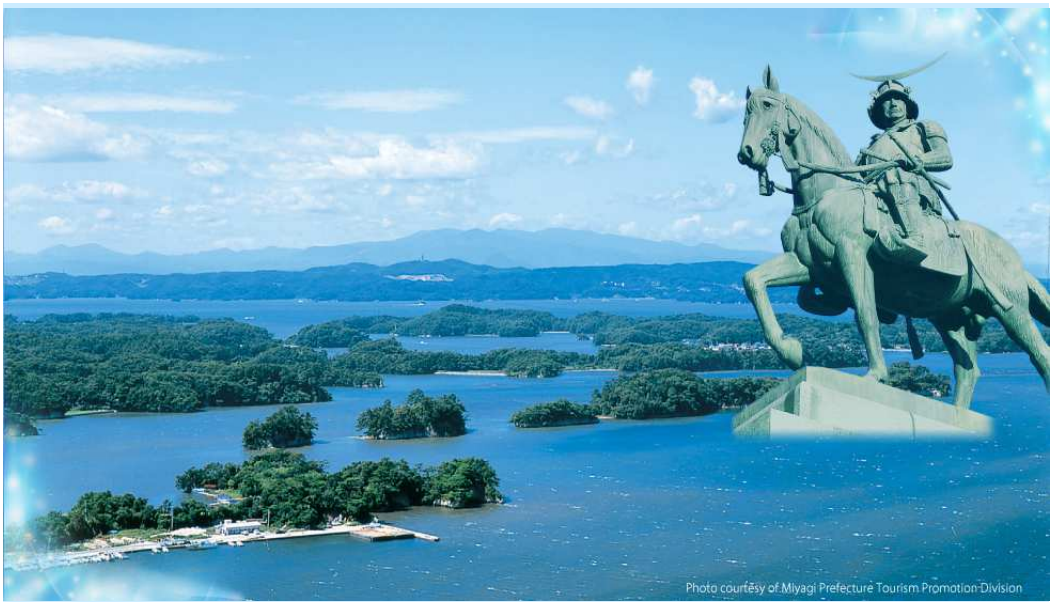
Third Announcement and Call for Papers

GEC 2022/ICRP-11

October 3 - 7, 2022
Sendai International Center
Sendai, Japan

The 75th Annual Gaseous Electronics Conference & The 11th International Conference on Reactive Plasmas



Organized by
GEC Executive Committee
International Organizing Committee of ICRP-11

Supported by
American Physical Society

Co-sponsored by
The Japan Society of Applied Physics

https://www.apsgec.org/gec2022/

General Information

The 75th Annual Gaseous Electronics Conference (GEC-2022) will be held as an international joint conference with the 11th International Conference on Reactive Plasmas (ICRP-11).

GEC, a special meeting of the APS Division of Atomic, Molecular, and Optical Physics (DAMOP), promotes ideas on the physical and chemical processes and dynamics taking place in partially ionized, collisional plasma and between the atoms, molecules, charged particles, photons, waves, and fields. The GEC has a long leadership history of presenting fundamental and basic science contributions on plasma sources, diagnostics, simulation, plasma chemistry, basic phenomena, atomic and molecular processes. In recent years, GEC has also been a leading venue for reporting on emergent areas of plasma-biotechnology, plasma medicine, multiphase plasmas, environmental applications and atmospheric-pressure plasma systems.

ICRP has been taking place based on the initiative of the Division of Plasma Electronics, the Japan Society of Applied Physics since 1991. The subjects covered in ICRP are the entire field of reactive plasmas and their applications to material, environment, energy, space, bio and medical fields with emphasis on basic phenomena, technologies, and the underlying basic physics and chemistry.

The GEC-2022/ICRP-11 will continue its tradition of offering a truly outstanding venue for leading research in low temperature plasma science and collision physics.

Themes ranging from fundamental plasma research to advanced topics will be discussed at GEC-2022/ICRP-11.

Sendai Tanabata Festival

Akiu Hot Spring

Scientific Program

The scientific program occurs from Tuesday-Friday with three to four parallel oral sessions consisting of contributed talks, invited talks, and Prize talks, which are 15, 30, and 45 minutes in length, respectively. Contributed posters will be presented during the afternoon poster sessions in the middle of the week.

The main program is preceded by workshops on Monday. Workshop topics are industrial plasmas, catalytic effects in plasma-liquid interaction, functional processes in plasma-solid reactions, and plasmas for space propulsion.

Conference Topics

General Sessions:

1. Atomic & molecular process

1.00 Atomic and molecular collisional and dynamical processes
1.01 Electron and photon collisions with atoms and molecules: excitation
1.02 Electron and photon collisions with atoms and molecules: ionization
1.03 Heavy-particle collisions
1.04 Dissociation, recombination and attachment
1.05 Distribution functions and transport coefficients for electrons and ions
1.06 Other atomic and molecular collision phenomena

2. Plasma science

2.01 Nonequilibrium kinetics of low-temperature plasmas
2.02 Basic plasma physics phenomena in low- temperature plasmas
2.03 Plasma boundaries: sheaths, boundary layers, others
2.04 Plasma-surface interactions
2.05 Plasma diagnostic techniques
2.06 Modeling and simulation: computational methods
2.07 Modeling and simulation: validation and verification
2.08 Modeling and simulation: plasma sources
2.09 Modeling and simulation: chemical reactions
2.10 Modeling and simulation: other
2.11 Glows: dc, pulsed, microwave, others
2.12 Capacitively coupled plasmas
2.13 Inductively coupled plasmas
2.14 Magnetically-enhanced plasmas: ECR, helicon, magnetron, others
2.15 Atmospheric and high pressure plasmas: jets and gliding arcs
2.16 Atmospheric and high pressure plasmas: dielectric barrier and corona discharges
2.17 Atmospheric and high pressure plasmas: catalysis and chemical conversion

2.18 Thermal plasmas: arcs, jets, switches, others
2.19 Plasmas in liquids
2.20 Plasma on or contacting liquids
2.21 Plasmas and aerosols
2.22 Negative-ion and dust-particle-containing plasmas
2.23 Gas phase plasma chemistry
2.24 Other plasma science topics

3. Plasma applications
3.01 Plasmas for light production: laser media, glows, arcs, flat panels, and novel sources
3.02 Plasma etching
3.03 Plasma deposition
3.04 Plasma ion implantation
3.05 Green plasma technologies: environmental and energy applications
3.06 Plasma processing for photovoltaic applications
3.07 Biological, medical, and agricultural applications of plasmas
3.08 Plasma propulsion and aerodynamics
3.09 Plasmas for nanotechnologies, flexible electronics, and other emerging applications
3.10 Plasma for other materials processing and synthesis

Workshop:

1. Industrial plasma technologies
2. Plasma physics for space propulsion technologies
3. Functional surfaces in plasma elementary and process-applicable reactions
4. Catalytic effects in plasma-liquid interaction

Matsushima

Plenary and Invited Speakers

Plenary:

Will Allis Prize Talk

Makabe, Toshiaki (Keio University, Japan)
"40 years with studies on radiofrequency plasma and related transport theory"

The GEC Executive Committee is pleased to recognize Professor Emeritus Makabe as the recipient of the 2022 Will Allis Prize for the Study of Ionized Gases.

Reactive Plasma Award Talk

Hori, Masaru (Nagoya University, Japan)
"Evolution of Reactive Plasma Processes by Radical Control" (tentative)

The International Organizing Committee of ICRP-11 is pleased to recognize Professor Hori as the recipient of the 2022 Reactive Plasma Award.

General Sessions:

Adamovich, Igor	Ohio State University, USA
Agarwal, Sumit	Colorado School of Mines, USA
Akatsuka, Hiroshi	Tokyo Institute of Technology, Japan
Barrachina, Raul	Bariloche Atomic Centre, Argentina
Barret, Steven	Massachusetts Institute of Technology, USA
Bourdon, Anne	Ecole Polytechnique, France
Camata, Renato	University of Alabama at Birmingham, USA
Charles, Christine	The Australian National University, Australia
Chang, Bingdong	Technical University of Denmark, Denmark
Chiang, Wei-Hung	National Taiwan University of Science and Technology, Taiwan
Choe, Wonho	KAIST, Korea
Colgan, James	Los Alamos National Laboratory, USA
Cvelbar, Uros	Jožef Stefan Institute, Slovenia
Fontes, Christopher	Los Alamos National Laboratory, USA
Gans, Timo	Dublin City University, Ireland
Gherardi, Matteo	University of Bologn, Italy
Gibson, Andrew	Ruhr University Bochum, Germany
Hamdan, Ahmad	Université de Montréal, Canada

Hara, Kentaro	Stanford University, USA
Haruyama, Tetsuya	Kyushu Institute of Technology, Japan
Helmersson, Ulf	Linköping University, Sweden
Hill, Christian	Vienna International Centre, Austria
Hoshino, Masamitsu	Sophia University, Japan
Iqbal, Muzammil	Korea Institute of Machinery and Materials, Korea
Ishikawa, Kenji	Nagoya University, Japan
Kadyrov, Alisher	Curtin University, Australia
Kamataki, Kunihiro	Kyushu University, Japan
Kersten, Holger	Kiel University, Germany
Komuro, Atsushi	The University of Tokyo, Japan
Lacoste, Deanna	King Abdullah University of Science and Technology, Saudi Arabia
Laroussi, Mounir	Old Dominion University, USA
Levko, Dmitry	Esgee Technologies Inc., USA
Likhanskii, Alexandre	Applied Materials, Inc., USA
Lietz, Amanda	North Carolina State University, USA
Lim, Yegeon	KAIST, Korea
Liu, Dingxin	Xi'an Jiaotong University, China
Maguire, Paul	Ulster University, UK
Mesbah, Ali	University of California, Berkeley, USA
Nagashima, Yasuyuki	Tokyo University of Science, Japan
Namba, Shinichi	Hiroshima University, Japan
Nunomura, Shota	National Institute of Advanced Industrial Science and Technology, Japan
O'Connor, Robert	Dublin City University, Ireland
Oehrlein, Gottlieb	University of Maryland, USA
Ptasinska, Sylwia	University of Notre Dame, USA
Puac, Nevena	Institute of Physics Belgrade, Serbia
Ren, Xueguang	Xi'an Jiaotong University, China
Scheiner, Brett	Los Alamos National Laboratory, USA
Schücke, Lars	Ruhr-University Bochum, Germany
Shigeta, Masaya	Tohoku University, Japan
Shinoda, Kazunori	Hitachi Company, Japan
Smolyakov, Andrei	University of Saskatchewan, Canada
Sun, Jing-Yu	Dalian University of Technology, China
Suzuki, Haruka	Nagoya University, Japan
Tachikawa, Masanori	Yokohama City University, Japan
Takashima, Keisuke	Tohoku University, Japan
Trelles, Juan P.	University of Massachusetts Lowell, USA
Trieschmann, Jan	Brandenburg University of Technology, Germany
Uchida, Giichiro	Meijo University, Japan

Veilleux, Jocelyn	Universite de Sherbrooke, Canada
Zhang, Cheng	Chinese Academy of Sciences, China
Zhang, Yuantao	Shandong University, China
Zheng, Bocong	Fraunhofer USA Center Midwest, Michigan State University, USA

Workshops:

Industrial plasma technologies

Moriya, Tsuyoshi	Tokyo Electron Limited, Japan
Kim, Jaeho	Samsung Electronics, Korea
Lee, Dae Hoon	Korea Institute of Machinery and Materials, Korea
Kenney, Jason	Applied Materials, USA
Ohtake, Hiroto	Hitachi High Technologies America, USA
Tatsumi, Tetsuya	Sony Semiconductor Solutions Corporation, Japan

Plasma physics for space propulsion technologies

Boswell, Rod	Boswell Technologies, Australia
Merino, Mario	Universidad Carlos III de Madrid, Spain
Little, Justin	University of Washington, USA
Fruchtman, Amnon	Holon Institute of Technology, Israel
Mazouffre, Stéphane	CNRS - ICARE laboratory, France
Kawashima, Rei	Shibaura Institute of Technology, Japan
Cho, Shinatora	Japan Aerospace Exploration Agency, Japan

Functional surfaces in plasma elementary and process-applicable reactions

Kurahashi, Mitsunori	National Institute for Material Science, Japan
Nakamura, Hiroaki	National Institute for Fusion Science, Japan
Ibano, Kenzo	Osaka University, Japan
Nozaki, Tomohiro	Tokyo Institute of Technology, Japan
Kim, June Young	Seoul National University, Korea
Stamate, Eugen	Technical University of Denmark, Denmark

Catalytic effects in plasma-liquid interaction

Zhou, Renwu	University of Sydney, Australia
Murakami, Tomoyuki	Seikei University, Japan
Shimizu, Naohiro	Nagoya University, Japan
Bogaerts, Annemie	University of Antwerp, Belgium

Contributed Papers

Call for Contributed Papers

Abstracts:

Contributed papers will be given orally in a 15-minute timeslot (12 minutes for presentation and 3 minutes for questions) or as a poster. For either mode, authors must submit an abstract, which succinctly identifies the problem, describes the approach, and summarizes the status or result of the completed or intended intellectual contribution. **Contributors must submit abstracts using the Abstract Submission site (https://www.apsgec.org/gec2022/abstracts.php)**.

Before you start:

- Know the number and the order of authors
- Proofread the abstract
- Abstracts are limited to 1,300 characters (about 250 words)
- Note the sorting category (category list) or focus topic
- Presentation Summary: Please provide a brief summary of your presentation written for a general audience. The summary should describe the "takehome" messages of your talk and their implications.

To submit an abstract, you must:

1. Use the GEC sorting category list when submitting
2. Know the correct ordering of authors and collaborators, and
3. Submit abstract content. The website will ask you for an APS membership number. If you are not an APS member, you should type "GEC abstract" in the member ID box when submitting.

For general information about APS abstract submission, please visit the following site (https://www.aps.org/meetings/abstract/submit.cfm).

Abstract Submission opens: **March 9, 2022**

Abstract Submission deadline: **June 10, 2022 (4:00 pm US Central Time)**

Tohoku University

Awards and Grants

Awards and Grants Deadlines

The GEC Student Award for Excellence:

The GEC Student Award for Excellence recognizes the important contributions students make to the GEC every year with their research, presence, and passion. One awardee will be selected and receive a $1,000 USD prize. The eligibility and nomination materials can be found on the **Awards site (**https://www.apsgec.org/gec2022/awards.php).
The application materials must be emailed as a single PDF file to the chair of the GEC 2022 Student Award for Excellence Committee, **Dr. Stephan Reuter** (stephan.reuter@polymtl.ca) **by 4:00 pm US Central Time on June 10, 2022**.

The GEC Student Poster Prize:

The GEC Student Poster Prize recognizes three student presented research posters for their contribution to the work and future of GEC. The eligibility and nomination materials can be found on the **Awards site (**https://www.apsgec.org/gec2022/awards.php).
Student applications are to be emailed to the chair of the GEC 2022 Student Poster Prize Committee, **Dr. Masaya Shigeta** (shigeta@tohoku.ac.jp) **by noon US Central Time on September 26, 2022**.

The Student Travel Grant:

The Student Travel Grant provides funding to offset the cost of attending the conference in person (onsite). The grant will cover the full registration cost of the conference and partial coverage for lodging. Nomination materials can be found on the **Grants and Scholarship site (**https://www.apsgec.org/gec2022/grants_scholarships.php).
Submit nominations to GEC Scholarship chair, **Dr. Tetsuji Shimizu** (tetsuji.shimizu@aist.go.jp) **by 4:00 pm US Central Time on June 10, 2022**.

The Child Care Grant:

The Child Care Grant provides up to $400 to attendees who bring young children to the meeting or who incur extra expense in leaving dependents at home (i.e., daycare, babysitting, or caregiver services), or who need to fund additional activities or services to address accessibility issues. The Application materials can be found on the **Grants and Scholarship site (**https://www.apsgec.org/gec2022/grants_scholarships.php).
Submit applications to GEC Scholarship chair, **Dr. Tetsuji Shimizu** (tetsuji.shimizu@aist.go.jp) **by noon US Central Time on September 1, 2022.**

Non-Technical Events

Special Events

Student Networking Event:

Thursday, October 6, 2022.
The event consists of a few roundtable discussions with students and researchers. Free lunch is provided. Good opportunity to learn about the inside story of research, work environment at companies and universities, career plan, tips of experiments, and more.

Women in Physics:

Thursday, October 6, 2022.
Lectures by female researchers who are active on the cutting edge of science will be held. The scientists will talk not only about the research they are working on, but also about their own experiences, including their career paths.

Social Events

Welcome Reception:

Monday, October 3, 2022.

GEC Reception and Banquet:

Thursday, October 6, 2022.

Closing Ceremony:

Friday, October 7, 2022.

Committees

GEC Executive Committee Members

Chair: Julian Schulze, University of Bochum, Germany

Chair elect: Shahid Rauf, Applied Materials Inc.

Past secretary: Gabe Xu, University of Alabama in Huntsville

Secretary: Toshiro Kaneko, Tohoku University, Japan

Secretary elect: Scott Baalrud, University of Michigan

Treasurer: Aranka Derzsi, Wigner Research Centre for Physics, Hungary

Kallol Bera, Applied Materials Inc.

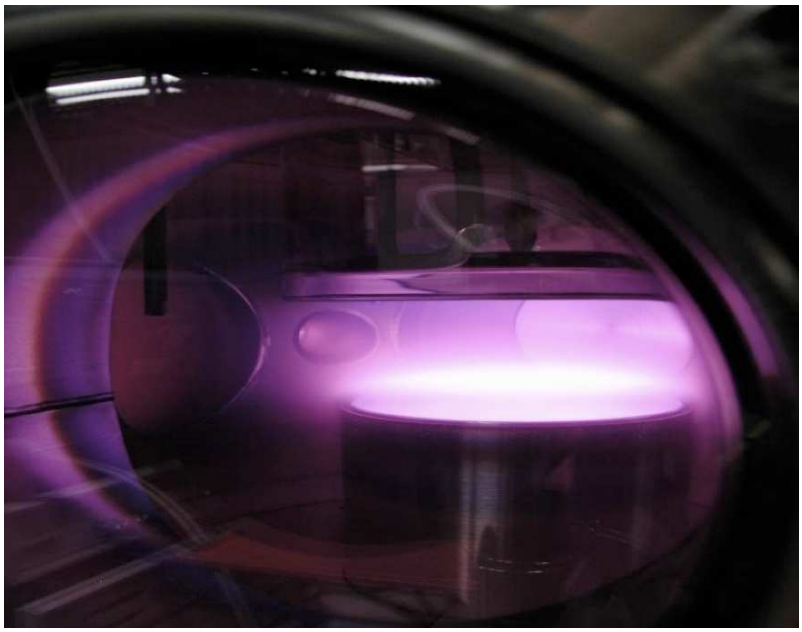
Mark Koepke, West Virginia University

Mark Kushner, University of Michigan

Sandra Quintanilla, University of North Texas

Stephan Reuter, Ecole Polytechnique de Montreal, Canada

Tetsuji Shimizu, National Institute of Advanced Industrial Science and Technology, Japan



GEC reference reactor

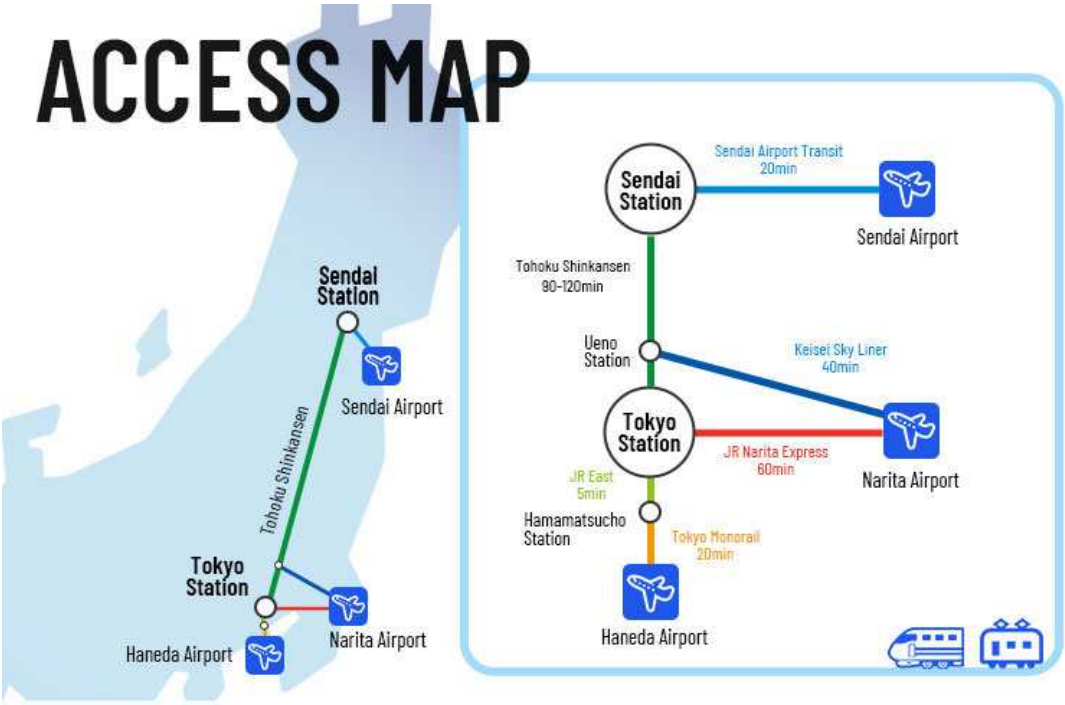
Conference Venue

GEC-2022/ICRP-11 is planned to be held as an in-person meeting at **the Sendai International Center (http://www.aobayama.jp/english/)** located in Sendai, Japan. If the Covid19 pandemic does not allow to hold an onsite conference, a fully virtual meeting will be organized.

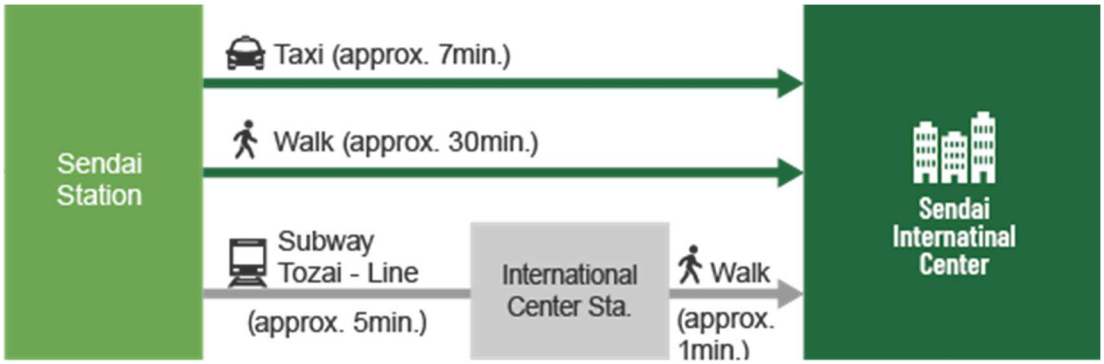
Travel Information

Tokyo has two international airports, Haneda and Narita, with many international flights, making it easy to get to Japan from anywhere in the world. There are two daily direct flights from Narita airport to Sendai. It takes 30 minutes by train from Sendai Airport to downtown Sendai. On the other hand, if you are traveling by train from Narita or Haneda airports, you can take the Shinkansen (bullet train) from the respective airports to Sendai via Tokyo Station. It takes 90 minutes from Tokyo Station to Sendai Station by Shinkansen.

Access 1: form Tokyo Airports (Narita/Haneda) to Sendai Station



Access 2: form Sendai Station to the venue

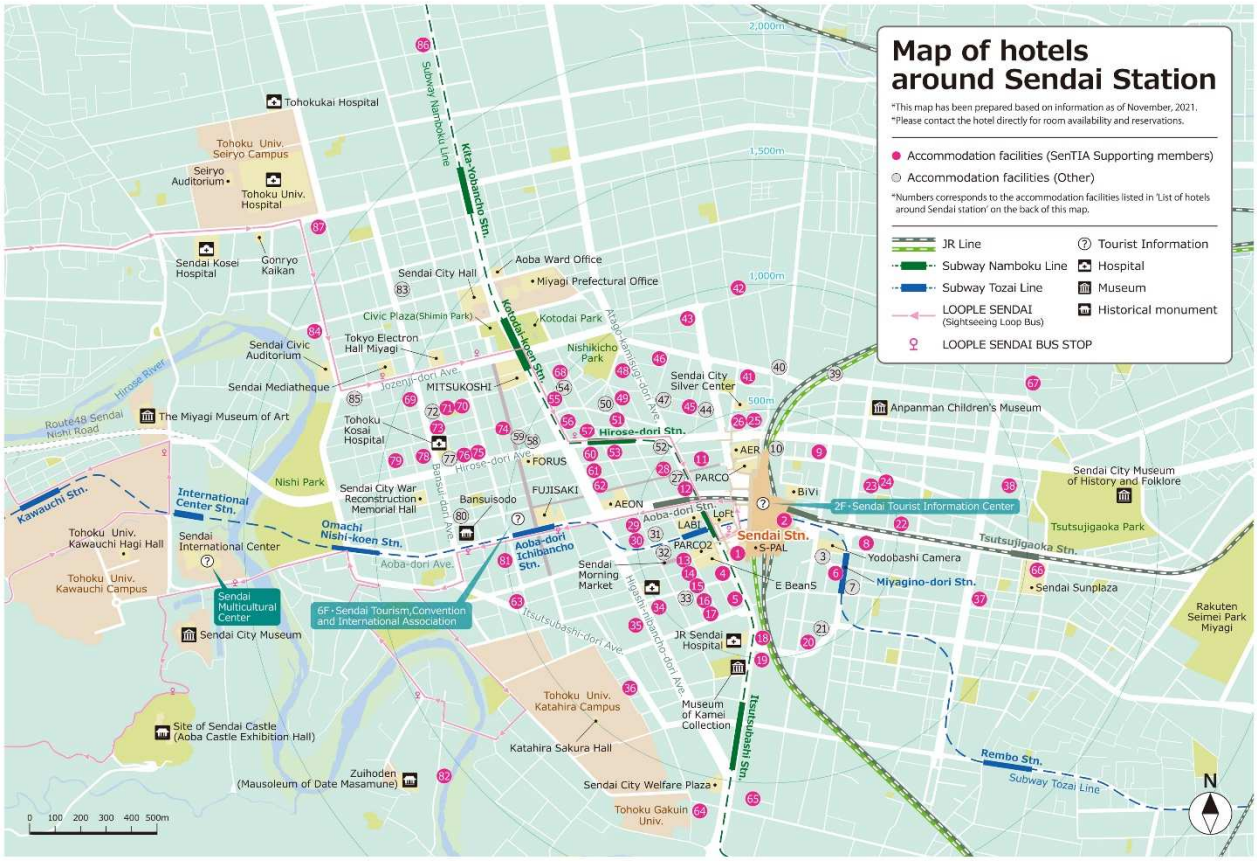


Hotel Accommodation

There are many hotels in Sendai. We recommend that you make your own reservations at the hotel reservation websites listed below.

Expedia **Booking.com** **Trivago**

Map of Hotels:



【 Accommodation facilities (SenTIA Supporting members) 】

● Within 500 meters radius from Sendai Stn.

No.	Name	TEL	Rooms
1	HOTEL METROPOLITAN SENDAI	81-22-268-2525	295
2	HOTEL METROPOLITAN SENDAI EAST	81-22-302-3373	282
4	Hotel Monterey Sendai	81-22-265-7110	206
5	WASHINGTON HOTEL SENDAI	81-22-745-2222	223
6	HOTEL VISTA SENDAI	81-22-385-6222	238
8	SENDAI GARDEN PALACE	81-22-299-6211	66
9	Comfort Hotel Sendai East	81-22-792-8711	202
11	HOTEL Green Pacific	81-22-221-8888	92
12	Richmond Hotel Premier Sendai Ekimae	81-22-716-2855	183
13	HOTEL Green Well	81-22-216-6155	47
14	HOTEL UNISITE SENDAI	81-22-716-0123	144
15	HOTEL CENTRAL SENDAI	81-22-711-4111	97
16	SENDAI BUSINESS HOTEL STATION FRONT	81-22-262-3211	250
17	HOTEL Green Mark	81-22-224-1050	140
18	Toyoko Inn Sendai-eki Nishi-guchi Chuo	81-22-726-1045	286
19	APA Villa Hotel Sendai-Eki Itsutsubashi	0570-023-111	610
20	ANA Holiday Inn SENDAI	81-22-256-5111	165
22	Hotel Grand Bach Sendai	81-22-296-0660	151
23	Toyoko Inn Sendai Higashi-guchi No.1	81-22-256-1045	208
24	Toyoko Inn Sendai Higashi-guchi No.2	81-22-298-1045	120
25	HOTEL JAL CITY SENDAI	81-22-711-2580	238
26	Hotel Monte Hermana SENDAI	81-22-721-7501	275
28	HOTEL Premium Green PLUS	81-22-212-1255	117
29	HOTEL KEIHAN SENDAI	81-22-263-0321	201
30	ALMONT HOTEL SENDAI	81-22-212-6551	141
34	Sendai Kokusai Hotel	81-22-268-1111	234

● Within 1,000 meters radius from Sendai Stn.

No.	Name	TEL	Rooms
35	The Westin Sendai	81-22-722-1234	292
36	Aisaki Ryokan (Inn)	81-22-264-0700	15
37	HOTEL MIELPARQUE SENDAI	81-22-792-8111	122
38	Oka no Hotel	81-22-256-7311	35
41	Richmond Hotel Sendai	81-22-722-0055	344
42	HOTEL SHIRAHAGI	81-22-265-3411	28
43	SENDAI ROYAL MAYFLOWER	81-22-262-5411	182
45	Toyoko Inn Sendai Nishi-guchi Hirose-dori	81-22-721-1045	210
46	Daiichi Inn Park	81-22-213-0089	85
48	HOTEL HOKKE CLUB SENDAI *Scheduled to close on January 5, 2022	81-22-224-3121	151
49	HOTEL Green Selec	81-22-217-3117	77
51	R&B Hotel Sendai Hirose-dori Ekimae	81-22-726-1919	202
53	dormy inn EXPRESS Sendai Hirose-dori	81-22-715-7077	120
55	LIBRARY HOTEL HIGASHI-NIBANCHO	81-22-221-7666	230
56	Mitsui Garden Hotel Sendai	81-22-214-1131	224
57	KOYO GRAND HOTEL	81-22-267-5111	149
60	Super Hotel Sendai / Hirosedori	81-22-224-9000	173
61	HOTEL Premium Green Hills	81-22-722-1501	118
62	HOTEL CROWN HILLS SENDAI AOBADORI	81-22-262-1355	154
63	Hotel Bel Air Sendai	81-22-217-8511	125

● Within 1,500 meters radius from Sendai Stn.

No.	Name	TEL	Rooms
64	MORISHIGE RYOKAN	81-22-222-5373	15
65	Hostel KIKO	81-22-281-9788	40
66	SENDAI SUNPLAZA	81-22-257-3333	74
67	HOTEL Green Palace	81-22-256-2691	88
68	Business Hotel TAIYO	81-22-221-1955	78
69	HOTEL Green Park	81-22-265-6171	72
70	HOTEL Premium Green SOVEREIGN	81-22-227-2322	92
71	Capsule Hotel Leaves	81-22-261-8020	120
73	SAUNA & CAPSULE CURE KOKUBUNCHO	81-22-713-8526	186
74	Smile Hotel Sendai Kokubuncho	81-22-261-7711	202
75	Hotel Grand Terrace Sendai Kokubun-cho	81-22-262-7755	294
76	HOTEL Green With	81-22-261-3737	78
78	MORI NO HOTEL SENDAI	81-22-713-5888	77
79	HOTEL Green Arbor	81-22-213-8990	64
81	HOTEL PEARL CITY SENDAI	81-22-262-8711	166

● Within 2,000 meters radius from Sendai Stn.

No.	Name	TEL	Rooms
82	Ryokan Otamaya	81-22-222-7892	20
84	HOTEL Green Line	81-22-217-8311	83

● Within 2,500 meters radius from Sendai Stn.

No.	Name	TEL	Rooms
86	HOTEL Green City	81-22-219-2691	80
87	BANSUITEI IKOISO	81-22-222-7885	14

Calendar of Events

Abstract Submission opens	March 9, 2022
Abstract Submission deadline	June 10, 2022 (4:00 pm US Central Time)
Author Notices of Acceptance	August 12, 2022
Third announcement	May, 2022
Early registration deadline	August 31, 2022

Invitation Letters

If a letter of invitation is needed to attend the conference, please contact Conference Secretariat (gec2022@senkyo.co.jp) with the following information:

- Attendee name and salutation (Prof., Dr., Mr., Mrs., Ms., etc.)
- Affiliation
- Address
- Title of the presentation/poster (if giving a presentation or poster)

Contact

For scientific program or technical information, contact:

Toshiro Kaneko (kaneko@tohoku.ac.jp)

Julian Schulze (schulze@aept.ruhr-uni-bochum.de)