



Graduate School of
Science and
Faculty of Science
Tohoku University
Japan

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Message from the Dean

Tadahiro HAYASAKA,
Professor

Dean, Graduate School of Science and Faculty of Science

What is science? We can define science as the study of the laws of nature based on objective facts and the process of exploring the causes of natural phenomena. We must ask what objective facts are and if everyone sees nature in the same way. Can we be objective as we try to determine nature's properties, like temperature and air pressure? The natural phenomena that we can observe, study, and experiment on are extremely limited. The laws that enable us to recognize the scale of space in our everyday lives may not apply to the atomic scale or the macro scale of the universe. What would we see if we could see the world of light waves beyond the region visible to our eyes? We think that we understand the nature around us, but in fact, our knowledge is limited. There is much that we do not know. Our daily experience of nature is like a piece of a jigsaw puzzle, from which we can only imagine what the completed picture is.

Remembering this, we need curiosity and imagination to explore the truth of nature and to truly study science. We must learn aggressively on our own, set research goals, and fully use our current knowledge to advance the understanding of science and bring about a whole new world. In the Graduate School of Science and the Faculty of Science at Tohoku University, our study and research cover a wide range of basic sciences, including Mathematics, Physics, Astronomy, Geophysics, Chemistry, Earth Science and Biology, and we actively nurture curiosity and imagination toward the study of nature. Using theory, experiments, observation, and more, we work hard to expand the boundaries of science while promoting cutting edge research. On the basis of our education policy, we train students not only to be researchers but also to be leaders who play active roles in various fields of society. The School of Science has been designed to attract excellent students and researchers to our campus, which is situated in an area richly endowed with nature, to work together to continually redefine science.

Tadahiro HAYASAKA
Dean
Professor



About of Tohoku University

Tohoku University has been committed to the principles of "Research First" and an "Open Door" policy since its foundation and is internationally recognized for its outstanding standards in education and research. The university contributes to world peace and equity by devoting itself to research useful in solving societal problems and educating human resources in leadership skills.

"Research First" and "Open Door"

Tohoku Imperial University, College of Science (currently, the Faculty of Science) was founded in 1907 as the third Imperial University after Tokyo and Kyoto. Since then, it has made remarkable achievements in research and has provided important human resources to our society. Of special note in our history are the ideas of "Research First" and "Open Door". "Research First" is our policy of giving research our highest priority, meaning that research is our ultimate mission. We believe that it is possible to provide true education to students through research. This long-standing philosophy of creativity and originality has been proven by producing many recipients of the Order of Culture, the Japan Academy Medal, and so on.

Our door is always widely open to the world. In other words, we have always operated with an "Open Door" policy. We willingly give our educational and research resources back to society, which in turn helps us to find undiscovered genius and develop it.

In the early years of our history, on the bases of competence and ability without adherence to custom, we accepted female students and those who had not graduated from high schools of the old education system, such as graduates of technical institutes. The latter were called "collateral" during that era. This is an example of the "Open Door" policy, which allowed Chika KURODA, Ume TANGE, and Raku MAKITA to join us as the first three Japanese female students. Seiji KAYA, former President of the University of Tokyo, is an example of "collateral" and is a graduate from the Kuramae Institute of Technology (the former Tokyo Institute of Technology). In addition, Professors Cheng Jian Gong and Su Bu Qing, prominent people in Mathematics in China, are both graduates from our Faculty and the first two foreign people to obtain doctorate degrees in Japan.

Those two philosophies are indispensable for distinguished and productive research. Some 40%–45% of our teaching staff each year are not graduates from Tohoku University, which is another example of our "Open Door."

Introduction to Faculty of Science

The Faculty of Science is responsible for education and research in the basic sciences. It encompasses all disciplines of natural science. Our activities are rooted in original questions about nature and are centered around a strong appetite for learning. The outcomes of our activities contribute to the welfare of humankind after they have been applied to technology. Original and creative research done in the Faculty of Science will be extremely important in the coming age as society increasingly focuses on concerns other than economic ones, such as a sustainable global environment and an improved quality of life. Doors to great success are open wide before you.

Introduction to Graduate School of Science

We provide high-quality educational and high-level research opportunities to foster professionals so that they can become proficient in specialized knowledge and research methodologies. Scholars from the Research Institutes of Tohoku University and other domestic and foreign research institutes are working jointly with us. All six of our departments adopted the "Program for Leading Graduate Schools" in 2014. We have developed an "attractive campus" and have made this university a highly advanced center of education and scientific research in the world based on the fruits of the "Program for Leading Graduate Schools".

The "Program for Leading Graduate Schools" has been designed and implemented in order to guide top students in their efforts to become global leaders with a commanding and creative presence in industry, academia, and government. By bringing together first class educators and students from all over the world and with the participation of industry, academia, and government, the program supports the radical reform of doctoral degree curriculums to go beyond specialized fields in order to develop internationally recognized degree programs. Moreover, the program is designed to promote the formation of graduate schools worthy of the highest institutes of education.



Motoko KOTANI

Research Area:

My research area is Discrete Geometric Analysis, in which we endeavor to discover the relations between discrete matter and continua or between microscopic structures and macroscopic properties. Recently, I started collaborative research with the Materials Scientists in the Advanced Institute for Materials Research.

Research Topics:

- 1) Discrete Geometric Analysis
- 2) Discrete Differential Geometry
- 3) Analysis of amorphous structures

We have infinite possibilities, although we are weak and mortal. We explore and discover things beyond our physical limitations by using our imaginations.

Mathematics provides a framework for our imagination, which we turn into breakthroughs in Science and Technology. This is why Mathematics is said to be fundamental to Science and Technology, and why it fascinates me so much.

I am a geometer, working in the research area called Discrete Geometric Analysis, which tries to make bridges between microscopic structures and macroscopic properties and enables us to observe things beyond the visible scale.

I am currently studying the structures and functions of matter and materials by using Discrete Geometric Analysis. Please join us in the project.

Toru YAMADA

The aim of our research is to understand the physical nature of the universe as well as studying physics and chemistry under difficult conditions.

Research Area:

Observational Astronomy, in which the formation and evolution of galaxies throughout their cosmic history are studied.

Research Topics:

- 1) Galaxy formation and evolution in high-redshifted protoclusters and large-scale structure
- 2) Evolution of the mass and color distributions of galaxies from low to high redshift
- 3) Earliest galaxy formation in the universe
- 4) Search for extrasolar planets

I have been working in the area of observational astronomy with my main focus on using optical and near infrared wavelengths at present-day cutting-edge facilities, such as the Subaru 8.2m Telescope, which is a world-leading telescope operated by the National Astronomical Observatory of Japan. It is exciting to explore and to understand the physical processes of the universe, which have not been observed previously. Recently, we are working to unveil the superstructure of galaxies at redshift $z = 3$, which corresponds to looking back 11.5 Gyrs ago (or 2.3 Gyr for the age of the universe to understand the early phase of the formation of the massive galaxies). In the distributions of very faint galaxies, we have witnessed the formation of massive galaxies in the densest part of the universe. In addition, we are performing observational situations for extrasolar planets by using the Subaru Telescope. It is equally exciting because we are essentially exploring the unseen world.

Astronomy is in another golden age with new facilities being started or planned, including ALMA, the giant radio interferometer, HSC and PFS, the new wide-field survey instruments for the Subaru Telescope, TMT, a thirty-meter telescope which is going to be constructed at the summit of Mauna Kea, Hawaii by early 2020's, and future space telescope missions. We are excited to be able to utilize new technologies to explore the unseen universe. We always welcome excellent and well-motivated young students to work with us!

IGPAS master's student in Chemistry from United States of America

Jenna Wen Ju Wu

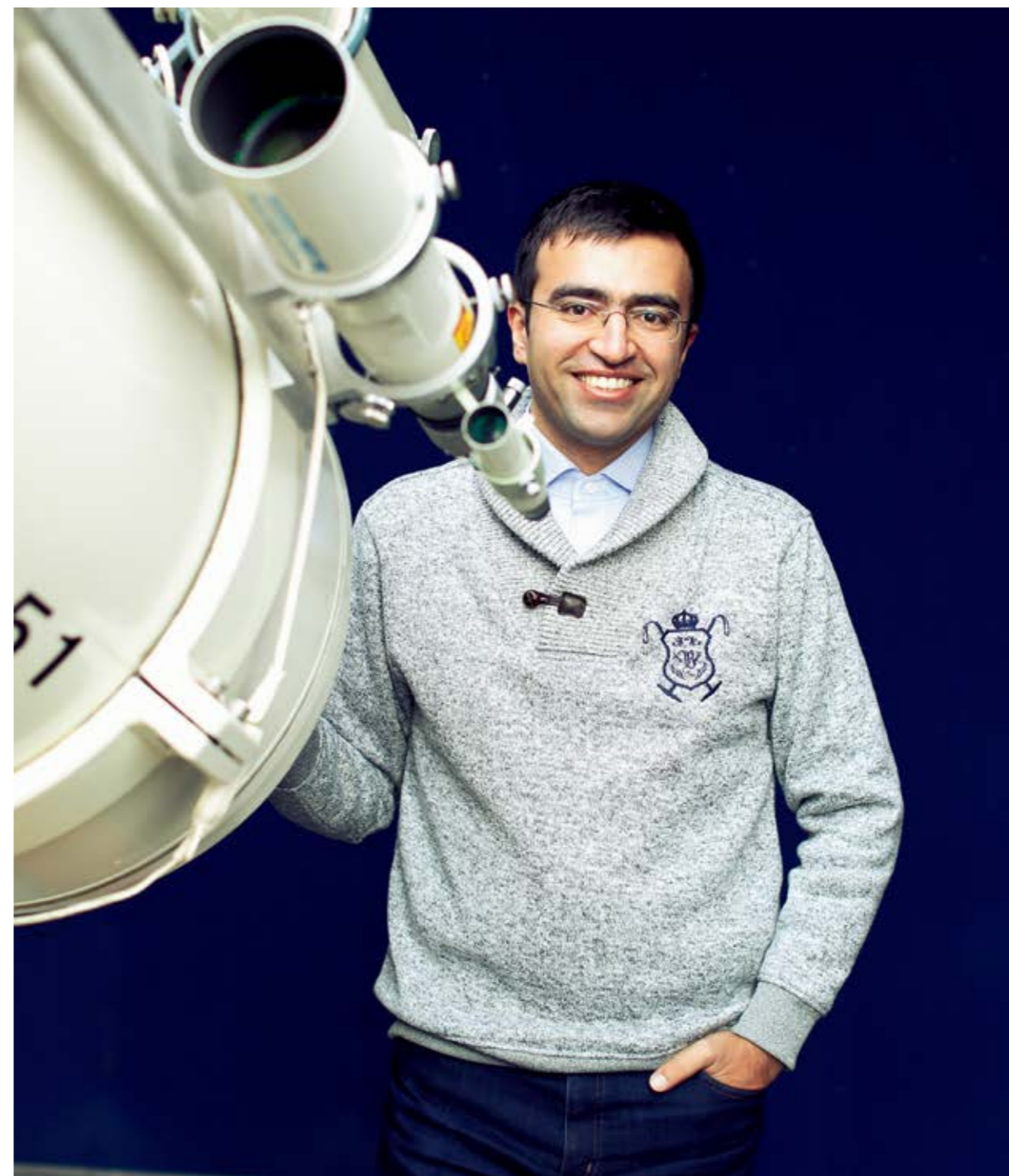
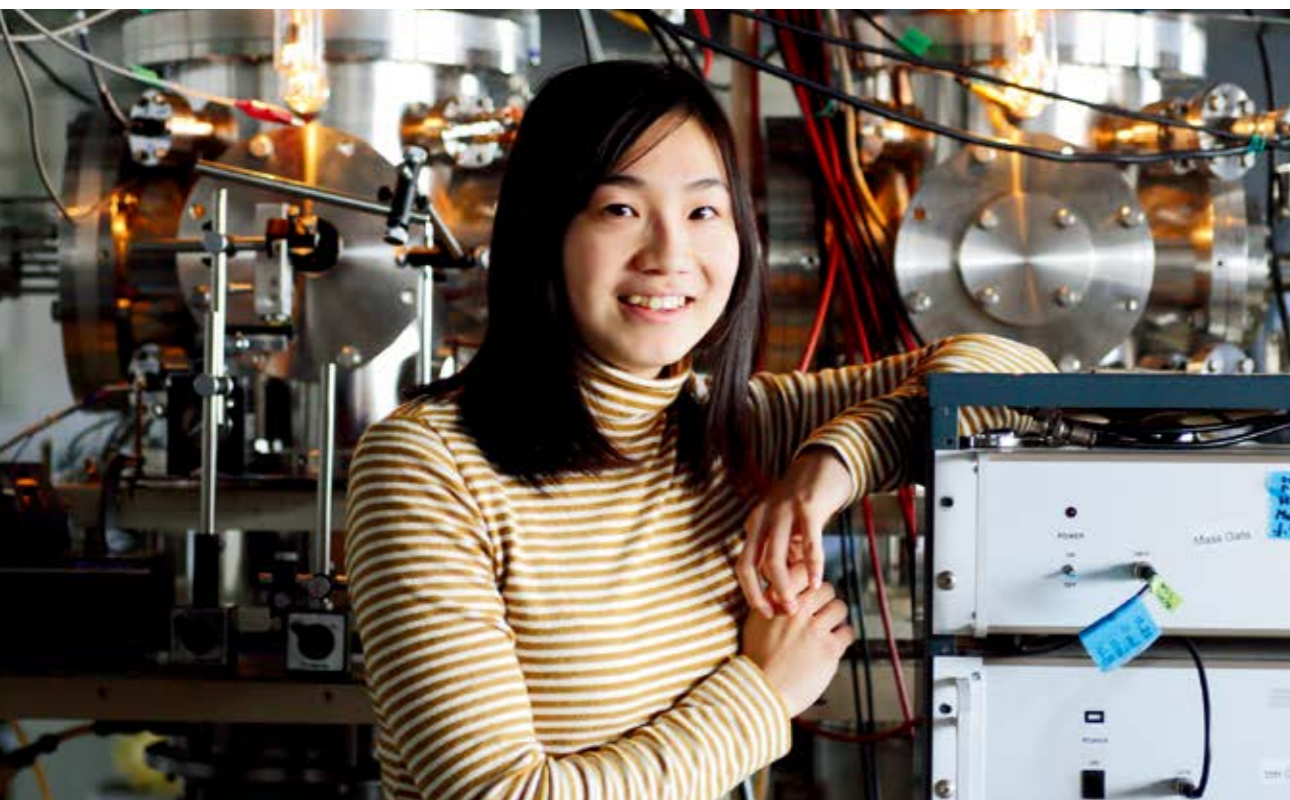
As an undergraduate student who had participated in Education Abroad Program with Tohoku University, I was pretty familiar with the environment of Sendai, and of course, the environment of Tohoku University before participating in the IGPAS program for graduate degree. I enjoyed the short 5 months of time that I spent at Tohoku University and did not hesitate when I found the chance to study here again.

Now as a graduate student of Tohoku University, I spend quite a large amount of time on campus, especially in the laboratory. Not only do we operate experiment apparatus and collect experimental data, but we also have discussions with professors and students in the laboratory. The laboratory environment provides the students motivation to learn, and it helps international students to communicate with Japanese students! I was able to have valuable discussions, and to learn a great deal of living techniques, including Japanese, from the Japanese students and staff.

Sendai is a small city, much smaller than the bustling Tokyo, yet the city is equipped with everything you can find in a big city, except the sense of being "busy". The city of Sendai is also known as the City of Trees in Japanese because of the great nature surrounding it and the greens they preserve in the city. That being said, it is very nice to spend some time exploring the city and its nature. I usually spend my weekends trying out some good restaurants or café, or have a little walk along the Hirose River, the river that runs through the city. Another charming point of Japan is its expression of the four seasons and the beauty of seasonal changes and sceneries overwhelmed me every single day here!

I like the city of Sendai especially because of its efforts in trying to help foreigners live comfortably! The city provides opportunities to help foreigners understand Japanese culture, and to introduce foreign cultures to the community. In this small city, you can enjoy not only the Japanese culture but also the sense of welcoming.

For prospective international students, Tohoku University provides you a great opportunity to challenge yourself and experience a new life while learning and doing valuable research! I am looking forward to achieve some personal growth by the time I finish studying here at Tohoku University, and you can too.

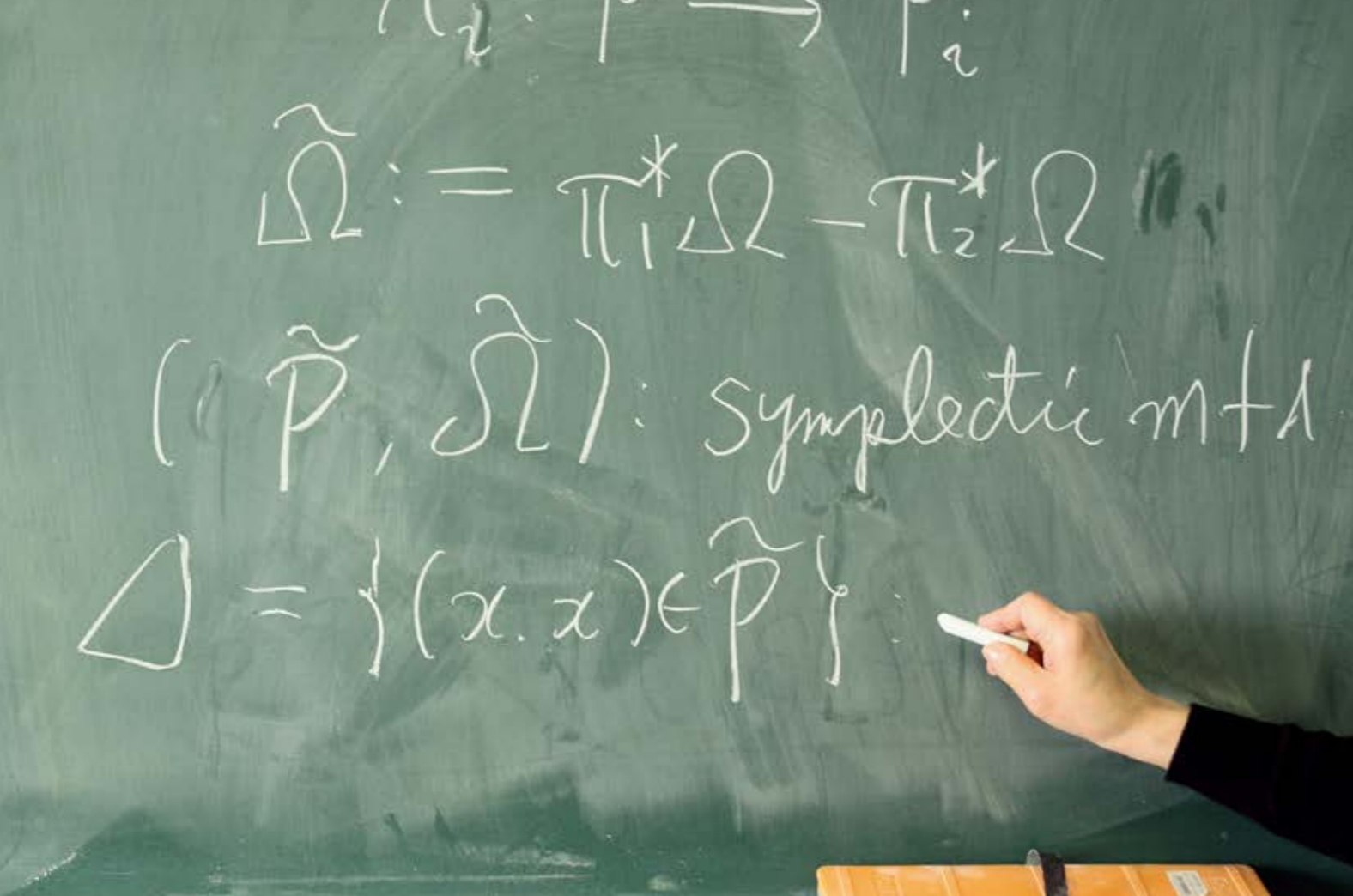


IGPAS doctoral student in Astronomy from Iran

Mohammad AKHLAGHI

Among nature's wonders, none are more mysterious to me than Astronomy, and among the various cultures, the experience of living in Japan was more interesting to me than living anywhere else.

Astronomy has become an increasingly international endeavor with no individual institute or country able to fully fund world-class projects. Therefore it is vital to be in an institute that is an active member in these collaborations. Tohoku University is one of only three universities in Japan with a separate institute for Astronomy and is an active member of the international astronomical projects, including the Hyper Supreme-Cam on the Subaru Telescope, which is just starting scientific operations, and the Thirty Meter Telescope, which should be completed by 2018. The professors in our institute have been very kind and supportive in my research and during my stay here. I have received generous support for all my research needs. The experience of living in Japan in general and Sendai in particular, which has a very rich culture and heritage in a conveniently sized and beautiful city, has also been wonderful.



Physics

Theoretical Physics

- Particle Physics and Cosmology
- Condensed Matter Physics
- Nuclear Physics
- Statistical Physics

Experimental Nuclear and Physics

- High Energy Physics
- Neutrino Science
- Nuclear and Hadron Physics

Experimental Condensed Matter Physics

- Low Temperature Physics
- Magnetism
- Nano Science
- Solid State Spectroscopy
- Quantum Physics
- Materials Research
- Biophysics

The Department of Physics at Tohoku University is one of the oldest and largest in Japan, having almost a 100-year history since its foundation in 1911, and it now has a faculty of more than 160 professors and about 250 students in the graduate school. Not only the faculty members but also those from research institutes and laboratories are actively involved in the school's programs. Research in our department covers all fields of physics from particle and nuclear physics to condensed-matter physics and extends even further to biophysics and industrial physics. Our graduate students are undertaking world-class research at the highest levels at the frontiers of physics under the guidance of their experienced supervisors. The advanced research facilities of our department assist in their activities. Our department ranked second in Japan and eleventh in the world in physics in 2012, according to a report by ISI Web of Science.

Mathematics

- Algebra
- Geometry
- Analysis
- Global Analysis
- Applied Mathematics

Mathematics is the language for describing the natural world. Its progress has been directly linked to that of other scientific fields, as notably seen in the case of Einstein's formulation of general relativity, which was made possible by the timely development of Riemannian geometry. The Mathematical Institute of Tohoku University was established in 1911. Many important contributions to various fields of modern mathematics have since originated from the Institute. Among these are Tannaka's Duality Theorem by Tadao TANNAKA and the concept of Sasakian Manifolds by Shigeo Sasaki, which has recently drawn renewed interest due to its connection to Superstring Theory. The Institute is currently a base of many researchers and students, both undergraduate and graduate, who are actively engaged in a wide range of research fields, which cover algebra, analysis, geometry, and logic. The Institute houses one of the best libraries in the country, which holds more than 60,000 books and journals. The members of the Institute have full access to the resources, and it offers a welcome environment for active learning and research. In addition, since the founding of the Institute in 1911, it has continued to publish the "Tohoku Journal of Mathematics", which was the very first of its kind in Japan and is now internationally recognized for its academic authority.





Geophysics

Solid Earth Physics

Atmospheric and Oceanic Science

Planetary and Space Physics

[Affiliated Centers]

Center for Atmospheric and Oceanic Studies (CAOS)

Planetary Plasma and Atmospheric Research Center (PPARC)

Research Center For Prediction of Earthquakes and Volcanic Eruptions

Geophysics is a broad research field involving studies on solid Earth, oceans, atmosphere, upper atmosphere, ionosphere, and planets. Geophysicists use physical approaches to investigate various phenomena in these areas and study their structures as well as their long-term and short-term variations in order to clarify the formation and evolution processes of our mother Earth and the solar system. In recent years, as a natural science, geophysics has been developing in close relation with human society. During the last 60 years, the Department of Geophysics has made great efforts and important contributions to establishing the framework of geophysics. We treasure the history and traditions of many of our seniors in our department, and at the same time, we are working to open new frontiers of geophysics.

Astronomy

Cosmology

General Relativity

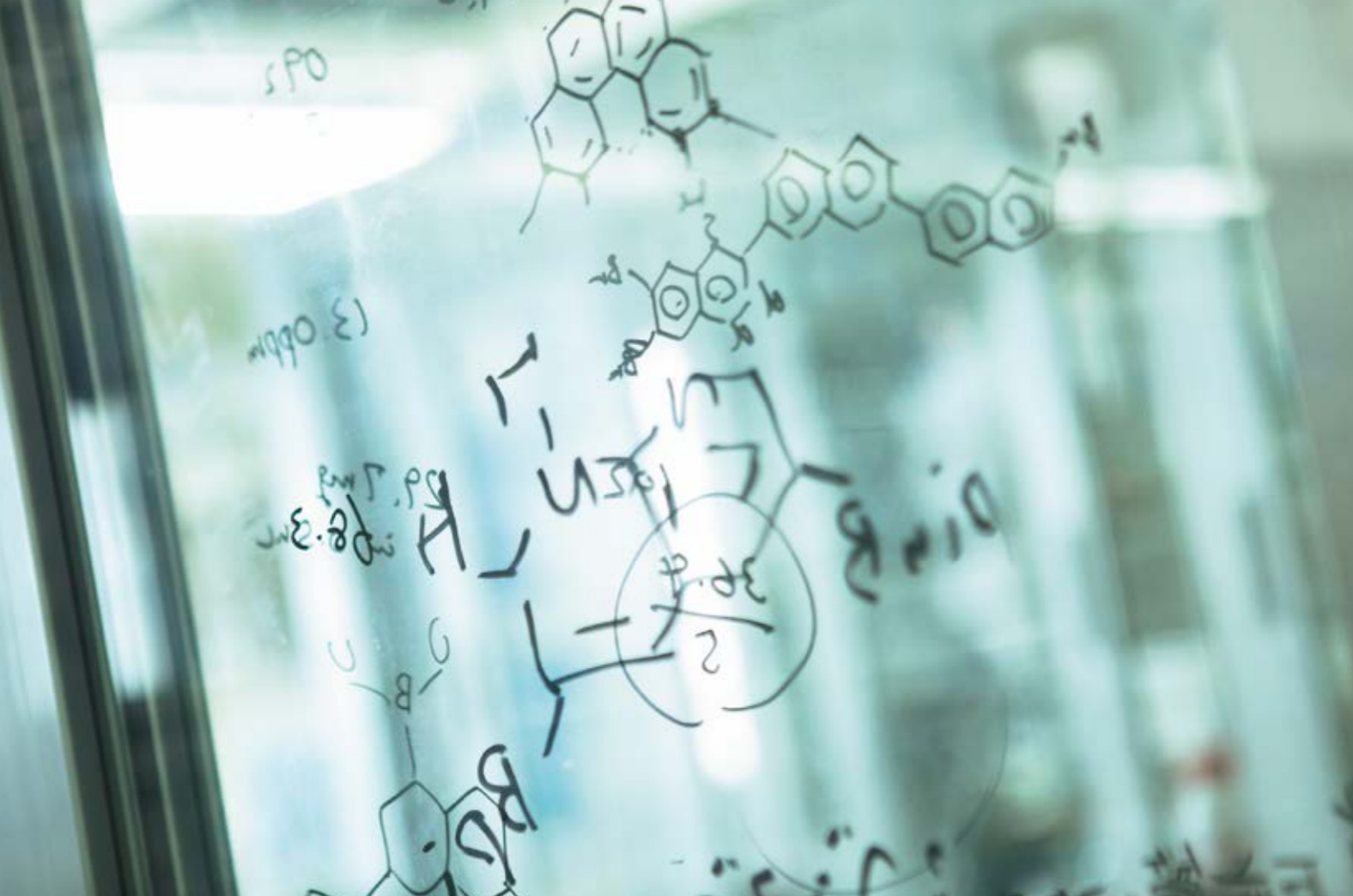
Galactic Astronomy

Stellar Physics

Experimental Astronomy

A total of 70 members in the institute, including faculty members, postdoctoral researchers, and students, are working on a wide variety of problems related to astronomical objects. The research activities cover 1) searching for planets in nearby stars, 2) understanding the physical properties of the stars in our galaxy, 3) revealing the formation and evolution processes for galaxies in distant parts of the universe, and 4) understanding the cosmological framework of the universe. These subjects are studied in two ways. The first is through theoretical research, where models are created and analyzed to understand a variety of fundamental astronomical phenomena on the basis of physics and mathematics, occasionally using computational resources, such as super-computers. The second is through observational research. Astronomical phenomena are observed with electromagnetic waves at all wavelengths, such as radio, infrared, optical, ultraviolet, X-ray, and gamma-rays, using various modern telescopes, such as the 8.2m Subaru Telescope at the summit of the 4,200-m Mauna Kea on the island of Hawaii. The data obtained with such observations are analyzed and compared with physical models of the astronomical phenomena to open even more windows into unexplored parts of the universe. Moreover, the development of new telescopes and cutting-edge instruments is a unique and important activity in the institute.





Earth Science

Division of GeoEnvironmental Science

- Paleo-Environment Change
- Paleo-Bioevents and Paleontology
- Fault and Geodynamics
- Geomorphology
- Human Geography
- Climate

The Earth's integrated system of the atmosphere, hydrosphere, and biosphere is driven by the energy of solar radiation just as we are, whereas the solid Earth (lithosphere) is driven by the decay energy of the radioactive elements in the Earth. The boundary between these four spheres is called the Geosphere, and these four spheres interact through the circulation of energy and materials. A huge variety of episodes has occurred and evolved in the Geosphere during the long history of the Earth, and we human beings are the newest product of this sphere. The Department of Geoenvironmental Science is looking at the past, present, and future in the Geosphere's environment, examining ancient rocks and sediments with a current knowledge of physics, chemistry, and biology. However, these changes cannot yet be fully understood by using today's observational techniques alone since they only produce snapshots of the evolving Geosphere. Our Department is coming to a better understanding of the Earth's environmental system in order to combat the serious problems caused by human activities.

Chemistry

- Inorganic and Analytical Chemistry
- Organic Chemistry
- Physical Chemistry
- Interdisciplinary Chemistry
- Advanced Atomic and Molecular Science
- Reaction Mechanism and Dynamics
- Solid-State Chemistry
- Biofunctional Chemistry

[Affiliated Centers]

Research and Analytical Center for
Giant Molecules

The department of chemistry was established in June 1907 with the establishment of Tohoku Imperial University, predecessor to the present Tohoku University. In the 100 years since its founding, the Department of Chemistry has grown to become the most prestigious institution of chemistry in Japan. The Department of Chemistry with its 52 faculty members in 17 research groups is now the largest in the nation. The ratio of students to faculty members is almost 1:1, which creates a highly conducive environment for student research and study. The members of the Department of Chemistry are all instilled with a strong motivation to seek out and investigate the unknown, and many of our most outstanding scientists have left a legacy of important work in their respective fields. Riko MAJIMA, Shiro AKABORI, Tetsuo NOZOE, and Koji NAKANISHI, all of whom are recipients of the National Culture Award of Japan, are four of the most distinguished members of our faculty.





Biology

- Biomolecular Sciences
- Developmental Biology and Neurosciences
- Environmental Life Sciences

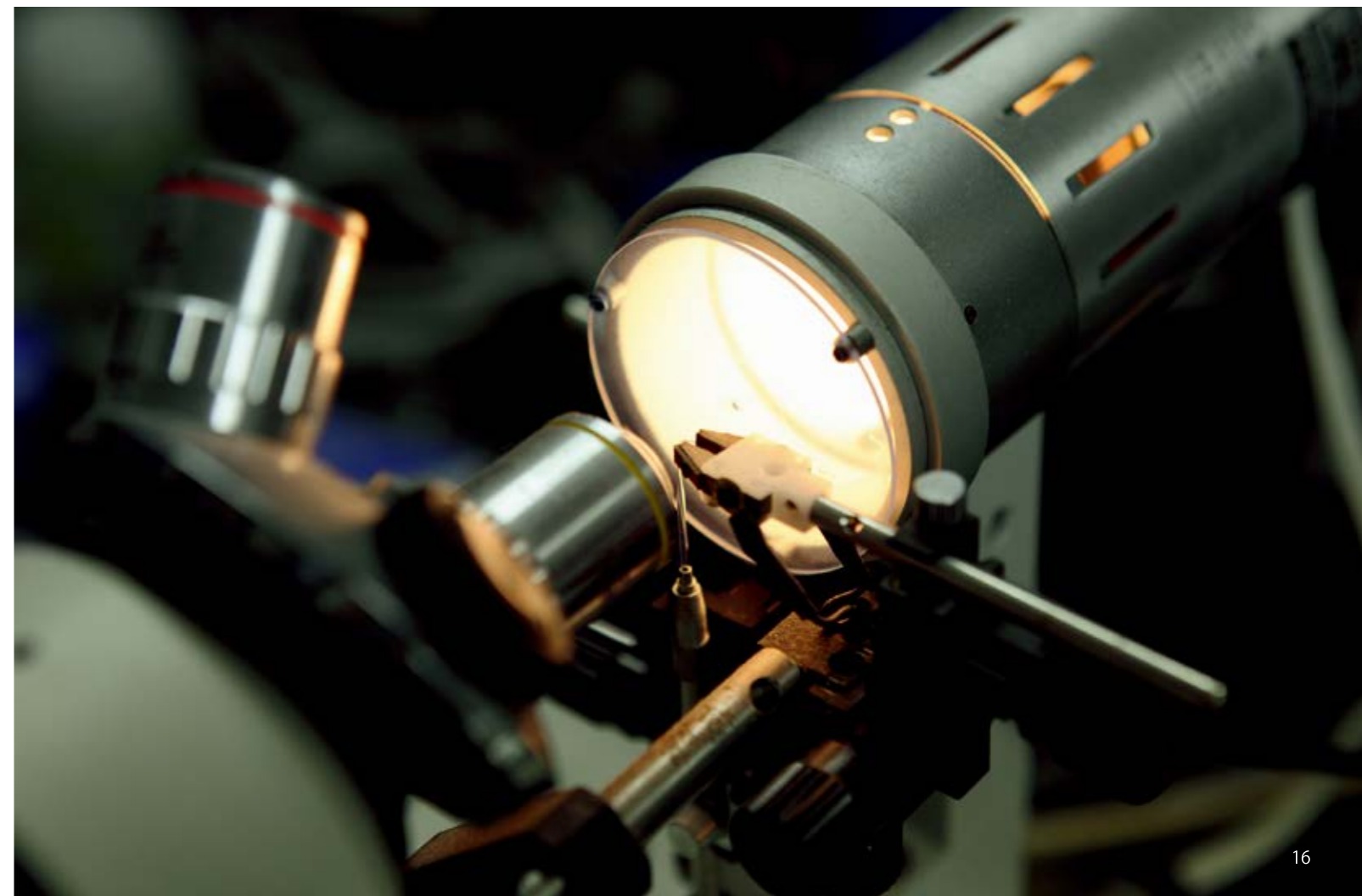
The land that we stand on, the air that we breathe, the food that we eat are all products of the past 4.6 billion years of the Earth's history. We human beings too. How were we created? Where will we go? The Department of Biology was established in 1922 and has been producing a number of graduates and postgraduates active in both academic and non-academic worlds. Since the Department was founded, the priority-in-research and open-door spirits of Tohoku University have governed the Department as well. Although the Department has kept the spirit and tradition founded by the pioneers, it has promoted updated research activities in response to the ever-developing area of biological sciences. Present research activities cover a wide range of basic biology from molecular and cellular biologies through ecology and evolutionary biology. Three facilities, the Asamushi Laboratory of Marine Biology, the Mount Hakkoda Botanical Laboratory, and the Botanical Garden, contribute to the education and research activities in the department. In 2001, the whole department was reorganized to establish the Graduate School of Life Sciences. We are more than happy to welcome talented biologists and students to promote and enjoy biological sciences in Sendai.

Earth Science

- Division of Earth and Planetary Materials Science

- Mineral
- Natural Resources and Environmental Geochemistry
- Early Solar System Evolution
- Earth and Planetary Material Physics
- Volcanology and Geofluids
- Geology and Petrology

Research on highly advanced Earth and Planetary Science is required to address new topics and find new tools to not only understand the phenomena of the Earth but also those of space. These include studies on the ultra-high pressure of planetary minerals, the evolution of materials and life on the Earth and in space, the formation of low-gravity materials in space, and various molecular-scale materials-formation mechanisms. The Department of Earth Science has not hesitated in adopting new methods and in developing advanced techniques involving synchrotrons, microgravity, and novel in-situ observation systems for crystal growth and phase transitions.



Academic Exchange Agreements with Foreign Institutions (As of January 30, 2015)



Total of 195 institutions from 32 countries/regions

<p>India</p> <ul style="list-style-type: none"> • Indian Institute of Technolo Bombay • Indian Institute of Science <p>Thailand</p> <ul style="list-style-type: none"> • Asian Institute of Technology • Suranaree University of Technology • King Mongkut's Institute of Technology Ladkrabang • Chulalongkorn University • Thammasat University • Chiang Mai University • King Mongkut's University of Technology Thonburi <p>Singapore</p> <ul style="list-style-type: none"> • National University of Singapore <p>Indonesia</p> <ul style="list-style-type: none"> • Universitas Indonesia • Gadjah Mada University • Institut Teknologi Bandung • Bogor Agricultural University • University of Brawijaya <p>South Korea</p> <ul style="list-style-type: none"> • Chonbuk National University • Seoul National University • Gwangju Institute of Science and Technology • Pukyong National University • Pohang University of Science and Techology(POSTECH) • Korea Advanced Institute of Science and Technology(KAIST) • Chungnam National University • Kyungpook National University • Yeungnam University • Dong-eui University • Chosun University • Korea University • Changwon National University • Sogang University • Yonsei University • Pusan National University • Kongju National University • Chung-Ang University • Kyung Hee University • Sungkyunkwan University • Kookmin University <p>Mongolia</p> <ul style="list-style-type: none"> • The Mongolian Academy of Sciences • Mongolian University of Science and Technology <p>Vietnam</p> <ul style="list-style-type: none"> • Vietnam National University, Hanoi • Foreign Trade University • Ho Chi Minh City University of Technology <p>China</p> <ul style="list-style-type: none"> • Northeastern University • University of Science and Technology of China • Tsinghua University, Beijing • Nanjing University • Peking University • Jilin University • Zhejiang University • Fudan University • Wuhan University of Technology 	<ul style="list-style-type: none"> • Chongqing University • Tongji University • Ocean University of China • University of Science and Technology Beijing • Nanjing University of Aeronautics and Astronautics • Xiamen University • Huazhong University of Science & Technology • Xi'an Jiaotong University • East China Normal University • Beihang University • Lanzhou University • Tianjin University • Dalian University of Technology • Yangzhou University • Chinese Academy of Social Sciences • Southeast University • Shanghai Jiao Tong University • Beijing University of Technology • Beijing University of Posts and Telecommunications • The Hong Kong University of Science and Technology • Shanghai Ocean University • China University of Geosciences (Wuhan) • City University of Hong Kong • Dongbei University of Finance and Economics • Shanghai University <p>Taiwan</p> <ul style="list-style-type: none"> • National Taiwan University • National Taiwan Ocean University • National Chung Cheng University • National Cheng Kung University • National Chiao Tung University • National Chung Hsing University • National Tsing Hua University, Hsinchu • National Chengchi University • Soochow University • University of Tehran <p>Iran</p> <ul style="list-style-type: none"> • Istanbul Technical University <p>Turkey</p> <ul style="list-style-type: none"> • Université Mohammed V-Agdal Rabat <p>Morocco</p> <ul style="list-style-type: none"> • The University of KwaZulu-Natal <p>South Africa</p> <ul style="list-style-type: none"> • The University of Sydney • The University of New South Wales • The Australian National University • The University of Melbourne <p>New Zealand</p> <ul style="list-style-type: none"> • The University of Auckland <p>Canada</p> <ul style="list-style-type: none"> • University of Waterloo • University of Ottawa <p>USA</p> <ul style="list-style-type: none"> • Pennsylvania State University • University of California • University of California, Berkeley • University of California, Davis • University of California, Irvine 	<ul style="list-style-type: none"> • University of California, Los Angeles • University of California, Merced • University of California, Riverside • University of California, San Diego • University of California, San Francisco • University of California, Santa Barbara • University of California, Santa Cruz • University of Washington • Purdue University • University of Alaska • Colorado School of Mines • Syracuse University • Institute of International Education • Temple University • Harvard University • Texas A&M University • University of Hawaii at Manoa • National Institutes of Health of the Department of Health and Human Services • University at Albany, State University of New York • University of North Carolina, Charlotte <p>Venezuela</p> <ul style="list-style-type: none"> • Universidad Simón Bolívar <p>Finland</p> <ul style="list-style-type: none"> • Aalto University • University of Oulu • Tampere University of Technology <p>Sweden</p> <ul style="list-style-type: none"> • Umeå University • KTH Royal Institute of Technology • Uppsala University • Stockholm University • Chalmers University of Technology <p>United Kingdom</p> <ul style="list-style-type: none"> • Imperial College London • The London School of Economics and Political Science, University of London • The School of Oriental and African Studies, University of London • The University of Nottingham • The University of York • The University of Sheffield • University College London <p>Belgium</p> <ul style="list-style-type: none"> • Belgian Nuclear Research Centre <p>Netherlands</p> <ul style="list-style-type: none"> • University of Groningen <p>Germany</p> <ul style="list-style-type: none"> • Rheinisch-Westfälische Technische Hochschule Aachen(RWTH Aachen) • Technische Universität Dortmund • Universität des Saarlandes • Technische Universität Darmstadt • Georg-August-Universität Göttingen • Technische Universität Dresden • Technische Universität Berlin • Technische Universität München • Karlsruher Institut für Technologie • Technische Universität Kaiserslautern • Ruprecht-Karls-Universität Heidelberg • Johannes Gutenberg-Universität Mainz 	<ul style="list-style-type: none"> • Deutsches Zentrum für Luft- und Raumfahrt e.V. • University of Paderborn • Technische Universität Chemnitz <p>France</p> <ul style="list-style-type: none"> • Université Pierre and Marie Curie (PARIS VI) • Université Rennes 2 Haute-Bretagne • Université de Grenoble • Université de Strasbourg • Université de Rennes 1 • Institut National des Sciences Appliquées de Lyon • Université Bordeaux 1 • École Centrale Group • École Centrale de Lille • École Centrale de Lyon • École Centrale Marseille (EGIM) • École Centrale de Nantes • École Centrale Paris • École des Mines d'Albi-Carmaux • Institut d'Études Politiques de Lyon • École Normale Supérieure de Lyon • École Polytechnique • Université Lumière Lyon 2 • Université de Technologie Compiègne • École Nationale Supérieure des Mines de Saint-Etienne • Bordeaux Institute of Technology • Université de Lyon <p>Spain</p> <ul style="list-style-type: none"> • University of Granada • Universidad de Valladolid <p>Italy</p> <ul style="list-style-type: none"> • Università degli Studi di Roma "La Sapienza" • Università degli Studi di Firenze • Politecnico di Torino • University of Naples Federico II • Università degli Studi di Verona • Politecnico di Milano <p>Austria</p> <ul style="list-style-type: none"> • Global Education for European Engineers and Entrepreneurs(GE4) • Universität Wien <p>Switzerland</p> <ul style="list-style-type: none"> • Ecole Polytechnique Fédérale de Lausanne • Eidgenössische Technische Hochschule Zürich <p>Poland</p> <ul style="list-style-type: none"> • Institute of Catalysis and Surface Chemistry, Polish Academy of Sciences <p>Russia</p> <ul style="list-style-type: none"> • Siberian Branch of the Russian Academy of Sciences • Lomonosov Moscow State University • Novosibirsk State University • Far Eastern Branch, Russian Academy of Science(FEB-RAS) • Lobachevsky State University of Nizhni Novgorod • National Research University Higher School of Economics • Saint Petersburg State University • National Technical University of Ukraine "Kyiv Polytechnic Institute" • ITER International Fusion Energy Organization <p>Ukraine</p> <ul style="list-style-type: none"> • International Organization
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Educational Programs

Degree Programs

[Undergraduate]

- AMC (Advanced Molecular Chemistry Course)

A four-year undergraduate chemistry course in English, and Japanese language is not required to obtain a Bachelor of Science degree. There is no application fee.

- General Undergraduate Program (Taught in Japanese)

[Graduate]

- IGPAS (International Graduate Program for Advanced Science)

Master's and doctoral program with 14 and 6 MEXT scholarship positions, respectively, open to those who enter in Fall 2017. Master's students are eligible to continue their scholarships for another three years in the doctoral course.

- General Graduate Program
- Double Degree Program with Ecoles Centrales and INSA-Lyon, France
- Joint Education Program with Tsinghua University, China

Non-degree Programs

[Exchange Programs with Partner Institutions]

Undergraduate

- JYPE: Junior Year Program in English (Auditing Student)
- DEEP: Direct Enrollment Education Program (Auditing Student)

Graduate

- COLABS: Cooperative Laboratory Study Program (Research Student)
- DEEP: Direct Enrollment Education Program (Auditing Student)
- Auditing Student Program (Undergraduate)
- Research Student Program (Graduate)

Financial Aids

International students may have opportunities to apply for fellowships/scholarships before or after admission. In addition, degree students are eligible to apply for admission and/or tuition fee waivers.

- Tohoku University President Fellowship
- MEXT (Japanese Government) scholarship
- JASSO (Japan Student Services Organization) scholarship
- JSPS (Japan Society of Promotion of Science) research fellowship
- Private foundation scholarships

Number of Students

Faculties / Schools

(as of May 1, 2014)

Faculties / Schools	Student Quota	Number of Students		
		Domestic	International	Total
Science	1,296	1,412	(220)	[31]
Total	9,994	11,060	(2,800)	[174]

1. () indicates the number of female students included in counts.
2. [] indicates the number of international students included in counts.

Graduate Schools

(as of May 1, 2014)

Graduate Schools	Master's Program / Profession Degree Program			
	Student Quota	Number of Students		
Science	524	586	(85)	[49]
Total	3,896	4,106	(900)	[477]

Graduate Schools	Doctoral Program			
	Student Quota	Number of Students		
Science	390	297	(43)	[62]
Total	2,656	2,651	(677)	[534]

1. () indicates the number of female students included in counts.
2. [] indicates the number of international students included in counts.

Affiliated Research Institutes

The Graduate School of Science has formal collaborative agreements with several affiliated research institutes. More than 100 students participate in research activities in the following affiliated institutes.

Inside Tohoku University

- Research Center for Neutrino Science (RCNS)
- Research Center for Electron Photon Science (ELPH)
- Institute for Materials Research (IMR)
- Institute of Multidisciplinary Research for Advanced Materials (IMRAM)
- Cyclotron and Radioisotope Center (CYRIC)
- International Research Institute of Disaster Science (IRIDeS)
- WPI Advanced Institute for Materials Research (AIMR)
- Research Center for Marine Biology, Graduate School of Life Sciences
- Tohoku University Museum (Museum of Natural History)

Outside Tohoku University

- High Energy Accelerator Research Organization (KEK)
- Japan Atomic Energy Agency (JAEA)
- RIKEN
- National Institute for Materials Science (NIMS)
- NTT Basic Research Laboratories (BRL)
- National Research Institute for Earth Science and Disaster Prevention (NIED)
- Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
- National Institute of Advanced Industrial Science and Technology (AIST)
- National Institute for Environmental Studies (NIES)

Sendai City

Sendai with a population of more than one million is a political and economic center of the Tohoku (northeast) Region in Japan. It is a large city, and it is known throughout Japan as a modern city in harmony with nature.

The city possesses beautiful scenery, such as the Hirose River, which runs the center of the city, and lush Zelkova trees throughout the city. Greenery is especially abundant in the center of the city, which has tree-lined streets and parks. As a result, Sendai is called the "City of Trees."

In summer, Sendai's Tanabata Festival*, which is the largest Tanabata festival in Japan, is held. In December, the trees are decorated with thousands of lights for the Pageant of Starlight.

*Tanabata is a Japanese star festival, celebrating the meeting of the deities Orihime and Hikoboshi (represented by the stars Vega and Altair, respectively). According to the legend, the separated lovers are allowed to meet only once a year on the seventh day of the seventh lunar month. However Sendai Tanabata takes place from August 6 to 8, and the entire city is filled with colorful Tanabata decorations.

Location: North-East of Japan

Distances from Tokyo: 350 km

Tohoku Shinkansen Line: 1 hr 31 min



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