

The Timetable of the 161st ISIJ Meeting

	March 25 (Fri)		March 26 (Sat)		March 27 (Sun)			
	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.		
Room 1 (6B2)	---	General assembly	(Int.) In-situ high temperature observation and measurement of metallurgical phenomena [Int.1-19](8:40-17:25)		Low CO ₂ technology for blast furnace/Operation technology of blast furnace [80-85] (9:50-12:00)	Mathematical model for blast furnace [86-89] (13:00-14:20)		
Room 2 (6B1)	Young engineer in ironmaking1·2 [1-8] (9:10-12:00)		Exploring a low carbon sintering process -Aiming at the reduction of 100 kg-CO ₂ /Fe-ton- (9:30-17:00)[1,000yen]		Present status of EAF dust treatment in the world (9:00-16:00)[3,000yen]			
Room 3 (813)	---		Ironmaking process enabling low carbon consumption /Coal and coke1 [31-37] (9:20-11:50)	Coal and coke2 /Young engineer session of coke-making [38-44] (13:00-15:30)	New process [90-94] (10:00-11:40)	Symposium on plant management by risk assessment (13:00-15:00)[Charge-free]		
Room 4 (814)	Electric furnace /Inclusion /Thermodynamics [9-16] (9:10-12:00)		Slag dust treatment1·2 [45-52] (9:10-12:00)	Hot metal treatment /Converter /Secondary refining [53-62] (13:30-17:00)	Fundamentals of solidification 1·2·3 [95-103] (9:00-12:10)	Development of in-situ observation technique for steel solidification and its application (13:00-16:30)[Charge-free]		
Room 5 (815)	Refractories1·2 [17-22] (9:30-11:40)		Ceremony of conferment of the honorary membership and prize awarding	Refractories3 /Electromagnetic processing [63-70] (9:00-11:50)	Introduction of novel processing forum activity1·2 /Property of cast metals [71-79] (13:30-16:40)	Fundamentals and application of special steel refining technology1·2·3·4 [104-116] (9:00-14:50)		
Room 6 (821)	CO ₂ reduction·scrap utilization /Transport phenomena1·2 [23-30] (9:20-12:20)			---	Frontier uses of iron- and steelmaking slags and their prospects (13:00-16:30)[1,000yen]	Developments of high-temperature thermophysical properties measurement and its systematizations for responding the industrial needs1·2·3·4 [117-132] (9:00-16:00)		
Room 7 (JIM-U) (822)	Green energy steelmaking-IV (Hydrogen production and use for steelmaking) 1·2 [133-139] (9:00-11:30)			---	Ecology in iron and steel industry /Environmental equipment /Ancient steelmaking technology [140-146] (14:30-17:10)	ISIJ and JIM joint session Fundamentals and application of microwave processing1·2·3·4 [J33-47](9:30-15:50)		
Room 8 (823)	---		Special lecture meeting	(D)Advanced imaging technologies for innovative steel production process [D1-4](10:00-12:00)	(D)Modeling and control to realize the deviation-free production [D5-9](14:00-16:40)	Instrumentation1·2 /Information system [147-156] (8:50-12:30)	Control1·2 [157-163] (14:00-16:30)	
Room 9 (632)	---			Rolling and cooling1·2 [169-174] (9:40-11:50)	Forming of sheet, plate and tube1·2 [175-182] (13:00-15:50)	(D)Approach for the elucidation of metallurgy and effect in processing of an oxide scale [D10-22](9:00-16:30)		
Room 10 (824)	Surface technology [164-168] (10:00-11:40)			Joining and high temperature oxidation/Manufacturing technology of high quality and high functional bar and wire [183-189] (9:00-11:30)	Today and future outlook of long life/life extension technologies of steel structures (13:00-17:10) [Member 2,000yen,Non-member 3,000yen]	---	---	
Room 11 (633)	Hydrogen embrittlement1·2 [190-195] (9:20-11:30)			13:30	---	Electrical steel1·2 [214-222] (13:50-17:00)	Austenitic heat resisting steels ·chemical compounds /Ni-base superalloys [237-242] (9:30-11:40)	Ferritic heat resisting steels [243-247] (13:00-14:40)
Room 12 (820)	The world technical trends in surface hardening and automotive steels (9:30-12:30)[1,000yen]			1	Fundamentals and novel approaches for new demands on work-hardening properties of steels (8:45-17:30)[4,000yen]		Electroplating·hot-dip coating·chemical conversion treatment /Corrosion·SCC [248-256] (9:00-12:10)	Corrosion mechanism [257-261] (13:30-15:10)
Room 13 (JIM-T) (831)	---			17:00	ISIJ and JIM joint session Titanium and its alloys1·2·3·4·5·6·7 [J1-18](9:00-17:30)		Fracture /Fracture behavior of dual phase steels [262-270] (9:00-12:10)	Mechanical properties of steels1·2 [271-277] (13:30-16:20)
Room 14 (832)	Grain refinement /Recovery and recrystallization [196-203] (9:00-11:50)				Overview for perspectives and problems of materials and process design toward resource saving and circulating society (8:45-12:15)[Charge-free]	Science and latest technologies of stainless steel Part1 (13:00-16:50) [Charge-free, Textbook 3,000yen]	Bainite and martensite1·2 [278-286] (9:00-12:10)	New aspects of steel research and development under resource and environmental restrictions (13:00-16:30)[1,000yen]
Room 15 (833)	Hot stamping [204-208] (10:20-12:00)				Microstructure control1·2 [223-228] (9:30-11:40)	Diffusional and diffusionless transformation /Aging·precipitation [229-236] (13:30-16:20)	Steel plate and pipe·Machine structural steel [287-291] (9:00-10:40)	Hot rolled steel sheet ·cold rolled steel sheet [292-296] (13:00-14:40)
Room 16 (834)	Mechanical property [209-213] (10:00-11:40)				Effect of biofilm and bacteria on the material characteristics (10:00-17:00)[1,000yen, Student charge-free]		Microstructure prediction /Physical property [297-304] (9:00-11:50)	Modeling of microstructure and phenomenon [305-309] (13:30-15:10)
Room 17 (835)	---				---	New approaches to the nondestructive evaluation with nonlinear phenomena for degradation of ageing structural materials (13:00-17:00)[Charge-free]	Stainless steel1·2·3 [310-319] (9:50-14:20)	
Room 18 (825)	---			Elemental analysis /Surface and state analysis [320-327] (9:00-11:50)	(Int.) Neutron: as a tool for developing miracle steel-1 [Int.20-28](13:00-17:40)	(D)The application of biological index to the evaluation and analysis for steels and steel making processes [D23-29](9:00-12:10)	---	
Room 19 (JIM-L) (721)	---			---		ISIJ and JIM joint session Ultrafine grained materials—fundamental aspects for ultrafine grained structures-1·2·3·4 [J19-32](9:00-15:10)		
		Banquet Meguro Gajoen (18:30-20:30) [12,000yen]		Poster session for students (12:00-15:00) ISIJ Beer Party (17:30-19:00)				

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

Board Meeting:
 Instrumentation, Control and System Engineering March 27(Sun) 12:30-13:00 Room8
 Processing for Quality Products March 26(Sat) 12:00-13:00 Room9

Instrumentation, Control and System Engineering

Lecture No. Discussion Sessions	Title	Speaker	Page
Advanced imaging technologies for innovative steel production process			
D1 (Invited Lecture)	Millimeter-wave imaging technologies	K.Mizuno	• • • 1
D2 (Invited Lecture)	Super-resolved quantization and machine learning for enforcing low-contrast image	M.Numada	• • • 5
D3 (Invited Lecture)	Introduction to high-speed and robust image processing technology -Pattern matching and pattern classification using effective image features-	M.Hashimoto	• • • 9
D4	Visual inspection and imaging technologies	N.Nagata	• • • 13
Modeling and control to realize the deviation-free production			
D5	Stability of temperature control of coke oven batteries	K.Tsumura	• • • 17
D6	Variance suppression for gauge control via stochastic optimal control	K.Fujimoto	• • • 21
D7	Nonlinear Receding Horizon control of probability density functions and investigation of its applicability to steel making processes	T.Ohtsuka	• • • 25
D8	Model development for estimating molten steel temperature in ladle and tundish	T.Okura	• • • 29
D9	Prediction and control of probability distribution of liquid steel temperature by bootstrap filter	S.Sonoda	• • • 33

Processing for Quality Products

Lecture No. Discussion Sessions	Title	Speaker	Page
Approach for the elucidation of metallurgy and effect in processing of an oxide scale			
D10	Fabrication of a small test descaler and some results	S.Taniguchi	• • • 37
D11	Descaling characteristics of primary scale under hot rolling conditions	S.Ueoka	• • • 41
D12	Experimental analysis of exfoliating stress between metal and scale at high temperature	H.Kushida	• • • 45
D13	Effect of oxide scale thickness on coefficient of friction in hot stamping	A.Yanagida	• • • 49
D14	Effect of scale on lubricity of rolling oil in hot steel rolling	A.Azushima	• • • 53
D15	Growth process of blistering during high temperature oxidation	Y.Kondo	• • • 57
D16 (Invited Lecture)	Mechanical properties of sintered iron oxides	M.Nanko	• • • 61
D17	Observation of 3-dimensional morphology of the subscale formed in steels by an organic solvent system dissolution technique	K.Kusabiraki	• • • 65
D18	A discussion on roll force and scale behavior in hot steel rolling	K.Hara	• • • 69
D19	Evaluation of deformation behavior of oxide scale in hot rolling using vacuum rolling mill	A.Segawa	• • • 73
D20	Transformation behavior of wustite	H.Tanei	• • • 77
D21	Prevention of red scale formation during hot rolling of steels	H.Okada	• • • 81
D22	Suppression of surface hot shortness caused by copper during hot rolling	Y.Kondo	• • • 85

Process Evaluation and Material Characterization

Lecture No. Discussion Sessions	Title	Speaker	Page
The application of biological index to the evaluation and analysis for steels and steel making processes			
D23	Application of biological index to iron and steel processes and its directional movement	H.Kanematsu	• • • 89
D24	Assay of physical properties of steel and plating by mammalian cell culture	A.Ogawa	• • • 91
D25	Biotechnological application of bacterial pore-forming toxins to a metal ion sensor	H.Ikigai	• • • 93
D26	Corrosion behavior of steel and stainless steel in sea water of Toyama bay	T.Gotou	• • • 95
D27	Establishment of biocompatible evaluation system for the nickel-titan alloy	H.Tamauchi	• • • 98
D28	Assessment of components eluted from electric arc furnace oxidizing slag with phytoplankton	T.Takahashi	• • • 101
D29	Bioassay of steel materials by aquatic organisms	M.Yamaguchi	• • • 103

International Organized Sessions

High Temperature Processes

2011/03/26 Lecture Room 1

In-situ high temperature observation and measurement of metallurgical phenomena

08:40 ~ 10:20 Chairperson:S.Kitamura(Tohoku Univ.)

08:40 ~ 09:00

Int. 1 High temperature in-situ observations of agglomerations of various oxide inclusions ... 465
Tohoku Univ. OH.Shibata, KTH,Tohoku Univ. Kristofer J.Malmberg, Tohoku Univ. S.Kitamura, KTH P.G.Jonsson, JFE
S.Nabeshima·Y.Kishimoto

09:00 ~ 09:20

Int. 2 $\delta \rightarrow \gamma$ interface migration behavior in low carbon high manganese steel samples de-oxidized with Ti and Al ... 468
JFE ON.Kikuchi·S.Nabeshima·Y.Kishimoto, Carnegie Mellon Univ. J.Nakano·S.Seetharaman

09:20 ~ 09:40

Int. 3 Observation of melting and solidifying behaviors of the CaO-SiO₂-FeOx system at various oxygen partial pressures ... 472
The Univ. of Tokyo OH.Matsuura·M.Kurashige·F.Tsukihashi

09:40 ~ 10:00

Int. 4 In-situ observation of slag/refractory reaction at high temperatures ... 476
Univ. of Ulsan OJoo Hyun Park, Yonsei Univ. Dong Joon Min

10:00 ~ 10:20

Int. 5 In-situ observation of Al₂O₃ and AlTiOx inclusions behaviour on the liquid steel surface ... 480
K.U.Leuven OM.Guo, McGill Univ. M.-A.Van Ende , K.U.Leuven B.Blanpain·P.Wollants

10:30 ~ 12:00 Chairperson:M.Guo(K.U.Leuven)

10:30 ~ 10:55

Int. 6 (Invited Lecture)Iron melting process in a smelter ... 484
:Initiation and dripping
POSTECH OY.Sasaki, POSCO Hyun-Soo Kim

10:55 ~ 11:15

Int. 7 Development of complex permittivity and permeability measurement apparatus for powder materials ... 488
Tokyo Inst. of Tech. OM.Hotta·M.Hayashi , Tokyo Univ. of the arts K.Nagata

11:15 ~ 11:35

Int. 8 Local structure of boron in the CaO-SiO₂-BO_{1.5} system ... 492
The Univ. of Tokyo OM.Sakamoto·K.Morita·Y.Yanaba

11:35 ~ 12:00

Int. 9 (Invited Lecture)Visualization of gas phase induced precipitation in slags ... 494
Carnegie Mellon Univ. OS.Seetharaman, KTH A.Semykina, Carnegie Mellon Univ. T.Kaneko, NETL J.Nakano·J.Bennett

13:00 ~ 14:30 Chairperson:H.Fukuyama(Tohoku Univ.)

13:00 ~ 13:25

Int. 10 (Invited Lecture)In-situ high temperature observation and measurement of metallurgical phenomena ... 498
Univ. of Wollongong OR.Dippenaar

13:25 ~ 13:45

Int. 11 In-situ observation of microstructural changes of steel during hot deformation ... 502
Toyota Central R&D Labs. OY.Yogo·H.Takeuchi·K.Tanaka ·N.Iwata , Nagoya Univ. T.Ishikawa

13:45 ~ 14:05

Int. 12 In-situ studies of continuous cooling transformation of steel weld ... 506
Osaka Univ. OH.Terasaki·Y.Komizo

14:05 ~ 14:30

Int. 13 (Invited Lecture)Emulsification in slag-metal system caused by the interfacial convection ... 509
TU Bergakademie Freiberg OP.R.Scheller·R.Hagemann

14:45 ~ 16:15 Chairperson:Y.Sasaki(POSTECH)

14:45 ~ 15:10

Int. 14 (Invited Lecture)The direct observation and modeling of metal flows in the primary meniscus regions of nearnet
shape casting processes ... 510
McGill Univ. OR.I.L.Guthrie·M.Isac·D.Li

15:10 ~ 15:30

Int. 15 Noncontact laser modulation calorimetry for high-temperature metallic melts ... 514
Tohoku Univ. OH.Fukuyama

15:30 ~ 15:50

Int. 16 Dissolution and formation of precipitates in Nb stabilized ferritic stainless steel investigated with in-situ TEM ... 518
K.U.Leuven OA.Malfliet, CNRS F.Momprou , ArcelorMittal F.Chassagne ·J.-D.Mithieux, K.U.Leuven B.Blanpain
·P.Wollants

15:50 ~ 16:15

Int. 17 (Invited Lecture)Morphology evolution of MnS inclusions in hot forging steel by heat treatment ... 521
Univ. of Science and Tech. Beijing OXinhua Wang·Xiaoqing Shao·Min Jiang

16:30 ~ 17:25 Chairperson:H.Shibata(Tohoku Univ.)

16:30 ~ 16:55

Int. 18 (Invited Lecture)In-situ high temperature metallurgical observations at the university of Leuven ... 525
K.U.Leuven OB.Blanpain·M.Guo·P.T.Jones·P.Wollants

16:55 ~ 17:20

Int. 19 (Invited Lecture) A decade of collaboration between KTH and Tohoku university ... 529
-Examples from CSLM studies to increase the metallurgical knowledge
KTH OP.G.Jonsson·A.Tilliander·K.Nakajima·A.Karasev, Tohoku Univ. H.Shibata·S.Kitamura

17:20 ~ 17:25

Closing remark H.Shibata(Tohoku Univ.)

International Organized Sessions Process Evaluation and Material Characterization

2011/03/26 Lecture Room 18

Neutron: as a tool for developing miracle steel1

13:00 ~ 14:40 Chairperson: M. Ohnuma (NIMS)

13:00 ~ 13:40

Int. 20 (Invited Lecture) In-situ neutron scattering study of nanostructured steel ... 533
Oak Ridge National Lab. OX.-L.Wang·M.K.Miller, Oak Ridge National Lab./Hong Kong Polytechnic Univ. C.T.Liu, HZB
U.Keiderling, Oak Ridge National Lab. A.D.Stoica·D.Ma

13:40 ~ 14:00

Int. 21 Real time neutron small-angle scattering during cementite spheroidization ... 534
Ibaraki Univ. OY.H.Su·Y.Tomota, JAEA J.Suzuki, NIMS M. Ohnuma, Yokohama National Univ. S.Morooka

14:00 ~ 14:40

Int. 22 (Invited Lecture) Neutron scattering at the HIPPO beamline as a tool for steel development ... 537
LANSCCE OS.C.Vogel

14:50 ~ 16:10 Chairperson: K. Sato (JFE)

14:50 ~ 15:30

Int. 23 (Invited Lecture) In-situ neutron diffraction studies of various metals on engine-X at ISIS ... 539
ISIS OA.M.Paradowska, AGH Univ. of Science and Tech. A.Baczanski, ISIS S.Y Zhang, The Open Univ. A.Rao, The
Open Univ. P.J.Bouchard, ISIS J.Kelleher

15:30 ~ 15:50

Int. 24 In situ stress measurement by neutron diffraction during tension ... 543
-Compression deformation (Bauschinger effect) in nodular graphite cast iron
Ibaraki Univ. OD.Naito·Y.Tomota, JAEA S.Harjo, Hitachi Construction Machinery S.Kubota

15:50 ~ 16:10

Int. 25 Microstructure evolution during isothermal annealing of 17Ni-0.2C martensite steel studied by *in situ* neutron ... 547
diffraction
JAEA OP.G.Xu·S.Harjo·T.Ito, Ibaraki Univ. Y.Tomota

16:20 ~ 17:40 Chairperson: Y. Tomota (Ibaraki Univ.)

16:20 ~ 17:00

Int. 26 (Invited Lecture) Neutron scattering techniques on steel research ... 550
KAERI OB.S.Seong·E.Shin·Y.S Han·C.Woo, Seoul National Univ. J.-Y Choi·H.C.Lee

17:00 ~ 17:20

Int. 27 Quantitative analysis of nano-size carbide precipitated in steels using small-angle X-ray and neutron scattering ... 552
methods
NIMS OY.Oba·M. Ohnuma, Kobe Steel E.Kakiuchi·T.Murakami·H.Hatano, JAEA J.Suzuki

17:20 ~ 17:40

Int. 28 Wetting process of β -FeOOH rust with Ti by small-angle neutron scattering ... 553
NIMS OM. Ohnuma·Y.Oba, Kobelco Research Inst. T.Wakabayashi·K.Sasakawa, Kobe Steel T.Nakayama, JAEA
J.Suzuki

High Temperature Processes

Lecture No. Plenary Session	Title	Speaker	Page
1	Development of technique that efficiently uses space in the yard	S.Kashimura	• • • 105
2	Improvements of sinter mixture granulation at Kokura No.3 sintering plant	T.Fuji	• • • 106
3	Installation capacity enhancement of Oita No.1 sintering machine	Y.Tokunaga	• • • 107
4	Development of blast furnace reaction simulator combining experiment and mathematical model	T.Hirosawa	• • • 108
5	Segregation behavior of nut coke under high coke rate condition of coke mixing in ore layer	N.Uchida	• • • 109
6	Study of mechanism of burden distribution formation by scale model (Development of burden distribution control technology-1)	M.Kadowaki	• • • 110
7	Development of simulation tool for analyzing particle behavior in charging system of blast furnace by using DEM (Development of burden distribution control technology-2)	H.Mio	• • • 111
8	Long-term low productivity operation and transition to high productivity at Kokura No.2 blast furnace	T.Taniguchi	• • • 112
9	Fluorite-free refining on alloy-400	T.Kawamoto	• • • 113
10	Improvement of de-dusting system at EAF steelmaking plant	J.-H.Shin	• • • 114
11	(Nishiyama Commemorative Prize)Development of refining technology of high purity steel	T.Mimura	• • • 115
12	(Nishiyama Commemorative Prize•ISIJ Research Promotion Grant)Change in chemical composition and morphology of de-oxidized products in Fe-Mn-Si-(V,Nb) alloy by heat treatment	H.Shibata	• • • 116
13	Generation of inclusion in molten steel by CaO-SiO ₂ -Al ₂ O ₃ slag	H.Yamamura	• • • 117
14	Rhodium dissolution behavior in the Na ₂ O-SiO ₂ and the CaO-SiO ₂ slag systems	C.Wiraseranee	• • • 118
15	Activity measurement of 1 solid phase and 1 liquid phase equilibrated composition area in CaO-SiO ₂ -CaF ₂ system	S.Hamamoto	• • • 119
16	(Nishiyama Commemorative Prize)Thermodynamics for high functional and environmentally harmonious refining process	Y.Kobayashi	• • • 120
17	Development of anti-alumina-clogging materials characterized by reaction with molten steel(2nd report)	M.Ogata	• • • 121
18	Fatigue failure behavior of Al ₂ O ₃ -SiO ₂ system bricks under compressive stress	Y.Hino	• • • 122
19	Influence that water glass exerts on physical properties of alumina-magnesia gunning refractories	K.Yamada	• • • 123
20	Application of new hot-gunning repair method to RH snorkel	T.Matsui	• • • 124
21	Relation between expansion behavior and bonding of silica mortar	A.Kasai	• • • 125
22	Adhesion control of the tundish on the hot-cycle operation	H.Onoda	• • • 126
23	CO ₂ absorption feature of Li ₂ ZrO ₃ and acceleration of absorption rate by B ₂ O ₃ doping	N.Tokuda	• • • 127
24	Distribution behavior of Pt, Au and Rh during two phase separation of Fe-Cu-C melt	R.Inoue	• • • 128
25	(ISIJ Research Promotion Grant)Influence of shot peening on initial oxidation and surface hot shortness of Cu bearing steel	A.Takemura	• • • 129
26	Splash of a drop impacting on a flat surface with poor wettability	Y.Ueda	• • • 130
27	Dynamic behavior of spheres simultaneously penetrating into a water bath under various wettability conditions	Y.Sakai	• • • 131
28	A novel method of measuring dynamic surface tension from profile of capillary jet	K.Katoh	• • • 132
29	Agglomeration and removal of dispersed particles from liquid under ultrasound irradiation	S.Hao	• • • 133
30	Enhancement of dissolution rate of copper into molten tin under ultrasound irradiation condition	N.Fukuda	• • • 134
31	Influence of gaseous sulfur on carburization rate to iron in CO-H ₂ mixtures	T.Hashimoto	• • • 135
32	Influence of lowering thermal reserve zone temperature on reduction rate of wustite	Y.Miyamoto	• • • 136
33	Influence of mixing ferro coke on blast furnace simulated reaction behavior in a packed mixed bed-II	Y.Tanaka	• • • 137
34	(ISIJ Young Researcher Award)Development of upgrading method of low rank coal for its utilization in cokemaking process	R.Ashida	• • • 138
35	Analysis of coarse defect generation behavior during plastic phase	K.Fukada	• • • 138
36	Effect of inert on coking pressure and plastic coal layer permeability (The mechanism of coking pressure generation-1)	S.Nomura	• • • 139
37	Improvement of coke quality by overlapping effect of coal melting temperature	S.-Y.Baek	• • • 140
38	Improvement of coal handling process for increasing semi-soft coking coal ratio	S.-W.Lee	• • • 141
39	Influence of compressibility of coke cake on coke pushing force	T.Nakagawa	• • • 142
40	Relationship between failure load P_{ff} and drum index (Evaluation of coke strength with materials mechanics approach-2)	H.Hayashizaki	• • • 143
41	Influence of converter slag addition on the coking of blend coal	T.Tanaka	• • • 144
42	Effect of asphalt pitch addition on coke pore structure	Y.Hayashi	• • • 145
43	Development of coke chamber wall monitoring system	T.Yoshihara	• • • 146
44	Development of deposit carbon control technique in coking chamber	T.Niinou	• • • 147
45	Elution behavior of EAF dust in carbonic acid	S.Yokoyama	• • • 148
46	Influence of gas species on elution of oxidizing slag discharged from EAF	T.Shimomura	• • • 149
47	Compressive strength of mortar prepared with wet-ground EAF slags under CO ₂	Nik Hisyamdin Mohad Nor	• • • 150

48	The solidificaion process analysis of admixture of dredge soil and slag for bring up sea grass bed	N.Ishikawa	• • •	151
49	Extraction of rutile from ilumenite ore by magnetic separation	K.Konno	• • •	152
50	Utilization of oily sludge in hot metal pretreatment equipment	M.Sawayama	• • •	153
51	Dissolution behavior of various $(2\text{CaO}\cdot\text{SiO}_2)\cdot(3\text{CaO}\cdot\text{P}_2\text{O}_5)$ solid solutions into water solution with pH control	T.Teratoko	• • •	154
52	Effect of Ps_2 and Po_2 on Fe and Mn distribution between liquid Fe–Mn sulfide and molten slags	S.–J.Kim	• • •	155
53	Control of FeO content in slag at hot metal dephosphorization with statistical approach	Y.Uchida	• • •	156
54	Development of dephosphorization with CaO powder top blowing without CaF_2 (Development of dephosphorization with CaO powder top blowing–1)	T.Tanigaki	• • •	157
55	Development of dephosphorization technology using ladle slag with CaO powder top blowing (Development of dephosphorization with CaO powder top blowing–2)	A.Matsumoto	• • •	158
56	Application of the hot metal dephosphorization model to Al_2O_3 containing slag	S.Kitamura	• • •	159
57	Influence of bottom bubbling condition on metal emulsion formation in Al–Cu alloy and molten salt system	D.–Y.Song	• • •	160
58	Investigation of the bath flow in Q–BOP with water model experiment	F.Ogasawara	• • •	161
59	Technology of decreasing the slag oxidation at the end point of blowing in the converter	J.–B.Choi	• • •	162
60	High efficient dephosphorization technique in decarburization converter utilizing FeO dynamic control	Y.Ogasawara	• • •	163
61	Changes in nitrogen and sulfur composition in liquid steel by blowing $\text{CaO}\text{--}\text{CaF}_2\text{--}\text{Al}_2\text{O}_3$ flux powder under reduced pressure	M.Numata	• • •	164
62	Construction of secondary refining process at Kimitsu works	T.Higashi	• • •	165
63	Examination of hot characteristics of porous material of slit type submerged nozzle	A.Sasaki	• • •	166
64	Properties of SiO_2 contain dense ZrO_2 system raw material for SN–plate	J.Yoshitomi	• • •	167
65	High durable ladle shroud by the improvement of an inner bore material	K.Sakakidani	• • •	168
66	Mechanism of nozzle clogging during continuous casting of REM containing steel	K.Taguchi	• • •	169
67	Solidified structure of SUS304 steel with and without the imposition of electromagnetic field	T.Nishimura	• • •	170
68	Solute distribution in Sn–Pb alloy with and without imposition of electromagnetic vibration	R.Tokushige	• • •	171
69	Molten steel flow control technology in mold at high speed casting over 7.0 m/min	S.–S.Lee	• • •	172
70	Technology of manufacturing broad width slab using electro magnetic stirrer	W.–J.Choi	• • •	173
71	New trends of in–process technology between ferrous and non–ferrous industries	T.Kozuka	• • •	174
72	Recent researches on microwave processing for environmental technology	N.Yoshikawa	• • •	175
73	Effect of ultrasound irradiation on transport phenomena	K.Okumura	• • •	176
74	Grain refinement of 409L steel with Fe–Ti–N master alloy	J.Wang	• • •	177
75	New functions of electromagnetic fields	K.Iwai	• • •	178
76	Effect of Ti content on hot ductility of steel	K.Isobe	• • •	179
77	Improvement of hot ductility via recrystallization of austenite in low carbon steel	M.S.Kang	• • •	180
78	Clarification of hot ductility improvement mechanism by predeformation treatment	Y.Awajjiya	• • •	181
79	Numerical analysis of mold flux behavior at meniscus during continuous casting	E.–Y.Ko	• • •	182
80	(Scientific Achievement Merit Prize)Future perspective and subject for low carbon blast furnace	T.Ariyama		
81	(Nishiyama Commemorative Prize)Development of reducing agents injection technology for reducing CO_2 emissions from ironmaking process	M.Sato	• • •	183
82	(ISIJ Research Promotion Grant)Enhancement of gasification reaction of reducing agent by the addition of Fe or CaO	S.Ueda	• • •	184
83	Evaluation of sinter reducibility and coke reactivity by experimental blast furnace	T.Natsui	• • •	185
84	On the redcution of sinter with injecting reformed–COG into blast furnace shaft	K.Higuchi	• • •	186
85	Prediction of hot metal temperature by monitoring direct reduction ratio	S.–B.Kim	• • •	187
86	Evaluation of BF total model using coupled model of two–fluid and particle tracking method	S.Natsui	• • •	188
87	Influence of gas volume and BF inner volume on gas penetration at shaft gas injection	T.Ariyama	• • •	189
88	Gas–solid flow in blast furnace considering property change of particles in cohesive zone	H.Kurosawa	• • •	190
89	DEM–CFD simulation in blast furnace for low carbon operation	S.Matsushashi	• • •	191
90	(ISIJ Research Promotion Grant)Carbothermic reduction of iron ore–graphite composite under high pressure	E.Kasai	• • •	192
91	Reduction behavior of carbon composite nickel limonite ore briquette	Y.–S.Lee	• • •	193
92	Production of carbon included sinter ore and evaluation of its reactivity in blast furnace atmosphere	C.Kamijo	• • •	194
93	Void structure of granulated raw material bed with dry particles addition (Development of RF–MEBIOS (return fine mosaic embedding for iron ore sintering method) process–4)	Y.Yamaguchi	• • •	195
94	Effect of installed RF–MEBIOS process at Kashima No.3 sinter plant (Development of RF–MEBIOS process–5)	Y.Nakagawa	• • •	196
95	(ISIJ Research Promotion Grant)Phase–field simulation of development of coarse columnar γ grain structure in CC slabs	M.Ohno	• • •	197
96	(ISIJ Research Promotion Grant)Self–propagating high–temperature synthesis of tungsten–free cemented carbide	K.Matsuura	• • •	198
97	GPGPU phase–field simulations during dendritic competitive growth	T.Takaki	• • •	199
98	Modeling of permeability for columnar dendrite based on Kozeny–Carman equation	D.Takahashi	• • •	200
99	Direct observation of Zn–Al alloy solidification on the steel sheet	H.Yasuda	• • •	201
100	Prediction of solid–liquid interfacial energy of steel during solidification	H.Mizukami	• • •	202

101 Comparison of crystallographic orientations determined from solidified pattern and EBSD analysis	H.Esaka	• • •	203
102 Effect of carbon concentration on the as-cast γ grain structure in hyper-peritectic carbon steels	S.Tsuchiya	• • •	204
103 Effect of viscosity on the behavior of liquid phase in centrifugal casting	H.Suzuki	• • •	205
104 (Nishiyama Commemorative Prize)Interfacial oxygen control using an electrochemical potential cell	D.J.Min	• • •	206
105 (Nishiyama Commemorative Prize)Calculated phase diagrams of non-metallic inclusions in steels and its applications	K.Oikawa	• • •	207
106 Evaluation of largest inclusions in Al killed Type 304 stainless steel by using statistics of extreme values	Y.Kanbe	• • •	208
107 Removal of nonmetallic inclusions by gas stirring on ladle refining processes	H.Motomura	• • •	209
108 Mathematical expression on deoxidation equilibria of special steels by Redlich-Kister polynomial	T.Miki	• • •	210
109 Equilibrium relationship between the oxide compounds in $MgO-Al_2O_3-Ti_2O_3$ and molten iron at 1873K	T.Ibuta	• • •	211
110 Reduction of hydrogen content in ESR ingot	J.Sato	• • •	212
111 Reduction of slag treatment cost by slag hot recycling process	K.Sakata	• • •	213
112 Transfer behavior of sulfur between hot metal and multi-phase flux in hot metal desulfurization	K.Takahashi	• • •	214
113 Dissolution reaction of sulfur into liquid calcium	H.Tanigawa	• • •	215
114 Dissolution rate of solid fluxes into molten slag	A.Ishikawa	• • •	216
115 The improvement of lining life by bottom-tuyere-changing of EAF for stainless steel	N.Nukushina	• • •	217
116 Improvement of bloom surface quality by optimizing mold oscillation parameters in continuous casting	M.Shiratori	• • •	218
117 Measurement of normal spectral emissivity for electromagnetically levitated liquid Fe-Ni alloys in a dc magnetic field	H.Kobatake	• • •	219
118 Density measurement of liquid iron-alloys by using electromagnetic levitation technique combined with static magnetic fields	M.Watanabe	• • •	220
119 Noncontact laser modulation calorimetry of high-purity liquid iron	K.Sugie	• • •	221
120 (ISIJ Young Researcher Award)Development of noncontact laser modulation calorimetry for high temperature liquid metal	H.Kobatake		
121 Thermal conductivity measurements of Ge-Sb-Te alloys by hot strip method	R.Lan	• • •	222
122 Dynamic surface tension measurement of liquid iron during adsorption-desorption process of CO gas	K.Morohoshi	• • •	223
123 Progress of rapid multi-physical property measurement method by electrical-optical hybrid pulse-heating technique (Development of capability of measuring thermal expansion)	H.Watanabe	• • •	224
124 Influence of evaporation on surface tension measurement of molten iron	S.Takahashi	• • •	225
125 Determination of initial melting temperature and ending solidifying temperature of liquid phase during sintering process	Y.D.Pei	• • •	226
126 Role of network database system for thermophysical property data for high temperature melts	Y.Yamashita	• • •	227
127 Examples of high temperature liquid physical properties for forging ingot making	K.Kajikawa	• • •	228
128 Effects of grain size on radiative heat transfer in mould fluxes containing iron oxides	A.Kushimoto	• • •	229
129 Iron oxide concentration change in mould flux for continuous casting	M.Wang	• • •	230
130 (ISIJ Research Promotion Grant)Composition dependence of viscosity for molten silicates based on a double logarithm	M.Nakamoto	• • •	231
131 A Modification of viscosity model based on structural information of $CaO-SiO_2-Al_2O_3-R_2O$ slags	S.Sukenaga	• • •	232
132 Viscosity of $SiO_2-CaO-CaF_2$ system	O.Takeda	• • •	233

Environmental, Energy and Social Engineering

Lecture No.	Title	Speaker	Page
Plenary Session			
133	Regeneration methodologies of recycling carbon medium in carbon recycling iron making system	Y.Kato	• • • 234
134	Hydrogen production by using intermediate temperature steam electrolysis with Ni base cermet cathode	T.Ishihara	• • • 235
135	Effect of Ni/SiC surface catalyst of Mg alloy on hydrogen absorption and desorption property	A.Yamamoto	• • • 236
136 (ISIJ Young Researcher Award)	The equilibrium distribution ratio of phosphorous between solid iron and molten slag	N.Maruoka	
137	Effect of slag composition on the reduction reaction of water vapor by converter slag	H.Matsuura	• • • 237
138	Process system for iron ore reduction with ammonia	S.Hosokai	• • • 238
139	Cost evaluation of the hydrogen ironmaking process	M.Ogawa	• • • 239
140 (Scientific Achievement Merit Prize)	Industrial ecology for steel	T.Nagasaka	
141 (Shiraishi Commemorative Prize)	Applicability of steelmaking slag as improvement of bottom sediment	K.Yabuta	
142	Characteristic of heat exchange by direct contact heat exchanger for latent heat storage	T.Nomura	• • • 240
143	Numerical studies on blast furnace gas cleaning facility moisture reduction technology using CFD	Y.-J.Lee	• • • 241
144	An empirical test on the improvements of regenerative combustion burner for reheating furnace in iron & steel industry	J.-R.Jeong	• • • 242
145	Refined powder iron and its manufacturing method	T.Misao	• • • 243
146	Analysis of $C+O=CO$ reaction in modified Tatara steelmaking furnace using chemical affinities by generation of Zuku	J.Tanabe	• • • 244

Instrumentation, Control and System Engineering

Lecture No. Plenary Session	Title	Speaker	Page
147	Development of high speed flatness measurement system using TDI cameras	S.Hashiguchi	• • • 245
148	Development of alignment-guidance device for culver roll mill using parallel projection imaging	T.Kodama	• • • 246
149	Development of high sensitivity inspection system for ERW pipes using phased array ultrasonic testing	Y.Iizuka	• • • 247
150	High current inspection system configuration by using optical CT	H.-C.Choo	• • • 248
151	Automatic ultrasonic testing device for strip mill roll	M.Muramatsu	• • • 249
152	The 3-Dimension monitoring system with 6-radars distribute sensor array for the burden surface of blast furnace	X.Z.Chen	• • • 250
153	The development of continuous measuring apparatus for molten steel temperature in the ladle	B.-I.Kim	• • • 251
154	Work domain analysis on hot strip rolling mill for ecological interface design	T.Sawaragi	• • • 252
155	Usefulness of parallel computing for scheduling problem	K.Fukuda	• • • 253
156	Agent-based planning in iron and steel production(The 3rd report) -Relationship model between experienced agent and unskillful worker-	H.Tamaki	• • • 254
157	(Nishiyama Commemorative Prize)Controlling technology of temper rolling and leveling for ultra-thin gauge strips	M.Yamashita	• • • 255
158	The improvement of hot scarfing process to enhance HCR	S.M.Yoon	• • • 256
159	PCM entry rapid auto tail end stop technology	S.-J.Lee	• • • 257
160	Decrease in coke oven heat consumption by optimal adjustment of multiple fuel valves	K.Tsuda	• • • 258
161	High efficient and high performance ladle crane for steelmaking plant (Achievement of high efficient energy operation using high performance ladle crane-1)	Y.Otani	• • • 259
162	High efficient and high performance ladle crane for steelmaking plant (Development of drive device for efficient crane-2)	Y.Kaneko	• • • 260
163	High efficient and high performance ladle crane for steelmaking plant (Development of high efficient and compact ladle crane-3)	E.Kido	• • • 261

Processing for Quality Products

Lecture No. Plenary Session	Title	Speaker	Page
164	(ISIJ Research Promotion Grant)Formation of fine protrusions on steel sheet and wire by sputter etching	K.Nakasa	• • • 262
165	Surface texturing effects on GA and GI steel sheets utilizing TCT technology	J.-S.Park	• • • 263
166	New electrolytic tinning line and tin free steel line of BAOSTEEL	G.H.Zhu	• • • 264
167	Study of gas jet impingement on the blockage of the air wiping nozzle during galvanizing processes	T.-H.Lee	• • • 265
168	Technology of correcting furnace deformation	K.-J.An	• • • 266
169	(Nishiyama Commemorative Prize)Development of hot rolling technology for high quality production	T.Sasaki	• • • 267
170	Automatic gauge control method during acceleration and deceleration at ultra low speed rolling (The compact continuous cold rolling system;7th report)	Y.Fukuchi	• • • 268
171	The control method of tandem cold rolling mill at ultra low speed rolling (The compact continuous cold rolling system;8th report)	Y.Fukuchi	• • • 269
172	Reducing technology of shape defect of the front end of thick API	J.-C.Yu	• • • 270
173	A numerical study of flow characteristics of a circular water jet impinging on a moving surface covered with water film	Y.Lee	• • • 271
174	Effects of surface roughness on spray cooling characteristics	H.Fukuda	• • • 272
175	(Mishima Medal)Improvement of steel ductility for high performance steel structures	S.Tsuyama	
176	Preventing crack by stretch flanging of high tensile strength steel sheet with additional part	U.Iwashita	• • • 273
177	Effect of geometrical size ratios of steel tube on buckling and wrinkling in compression test	K.Suzuki	• • • 274
178	Development of the high-level(Y-type) hydroforming technology	G.-H.Yoo	• • • 275
179	Plastic deformation behavior and material modeling of cold rolled IF steel sheet under linear biaxial stress paths with large strain	R.Enatsu	• • • 276
180	Strain rate dependency of work hardening behavior of cold rolled steel sheet under biaxial tension	F.Sugawara	• • • 277
181	Springback analysis and its experimental validation considering the Bauschinger effect and nonlinear behavior during unloading	N.Noma	• • • 278
182	Improvement of die life by controlling of die surface morphology and applying solid lubricant	H.Fukaura	• • • 279
183	(Mishima Medal)Basic characteristics of steel welded joints	T.Kasuya	
184	Effect of oxides in high strength weld metal on toughness	S.Nakamura	• • • 280
185	(ISIJ Research Promotion Grant)Quantitative analysis of internal precipitates in high-temperature oxidation of Fe-1wt%Si alloy at 1473 K	W.-P.Huang	• • • 281
186	Evaluation of material fracture by drawing and upsetting of carbon steels for machine structural use and chromium molybdenum steels	K.Komori	• • • 282
187	Improvement of residual stress of drawn wire and bar	R.Koyama	• • • 283
188	Roller leveler straightening and additional twisting for coiled wire	B.Li	• • • 284
189	Development of load prediction model by upsetting test and elementary analysis (Development of CAE for plasticity processing system with ultrasonic vibration-1)	T.Yoshida	• • • 285

Microstructure and Properties of Materials

Lecture No.	Title	Speaker	Page
Plenary Session			
190	Analysis of hydrogen trapping site using artificially produced Fe/TiN multilayers Part VII	T.Wakabayashi	• • • 286
191	Hydrogen desorption behavior of SUS316L and SUS304 during elastic and plastic deformation	M.Kitamura	• • • 287
192	Comparison between Kissinger formula and McNabb–Foster model in simulation of thermal desorption spectrum of hydrogen	L.Cheng	• • • 288
193	Relationship between hydrogen embrittlement susceptibility and enhanced lattice defect formation of high-strength low-alloy steel	T.Nakamoto	• • • 289
194	Delayed fracture properties of surface-softened PC bar	Y.Matsumoto	• • • 290
195	Effect of hydrogen on rolling contact fatigue phenomena due to hydrogen embrittlement	T.Kinami	• • • 291
196	(Mishima Medal)Basic research and application of ultrafine grained steel	S.Torizuka	
197	Quantitative observation of carbon and nitrogen segregation at grain boundaries of ferrite steel by atom probe tomography	J.Takahashi	• • • 292
198	Evaluation of grain boundary segregation energy for carbon and nitrogen in ferritic steel	S.Takaki	• • • 293
199	Effects of thermo-mechanical conditions on grain refinement of pearlite steel	M.Sakamoto	• • • 294
200	(Nishiyama Commemorative Prize)Microstructures of the SUS304&316 processed by multi directional forging and the mechanical properties	H.Miura	• • • 295
201	Dynamic recrystallization during hot deformation of tempered martensite in low and medium carbon steels	U.H.Lee	• • • 296
202	Atom probe tomography analysis of carbon atoms during recovery in Ti added low carbon cold rolled steel	Y.Kobayashi	• • • 297
203	Influence of microstructure change in hot strip on the recrystallization behavior in cold rolled steel sheets	Y.Yamaguchi	• • • 298
204	Surface properties of hot-stamped galvanized steel sheet (Development of galvanized steel sheet for hot stamping–Part1)	K.Imai	• • • 299
205	Mechanical properties of hot-stamped galvanized steel sheet (Development of galvanized steel sheet for hot stamping–Part2)	T.Nishibata	• • • 300
206	Coating structure of hot-stamped galvanized steel sheet (Development of galvanized steel sheet for hot stamping–Part3)	K.Akioka	• • • 301
207	Frictional and heat transfer properties of hot-stamped galvanized steel sheet (Development of galvanized steel sheet for hot stamping–Part4)	M.Nakata	• • • 302
208	Weldability of hot stamped galvanized steel sheet (Development of galvanized steel sheet for hot stamping–Part5)	H.Fujimoto	• • • 303
209	(Nishiyama Commemorative Prize)Analysis of local deformation behavior of steels by nanoindentation technique	T.Ohmura	• • • 304
210	Tensile behavior analysis of dual phase steel in rigid plastic model	S.Nomura	• • • 305
211	Microstructure at interface and mechanical properties of steel / Mg alloy multilayered metal composites by infiltration	S.Nambu	• • • 306
212	Effect of stress ratio on high cycle fatigue properties of alloy718 forging	N.Nagashima	• • • 307
213	A study on the effecting factors to prevent dynamic strain aging on ultra low carbon steel	J.–S.Yook	• • • 308
214	Crystallographic feature on the formation of deformation twins during tensile deformation in polycrystalline high Si steel	T.Mizuguchi	• • • 309
215	Application of grain growth simulation to normal grain growth in steel sheets (Investigation of grain growth Model2)	K.Murakami	• • • 310
216	Effect of cold rolling reduction rate on secondary recrystallized orientation in 3%Si-Fe	T.Imamura	• • • 311
217	Copper precipitation hardening high strength electrical steel	J.–S.Kim	• • • 312
218	Effect of decarburization temperature on the secondary recrystallization behaviors of grain oriented electrical steel	C.–K.Hou	• • • 313
219	Texture formation in Fe-3mass%Si and 430 stainless steel by high-temperature uniaxial compression deformation	Y.Onuki	• • • 314
220	Texture changes in grain growth of non-oriented electrical steel sheets	Y.Arita	• • • 315
221	Thermal conductivity of lamination stacks of non-oriented electrical steel	S.Yamazaki	• • • 316
222	Influence of texture on hysteresis loss of electrical steel	H.Tada	• • • 317
223	Dynamic ferrite transformation behavior at various deformation temperatures in 6Ni-0.1C steel	N.K.Park	• • • 318
224	Effect of magnetic field on aging effect of high carbon steel wire	S.Nishida	• • • 319
225	Cr–N interaction in α iron –Evaluation from the effect of Cr on equilibrium solubility of N	Y.Tanaka	• • • 320
226	Cr–N and Cr–C interactions in α iron –Evaluations from the effects of Cr on the Snoek relaxation	Y.Tanaka	• • • 321
227	Analysis of phase transformation behavior on dual phase cold-rolled steel sheet	T.Yamashita	• • • 322
228	Investigation of macro segregation and solidification structure in small ingots	F.Satou	• • • 323
229	Three dimensional morphology of high carbon lath martensite	K.Ichinotani	• • • 324
230	Effect of phosphorus on M–A constituent formation behavior in low carbon steels	T.Yokota	• • • 325
231	Deformation-induced martensitic transformation behavior of retained austenite dispersed in martensitic stainless steel	Y.Matsuoka	• • • 326
232	Effect of alloy elements on hardenability in B-added steels	T.Fujishiro	• • • 327
233	Effect of Mo addition on Cu precipitation in ferritic stainless steel	S.Kobayashi	• • • 328
234	(Nishiyama Commemorative Prize)Precipitation and hardening behavior of Cu in BCC-, FCC- and dual phase stainless steel	H.Kimura	• • • 329
235	The effect of VC precipitation on the mechanical properties and deformed microstructures of vanadium-alloyed S45C steels	H.H.Kuo	• • • 330

236 Effect of Nb addition and cooling conditions on precipitation hardening of high V added medium carbon steels	E.Kakiuchi	• • •	331
237 Effect of aluminum on oxidation characteristics of fully lamellar TiAl alloys	Y.Koyanagi	• • •	332
238 Effect of grain size on steam oxidation for shot-peened 18Cr–8Ni steels	Y.Nishiyama	• • •	333
239 Development of Fe–30Cr–50Ni–W alloy without γ' precipitation strengthening for advanced USC boilers	H.Semba	• • •	334
240 Effect of heat treatment on microstructure of Ni–19Cr–12Co–6Mo–2Al–3Ti–1W–0.05C–0.005B alloy	S.Oinuma	• • •	335
241 Morphology of γ' precipitates in non-Re single crystal nickel-based superalloy, containing 12%Cr, crept at 1273K, 160MPa	Y.Kubo	• • •	336
242 Creep properties of non-Re single crystal nickel-based superalloy, containing 12%Cr at 1273K	Y.Kubo	• • •	337
243 Growth and exfoliation of steam oxide scale on 9Cr steel tubes used long time in actual boiler	S.Kihara	• • •	338
244 Creep property of A ₃ HAZ simulated high Cr ferritic heat resistant steels	Y.Liu	• • •	339
245 Influence of transient creep on acceleration creep of Mod.9Cr–1Mo steel	F.Abe	• • •	340
246 Relation between creep curve and degradation of 9Cr–W steel	M.Tamura	• • •	341
247 Effect of static recovery on the breakdown of creep strength of Gr.91 steel during long-term creep	R.P.Chen	• • •	342
248 (ISIJ Research Promotion Grant)Effect of preadsorption of polyethylene glycol on the appearance and morphology of electrogalvanized steel sheets	H.Nakano	• • •	343
249 Effect of pre-plating compositions on galvanizing properties in TWIP steel sheet	S.–H.Jeon	• • •	344
250 Effect of annealing in a pure nitrogen atmosphere on the galvanizability of 590TRIP steels	R.–B.Park	• • •	345
251 Prevention of temper coloring on stainless steel by coating alkaline silicate films	Y.Nishida	• • •	346
252 Mechanism of surface-strain-based improvement to chemical conversion phosphate coating for pretreatment of painting on high Si-added steel	Y.Ishiguro	• • •	347
253 Corrosion film mechanism in the high temperature and high carbon dioxide environment of the alloy steel pipe	R.Achiwa	• • •	348
254 Effect of NaCl,Na ₂ SO ₄ contents on high temperature corrosion behavior of SUS310S in carbonization treatment furnace of sewage sludge	H.Takabayashi	• • •	349
255 Verify of HNO ₃ stress corrosion cracking theory by entity specimen analysis (Analyze of stress corrosion cracking of hot blast stove shell-1)	Y.Satoh	• • •	350
256 Proposition of HNO ₃ –H ₂ SO ₄ –HCl stress corrosion cracking theory by experiment verification (Analyze of stress corrosion cracking of hot blast stove shell-2)	Y.Satoh	• • •	351
257 (Satomi Prize)Development of corrosion prediction method for designing steels in the atmosphere	S.Fujita		
258 Development of steel plates for paint use in saline environment	T.Kamimura	• • •	352
259 Effect of alloy composition on corrosion resistance of Fe–Al alloys in HCl solution	S.Tanaka	• • •	353
260 Effect of Cr content on corrosion resistance of Fe–Al alloys in HCl solution	J.Fukuma	• • •	354
261 Improvement of corrosion resistance of surface treated FeAl by mechanical brushing	J.Fukuma	• • •	355
262 (Nishiyama Commemorative Prize)Fracture safety concept based on crack arrest toughness of steels	T.Inoue	• • •	356
263 Numerical simulation model for ductile crack propagation in high-pressure gas pipelines incorporating finite deformation	S.Aihara	• • •	357
264 Effect of solute Ni on mechanical property of ferritic steel	N.Yoshimura	• • •	358
265 The change in dislocation mobility with Ni content in ferritic steels and its effect on the brittle-to-ductile transition	K.Maeno	• • •	359
266 The brittle-to-ductile transition in Fe–Al single crystals	M.Tanaka	• • •	360
267 Scale-bridging 3D/4D characterization on deformation and fracture behavior in DP steels I –Evaluation of stress partitioning using the pulse neutron beam–	S.Morooka	• • •	361
268 Scale-bridging 3D/4D characterization on deformation and fracture behavior in DP steels II –Evaluation of stress partitioning behavior using EBSD-based elastic strain measurement–	M.Ojima	• • •	362
269 Scale-bridging 3D/4D characterization on deformation and fracture behavior in DP steel III –3D image-based stereology of DP steel microstructure–	N.Sato	• • •	363
270 Scale-bridging 3D/4D characterization on deformation and fracture behavior in DP steels IV –Development of vertical fully-automated serial sectioning device–	Y.Adachi	• • •	364
271 (Scientific Achievement Merit Prize)Grain refinement strengthening of steel	S.Takaki		
272 High total-balance martensitic steel suitable for hot stamping-2	T.Hanamura	• • •	365
273 Delamination behavior of ultrafine-grained steels processed by warm tempforming	Y.Kimura	• • •	366
274 Work hardening and microstructure of deformation zone near the cutting edge formed by machining in carbon steel	Y.Katayama	• • •	367
275 Fracture toughness of TRIP-aided martensitic steels	D.Ina	• • •	368
276 Notch fatigue properties of TRIP-aided bainitic ferrite steels	N.Yoshikawa	• • •	369
277 Effect of thermal drilling condition on burring in TRIP sheet steels	A.Nagasaka	• • •	370
278 (ISIJ Research Promotion Grant)Effect of dislocation network on formation process of BWING in steels	H.Ueda	• • •	371
279 (ISIJ Research Promotion Grant)Influence of intergranular bainite on the mechanical property in BWING steels	Y.Takahashi	• • •	372
280 Microstructural characterization of martensitic transformation in novel Fe–Mn based alloys	E.–P.Kwon	• • •	373
281 (ISIJ Research Promotion Grant)Dynamic characteristics during martensitic transformation	H.Terasaki	• • •	374
282 (ISIJ Young Researcher Award)Crystallographic analysis of martensite and bainite structures by means of SEM/EBSD	G.Miyamoto		
283 (ISIJ Research Promotion Grant)Variant selection in martensite and bainite transformation by ausforming process	G.Miyamoto	• • •	375
284 Carbon enrichment in untransformed austenite during bainite transformation stasis	N.Takayama	• • •	376
285 Ausforming on nanobainite steel studied by 3-D visualization and <i>in situ</i> neutron diffraction	W.Gong	• • •	377
286 Phase transformation behavior on worn surface induced by sliding wear in Fe–Ni alloys	H.Sato	• • •	378

287 (Nishiyama Commemorative Prize)Development of high strength UOE pipe with excellent HAZ toughness	Y.Terada	• • •	379
288 (Nishiyama Commemorative Prize)Development of high performance steel plates for high heat input welding	R.Uemori	• • •	380
289 Microstructure observations for tensile-deformed lath martensite in a layer-integrated steel	T.Hayashi	• • •	381
290 4D observation of a fatigue crack in steel	F.Tomizato	• • •	382
291 Effect of the inclusion length on the rolling contact fatigue	Y.Neishi	• • •	383
292 Theoretical analysis of the effect of cementite geometry on its dissolution behavior during austenitization in low-carbon steels	T.Nishibata	• • •	384
293 Measurement of the distribution of martensite hardness by nano-indentation	C.Wakabayashi	• • •	385
294 Numerical simulation of $\gamma \rightarrow \alpha$ transformation in consideration of the variant selection rules (1)	Y.Suwa	• • •	386
295 Effect of Nb addition on tensile properties of high-Mn multiphase steels	C.-S.Oh	• • •	387
296 Stretch-flangeability of a newly developed TRIP-aided martensitic sheet steel	J.Kobayashi	• • •	388
297 Growth and dissolution model for pulsed carburizing/diffusion continuous process (Calculation of microstructure change in vacuum carburizing-4)	H.Ikehata	• • •	389
298 Effect of fine precipitates in austenite on the γ / α transformation behavior in hot-rolled steel	N.Kosaka	• • •	390
299 Analysis of microstructure evolutions in a low carbon steel for continuous cooling processes using multi-phase-field method	Y.Nishida	• • •	391
300 (ISIJ Research Promotion Grant)Multi-phase-field simulation of ferrite transformation based on deformed microstructure	A.Yamanaka	• • •	392
301 Development of recrystallization texture prediction method linking with deformation texture prediction model	T.Morimoto	• • •	393
302 Influence in processing history on thermal magnetic properties	T.Tajima	• • •	394
303 (ISIJ Research Promotion Grant)Structure and magnetic properties of Fe single-crystal thin films prepared by UHV RF magnetron sputtering on GaAs single-crystal substrates	S.Ouchi	• • •	395
304 (ISIJ Research Promotion Grant)Development of Fe-based thermoelectric materials	H.Muta	• • •	396
305 A calculation of induction heating considering temperature dependence of magnetization characteristics	H.Takeuchi	• • •	397
306 (ISIJ Research Promotion Grant)Formulation of the many-body potential of iron for the bcc-fcc phase transformation	Y.Shibuta	• • •	398
307 Molecular dynamics study of the bcc-fcc phase transformation of iron	S.Tateyama	• • •	399
308 Determination method of numerical factors in the simulation model of microstructural change during hot rolling by considering grain size distribution	S.Nanba	• • •	400
309 Soft impingement model considering the difference in ferrite grain size	T.Murakami	• • •	401
310 Material property and formability of 14Cr-0.1Sn ferritic stainless steel (Development of Sn containing stainless steel-1)	E.Ishimaru	• • •	402
311 Mechanism for suppression of surface hot-shortness in 14Cr-0.1Sn ferritic stainless steel (Development of Sn containing stainless steel-2)	M.Hatano	• • •	403
312 Effect of Sn addition on corrosion behavior of 14Cr-0.1Sn ferritic stainless steel (Development of Sn containing stainless steel-3)	H.Matsuyama	• • •	404
313 (Nishiyama Commemorative Prize)Development of corrosion resistant materials for long products	T.Shimizu	• • •	405
314 Corrosion resistance & precipitation behavior of nitride at heat affected zone of lean duplex stainless steels	Y.Oikawa	• • •	406
315 Effect of post-weld heat treatment on reliability of duplex stainless steel	R.Udo	• • •	407
316 Influence of chromium on the Hall-Petch coefficient in ferritic stainless steel	A.Hironaka	• • •	408
317 Development of non-magnetic and high yield point SUS304 steel by warm working	S.Torizuka	• • •	409
318 Improvement of surface roughness in h-BN added austenitic stainless steel	M.Kawajiri	• • •	410
319 Influence of amount of sulfur and sulfide form on cold forgeability of austenitic stainless steels	Y.Hikasa	• • •	411

Process Evaluation and Material Characterization

Lecture No.	Title	Speaker	Page
Plenary Session			
320	The monitoring of the environmental load substance using dioxin precursor analyzer	H.Nagano	• • • 412
321	The size-specific analysis of precipitates in steel	S.Kinoshiro	• • • 413
322	Calibration curves for Ni determination in Fe-Ni alloys by laser-induced plasma emission spectrometry	C.Abe	• • • 414
323 (Asada Medal)	Development of separation techniques for the analysis of iron and steel	M.Hiraide	
324 (Shiraishi Commemorative Prize)	Industrial application of NMR techniques to steel making process and related materials	K.Saito	
325	Microstructural evolution of high-Mn austenitic steels with different stacking fault energy induced by plastic deformation	S.Sato	• • • 415
326	Analysis of adhesion interface between steel cord and dissimilar material	Y.Murakami	• • • 416
327	Degreasing behavior of Ca sulfonate on gold surface observed by SEIRAS	N.Nagase	• • • 417

ISIJ and JIM Joint Session

Lecture No.	Title	Speaker	Page
Plenary Session			
J1	Reduction of titanium oxides in molten CaCl ₂ -CaO	N.Kobayashi	• • • 418
J2	Effects of oxygen content and heat treatment conditions on mechanical properties of Ti-5%Al-1%Fe uni-directionally hot rolled sheets	A.Kawakami	• • • 419
J3	Age hardening behavior and microstructural evolution in Ti-Fe-O-N alloy	T.Nagase	• • • 420
J4	Simulation of alpha grain growth in Ti-rich Ti-Fe-O alloy using phase-field method	A.Seki	• • • 421
J5	Deformation mode in Ti-6Al-4V alloy with ($\alpha + \alpha'$) bimodal microstructure	H.Matsumoto	• • • 422
J6	Static globularization of lamella alpha phase in Ti-6Al-4V alloy	Y.Ito	• • • 423
J7	Effect of compressive stress on α -to- β phase transformation in titanium alloy	B.Liu	• • • 424
J8	(JIM The Meritorious Honor Award)Selected problems in the fatigue behavior of Ti alloys	J.C.Williams	• • • 425
J9	Effect of trace B addition on high-cycle fatigue property of β -type Ti-6.8Mo-4.5Fe-1.5Al alloy	T.Kitaura	• • • 426
J10	High strain rate superplasticity and structural changes of fine-grained β rich- $\alpha + \beta$ type titanium alloy obtained through hydrogen treatment	J.Nakahigashi	• • • 427
J11	Effect of aluminium content on phase constitution and heat treatment behavior of Ti-8.5Mn-1Fe-Al alloys	T.Kinoshita	• • • 428
J12	Relationship between mechanical properties and microstructure of β -type titanium alloy through high-pressure torsion	H.Yilmazer	• • • 429
J13	Improvement of mechanical strength using two kind of alpha phases due to elemental segregation in biomedical beta type titanium alloy	K.Narita	• • • 430
J14	(ISIJ Research Promotion Grant)Development of Young's modulus self-adjustable titanium alloys for biomedical applications	M.Nakai	• • • 431
J15	Formation of refined microstructure and martensitic transformation after hot forging of titanium alloy Ti-10V-2Fe-3Al	T.Akanuma	• • • 432
J16	Formation of deformation structure and elastic limit in martensite structure of Ti-Nb alloys	Y.Mantani	• • • 433
J17	Observation of isothermal omega phase and deformation-induced structural change by orthogonal FIB/SEM	K.Tsuchiya	• • • 434
J18	Improvement of room temperature tensile ductility for Ti-Mo alloy using elemental segregation	S.Emura	• • • 435
J19	Microstructure refinement and strengthening in Al-Fe by high-pressure torsion	C.J.Mauricio	• • • 436
J20	Effects of particle size on Al-Al ₂ O ₃ composites by high-pressure torsion	M.Ashida	• • • 437
J21	Effect of boundary misorientation on tensile behavior of nanostructured high purity aluminium	N.Kamikawa	• • • 438
J22	Microstructure and mechanical properties of wire-brushed Mg alloys	H.Kitahara	• • • 439
J23	In situ fabrication of bulk nanograin-structured Ni-Ti-Al composites by high-pressure torsion	K.Edalati	• • • 440
J24	Microstructure and mechanical properties of pure titanium and Ti-6Al-4V compacts with harmonic microstructure	R.Imao	• • • 441
J25	Grain fragmentation and high strengthening by deformation twins in Cu-Zn-Si alloy by heavy rolling	T.Kobayashi	• • • 442
J26	Microstructure and mechanical properties of Cu-Zn alloy processed by heavy cold rolling and low temperature annealing	H.Miura	• • • 443
J27	Tensile deformation and fracture behavior of SUS316L and SUS304L austenitic stainless steel compacts with harmonic microstructure	M.Rifai	• • • 444
J28	Strain induced transformation and annealing behavior of SUS304 stainless steel processed by HPT	I.Shuro	• • • 445
J29	Strain-induced transformation of SUS316L stainless steel deformed by high pressure torsion	H.C.Wang	• • • 446
J30	Annealing behavior of FeNi alloy processed by high-pressure torsion	S.W.Lee	• • • 447
J31	Ultrafine grained structures of martensitic phase of ultra low C,N stainless steel deformed by ECAP	H.Miyamoto	• • • 448
J32	High speed deformation of high Mn-high C austenitic steels with various mean grain sizes	R.Uejii	• • • 449
J33	Physical mechanism of microwave processing	M.Sato	• • • 450
J34	Ti-M(M=Cr,Fe) alloys nitriding at atmospheric pressure	K.Kashimura	• • • 451
J35	Nitrogen emission behavior of TiN during microwave irradiation	J.Fukushima	• • • 452
J36	Microwave heating processing of metallic glass composites	G.Q.Xie	• • • 453
J37	Heating of Fe ₃ O ₄ and Fe by ferro-magnetic resonance using 5.8GHz microwave	N.Yoshikawa	• • • 454
J38	Process analysis for densification in millimeter wave pressure sintering	H.Kimura	• • • 455
J39	Influence on micro-structure of micro-wave in applied to material	K.Fujisaki	• • • 456
J40	Continuous pig iron making by microwave heating-III (Development of molten pig iron ejecting system from microwave applicator)	K.Hara	• • • 457
J41	Analysis of iron core heated by millimeter-waves	S.Takayama	• • • 458
J42	Dehydration behavior of goethite blended with graphite by microwave heating	Y.Saito	• • • 459
J43	Preparation of silicon with microwave heating	H.Horikoshi	• • • 460
J44	Microwave heating and high temperature complex permittivity measurements of Cr ₂ O ₃ powder	K.Imazeki	• • • 461
J45	Relationship between dielectric constant and density of copper powder compact body -measured by coaxial cable probe method	S.Sano	• • • 462
J46	Permittivity and electric conductivity measurement of FeO(OH)/C powder mixture	K.Kawahira	• • • 463
J47	Effect of specific surface area and electrical conductivity on complex permittivity of Fe ₃ O ₄ and γ -Fe ₂ O ₃ powders	M.Hotta	• • • 464