: Some analytical perspectives
Indian Institute of Science ○S. Krishnan, National Institute of Advanced Studies S. Srinivasan,
Indian Institute of Science P. George . . . 101

13:45-14:20

Int.-21 (Invited Lecture) Ancient Indian iron technology and its survival
Banaras Hindu Univ. ○V. Tripathi . . . 103

14:20-14:50

Int.-22 Process engineering for iron making with iron sand under dynamic states in low height furnace
Kobelco Research Institute ○Y. Matsui, Chiba Institute of Technology K. Terashima,
Tohoku Univ. R. Takahashi . . . 106

15:00-15:35

Int.-23 (Invited Lecture) Steel and sword : A comparison of Indian and Japanese heritage
Indian Institute of Science ○S. Ranganathan · S. Suwas, PEC Univ. of Technology P. Tiwari,
Indian Institute of Science A. Chaudhari . . . 107

15:35-16:05

Int.-24 (ISIJ Research Promotion Grant) Metallurgical analysis of traditional Japanese sword through manufacturing process by pulsed neutron imaging
Tokyo Univ. of the Arts ○M. Tanaka, Nagoya Univ. M. Isono · Y. Shiota · Y. Kiyanagi . . . 110

16:05-16:10

Concluding Remarks S. Ranganathan [Indian Institute of Science]

16:10-16:15

Closing Address K. Nagata [Tokyo Institute of Technology]

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High Temperature Processes

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3	Development of permeability evaluation at cohesive zone	I. Shoji	• • • 114
4	Long period shutdown for stove replacement of Muroran No.2 blast furnace	Y. Ogasawara	• • • 115
Young engineer session of iron making 2			
5	Effect of the specific surface area on granulation of iron ore	K. Maeno	• • • 116
6	Survey results on property of sinter cake in the height direction at Muroran 6DL sintering bed.	R. Kusuda	• • • 117
7	Operation of Kokura No.3 sintering machine after replace of the ignition burner.	T. Sasaki	• • • 118
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9	Activity coefficient of strongly interacting solutes in liquid steel	Y. Kang	• • • 120
10	The effects of the compositions of Ca ₂ SiO ₄ -Ca ₃ P ₂ O ₈ solid solution on the component activities of low basicity slags	R. Matsugi	• • • 121
11	Measurement of carbon solubility in molten Si-Cr alloy at SiC saturation	D. Hironori	• • • 122
Thermodynamics 2			
12	Measurement of CaO activity for the CaO-Al ₂ O ₃ -CeO _{1.5} melts at 1873K	R. Kitano	• • • 123
13	Thermodynamic property of Te and its interaction with some alloying elements in molten iron	S. Ueda	• • • 124
14	(ISIJ Research Promotion Grant) Measurement of the Cu activity in molten iron by the oxidation via Ag phase	T. Maeda	• • • 125
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Transport phenomena 1			
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17	Effect of borate on liquid copper around interface between solid iron and oxide phase	K. Urata	• • • 128
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20	SPH simulation of liquid - liquid interfacial flow due to a rising bubble.	R. Nashimoto	• • • 130
21	Influence of gas flow rate on the behavior of large size droplets emulsified by bottom bubbling in molten Sn alloy/ oxide system	J. Liu	• • • 131
Control of formation reaction of inclusion in molten steel 1			
22	Control of non-metallic inclusions in continuous casting process	H. Todoroki	• • • 132
23	Behavior of CaS precipitation in CaO-Al ₂ O ₃ oxide at temperature range of solid iron	M. Kageyama	• • • 133
24	Ca deoxidation and sulfurization equilibrium in molten Fe-Ni alloy	S. Yamawaki	• • • 134
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Control of formation reaction of inclusion in molten steel 2			
26	(Sawamura Award) Direct measurement of agglomeration force exerted between alumina particles in molten steel	K. Sasai	• • • 136
27	Effect of pressure difference between cavity and external atmosphere on sintering of alumina particles in molten iron	M. Nakamoto	• • • 137
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Young engineer session of coke-making 1

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32 Modeling of deformation behavior of coke cake during discharge and evaluation of the influence on the wall	Y. Yamauchi	• • •	142

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