

Images of FRIS achievements

1) Masaki Okumura

Newly determined structure of P5, ER-resident chaperone/enzyme, represents dimer in solution via a unique leucine-valine adhesive motif.

2) Yohei Kawazura

An artistic image of ions and electrons heated by plasma turbulence in accretion disks and the solar wind.

3) Kohei Ichikawa

The radio band composite image of Arp 187 obtained by the VLA and ALMA telescopes (blue: VLA 4.86 GHz, green: VLA 8.44 GHz, red: ALMA 133 GHz). © ALMA (ESO/NAOJ/NRAO), Ichikawa et al.

4) Shinichi Sato

Image of antibody chemical modification in a small space at the nanometer scale on magnetic beads.

5) Toshiharu Ichinose

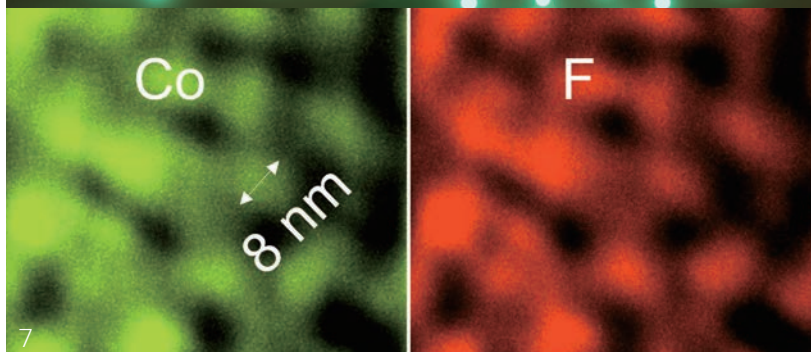
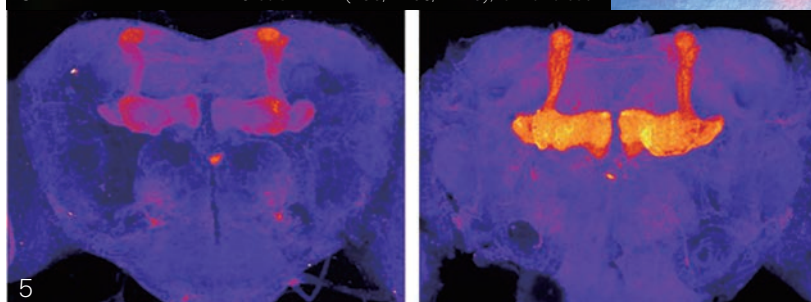
Dopamine D1 receptor in brains of flies that did (right) or did not (left) drink ethanol.

6) Hiroya Abe

Interfacial polymerization inspired by insects' cuticle formation process.

7) Cao Yang

Magnetron sputtering formation of transition metal difluoride (CoF_2) nanoparticles uniformly distributed in a carbon matrix



Frontier Research Institute for Interdisciplinary Sciences, Tohoku University

Frontier Research Institute for Interdisciplinary Sciences

2021

FRONTIER

RESEARCH
INSTITUTE FOR

Information and Systems

Materials and Energy

Life and Environmental Science

Devices and Technology

INTERDISCIPLINARY

Human and Society

Advanced Basic Science

SCIENCES

Outline

The Frontier Research Institute for Interdisciplinary Sciences (FRIS) was established in April 2013. It consists of the Managing and Planning Division, the Advanced Interdisciplinary Research Division, and the Creative Interdisciplinary Research Division. The Managing and Planning Division and the Advanced Interdisciplinary Research Division are staffed with 4 professors, 3 associate professors, and 2 specially appointed associate professors (the University Research Administrator), while the Creative Interdisciplinary Research Division is staffed with young researchers holding tenure-track positions (52 assistant professors as of July 1, 2021). The faculty members belong to one of the following 6 fields, from the viewpoint of interdisciplinary research: "Materials and Energy," "Life and Environments," "Information and Systems," "Devices and Technology," "Humans and Society," and "Advanced Basic Science."

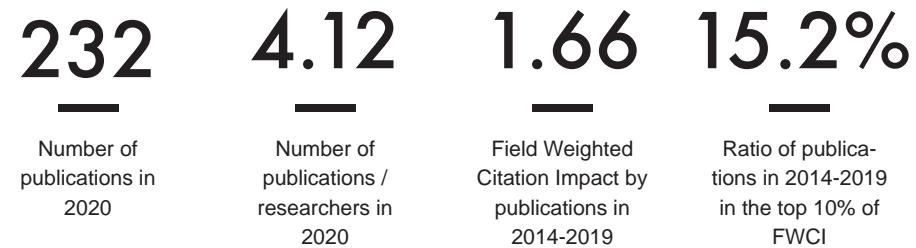
What We Do

Our objective is to contribute to the enrichment of human society by fostering the work of young researchers through collaboration with each graduate school and research institute, as well as the Division for Interdisciplinary Advanced Research and Education in Tohoku University. We aim to pioneer and promote interdisciplinary research by collaboration among different fields.

How We Do It

While working primarily in their core disciplines, researchers promote interdisciplinary research through exchange and collaboration with researchers from different fields. To support these efforts, FRIS has established the Managing and Planning Division to facilitate cooperation among the six research areas. Additionally, the Managing and Planning Division provides support for collaboration with schools within Tohoku University, as well as other universities.

Activity of FRIS



The photos in this brochure were taken with COVID-19 infection control measures in place or before the spread of infection in Japan, and represent the original image of research exchange at FRIS. At present, we are actively conducting research exchange using online and other means following Tohoku University's BCP as needed.

Message

FRIS is a unique research institute whose mission is to create new knowledge and value through interdisciplinary research that fuses different fields, and to contribute to the development of a prosperous human society. A key feature of FRIS is fostering young researchers who promote interdisciplinary research across academic fields through the cooperation of the entire university. Every year, we recruit young researchers of all disciplines from around the world. In our selection process, we emphasize the perspectives of diversity of research domain, gender, and nationality, as well as interdisciplinary aspects. FRIS provides opportunities for exchange between researchers from different fields, offers a mentor system through cooperation between different departments/institutes, and secures an independent research environment for developing principal investigators (PIs). Furthermore, Tohoku University provides budget support to allow young researchers to focus on their own research.

Our full-time professors from various

fields have produced a variety of cutting-edge research results such as research and development of novel materials and devices based on these materials that have excellent functional properties. These results have led to many collaborative research projects with industry partners. FRIS has also produced outstanding results in life sciences and astrophysics. Furthermore, our young researchers are producing world-class research that has opened doors to new fields of study. Nine researchers have won the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology, Young Scientists' Award, seven have been selected for the PRESTO Strategic Basic Research Program, and five have been chosen in the Fusion Oriented Research for disruptive Science and Technology (FOREST) program.

At the same time, FRIS faces several challenges to overcome. These include the establishment of a mechanism through our tenure track system to enable our young interdisciplinary researchers to be

active around the world, as well as the development of a method of appropriately evaluating interdisciplinary research in various academic fields. Furthermore, we are putting great effort into strengthening the FRIS alumni network and looking ahead to the post-COVID-19 future by promoting further exchange among researchers from different disciplines in the Tohoku Initiative for Fostering Global Researchers for Interdisciplinary Sciences (TI-FRIS) program.

As an international and interdisciplinary research institute, FRIS will continue to support young researchers to create new interdisciplinary science, promote world-class research, stimulate exchange among researchers from different disciplines, build networks, and disseminate research results. I hope that researchers who understand the importance of interdisciplinary exchange and pioneer new interdisciplinary research will illuminate the future of the world by joining FRIS.

Researchers pioneering
new interdisciplinary science
will open the gates to
the future of advanced research.

Professor Toshiyuki Hayase

**Director,
Frontier Research Institute for Interdisciplinary Sciences,
Tohoku University**

Professor Hayase has been the director of FRIS since 2018. His research interests are flow stability, flow control, flow in living organisms (e.g., blood), its application to medical engineering, and the integration of flow simulation and measurement methods.



FRIS Triangle

FRIS has 3 missions at the heart of its activities.

1 Promoting Advanced Interdisciplinary Research

Promoting advanced interdisciplinary research led by full-time faculty members from the Advanced Interdisciplinary Research Division.

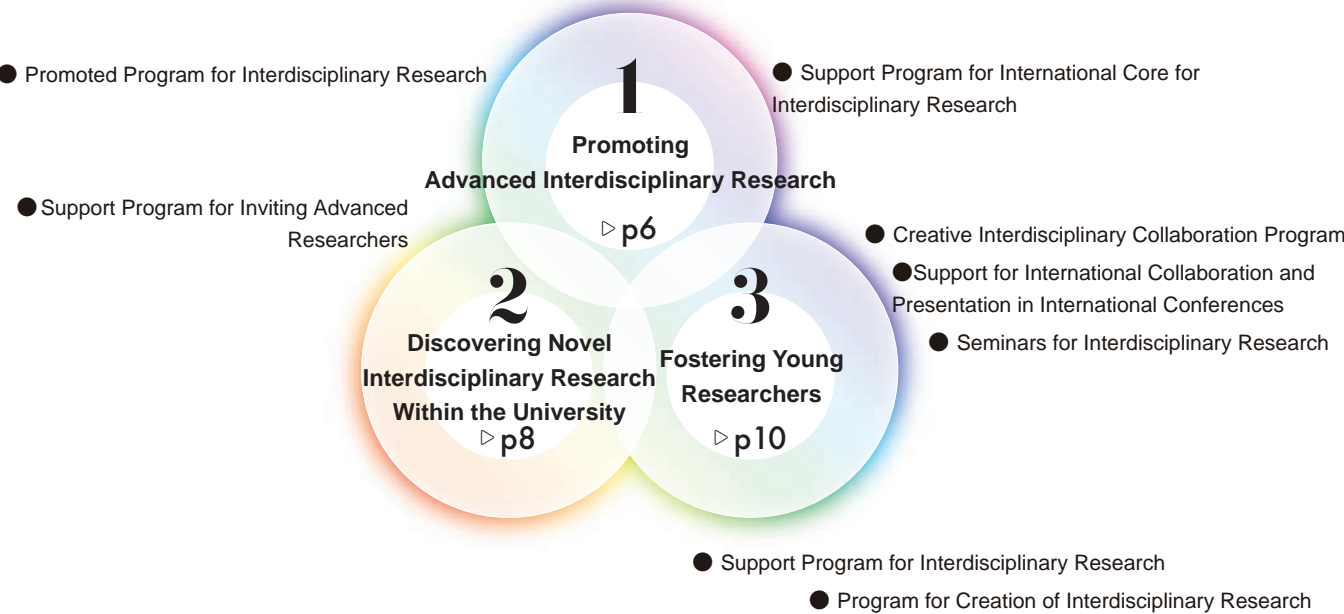
2 Discovering Novel Interdisciplinary Research Within the University

Supporting the innovative and unique interdisciplinary research of faculty members from other departments at Tohoku University.

3 Fostering Young Researchers

Fostering young researchers in the Creative Interdisciplinary Research Division expected to become excellent leaders in the next generation of new research fields, through planning and developing new international interdisciplinary research.

The 3 missions of FRIS—promoting research regardless of field, supporting interdisciplinary research, and fostering young researchers—are also the identity of FRIS.

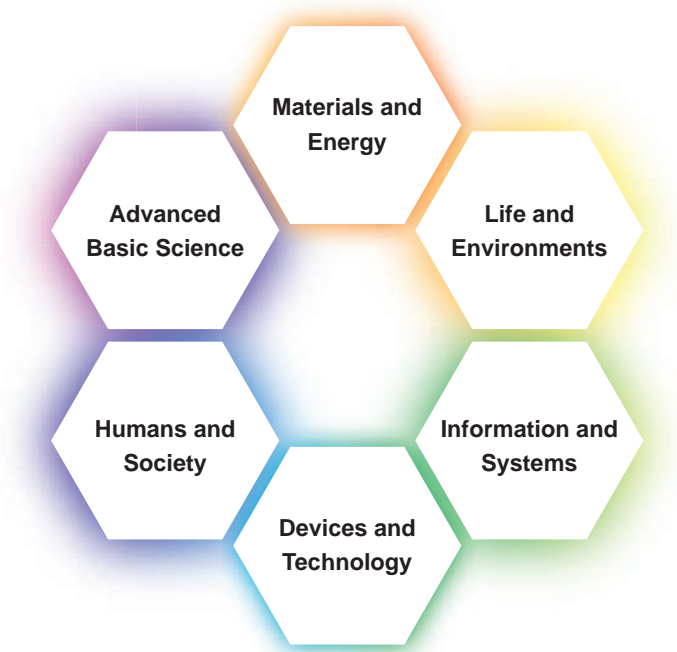


Six Research Areas

FRIS has established 6 research areas covering almost all academic disciplines.

- Materials and Energy
- Life and Environments
- Information and Systems
- Devices and Technology
- Humans and Society
- Advanced Basic Science

FRIS researchers focus on their own research fields, but they also aim to go beyond their core research fields to pursue cross-disciplinary fusion and actively engage in exchange and collaboration with researchers in other fields.



Divisions

Two Research Divisions and the Managing and Planning Division

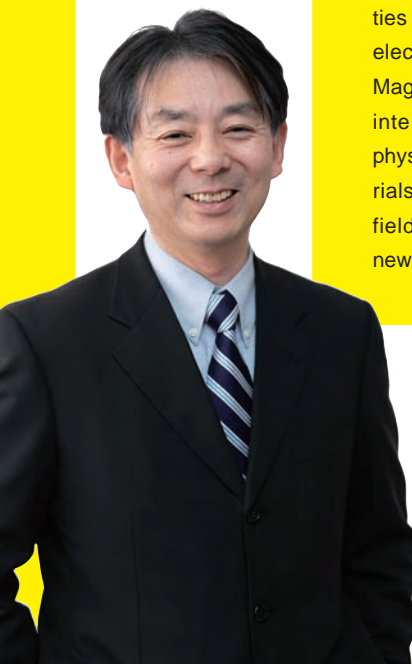
FRIS consists of the Advanced Interdisciplinary Research Division, in which full-time faculty members are assigned to each field of study; the Creative Interdisciplinary Research Division, in which young researchers conduct advanced research across disciplines; and the Managing and Planning Division, which supports the research divisions' activities.

Mission 1

Promoting Advanced Interdisciplinary Research

Full-time faculty members in the Advanced Interdisciplinary Research Division have their own perspectives to promote high-level interdisciplinary research in 6 research areas. FRIS further supports the advancement of cross-sectional research by offering open-space environments to exchange ideas and information among different fields.

When metals and ceramics are composited at nanoscale, they exhibit unprecedented functional properties. We have discovered new multi-functional properties such as the Tunneling Magneto-Dielectric (TMD) effect and the Tunneling Magneto-Optical (TMO) effect. Through interdisciplinary research in magnetic physics, medical engineering, and materials science, we are pioneering a new field of nano-composite thin films with new functions.



Hiroshi Masumoto
Professor
Materials and Energy

- RESEARCH TOPICS
- Tunneling Magneto-Dielectric (TMD) and Tunneling Magneto-Optical (TMO) effect materials by metals-ceramics nano composite structures
 - Development of osteoconductive implant materials by plasma oxidation of metallic titanium

Analyzing the interfaces between the electrolyte solutions and the electrodes for lithium secondary batteries, fuel cells, next generation batteries and molecular electronic devices is important for developing electro-chemical energy conversion devices. Our present study investigates the behavior of molecules at the interface with In situ Raman spectroscopy and focuses on the dynamical changes in the Raman spectra at different battery conditions.



Takashi Itoh
Associate professor
Materials and Energy

- RESEARCH TOPICS
- In situ Raman spectroscopy for battery active materials
 - Development of Zinc-air batteries, Lithium secondary batteries and fuel cells

Activity of FRIS [Senior Researchers]

30

Number of publications in 2020

4.29

Number of publications / researchers in 2020

2.76

Field Weighted Citation Impact by publications in 2014-2019

15.7%

Ratio of publications in 2014-2019 in the top 10% of FWCI

I am a member of the theory team in the Event Horizon Telescope consortium, which captured the first-ever image of a black hole. Every day at FRIS, I am stimulated by chats with colleagues in other research fields. I also have published omnibus books with young researchers from FRIS and DIARE.



Kenji Toma
Associate Professor
Advanced Basic Science

- RESEARCH TOPICS
- Astrophysics: theory, simulations & observations

We have proposed an atomic diffusion bonding method for bonding wafers of different materials at room temperature using the rearrangement of crystal lattices at the contact interface of thin films. Using this method, we are developing research on new device formation. We are also working on research on functional thin films used in electronic devices using the thin film deposition technology that is the basis of the bonding technique.



Takehito Shimatsu
Professor
Information and Systems

- RESEARCH TOPICS
- Atomic diffusion bonding technique for electric/optical devices.
 - High density MAMR/HAMR recording media.

Novel material properties induced by nanoscale local crystal structures are attracting attention. It is difficult to analyze such local structures with the use of conventional structure analysis methods. We have been developing a three-dimensional local structure analysis method by combining electron diffraction techniques with information science such as machine learning.



Kenji Tsuda
Professor
Advanced Basic Science

- RESEARCH TOPICS
- Development of a method to analyze 3D nanoscale local crystal structure and electrostatic potential using convergent-beam electron diffraction (CBED)
 - Application of machine learning to simulations of multiple scattering of electron diffraction

We are interested in the relationship between nanomechanics in the cell and cellular morphogenesis. We are analyzing how and why disruption of the cellular nanomachines in our body, such as molecular motor proteins and cytoskeletal proteins, leads to human diseases such as neurodegeneration, infertility, and blindness.



Shinsuke Niwa
Associate professor
Life and Environments

- RESEARCH TOPICS
- Molecular motors
 - Axonal transport

Random atomic structured materials such as amorphous or metallic glass have significantly different properties with those of conventional crystalline alloys and are anticipated to have industrial uses in the next generation. We address an important challenge by controlling the relaxation behavior of glasses to improve their mechanical properties and to contribute to their applications.



Junji Saida
Professor (concurrent post)
Advanced Basic Science

- RESEARCH TOPICS
- Control of relaxation state in metallic glass
 - Development of mechanical properties of metallic glass

Mission 2

Discovering Novel Interdisciplinary Research Within the University

One of the most important missions at FRIS is to identify and develop interdisciplinary research seeds that exist within FRIS and throughout Tohoku University. FRIS offers three research programs which aim to provide not only funding, resources, and space, but also opportunities to actively engage with researchers from other fields: the Support Program for Interdisciplinary Research, the Promoted Program for Interdisciplinary Research, and the Program for Creation of Interdisciplinary Research. In order to develop world-leading research, international collaboration is essential, therefore, FRIS also offers the Support Program for International Core for Interdisciplinary Research.

Although some of the titles and details of the programs have changed, a review of the achievements of these programs over the past 20 years shows that FRIS has been a pioneer in the development of current major academic research fields. The results of supported programs are often awarded prizes or featured in the press due to their advanced nature and newsworthiness, highlighting their importance for discovering and supporting interdisciplinary research.

Process



Programs

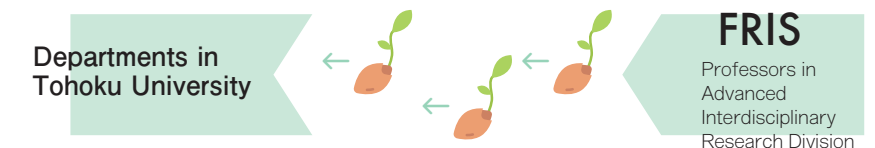
Support Program for Interdisciplinary Research

A three-year grant for supporting interdisciplinary research by researchers from several departments in Tohoku University. This program focuses on promoting a novel interdisciplinary research topic through active exchange, discussion, and cooperation among various fields.



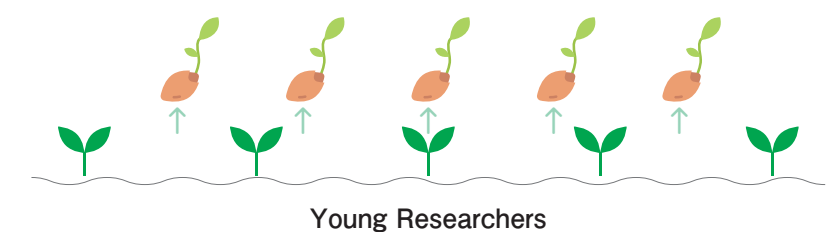
Promoted Program for Interdisciplinary Research

A three-year grant open to research groups led by faculty members of the Advanced Interdisciplinary Research Division, which supports research projects aimed at pioneering a novel interdisciplinary field with growth potential.



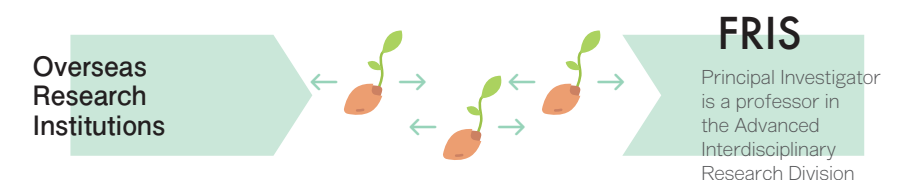
Program for Creation of Interdisciplinary Research

A two-year grant to support early-stage pioneering interdisciplinary research. It is open to young researchers in Tohoku University.



Support Program for Intenational Core for Interdisciplinary Research

This program supports interdisciplinary research conducted with overseas partners that opens new frontiers of science.



Mission 3

Fostering Young Researchers

FRIS selects and supports young researchers who conduct interdisciplinary exploratory research from new perspectives through international open recruitment. Selected candidates are assigned to FRIS as assistant professors (principal investigators) of the Creative Interdisciplinary Research Division, and collaborate with members in graduate schools, institutes, and the Division for Interdisciplinary Advanced Research and Education (DIARE) in an independent research environment. By supporting promising young researchers who will lead the next generation, FRIS aims to create new academic fields and foster top-level researchers who are active on the global stage. FRIS has established a tenure track system that allows accomplished young researchers to carry out their research in a stable environment.

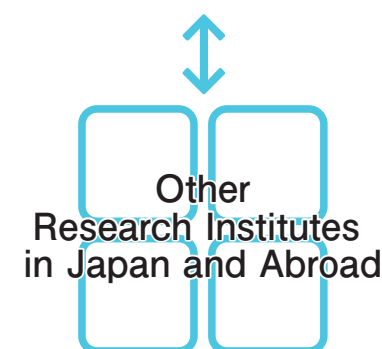
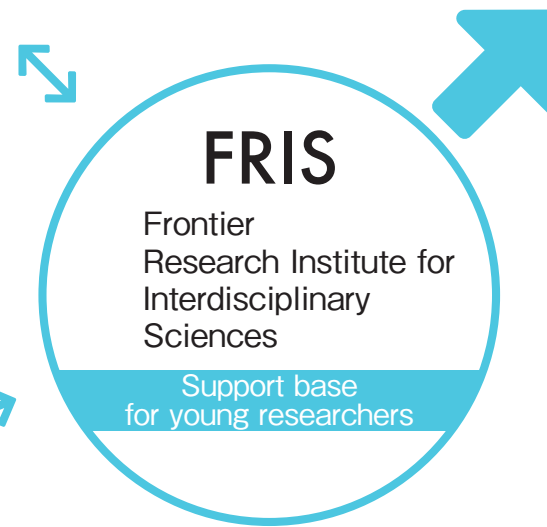
Diagram

● Cooperation with Departments and Research institutes

Young researchers at FRIS are trained in close cooperation and collaboration with other departments and institutes in the university. Young researchers in the Creative Interdisciplinary Research Division appoint professors or associate professors from Tohoku University as mentors who support them by providing support such as access to experimental space and facilities. Each young researcher is, however, guaranteed an independent research environment. FRIS assists the young researchers in obtaining stable positions by keeping their mentors and heads of relevant departments informed of their activities and by consulting whether or not they will be hired by their respective departments.

● Division for Interdisciplinary Advanced Research and Education (DIARE)

Assistant professors at FRIS collaborate with graduate students selected by DIARE in a variety of seminars, and for planning and executing symposiums. They maintain close cooperation through research and education.



Global Leaders
of
the Future

Activity of FRIS [Young Researchers]

209

Number of
publications in
2020

4.10

Number of
publications /
researchers in
2020

1.40

Field Weighted
Citation Impact by
publications in
2014-2019

14.9%

Ratio of publica-
tions in 2014-2019
in the top 10% of
FWCI

● Shoshi Program

It is difficult for young researchers to develop their skills and careers in fields of interdisciplinary research where competitive funding is scarce and the potential for achievement is hard to forecast. Since society needs talented people possessing broad perspectives and multifaceted thinking, MEXT funds programs that encourage the development of such talent. FRIS recruits young researchers interested in interdisciplinary research from all over the world (for five-year terms) and covers their research expenses (up to 2.5 million yen).

Selected young researchers appointed as assistant professors carry out research in cooperation with their mentors. Mentors are professors or associate professors who provide the young researchers with research environments, guidance, and career path support.

FRIS has established a tenure track system for accomplished young researchers to produce outstanding research results and advance their careers in a stable environment.

● Open Access Journal Publication Support Program

A program that supports publication costs when an assistant professor belonging to the Advanced Interdisciplinary Research Division, or the Creative Interdisciplinary Research Division publishes excellent results in a high-impact open access journal.

● Support for International Collaboration and Presentation in International Conferences

The purpose of this program is to foster internationally active young researchers and form networks for international interdisciplinary research. We provide for the living expenses of young Tohoku University researchers engaged in collaborative research at overseas research institutes for two to four weeks, and the travel expenses of young researchers and graduate students giving presentations at academic conferences outside Japan.

● Creative Interdisciplinary Collaboration Program

This program aims to support interdisciplinary research by young researchers at FRIS.

For selected applicants, funds are allocated for equipment, consumable supplies, travel (including for international collaboration), publication, rewards, and/or staffing expenses for the promotion of advanced interdisciplinary science.



Posters for various research exchange seminars



Mission 3

Seminars, Workshops, Omnibus Lectures

Fostering Young Researchers

FRIS regularly organizes seminars and workshops to promote interdisciplinary research and plans, and it implements a wide range of in-depth discussions with members from all fields. We also support collaborative activities with other universities in the Tohoku region (TI-FRIS) and the construction of common research equipment covering multiple fields (FRIS CoRE).

Hub Meeting

Once a month, all FRIS members get together for a research presentation seminar. Researchers and students from the university's faculties and research institutes participate in the seminar, and breakthroughs are shared through cross-disciplinary discussions.

FRIS Retreat

Once a year, all FRIS members meet off-campus to exchange ideas from different fields. The free discussions in a place apart from the usual university environment create opportunities for new discoveries.

Joint Interdisciplinary Research Seminar

About once a month, FRIS, in collaboration with the Division for Interdisciplinary Advanced Research and Education (for more about DIARE, see pp. 12–13), holds a joint interdisciplinary research seminar with doctoral and master's students selected by DIARE. In summer, about 150 people join a big poster session as the FRIS/DIARE Joint Workshop.

Various Research Exchange Activities

FRIS supports young researchers with independently planning seminars and workshops. FRIS also offers lectures by young researchers in an omnibus format, as part of Tohoku University's educational programs.

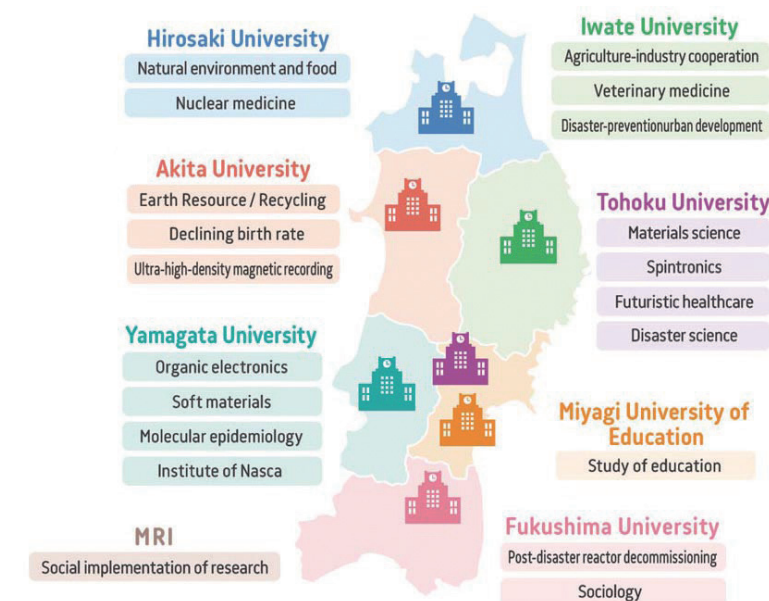


TI-FRIS

| 学際融合東北拠点 |

TI-FRIS

The Tohoku Initiative for Fostering Global Researchers for Interdisciplinary Sciences (TI-FRIS), led by Tohoku University, is a consortium of universities in the Tohoku region, including Hirosaki University, Iwate University, Akita University, Yamagata University, Fukushima University, and Miyagi University of Education, as well as the Mitsubishi Research Institute. In partnership with cooperating research institutions and companies in Japan and worldwide, the initiative is building a new researcher development program covering the whole Tohoku region that will foster world-class researchers with interdisciplinarity, internationality, and sociability.



FRIS CoRE

FRIS CoRE

To maintain a world-class research level, it is indispensable to provide young researchers with an unconfined environment where they can tackle high risk-high pay-off issues with their fresh ideas. As the research and education budget from the Japanese government continues to decline, the number of young researchers who can conduct interdisciplinary research as independent researchers is limited. To this end, we propose to support young researchers by establishing a Cooperative Research Environment (CoRE). CoRE refers to an environment in which daily experiments of various research fields can be freely performed under one roof, accelerating interdisciplinary interaction.



Aiming for an innovative lifestyle and to become a researcher who pursues the meaning of a rich life

● Please describe the research you are currently working on.

I want to utilize less-polluting materials in energy devices.

Typically, devices are made from metals. However, in addition to these materials being finite, a lot of CO₂ is emitted in the process of making them. That is why I want to use woody biomass, which is an abundant resource in Japan. I am researching how to synthesize materials from biomass in a way that minimizes air and water pollution, and how these materials can then be utilized in batteries and other energy devices. Broad-leaved trees such as oaks will sprout again after being cut down, so we can create something like a materials farm. In my research, I am trying to create high-quality carbon materials from these trees and make them into devices. I am also focusing on the traditional technology of white charcoal and investigating new engineering uses for it.

In Japan, since ancient times, people have grown food in the fields, used wood as a heat source in firewood and charcoal, and used streams as a power source, including as a source of electricity. I believe that we should not just

imitate these techniques but adapt them to modern technology and create new ways of using them to suit modern life. We are aiming to develop technologies that utilize the resources in the satoyama in a way that is compatible with modern engineering and incorporate them into daily life, in pursuit of a more sustainable lifestyle. Together with my colleagues and with others in the community, I am working to build a recycling system for local resources such as biomass, food waste and wastewater. In other words, as a member of a local community, I try to achieve as much food and energy self-sufficiency as possible, and at the university, we are conducting research about how to solve the technical obstacles to a local community in achieving energy self-sufficiency.

● What qualities do you think make FRIS unique?

There are talented people from a variety of fields, whose diverse perspectives are a source of inspiration.

FRIS is unique in that it is a mixture of people from different fields. There are many talented researchers, who serve as a great source of inspiration. The

research achievements of the people here are impressive, and many of their studies are based on thorough investigation. In addition, when other researchers ask about my work, they pose questions from all kinds of angles, which gives me new perspectives and is very useful. For someone like me who is interested in many different things, it is very enjoyable to have more points of view. It makes me think that I should not lose my originality but that I should also do my best to compete within the existing framework. We have a lot of freedom, anyway, and can conduct our research however we see fit.



Yuta Nakayasu
Assistant Professor

Originally from Shizuoka, Japan, Yuta Nakayasu entered Tohoku University in 2009 and received his PhD there after nine years (one of which was spent in New Zealand) studying materials science, chemical engineering, and environmental science. After serving as a faculty member at the Institute of Multidisciplinary Research for Advanced Materials (IMRAM), he joined FRIS in April 2019. His research focuses on utilizing biomass feedstocks in energy device materials, with the aim of creating sustainable lifestyles in the region.

Others

Outreach Activities, etc.

Outreach Activities, etc.

■ FRIS Annual Meeting

At the FRIS Annual Meeting, faculty members and the principal investigators of research programs present their research results at the end of each academic year.

■ Katahira Matsuri Festival

The Katahira Matsuri Festival is a public event planned by the Alliance of Research Institutes and Centers at Tohoku University that is held every other year. FRIS members participate to present their research activities and share the wonders of science.

■ Lectures, etc.

FRIS faculty members individually organize many events related to their research for the public.

■ Book Publication

The second volume of an omnibus book on the significance and appeal of interdisciplinary exchange was published by young researchers from FRIS and DIARE doctoral research education students (*Hyakkaryoran: Young Researchers' Interdisciplinary Frontiers*, vol. 2, Tohoku University Press).

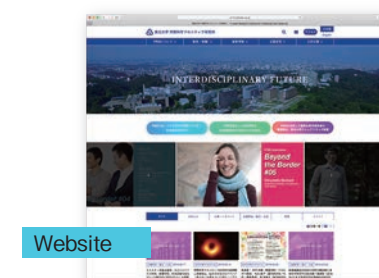


FRIS Annual Meeting



Katahira Matsuri Festival

Managing and Planning Division



Website



FRIS news

Support and Dissemination of Interdisciplinary Research Activities

FRIS conducts the following activities to inspire researchers who are involved in interdisciplinary research and to encourage them to broaden the scope of their work.

- Collecting results, preparing evaluation materials, managing websites, and producing PR materials.
- Managing and administering research admissions and faculty recruitment for the Creative Interdisciplinary Research Division.
- Providing support for planning and organizing seminars, workshops, symposia, and the annual meeting.

For inquiries

Email: ura@fris.tohoku.ac.jp



◀ Specially Appointed Associate Professor
Kazuyuki Suzuki



◀ Specially Appointed Associate Professor
Hideaki Fujiwara



Profiles
of young researchers >
Materials and Energy



Hanae Aoki
Research Fields High frequency soft magnetic thin film, Multifunctional material



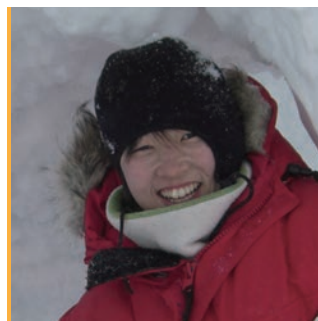
Hiroshi Ueno
Research Fields Physical organic chemistry, Nanomaterials science



Tuan Hung Nguyen
Research Fields Fundamental theory and simulation of materials intelligence for energy applications



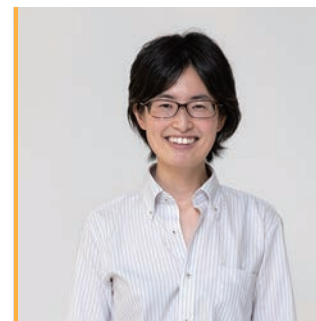
Shinichi Sato
Research Fields Synthetic Organic Chemistry, Chemical Biology



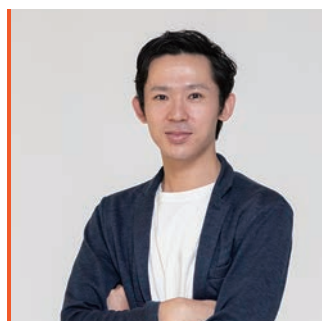
Kozue Shiomi
Research Fields Behaviour, Movement Ecology, Cognitive Ecology



Yasukazu Daigaku
Research Fields DNA replication, Mutagenesis



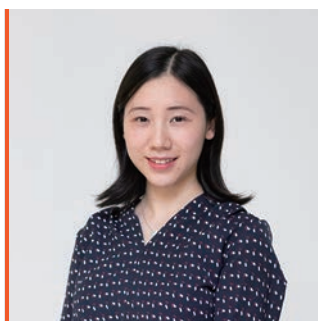
Kyoko Chiba
Research Fields Biochemistry



Yuji Saito
Research Fields Micro-diffusion flame, Space propulsion, Metal/water combustion, Data-driven sparse sensing



Kohei Shimokawa
Research Fields Energy materials, Electrochemistry



Jun Zhang
Research Fields Coordination Chemistry, Porous Magnets, Gas Sorption



Takuya Mabuchi
Research Fields Quantum engineering, Molecular fluid engineering, Material science and engineering

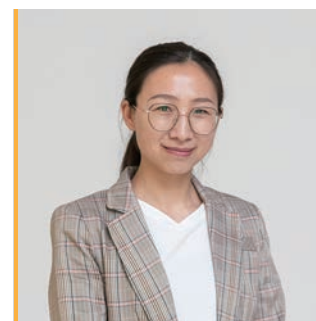


Tomomi Tsunematsu
Research Fields Sleep research using mice, Electrophysiology



Yuji Nashimoto
Research Fields Biomedical engineering, Electrochemistry, Microengineering

Profiles
of young researchers >
Information and Systems



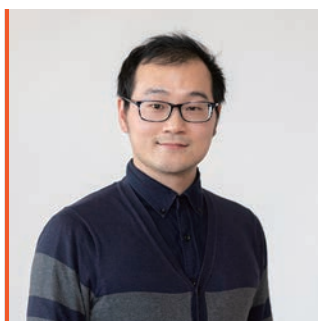
Sai Sun
Research Fields Cognitive and Social Neuroscience, Psychophysics, Neuroeconomics



Jiuhui Han
Research Fields Electrochemistry, Porous Materials, Transmission Electron Microscopy



Rui Yamada
Research Fields Nonequilibrium materials, Materials processing, Powder metallurgy



Yang Cao
Research Fields Nano magnetism, Materials processing engineering

Profiles
of young researchers >
Life and Environments



Fumihiko Kaneda
Research Fields Quantum optics, Quantum measurements, Quantum information technology

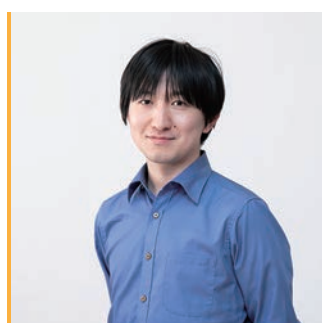


Kotaro Yasui
Research Fields Bioinspired robotics

Profiles
of young researchers >
Devices and Technology



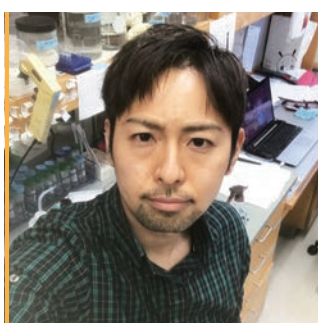
Hiroya Abe
Research Fields Biosensor, Energy catalysts, Polymer chemistry, Biomaterials, Bioinspired materials



Hiroki Ida
Research Fields Electrochemistry, Probe microscopy, Live cell imaging



Toshiharu Ichinose
Research Fields Behavioral genetics, Memory consolidation, Dopamine modulation



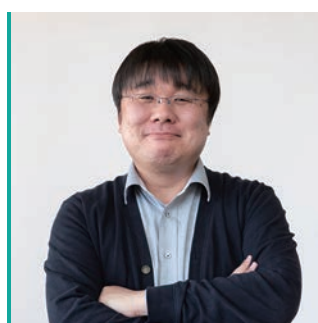
Joji Kusuyama
Research Fields Endocrinological Metabology, Exercise Physiology, Oral Biology



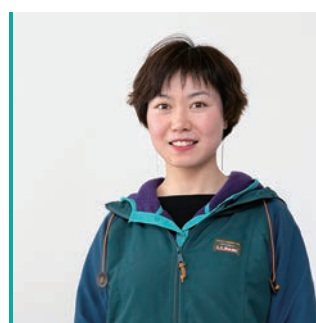
Yuta Kudo
Research Fields Natural product chemistry, Organic chemistry, Biochemistry



Takuro Ishii
Research Fields Medical ultrasound imaging, Biofluid dynamics, Computer-aided diagnostics, Urology



Hisashi Kino
Research Fields Semiconductor Engineering



Yuanyuan Guo
Research Fields Bioelectronics, Multifunctional fibers and sensors, Neural engineering



Yusuke Sato
Research Fields Molecular Robotics, Biophysics, DNA nanotechnology



Yuki Suzuki
Research Fields Nanobiotechnology



Chaoliang Zhang
Research Fields Spintronics, Magnetism, Magnetic materials



Chrystelle Bernard
Research Fields Dynamics behavior of polymers, cold-spray



Yuta Yamane
Research Fields Condensed Matter Physics and Spintronics



Shimpei Endo
Research Fields Quantum physics, Few- and many-body problem



Yasunori Okamoto
Research Fields Bioinorganic chemistry, Protein engineering, Systems catalysis



Masaki Okumura
Research Fields Structural biology, Protein Science, Biochemistry



Shuhei Obara
Research Fields Astro-particle physics

Profiles
of young researchers
Humans and Society



Alimu Tuoheti
Research Fields History of thought, Religious studies, Theory of comparative culture, Area studies



Yueh Hsuan Weng
Research Fields AI and Law, Legal informatics, Social robotics, Robot ethics



Tomokatsu Onaga
Research Fields Network science, Mathematical modelling



Yohei Kawazura
Research Fields Plasma physics, Turbulence, Hamiltonian mechanics



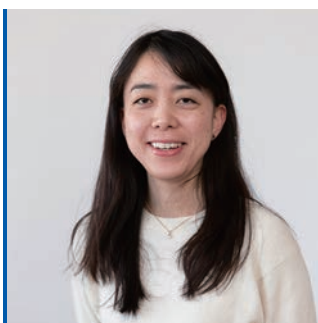
Naoya Kitajima
Research Fields Physics of the early universe, Particle physics beyond the standard model



Hakuto Suzuki
Research Fields Unconventional Superconductivity, Quantum Magnetism, Resonant Inelastic X-ray Scattering



Atsushi Tahara
Research Fields Research Fields Organometallic/Organic Chemistry, Computational study



Kaoru Kakinuma
Research Fields Sustainability, Socio-ecological system, Climate change and migration



Kohei Tamura
Research Fields Anthropology, Cultural evolution, Archaeological informatics



Yuta Nakayasu
Research Fields Materials processing engineering, Eco-friendly lifestyle creation



Kexin Xiong
Research Fields Psycholinguistics, Neurolinguistics, Second Language Acquisition



Daniel Pastor-Galan
Research Fields Geology



Masaki Yamada
Research Fields Particle physics, Cosmology

INTERDISCIPLINARY FUTURE

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Yuka Hatano
Research Fields Anthropology, Dentistry, Forensic medicine, Three-dimensional analysis

Profiles
of young researchers
Advanced Basic Science



Satoshi Iihama
Research Fields Magnetism, Spintronics, Photo-spintronics



Kohei Ichikawa
Research Fields Observational astronomy, Astrophysics

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Taxi / 15 minutes from Sendai Station. About 2,000 yen.

