

# The 192nd ISIJ Meeting

## Date

September 23 to 25, 2026

Reception: 8:30 - 16:00 (September 23-24) , 8:30 - 14:00 (September 25)

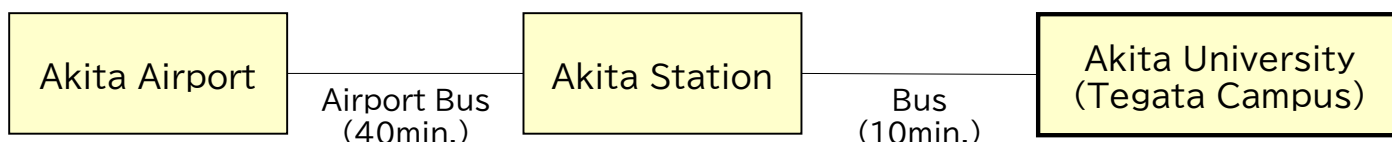
## Venue

Akita University, Tegata Campus

1-1 Tegatagakuen-machi, Akita city 010-8502, Japan

## Access to Akita University

Complimentary shuttle bus service will be available between the conference venue and Akita Station. For the operating schedule, please refer to the ISIJ website. (<https://www.isij.or.jp/meeting/2026autumn/index.html>)



\* For more information, please see the following website.

<https://www.akita-u.ac.jp/eng/access/index.html>

## On-site Check-In Procedures

Please print your participation certificate in color on A4-sized paper at 100% scale and present it at the conference reception desk. A name holder will be provided at the reception. Please fold the certificate into quarters and insert it into the holder.

## Information for the 192nd ISIJ Meeting

For the program and the latest information, please visit the ISIJ website.

<https://www.isij.or.jp/english/meeting/2026autumn/index.html>

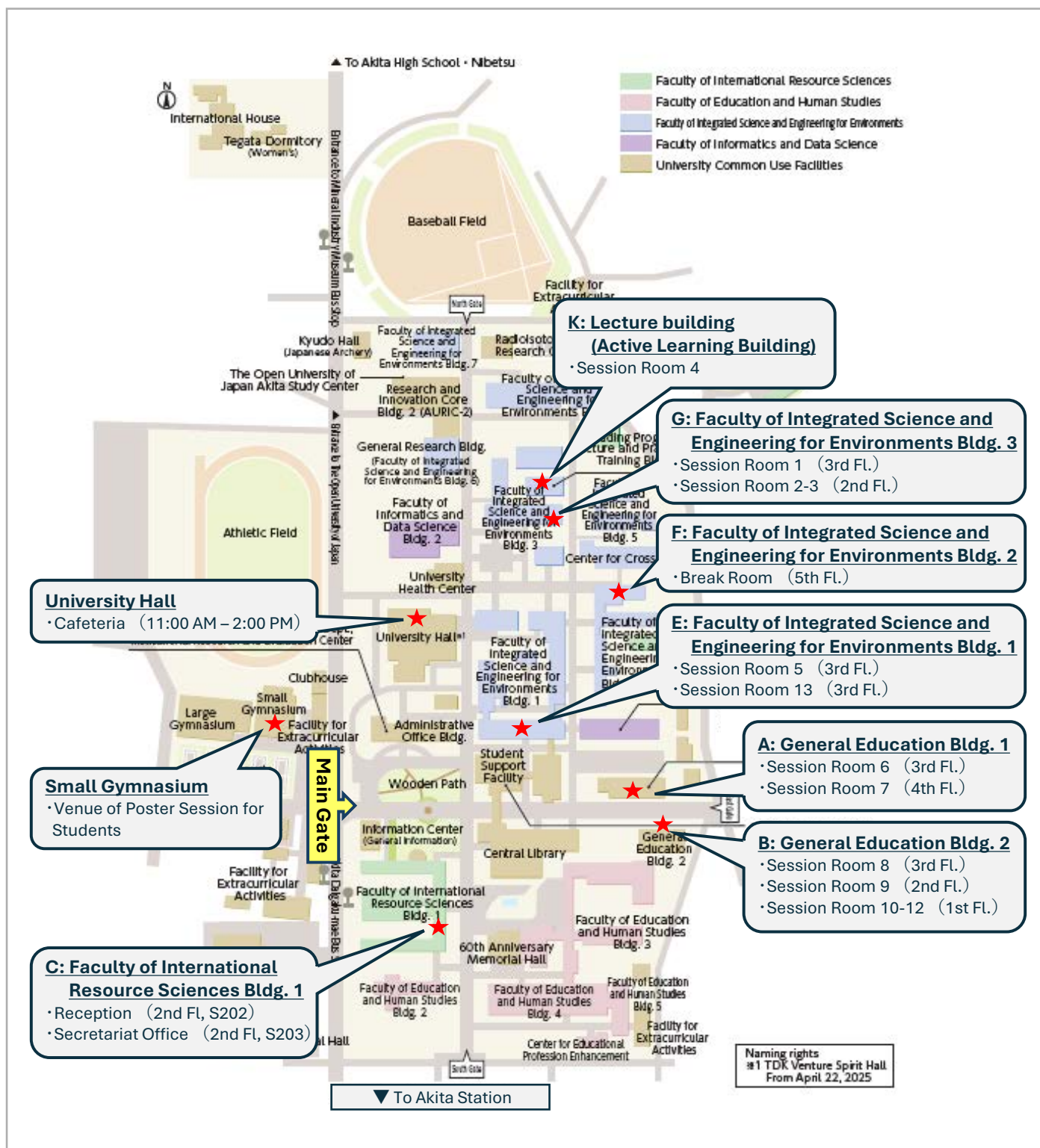


JP

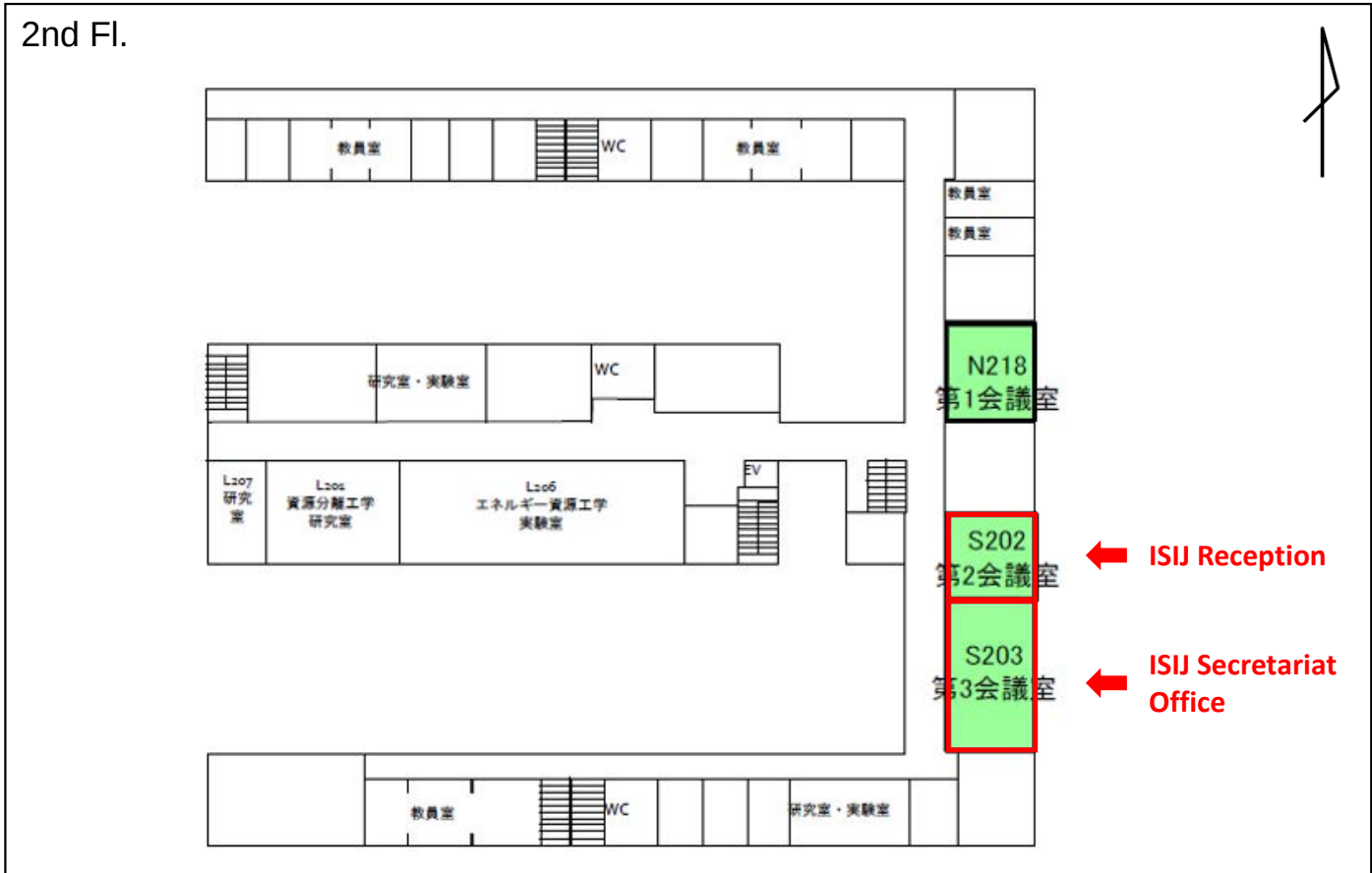


EN

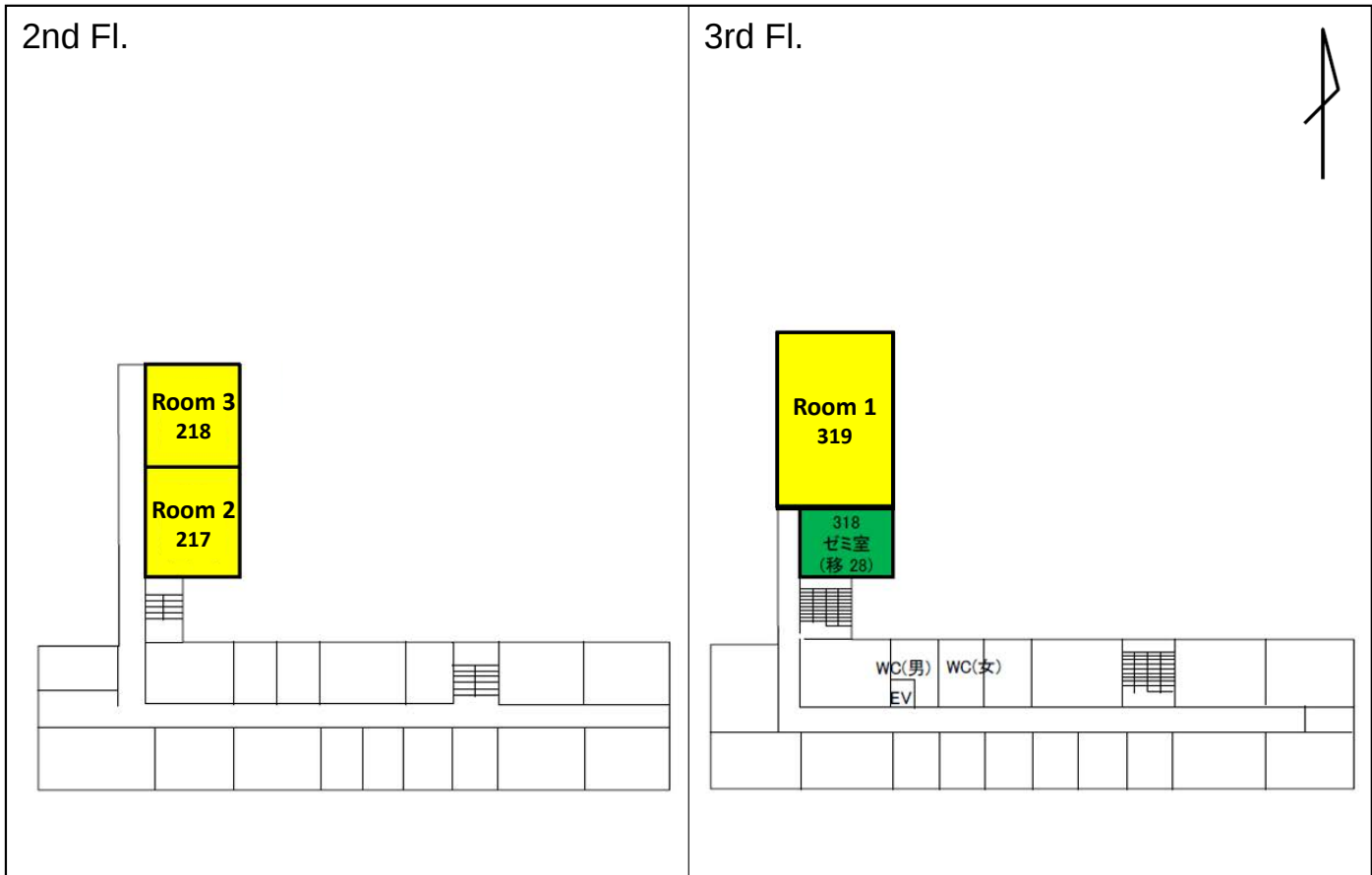
## Campus Map



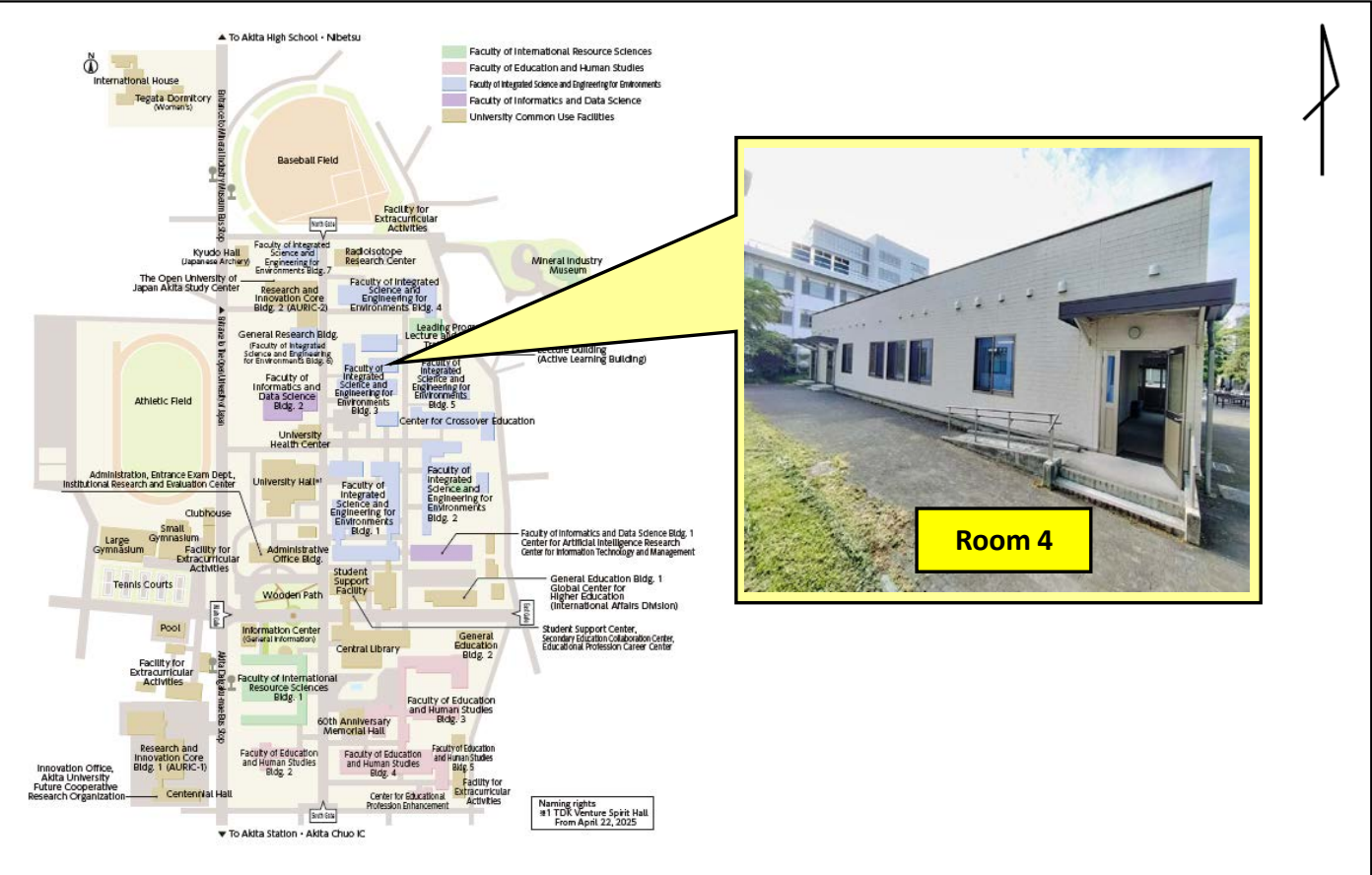
C: Faculty of International Resource Sciences Bldg. 1



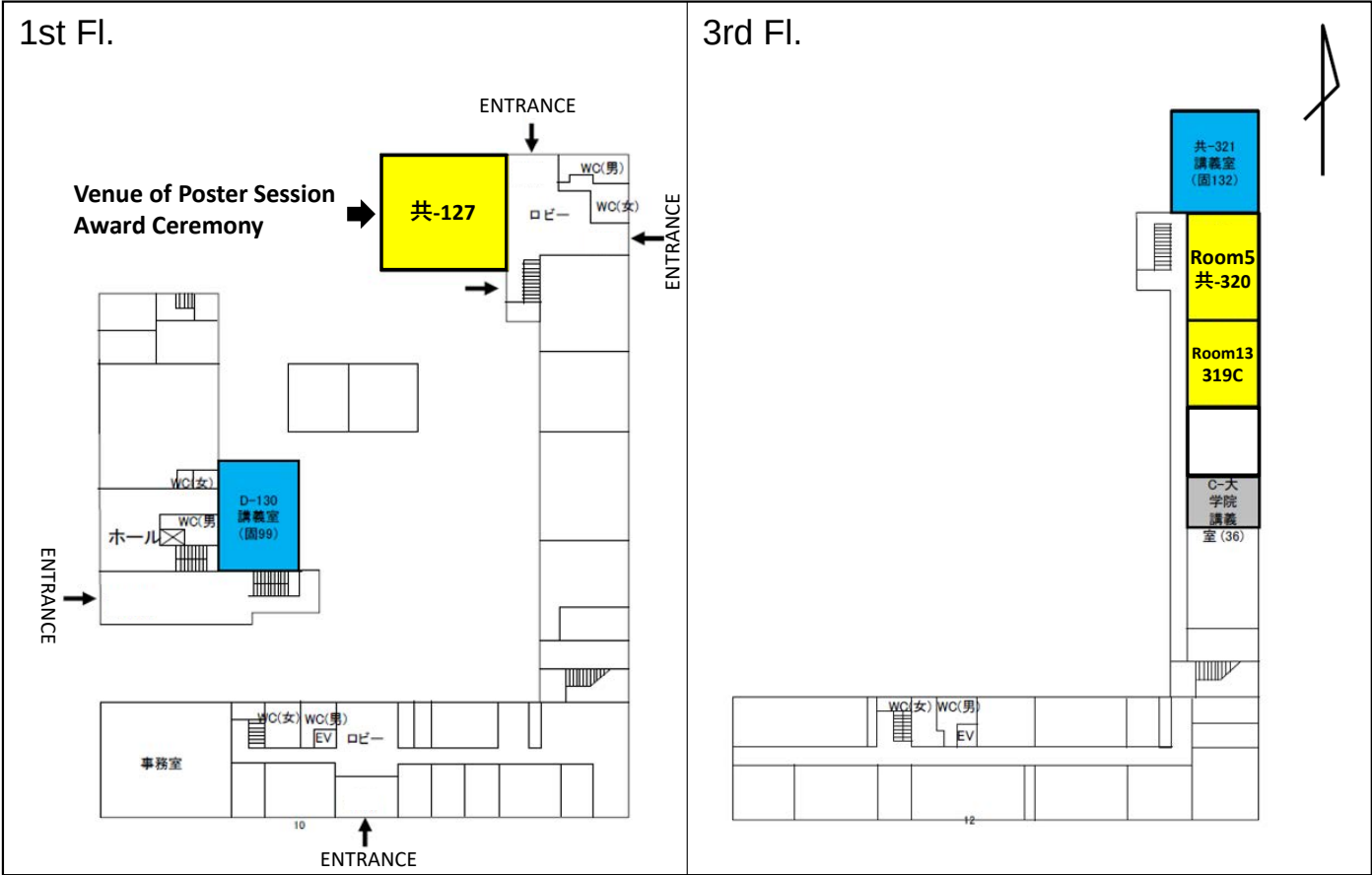
G: Faculty of Integrated Science and Engineering for Environments Bldg. 3



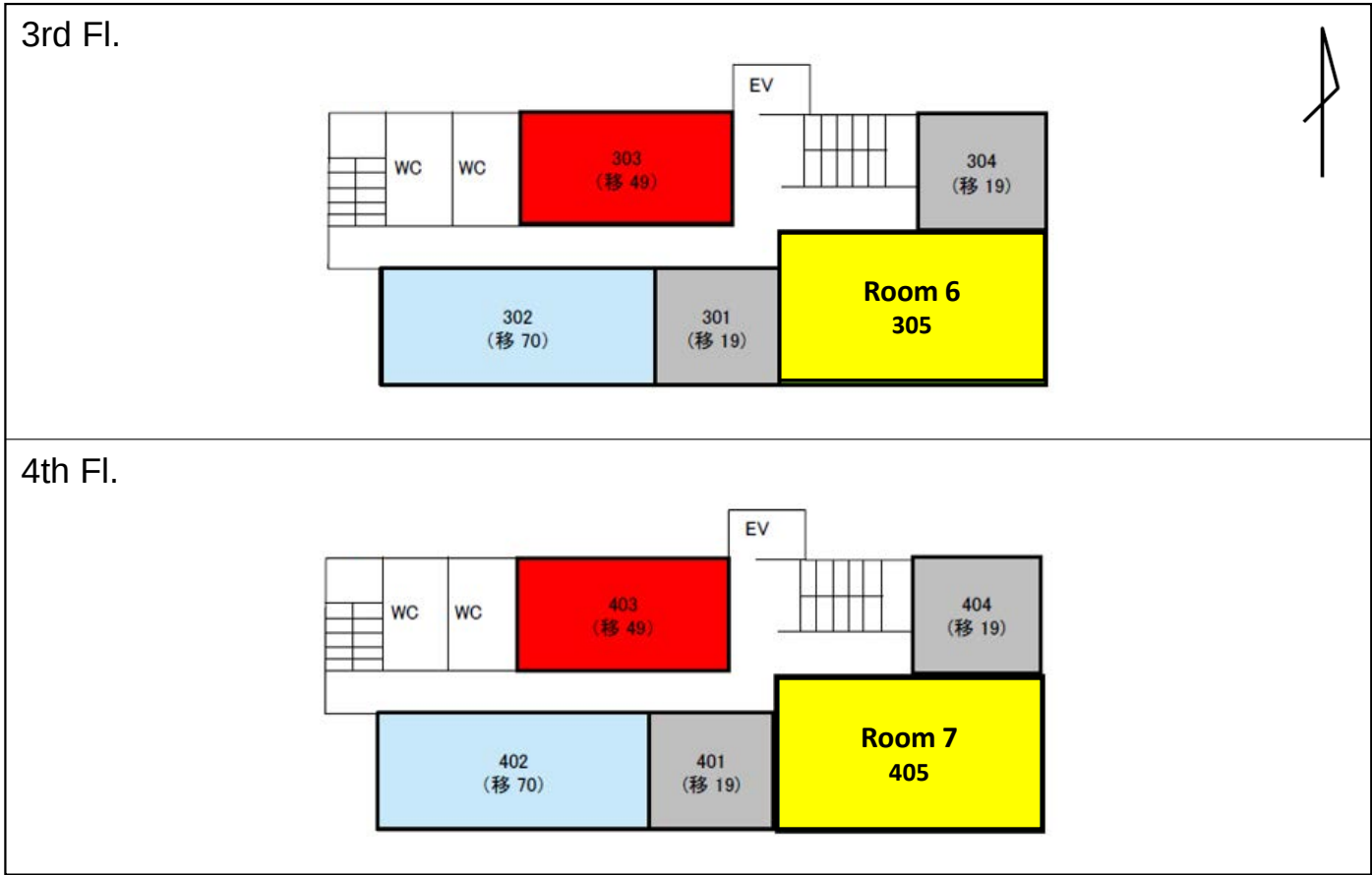
K: Lecture building (Active Learning Building)



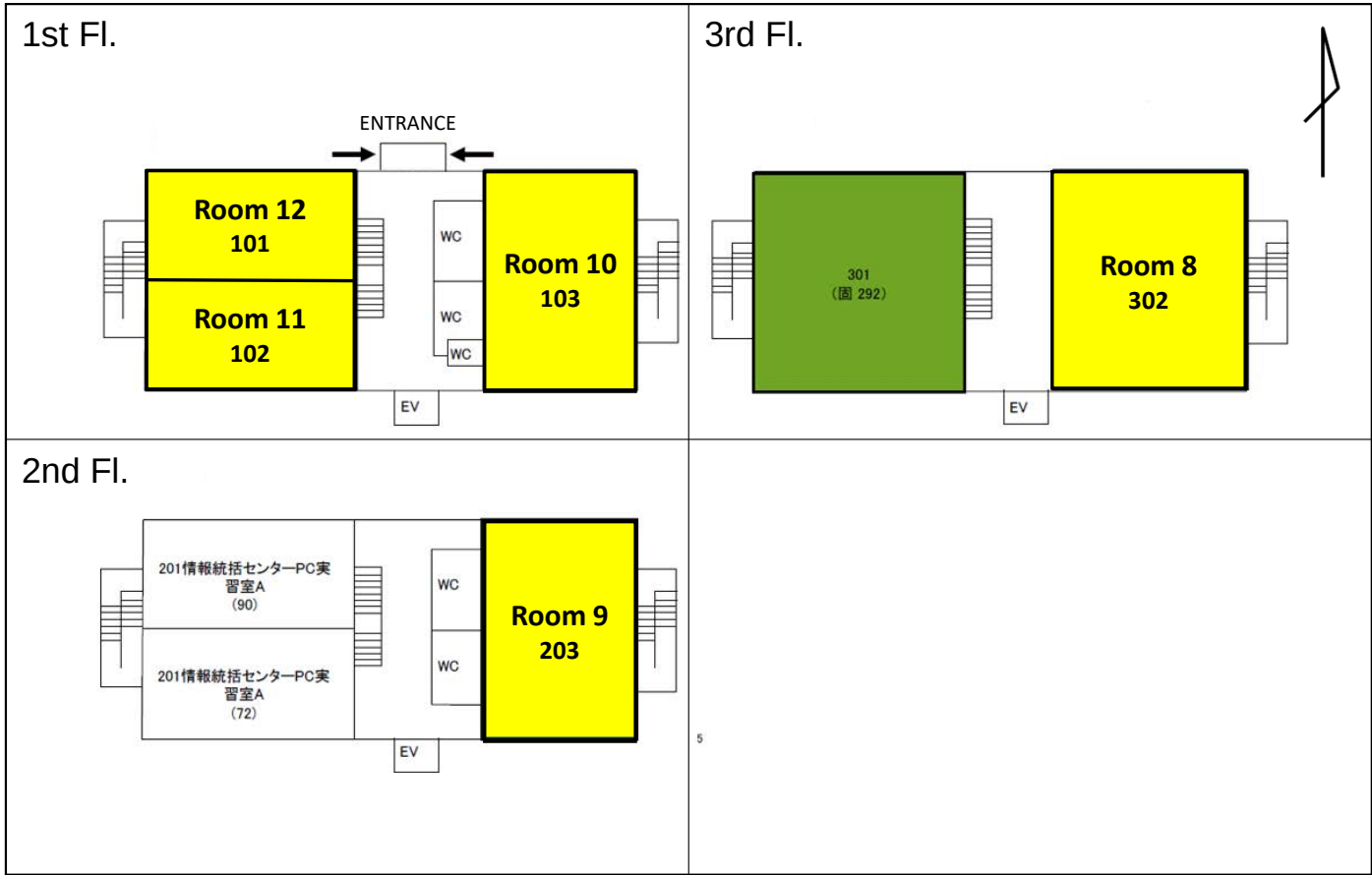
E: Faculty of Integrated Science and Engineering for Environments Bldg. 1



A: General Education Bldg. 1

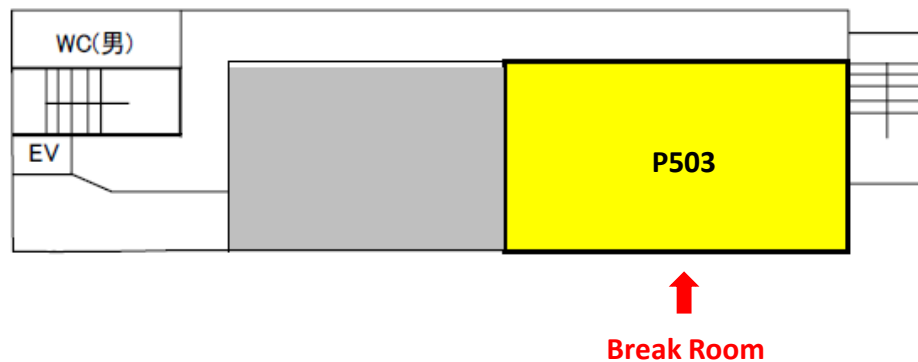


B: General Education Bldg. 2



## F: Faculty of Integrated Science and Engineering for Environments Bldg. 2 (P Building)

5th Fl.



### ■ Information on the Next Meeting (The 193rd ISIJ Spring Meeting)

\* Please refer to the ISIJ website for the latest information.

Dates: March 8 to 10, 2027

Venue: Institute of Science Tokyo, Ookayama Campus

(2-12-1 Ookayama, Meguro-ku, Tokyo 152-8550, Japan)

# Program of the 192<sup>nd</sup> ISIJ Meeting (September 23-25, 2026)

## Discussion Sessions

### High Temperature Processes

| Lecture No.                                                                                                                                    |                                                                                                                                                                                                                  |              |       |      |
|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------|------|
| Discussion Session                                                                                                                             | Title                                                                                                                                                                                                            | Speaker      |       | Page |
| <b>Cokemaking technology for utilization of carbon neutral resources</b>                                                                       |                                                                                                                                                                                                                  |              |       |      |
| <b>(Final report meeting of the study group of "Cokemaking technology for enhancement toward next generation")</b>                             |                                                                                                                                                                                                                  |              |       |      |
| D1                                                                                                                                             | Preparation and size enlargement of high-strength coke by a sequential biomass torrefaction–pulverization–molding–carbonization process                                                                          | J. Hayashi   | • • • | 254  |
| D2                                                                                                                                             | Cedar-derived heavy tar as a binder for high-strength molded coke                                                                                                                                                | J. Miyawaki  | • • • | 255  |
| D3                                                                                                                                             | Strength properties of bio-coke mixed with coking coal for application in blast furnace                                                                                                                          | S. Mizuno    | • • • | 258  |
| D4                                                                                                                                             | Co-processing of waste plastics and biomass to produce raw materials of coke                                                                                                                                     | R. Ashida    | • • • | 259  |
| D5                                                                                                                                             | Development of formed coke from industrial lignin                                                                                                                                                                | H. Nonaka    | • • • | 260  |
| D6                                                                                                                                             | Production of high-strength coke from biomass by chemically modification                                                                                                                                         | Y. Mochizuki | • • • | 263  |
| D7                                                                                                                                             | Evaluation of the reaction degradation behavior of coke blended with torrefied biomass                                                                                                                           | Y. Matsukawa | • • • | 264  |
| <b>Development of electric arc furnace and melting furnace technologies to realize carbon neutrality in the Japanese steel industry</b>        |                                                                                                                                                                                                                  |              |       |      |
| D8                                                                                                                                             | Overview of electric arc furnace and smelting furnace development in the green innovation fund project “Hydrogen utilization in iron and steelmaking GREINS <sup>®</sup> ”                                       | N. Kikuchi   | • • • | 266  |
| D9                                                                                                                                             | Estimation of future copper concentration in steel under steel recycling in Japan                                                                                                                                | I. Daigo     | • • • | 270  |
| D10                                                                                                                                            | Is carbon an enemy or an ally in the steelmaking process?<br>-Development of the Fe <sub>3</sub> C production process and its effective utilization-                                                             | Y. Sasaki    | • • • | 274  |
| D11                                                                                                                                            | Effects of composition and solid phase on the foaming properties of CaO-SiO <sub>2</sub> -Fe <sub>x</sub> O slag                                                                                                 | N. Saito     | • • • | 276  |
| D12                                                                                                                                            | Mixing characteristics in an electric arc furnace using a water model                                                                                                                                            | Y. Higuchi   | • • • | 278  |
| D13                                                                                                                                            | Development of an electric arc furnace simulator with electromagnetic stirring and gas injection                                                                                                                 | S. Takagi    | • • • | 279  |
| D14                                                                                                                                            | Numerical simulation of cold iron melting behavior under molten steel flow in an electric arc furnace                                                                                                            | S. Tsukiyama | • • • | 281  |
| D15                                                                                                                                            | Phase-field simulation of melting behavior of cold iron sources in an electric arc furnace                                                                                                                       | M. Wakai     | • • • | 282  |
| D16                                                                                                                                            | Evaluation of induction heating characteristics of hot briquetted iron and development and validation of a numerical model                                                                                       | Y. Miwa      | • • • | 283  |
| D17                                                                                                                                            | Effect of surface temperature on the behavior of nitrogen concentration in molten iron during arc heating                                                                                                        | H. Muneoka   | • • • | 284  |
| D18                                                                                                                                            | Influence of Al <sub>2</sub> O <sub>3</sub> on phosphorus partition ratio at steelmaking temperature                                                                                                             | Y. Uchida    | • • • | 287  |
| D19                                                                                                                                            | Measurement and formulation of electrical conductivity of CaO-SiO <sub>2</sub> -Al <sub>2</sub> O <sub>3</sub> -Fe <sub>x</sub> O molten slag contributing to hot metal production in electric smelting furnaces | N. Saito     | • • • | 289  |
| D20                                                                                                                                            | Investigation of the dissolution behavior of hot briquetted iron (HBI) in slag                                                                                                                                   | S. Ueda      | • • • | 291  |
| D21                                                                                                                                            | Evaluation of rates of slag/metal reactions at bottom part of electric smelting furnace                                                                                                                          | K. Kato      | • • • | 292  |
| <b>Interim report of the research group on visualization of melt dripping behavior in the lower region of hydrogen-enriched blast furnaces</b> |                                                                                                                                                                                                                  |              |       |      |
| D22                                                                                                                                            | (ISIJ Research Promotion Grant) Three-dimensional pore network structure and mechanical response of coke                                                                                                         | Y. Saito     | • • • | 294  |
| D23                                                                                                                                            | Effect of temperature on degradation behaviors during steam gasification of coke                                                                                                                                 | Y. Ueki      | • • • | 296  |
| D24                                                                                                                                            | Carbon structure evaluation of various cokes for understanding their reactivity in direct carburization                                                                                                          | N. Kannari   | • • • | 298  |
| D25                                                                                                                                            | Initial melt formation behavior of iron-calcium ferrite compacts with different residual FeO                                                                                                                     | K. Ohno      | • • • | 300  |
| D26                                                                                                                                            | Carburization-mechanism of iron by CO-H <sub>2</sub> gas system                                                                                                                                                  | S. Uchiyama  | • • • | 302  |
| D27                                                                                                                                            | Sliding behavior of molten slag on coke                                                                                                                                                                          | H. Makiuchi  | • • • | 304  |
| D28                                                                                                                                            | Effect of reduction degree on the liquid fraction of molten slag in the dripping zone                                                                                                                            | T. Kon       | • • • | 306  |
| D29                                                                                                                                            | Simulation of melts dynamics in the lower molten zone of a hydrogen-enriched blast furnace                                                                                                                       | S. Natsui    | • • • | 308  |



# Program of the 192<sup>nd</sup> ISIJ Meeting (September 23-25, 2026)

## Sustainable Systems

### The development of emerging and advanced seed technologies through the 'Steel Carbon Neutral Research Grant'

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| D30 | Fundamental investigation of influence of wettability on coalescence of liquid metals in molten slag                           | M. Nakamoto  | • • • | 312 |
| D31 | Thermodynamic analysis of slag/metal reaction in melting process of hydrogen-based direct reduced iron                         | K. Kato      | • • • | 314 |
| D32 | Evaluation of sulfur and phosphorus distribution characteristics between molten iron and molten copper                         | Y. Niwa      | • • • | 315 |
| D33 | Identifying high-grade steel and assessing national consumption using the PSPP framework                                       | H. Gao       | • • • | 318 |
| D34 | Fabrication of mortar blocks containing steel-making slags and wood chips as repair materials for damaged coastal environments | N. Uehara    | • • • | 321 |
| D35 | Synthesis of hydrocarbon gases by electrochemical reduction of carbon dioxide and water                                        | Y. Suzuki    | • • • | 322 |
| D36 | Chemical heat battery system for achieving carbon neutrality in the steel making process                                       | K. Nakaso    | • • • | 323 |
| D37 | Direct iron ore reduction using hydrogen plasma arc smelting                                                                   | M. Uchikoshi | • • • | 325 |

### Interim report session of the research group

#### “Thermal energy storage technologies for carbon neutrality of the Iron & Steel Industry”

|     |                                                                                                                                                                                                           |             |       |     |
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| D38 | Advances in thermal energy storage technology development for carbon neutral steelmaking                                                                                                                  | T. Nomura   | • • • | 327 |
| D39 | Evaluation of heat storage and release performance in a 600 °C scale medium to high-temperature packed bed latent heat storage system and development of a numerical model                                | T. Nakamura | • • • | 329 |
| D40 | Evaluation of thermal properties of Al-Si@Al <sub>2</sub> O <sub>3</sub> particles in a fluidized bed                                                                                                     | C. Fushimi  | • • • | 330 |
| D41 | Development of exergy-recuperative carbon dioxide capture and utilization technologies using heat-storage catalysts                                                                                       | T. Nomura   | • • • | 332 |
| D42 | A process for chemical reaction-based CO <sub>2</sub> capture and thermal-to-chemical energy conversion                                                                                                   | S. Hosokai  | • • • | 334 |
| D43 | Smart chemical heat storage system for effective utilization of exhaust heat from steel making process                                                                                                    | K. Nakaso   | • • • | 335 |
| D44 | Development of silicone rubber composite materials for magnesium chloride/ammonia-based thermochemical energy storage systems to utilize low-temperature waste heat from steel production at around 100°C | R. Suzuki   | • • • | 337 |
| D45 | Thermal discharge power enhancement of thermochemical storage composite using calcium hydroxide                                                                                                           | S. Funayama | • • • | 339 |
| D46 | Pre-emptive system assessment for thermal energy storage system towards carbon neutrality in steel industry                                                                                               | S. Fujii    | • • • | 340 |

## Instrumentation, Control and System Engineering

### Systemic optimization of exergy flows in steel production processes

|     |                                                                                                                                                                      |               |       |     |
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| D47 | Development of dynamic exergy flow network for systemic optimization (Exergy flow network construction and exergy analysis for EAF routes)                           | H. Suwa       | • • • | 342 |
| D48 | Challenges in steel production systems toward carbon neutrality                                                                                                      | J. Mori       | • • • | 344 |
| D49 | Visualization and verification of carbon emissions in upstream processes of integrated steelmaking using probabilistic timed automata                                | K. Sakakibara | • • • | 346 |
| D50 | Toward developing an logistics-exergy simulator of steelworks for systemic optimization                                                                              | I. Ono        | • • • | 350 |
| D51 | A proposal for systemic optimization considering energy flows in steel production (Extension to a flexible flow shop model and consideration of machine temperature) | M. Hamada     | • • • | 352 |

### Equipment diagnostics in ironworks using 3D area sensing

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| D52 | Equipment diagnostics in ironworks using 3D area sensing                                                                                                             | I. Ishii      | • • • | 354 |
| D53 | Measurement and modeling of nonlinear vibrations in structural members induced by imperfect support connections                                                      | K. Nakahata   | • • • | 355 |
| D54 | Monocular model-based 3D displacement measurement of conveyor structures with camera vibration compensation                                                          | F. Wang       | • • • | 359 |
| D55 | Improvement of the rhodes method and its application to time-series displacement measurement of conveyor structures                                                  | T. Sano       | • • • | 362 |
| D56 | Crack detection in beam structures using digital image correlation and low-rank mode decomposition                                                                   | Y. Kato       | • • • | 364 |
| D57 | Surrogate modeling of structural simulation for plant equipment diagnosis                                                                                            | K. Sakakibara | • • • | 368 |
| D58 | Toward the development of a surrogate model for truss damage identification (Parametric finite element analysis based on three-dimensional point cloud measurements) | A. Koga       | • • • | 372 |



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## Processing for Quality Products

### Current status and future perspectives of digital twin technologies for pipe manufacturing

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| D59 | Development of thread measurement system for OCTG                                                                          | S. Oshima  | • • • | 376 |
| D60 | FEM-based dimensional prediction for surface flaw in mandrel rolling                                                       | E. Abe     | • • • | 379 |
| D61 | (Invited Lecture) Development of visualization technologies and a data utilization system for ERW steel pipe manufacturing | H. Arakawa | • • • | 383 |
| D62 | (Keynote Lecture) What are the fundamental technologies you need to master to build a digital twin?                        | R. Kikuchi | • • • | 386 |

### Recent trends of the analysis of strip rolling processes

|     |                                                                                                          |               |       |     |
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| D63 | In-situ investigation of roll-bite deformation under different rolling conditions                        | K. Tsukihara  | • • • | 390 |
| D64 | Validation of 3D elasto-plastic finite element analysis of cold rolling using experimental data          | H. Furumoto   | • • • | 394 |
| D65 | FEM analysis of width deformation in a hot strip mill including a width sizing press                     | M. Sano       | • • • | 398 |
| D66 | Plane strain analysis of slip line pattern on rolling of sheet using elastoplastic finite element method | H. Takizawa   | • • • | 402 |
| D67 | Non-uniform elastic-plastic deformation phenomena in strip rolling                                       | J. Yanagimoto | • • • | 406 |
| D68 | 3D finite element analysis of roll deformation in temper rolling                                         | W. Baba       | • • • | 410 |

## Microstructure and Properties of Materials

### Science of martensitic microstructures and their role in material property development

|     |                                                                                                                       |              |       |     |
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| D69 | Internal elastic energy during martensitic transformation in iron alloys                                              | Y. Tsukada   | • • • | 414 |
| D70 | A unified mechanism for burst and grain size dependence of start and burst temperatures in martensite transformation  | T. Tomida    | • • • | 418 |
| D71 | Development on atomic-scale modeling of grain boundary for block boundary in martensite microstructure                | K. Matsubara | • • • | 421 |
| D72 | Relationship between grain boundary character and solute segregation in Fe-C-Mn lath martensite                       | Y. Zhang     | • • • | 422 |
| D73 | Cooperative deformation and the resulting strengthening mechanism in lath martensite: Implication for lath martensite | R. Matsumura | • • • | 425 |
| D74 | Deformation behavior of martensitic steels with various carbon contents                                               | S. Nambu     | • • • | 428 |
| D75 | Effect of hydrogen on fatigue crack growth in high-carbon chromium bearing steel under mixed-mode loading             | Y. Mine      | • • • | 430 |

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## High Temperature Processes

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| 2                                                                                  | Recovery and Restart of blast furnace operation after a blower trip at Kurashiki works                                                                                              | H. Hayashi   | • • • 432 |
| 3                                                                                  | Fukuyama area countermeasures following major troubles in multiple districts                                                                                                        | M. Tsuji     | • • • 433 |
| 4                                                                                  | Effect of reducing charged fines and generated fines in the blast furnace at Nagoya No.3 BF                                                                                         | S. Murotani  | • • • 434 |
| 5                                                                                  | Development of rapid FeO estimation technology with AI image analysis of sinter cake cross-section                                                                                  | Y. Takehara  | • • • 435 |
| <b>Blast furnace 1</b>                                                             |                                                                                                                                                                                     |              |           |
| 6                                                                                  | Development of high-temperature gas generator for blast furnace shaft preheating                                                                                                    | T. Furuyama  | • • • 436 |
| 7                                                                                  | Reduction disintegration mechanism of acid pellet under hydrogen enriched blast furnace conditions                                                                                  | K. Momma     | • • • 437 |
| 8                                                                                  | Transient analysis of coke degradation behavior with gasification reaction                                                                                                          | T. Iwanaga   | • • • 438 |
| 9                                                                                  | Effect of coke reactivity on reducing agent rate in carbon recycling blast furnace                                                                                                  | T. Yotsuya   | • • • 439 |
| <b>Blast furnace 2</b>                                                             |                                                                                                                                                                                     |              |           |
| 10                                                                                 | Reduction and melting behaviors of recovered carbon from exhaust gas and iron ore composite under blast furnace condition                                                           | H. Yanagida  | • • • 440 |
| 11                                                                                 | Effect of carbon material type on interfacial microstructure formation of highly reduced iron ore in contact with carbonaceous materials                                            | K. Fukuyama  | • • • 441 |
| 12                                                                                 | Numerical analysis of the thermal flow of molten iron droplets flowing down an inclined coke substrate                                                                              | T. Tomomitsu | • • • 442 |
| <b>Steel and phosphorus</b>                                                        |                                                                                                                                                                                     |              |           |
| 13                                                                                 | In-situ cokes activation to produce white phosphorus from crude phosphoric acid                                                                                                     | A. Siahaan   | • • • 443 |
| 14                                                                                 | (ISIJ Research Promotion Grant) Dephosphorization of high phosphorus manganese ore using acetylacetone                                                                              | W. Gu        | • • • 444 |
| 15                                                                                 | Phosphorus speciation in iron oxyhydroxides formed in the presence of phosphate:<br>A model study for high-phosphorus iron ore                                                      | K. Shinoda   | • • • 445 |
| <b>Quantification of solidification phenomena using multiple approaches VIII-1</b> |                                                                                                                                                                                     |              |           |
| 16                                                                                 | Development of a DCC phase-field model for quantitative prediction of rapid solidification                                                                                          | T. Morino    | • • • 446 |
| 17                                                                                 | Development of a phase-field data assimilation method for hexagonal alloys                                                                                                          | A. Yamamura  | • • • 447 |
| 18                                                                                 | Enhancement of estimation model for solid-liquid interface properties by inverse problem                                                                                            | G. Kim       | • • • 448 |
| 19                                                                                 | (ISIJ Research Promotion Grant) GPU-AMR implementation of three-dimensional multi-phase-field lattice Boltzmann computations of equiaxed dendrites of growth, motion, and collision | S. Sakane    | • • • 449 |
| <b>Quantification of solidification phenomena using multiple approaches VIII-2</b> |                                                                                                                                                                                     |              |           |
| 20                                                                                 | Automatic extraction method for primary trunk in solidification dendrite structures                                                                                                 | D. Mori      | • • • 450 |
| 21                                                                                 | A machine learning approach for predicting micro-segregation from solidification microstructure images                                                                              | K. Urashima  | • • • 451 |
| 22                                                                                 | Numerical simulation of dendrite deflection under forced convection using LB-QCA method                                                                                             | K. Kaneko    | • • • 452 |
| 23                                                                                 | Evaluation of adhesion of inclusions on the nozzle wall by water model experiment with utilization of hydrophobic interaction                                                       | H. Harada    | • • • 453 |
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| 24                                                                                 | Investigation of the formation mechanisms of microstructural heterogeneity and macro segregation during casting                                                                     | K. Izawa     | • • • 454 |
| 25                                                                                 | Changes in the lattice constant of Fe-C alloys during austenite grain coarsening after massive-like transformation                                                                  | K. Tamura    | • • • 455 |
| 26                                                                                 | Influence of heat treatment on dendrite microstructure and hardness for high-alloy cast iron                                                                                        | H. Miyahara  | • • • 456 |
| <b>Continuous casting</b>                                                          |                                                                                                                                                                                     |              |           |
| 27                                                                                 | Effect of Carbon on susceptibility to hot tearing in SUS430                                                                                                                         | Y. Sakaizawa | • • • 457 |
| 28                                                                                 | Real-time monitoring technology for continuous bubbling equipment in ladle                                                                                                          | S. Kim       | • • • 458 |
| 29                                                                                 | Erosion resistance of Mn/Ce co-doped zirconia for submerged nozzles                                                                                                                 | S. Kim       | • • • 459 |

# Program of the 192<sup>nd</sup> ISIJ Meeting (September 23-25, 2026)

## Research frontier on secondary inclusion formation in steel 1

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| 30 | (ISIJ Research Promotion Grant) Effect of interdendritic flow on microsegregation behavior using numerical simulations | Y. Natsume   | • • • | 460 |
| 31 | Estimation of inclusion engulfment behavior from in situ observation of solidification in a model material             | S. Kawanishi | • • • | 461 |
| 32 | Equilibrium of (Ti,Nb)N inclusion in Fe-18Cr-2Mo alloy at 1473K                                                        | W. Xie       | • • • | 462 |
| 33 | Measurement method for TiN inclusions by using small-angle neutron scattering                                          | A. Yamasaki  | • • • | 463 |

## Research frontier on secondary inclusion formation in steel 2

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| 34  | Evaluation of partition coefficients via random sampling with analytical errors                                    | H. Fukaya   | • • • | 464 |
| 35  | Evaluation of microstructure and solute distribution during unidirectional solidification of Fe-Al-Mn-N-C-P alloys | K. Kato     | • • • | 465 |
| 235 | Evaluation technique for TiN inclusions in high-carbon steel wire rod                                              | S. Tanaka   | • • • | 466 |
| 36  | In-situ observation of thermal evolution of as-solidified microstructure of ALLOY-800HT during reheating           | Y. Yoshioka | • • • | 467 |
| 37  | Measurement of nitrogen solubility in molten Fe-Cu alloys                                                          | M. Uno      | • • • | 468 |

## Nobel processing forum preview: Session 1

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| 38 | Feedstock-dependent microwave SiC synthesis from silicon-based solid wastes toward CO <sub>2</sub> utilization | J. Fukushima | • • • | 469 |
| 39 | Solidification starting position control of supercooled alloy using electromagnetic field                      | M. Makimura  | • • • | 470 |
| 40 | Numerical simulation of fine bubble formation in swirling liquid metal                                         | R. Atsuta    | • • • | 471 |
| 41 | Selective energy supply to a material using a gan semiconductor oscillator                                     | K. Kashimura | • • • | 472 |
| 42 | Elucidation of the mechanism of microwave-assisted carbothermal reduction of SiO <sub>2</sub>                  | T. Miyata    | • • • | 473 |

## Nobel processing forum preview: Session 2

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| 43 | Evaluation of magnetic energy and high magnetic field effects on the $\alpha/\gamma$ phase transformation in pure iron | R. Onodera | • • • | 474 |
| 44 | Model experiments on removal of non-metallic inclusions in molten metal by ultrasound                                  | H. Iwata   | • • • | 475 |

## New ironmaking 1

|    |                                                                                      |           |       |     |
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| 45 | Effect of the state of gangue on pellet shrinkage behavior during hydrogen reduction | K. Seto   | • • • | 476 |
| 46 | Re-oxidization of iron ore fine reduced by hydrogen                                  | K. Fujino | • • • | 477 |
| 47 | Carburization and carbonization behavior in Hydrogen-Direct Reduction Iron           | S. Iizuka | • • • | 478 |

## New ironmaking 2

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| 48 | Formation of Fe <sub>3</sub> C by a two-step reduction-carburization process under low carbon activity          | Y. Kakisaka | • • • | 479 |
| 49 | Effect of gangue-derived slag on the carburization and melting behaviors of fluidized bed hydrogen-reduced iron | H. Sato     | • • • | 480 |
| 50 | Observation of heat transfer behavior to metals by discharge                                                    | T. Akiyama  | • • • | 481 |
| 51 | Effect of pulverized carbon supply conditions on slag foaming behavior                                          | T. Iwama    | • • • | 482 |

## Raw material

|    |                                                                                                                                           |              |       |     |
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| 52 | Quantitative evaluation of Si form in iron ore using MLA                                                                                  | Y. Yamaguchi | • • • | 483 |
| 53 | Quantitative evaluation of mineral phase ratios in iron ore sinter using CNN-based semantic segmentation                                  | R. Higashi   | • • • | 484 |
| 54 | Effects of Al <sub>2</sub> O <sub>3</sub> and SiO <sub>2</sub> addition on the strength of sintered hematite pellets for direct reduction | T. Nishimori | • • • | 485 |

## High temperature reactions

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| 208 | Creep properties of quenched and tempered low-alloy steel plates                                                                         | K. Hashimoto | • • • | 639 |
| 209 | Tensile and fatigue properties of quenched-and-tempered low-alloy steels in the creep temperature regime                                 | D. Fujikawa  | • • • | 640 |
| 210 | Corrosion resistance of Ni-based heat-resistant alloys in a helium environment simulating High Temperature Gas-cooled Reactor conditions | T. Hamaguchi | • • • | 641 |

## Heat-resistant steels and alloys 2

|     |                                                                                                                          |             |       |     |
|-----|--------------------------------------------------------------------------------------------------------------------------|-------------|-------|-----|
| 211 | Evaluation of hydrogen effects on creep rates of SUS316L using hollow specimens tested under different stress conditions | K. Saito    | • • • | 642 |
| 212 | Effect of grain boundary TCP phases on the grain size dependence of creep in a Ni-Cr-Mo alloy                            | T. Yanagiya | • • • | 643 |
| 213 | Effects of $\gamma''$ (D0 <sub>22</sub> ) particle size on the creep rates of Ta-718 type Ni based alloys                | K. Mitsui   | • • • | 644 |

## Heat-resistant steels and alloys 3

|     |                                                                                                                         |               |       |     |
|-----|-------------------------------------------------------------------------------------------------------------------------|---------------|-------|-----|
| 214 | Analysis of deformation behavior during high-temperature tensile test in carbon steel using Z parameter and grid method | N. Koga       | • • • | 645 |
| 215 | Microstructure of long-term crept specimens of 1Cr-0.5Mo steel                                                          | K. Sawada     | • • • | 646 |
| 216 | Estimation of creep constitutive parameters in a welded joint using digital image correlation                           | K. Sato       | • • • | 647 |
| 217 | Effect of build conditions on creep properties of mod. 9Cr-1Mo steel manufactured by laser powder bed fusion            | T. Hatakeyama | • • • | 648 |

## Prediction of microstructure and property

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| 218 | Development and demonstration of automated evaluation system of process-structure-property relationship in structural metallic materials                                                             | G. Miyamoto | • • • | 649 |
| 219 | Determinable domains and predictability limits of three-dimensional inverse stereology                                                                                                               | Y. Adachi   | • • • | 650 |
| 220 | Phase-field simulation of grain growth using 3D-DCT measurement results as initial conditions                                                                                                        | Y. Suwa     | • • • | 651 |
| 221 | Mean-field grain growth under mobility anisotropy: Grain-size distributions compared with microstructure-resolved simulations                                                                        | Z. Wang     | • • • | 652 |
| 222 | Development of a predictive model for decarburization and carburization during heat treatment of steel (Validation of a predictive model for both decarburization and carburization in SCM435 steel) | K. Omura    | • • • | 653 |

## Aging and precipitation

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| 223 | Characterization of the precipitation sequence of transition carbides by near bulk in-situ heating transmission electron microscopy | Y. Kawahara  | • • • | 654 |
| 224 | Effect of VC precipitates on microstructure and deformation in V-added Fe-Ni-C metastable austenitic steel                          | K. Sekiguchi | • • • | 655 |
| 225 | Quantitative evaluation of carbon-enriched regions during low-temperature aging of low-carbon martensitic steel                     | H. Hiroshima | • • • | 656 |

## Hydrogen embrittlement 5

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| 226 | First-principles calculation of H cluster induced by H-H interaction in Fe-Cr-Ni austenitic steels                            | J. Moriyama | • • • | 657 |
| 227 | Hydrogen trapping by precipitates in Alloy 718 using atom probe tomography                                                    | T. Sasaki   | • • • | 658 |
| 228 | Quantification of hydrogen-assisted crack initiation characteristics of SUS316L in a low-temperature hydrogen gas environment | A. Kyoyama  | • • • | 659 |
| 229 | (ISIJ Research Promotion Grant) Observation of fracture surface formed by hydrogen embrittlement in SUS304L steel by EBSD     | S. Torizuka | • • • | 660 |

# Program of the 192<sup>nd</sup> ISIJ Meeting (September 23-25, 2026)

## Process Evaluation and Material Characterization

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| 230                                                                  | Hydrochloric and sulfuric acids-free microwave digestion of stainless steel samples for chemical analyses                                                        | K. Nakayama  | • • • 661 |
| 231                                                                  | Depth profiling of hydrogen in steel using glow discharge optical emission spectroscopy                                                                          | K. Oka       | • • • 662 |
| 232                                                                  | Application of x-ray fluorescence measurement for inline quantitative evaluation of internal oxidation layer in steel sheet                                      | K. Sasaki    | • • • 663 |
| 233                                                                  | Identification of mineral phases formed on continuous casting stoppers using cathodoluminescence                                                                 | S. Imashuku  | • • • 664 |
| 234                                                                  | Approach to elucidation of the Japanese sword structure by using negative muon life time analysis and neutron imaging                                            | Y. Kiyanagi  | • • • 665 |
| <b>Precipitate and inclusion analysis/Crystal structure analysis</b> |                                                                                                                                                                  |              |           |
| 236                                                                  | EBSD analysis of carbides in high-speed steel using the spherical index                                                                                          | T. Fukino    | • • • 666 |
| 237                                                                  | Relationship between measured high-temperature thermal properties and next-generation power device process conditions                                            | S. Suzuki    | • • • 667 |
| 238                                                                  | 4D-STEM virtual dark-field analysis of deformation-induced martensite distribution in SUS304                                                                     | J. Takahashi | • • • 668 |
| <b>Crystal structure analysis</b>                                    |                                                                                                                                                                  |              |           |
| 239                                                                  | (ISIJ Research Promotion Grant) Correction of the equations for stacking fault probability evaluation in tensile-deformed specimens: A neutron diffraction study | T. Ito       | • • • 669 |
| 240                                                                  | (ISIJ Research Promotion Grant) Relationship between microstructure, residual stresses and magnetic properties in functional iron alloys                         | S. Suzuki    | • • • 670 |
| 241                                                                  | Algorithmic reliability of a Wilkinson-type HR-EBSD workflow                                                                                                     | R. Morohoshi | • • • 671 |

# Program of the 192<sup>nd</sup> ISIJ Meeting (September 23-25, 2026)

## ISIJ and JIMM Joint Sessions

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| <b>Titanium and its alloys 1</b>                                                            |                                                                                                                                                                               |              |           |
| J1                                                                                          | Tensile deformed microstructure of layered Ti-Mo by hot rolling of stacked sheets                                                                                             | S. Emura     | • • • 672 |
| J2                                                                                          | Anisotropy in properties of low-temperature linear friction welded joints of Ti-5.5Al-1.5Fe-0.25Si sheets                                                                     | Y. Aoki      | • • • 673 |
| J3                                                                                          | Bulk consolidation and material properties of Ti Ti <sub>3</sub> Al and Al <sub>3</sub> Mo mixed powders through gradual pressurization during heating                        | H. Takamiya  | • • • 674 |
| J4                                                                                          | Single-crystal formation and cellular-dendritic growth in Ti-42Nb alloy fabricated by laser powder bed fusion with a flat-top laser                                           | X. Zhu       | • • • 675 |
| <b>Titanium and its alloys 2</b>                                                            |                                                                                                                                                                               |              |           |
| J5                                                                                          | Effect of specimen size on c-axis tensile behaviour of pure titanium single crystal                                                                                           | S. Ueki      | • • • 676 |
| J6                                                                                          | Plasticity at room and high temperatures of Ti-5.5Al-1.5Fe-0.25Si (Ti-52AFS) alloy                                                                                            | H. Matsumoto | • • • 677 |
| J7                                                                                          | Warm tensile deformation behavior of Ti-5.5Al-1.5Fe-0.25Si                                                                                                                    | Y. Koike     | • • • 678 |
| <b>Titanium and its alloys 3</b>                                                            |                                                                                                                                                                               |              |           |
| J8                                                                                          | Effect of Cu addition on microstructure on mechanical properties of Ti-Fe-Cu-Al alloys                                                                                        | T. Shiraishi | • • • 679 |
| J9                                                                                          | Modeling the contributions of oxygen and iron to high-temperature strength of Ti-6Al-4V alloy                                                                                 | Y. Sekine    | • • • 680 |
| J10                                                                                         | Low temperature aging and superelastic properties of Ti-4Co-10~15Al (mol%) alloys                                                                                             | L. Wen       | • • • 681 |
| J11                                                                                         | (The Japan Institute of Metals and Materials Young Researcher Award) Study on the phase stability and functional enhancement of Ti-based high-temperature shape memory alloys | N. Nohira    | • • • 682 |
| <b>Titanium and its alloys 4</b>                                                            |                                                                                                                                                                               |              |           |
| J12                                                                                         | Compressive deformation behavior of Ti-Zr based alloys with compositional modulated microstructure                                                                            | H. Morizono  | • • • 683 |
| J13                                                                                         | Effects of nitrogen addition on microstructure and mechanical properties of Ti <sub>2</sub> AlC/TiAl composites                                                               | M. Murakami  | • • • 684 |
| J14                                                                                         | Phase-field analysis of multi-variant structure formed via martensitic transformation in Ti-Nb-O alloys                                                                       | D. Sakurai   | • • • 685 |
| J15                                                                                         | Formation mechanism of fine equiaxed $\alpha$ grains in Ti-Fe-O alloys                                                                                                        | K. Sugita    | • • • 686 |
| <b>Materials science of martensitic and bainitic transformations and its applications 1</b> |                                                                                                                                                                               |              |           |
| J16                                                                                         | (The Japan Institute of Metals and Materials Murakami Memorial Award) Development of novel shape memory alloys and SMA-based composites                                       | H. Hosoda    | • • • 687 |
| J17                                                                                         | SEM-DIC strain analysis of reverse martensitic transformation in Ti-Nb-Al shape memory alloy                                                                                  | Y. Hiruma    | • • • 688 |
| J18                                                                                         | A crystal plasticity-aided HD-FIB-DIC approach to quantify type ii internal stress in lath martensite                                                                         | W. Zhao      | • • • 689 |
| J19                                                                                         | Relationship between the number of active slip systems and internal stress field during martensitic transformation in steels                                                  | S. Ito       | • • • 690 |
| <b>Materials science of martensitic and bainitic transformations and its applications 2</b> |                                                                                                                                                                               |              |           |
| J20                                                                                         | In-situ characterization of distributed plastic deformation promoted by low-temperature tempering in lath martensite                                                          | S. Gong      | • • • 691 |
| J21                                                                                         | Effects of Cu on the local deformation behavior of as-quenched lath martensitic steel                                                                                         | S. Wu        | • • • 692 |
| J22                                                                                         | 4D statistical analysis of deformation-induced $\alpha'$ martensitic microstructure evolution using synchrotron nano-CT                                                       | O. Takakuwa  | • • • 693 |
| J23                                                                                         | Analysis of shear band formation on the bending surface of lath martensite using a kinematic slip accommodation index                                                         | N. Maruyama  | • • • 694 |
| <b>Materials science of martensitic and bainitic transformations and its applications 3</b> |                                                                                                                                                                               |              |           |
| J24                                                                                         | The plastic deformation and ductilization mechanism of bainite/martensite high-carbon steels                                                                                  | S. Liu       | • • • 695 |
| J25                                                                                         | Bulge recrystallization and its anisotropic growth in lath martensite with different carbon contents                                                                          | N. Nakada    | • • • 696 |
| J26                                                                                         | Martensitic transformation behavior around B2 precipitate on Fe-Ni-Al Alloys                                                                                                  | T. Moritani  | • • • 697 |
| <b>Materials science of martensitic and bainitic transformations and its applications 4</b> |                                                                                                                                                                               |              |           |
| J27                                                                                         | Effect of martensite lath deformation gradient on the geometrical incompatibility of butterfly variant pairs                                                                  | W. Aoki      | • • • 698 |
| J28                                                                                         | Three-dimensional crystallographic and variant configuration analysis of lath martensite in medium-carbon steel                                                               | A. Shibata   | • • • 699 |
| J29                                                                                         | Variant selection in lower bainite nucleated at austenite twin boundaries after ausforming                                                                                    | K. Shimizu   | • • • 700 |
| J30                                                                                         | TWIN relations and bainite formation in low-alloyed TRIP steel                                                                                                                | M. Takahashi | • • • 701 |

## Program of the 192<sup>nd</sup> ISIJ Meeting (September 23-25, 2026)

### Materials science of martensitic and bainitic transformations and its applications 5

|     |                                                                                                                                                          |                |       |     |
|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------|-----|
| J31 | Analysis of crystal structure changes during stress-induced martensitic transformation in $\beta$ -Ti alloy single crystal using synchrotron In-situ XRD | K. Ono         | • • • | 702 |
| J32 | In situ neutron diffraction study of deformation-induced martensitic transformation at room temperature in type 304 stainless steel                      | T. Miyakawa    | • • • | 703 |
| J33 | Driving force required for $\gamma \rightarrow \epsilon \rightarrow \alpha'$ transformation during cooling in metastable austenitic stainless steel      | T. Masumura    | • • • | 704 |
| J34 | Effect of prestrain on the thin-plate martensite microstructure formation an Fe-25Ni-0.75C alloy                                                         | M. Takayashiki | • • • | 705 |

### Materials science of martensitic and bainitic transformations and its applications 6

|     |                                                                                                                          |              |       |     |
|-----|--------------------------------------------------------------------------------------------------------------------------|--------------|-------|-----|
| J35 | Plastic deformation in martensitic transformation and degradation of superelasticity in Fe–Mn–Al–Ni alloy                | M. Matsumoto | • • • | 706 |
| J36 | Effects of subgrains on superelastic behavior in Fe-Mn-Al-Ni alloy                                                       | M. Kubo      | • • • | 707 |
| J37 | Tensile Superelastic Behavior in $\langle 001 \rangle$ - and $\langle 023 \rangle$ -Oriented Fe–Mn–Al–Ni Single Crystals | K. Song      | • • • | 708 |

### Materials science of martensitic and bainitic transformations and its applications 7

|     |                                                                                                                         |            |       |     |
|-----|-------------------------------------------------------------------------------------------------------------------------|------------|-------|-----|
| J38 | Effect of lattice modulation on thermoelastic martensitic transformation and premartensitic state in Ti-Pd based alloys | H. Ikeda   | • • • | 709 |
| J39 | Microstructure and heat treatment of Ni-Ti alloy with $\text{Ni}_4\text{Ti}_3$ stoichiometric composition               | Y. Asakura | • • • | 710 |
| J40 | Elucidation of magnetic-field-induced phase transformation in $\text{Mn}_3\text{Ga}$ alloys with ultra-low energy loss  | D. Imatomi | • • • | 711 |

# The timetable of the 192nd ISIJ Meeting (September 23-25, 2026 at Akita University)

| Session Room                                                                                          | Sept. 23 (Wed.)                                                                                                                                                                                    |                                                                                                                                             | Sept. 24 (Thu.)                                                                                                                                                |                                                                                                                                             | Sept. 25 (Fri.)                                                                                                                                                                 |                                                    |
|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|
|                                                                                                       | AM                                                                                                                                                                                                 | PM                                                                                                                                          | AM                                                                                                                                                             | PM                                                                                                                                          | AM                                                                                                                                                                              | PM                                                 |
| Session Room 1<br>G. Faculty of Integrated Science and Engineering for Environments Bldg. 3 Room 319  | Cokemaking technology for utilization of carbon neutral resources (Final report meeting of the study group of "Cokemaking technology for enhancement toward next generation") [D1-D7] (9:30-15:15) |                                                                                                                                             | Interim report of the research group on visualization of melt dripping behavior in the lower region of hydrogen-enriched blast furnaces [D22-D29] (9:30-16:30) |                                                                                                                                             | New ironmaking 1・2 [45-51] (9:00-11:40)                                                                                                                                         | Raw material [52-54] (13:00-14:00)                 |
| Session Room 2<br>G. Faculty of Integrated Science and Engineering for Environments Bldg. 3 Room 217  | Development of electric arc furnace and melting furnace technologies to realize carbon neutrality in the Japanese steel industry [D8-D21] (9:10-16:40)                                             |                                                                                                                                             | Quantification of solidification phenomena using multiple approaches VIII-1・2 [16-23] (9:00-12:00)                                                             | Quantification of solidification phenomena using multiple approaches VIII-3 / Continuous casting [24-29] (14:00-16:20)                      | High temperature reactions / Thermodynamics [55-60] (9:40-11:55)                                                                                                                | Converter・Secondary refining [61-64] (13:00-14:20) |
| Session Room 3<br>G. Faculty of Integrated Science and Engineering for Environments Bldg. 3 Room 218  | Young engineer in ironmaking session [1-5] (9:00-10:40)                                                                                                                                            | Blast furnace 1・2 [6-12] (13:00-15:40)                                                                                                      | Research frontier on secondary inclusion formation in steel 1・2 [30-37, 235] (9:00-12:15)                                                                      | Nobel processing forum preview: Session 1・2 [38-44] (14:00-16:40)                                                                           | Young engineer session of coke-making 1・2 [65-72] (9:00-11:55)                                                                                                                  | Coal and coke [73-75] (13:30-14:30)                |
| Session Room 4<br>K. Lecture building (Active Learning Building)                                      | Trends in next-generation green technologies contributing to reducing environmental impact in the iron & steel industry [76-78] (9:00-10:20)<br><br>Steel and phosphorus [13-15] (10:20-11:20)     | Steel slag utilization [82-85] (13:30-14:50)<br><br>Tramp element [79-81] (15:10-16:10)                                                     | Nature positive strategy for the iron and steel industry: Expanding and deepening the scope toward planetary boundaries (9:00-12:10) [Charge-Free]             | The development of emerging and advanced seed technologies through the 'Steel Carbon Neutral Research Grant' [D30-D37] (13:00-16:40)        | Interim report session of the research group "Thermal energy storage technologies for carbon neutrality of the Iron & Steel Industry" [D38-D46] (9:30-16:00)                    |                                                    |
| Session Room 5<br>E. Faculty of Integrated Science and Engineering for Environments Bldg. 1 Room 320  | System [86-89] (10:30-11:50)                                                                                                                                                                       | Systemic optimization of exergy flows in steel production processes [D47-D51] (13:00-15:10)                                                 | Instrumentation・Control [90-97] (9:00-12:00)                                                                                                                   | Equipment diagnostics in ironworks using 3D area sensing [D52-D58] (14:00-16:30)                                                            | -                                                                                                                                                                               | -                                                  |
| Session Room 6<br>A. General Education Bldg. 1 Room 305                                               | Control technologies for free cutting 18-1・2 [98-104] (9:00-11:40)                                                                                                                                 | Fundamental tribological studies on manufacturing processes III / Surface treatments and application [105-111] (13:00-15:40)                | Deformation and joining / Mathematical modeling [117-122] (9:00-11:20)                                                                                         | Current status and future perspectives of digital twin technologies for pipe manufacturing [D59-D62] (13:50-16:40)                          | Recent trends of the analysis of strip rolling processes [D63-D68] (9:05-13:45)                                                                                                 |                                                    |
| Session Room 7<br>A. General Education Bldg. 1 Room 405                                               | -                                                                                                                                                                                                  | Water cooling technologies and oxidation behavior in steel processing [112-116] (13:00-14:40)                                               | Metallurgical technology and culture of the Tohoku Region (9:00-16:40) [2,000yen, Student 1,000yen]                                                            |                                                                                                                                             | Reliability evaluation of welds 8-1・2 [123-131] (9:00-12:15)                                                                                                                    | -                                                  |
| Session Room 8<br>B. General Education Bldg. 2 Room 302                                               | -                                                                                                                                                                                                  | Diffusional and diffusionless transformations 1・2 [132-138] (13:00-15:35)                                                                   | Texture & Electrical steel / Deformation and texture [156-161] (9:30-11:50)                                                                                    | Recovery・Recrystallization / Segregation [162-167] (14:00-16:20)                                                                            | -                                                                                                                                                                               | -                                                  |
| Session Room 9<br>B. General Education Bldg. 2 Room 203                                               | -                                                                                                                                                                                                  | -                                                                                                                                           | Hydrogen embrittlement 1・2 [168-175] (9:00-11:55)                                                                                                              | Hydrogen embrittlement 3・4 [176-182] (14:00-16:35)                                                                                          | Prediction of microstructure and property / Aging and precipitation [218-225] (9:00-12:00)                                                                                      | Hydrogen embrittlement 5 [226-229] (13:00-14:20)   |
| Session Room 10<br>B. General Education Bldg. 2 Room 103                                              | -                                                                                                                                                                                                  | Strength and deformation behavior 1・2 [139-146] (13:00-16:00)                                                                               | The technical session by young engineers of hot rolling / The technical session 1 by young engineers of cold rolling [183-190] (9:00-12:00)                    | The technical session 2 by young engineers of cold rolling / The technical session by young engineers of coating [191-197] (13:00-15:40)    | -                                                                                                                                                                               | -                                                  |
| Session Room 11<br>B. General Education Bldg. 2 Room 102                                              | -                                                                                                                                                                                                  | Fatigue property / Toughness and ductility 1・2 [147-155] (13:00-16:30)                                                                      | Stainless steels 1・2 [198-203] (9:30-11:45)                                                                                                                    | Surface treatment & Corrosion [204-207] (14:00-15:20)                                                                                       | Science of martensitic microstructures and their role in material property development [D69-D75] (9:00-11:40)                                                                   | -                                                  |
| Session Room 12<br>B. General Education Bldg. 2 Room 101                                              | -                                                                                                                                                                                                  | Understanding of long-standing & new issues in heat resistant steels and alloys -The 3rd symposium- (14:00-16:40) [Charge-Free]             | Heat-resistant steels and alloys 1・2 [208-213] (9:30-11:40)                                                                                                    | Heat-resistant steels and alloys 3 [214-217] (14:00-15:20)                                                                                  | Microbial dynamics associated with material-environment interactions and their control: From the perspective of the diversity of microbial functions (9:10-16:00) [Charge-Free] |                                                    |
| Session Room 13<br>E. Faculty of Integrated Science and Engineering for Environments Bldg. 1 Room 319 | -                                                                                                                                                                                                  | -                                                                                                                                           | Elemental analysis [230-234] (9:30-11:10)                                                                                                                      | Precipitate and inclusion analysis/ Crystal structure analysis / Crystal structure analysis [236-241] (14:00-16:15)                         | -                                                                                                                                                                               | -                                                  |
| JIMM Room K<br>Faculty of International Resource Sciences Bldg. 1 Room S302                           | -                                                                                                                                                                                                  | -                                                                                                                                           | ISIJ and JIMM Joint Sessions Titanium and its alloys 1・2 [J1-J7] (9:00-11:30)                                                                                  | ISIJ and JIMM Joint Sessions Titanium and its alloys 3・4 [J8-J15] (14:10-17:10)                                                             | -                                                                                                                                                                               | -                                                  |
| JIMM Room B<br>Faculty of Education and Human Studies Bldg. 3 Room 254                                | ISIJ and JIMM Joint Sessions Materials science of martensitic and bainitic transformations and its applications 1 [J16-J19] (10:10-11:50)                                                          | ISIJ and JIMM Joint Sessions Materials science of martensitic and bainitic transformations and its applications 2・3 [J20-J26] (13:00-15:30) | ISIJ and JIMM Joint Sessions Materials science of martensitic and bainitic transformations and its applications 4・5 [J27-J34] (9:00-11:50)                     | ISIJ and JIMM Joint Sessions Materials science of martensitic and bainitic transformations and its applications 6・7 [J35-J40] (14:00-16:10) | -                                                                                                                                                                               | -                                                  |
|                                                                                                       | Banquet (18:30-20:30 at 4th Fl. Akita Castle Hotel) [12,000yen]                                                                                                                                    |                                                                                                                                             | -                                                                                                                                                              | Poster Session for Students (12:00-14:30 at Small Gymnasium) [Charge-Free]                                                                  | Poster Session Award Ceremony (10:00-11:00 at Faculty of Integrated Science and Engineering for Environments Bldg. 1 Room 127) [Charge-Free]                                    | -                                                  |

[ ] : Lecture Number  
( ) : Lecture Time  
■ : Event to be held during the ISIJ Meeting (Symposium)