

Map

From Sendai Station to KATAHIRA Campus, Tohoku University.



Access

Walk

About 20 min
From the west exit of Sendai Station to KATAHIRA Campus North Gate of Tohoku University

Bus

About 10 min
From the bus stop of No. **11**, **12** at Sendai Station Bus Terminal
Get on bus for DOBUTSU-KOEN 3 by way of OTAMAYABASHI
11 - Sendai municipal bus 701, 704 and 706 system
12 - Miyagi Kotsu bus 14, 28 and 29 system

Subway

About 15 min
Get off at Subway Namboku Line Sendai Station (Exit South 2) or Itsutsubashi Station (Exit North 2) and walk to KATAHIRA campus
About 10 min
Get off at Subway Tozai Line Aobadori-Ichibancho (Exit South 1) and walk to KATAHIRA campus

Taxi

From the Taxi stand at the JR Sendai Station, West Exit (1F)
About 10 min
KATAHIRA Campus

※Schedule is subject to change due to weather conditions, road situation and other factors.



TOHOKU UNIVERSITY Material Solutions Center

2022

*Tohoku University
Material Solutions Center (MaSC) contributes to
economic evolution of Tohoku and Japan
through the world-leading research projects
on material development for the future.*

Tohoku University KATAHIRA Campus

From North Gate to Material Solutions Center (MaSC)



i Information **🍴** Restaurant **🏠** Shop



TOHOKU UNIVERSITY Material Solutions Center

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August 2022





Director of
TOHOKU UNIVERSITY
Material Solutions Center
Tadashi Furuhashi

Working on new materials for the future of society

Tohoku University Material Solutions Center (MaSC) was founded on Tohoku University's Katahira campus in January 2014. It aims to promote innovation, entrepreneurship and industrialization from the endeavors of joint-research on new materials in order to contribute to society in the future. The construction cost of the center was provided by the Ministry of Economy, Trade and Industry's subsidization for the improvement of industrial technology development facilities. The remaining cost was shared by the Institute for Materials Research (IMR), the Institute of Fluid Science (IFS), the Institute of Multidisciplinary Research for Advanced Materials (IMRAM), and Tohoku University headquarters.

In 2018, the Research Institute of Electrical Communication (RIEC) also began participation in the operations of the center, expanding the scope of research and development to both materials and their applied devices, allowing the University to create a cooperative creation base between industry and academia in the Katahira area.

Tohoku University is proud of its world-leading practical accomplishments and its tradition of material science research. Katahira campus in particular has a number of excellent research institutes for material science. Bringing together these strengths, MaSC will help the solution of your problems to meet various industrial demands.

Operations of MaSC is financially independent from the university and its funds come from usage fees for spaces and equipment, as well as other sources while attention is given to uphold security and safety.

The main research themes of this center are categorized into three fields: "Social Infrastructure", "Electronics" and "Energy". Each research project is determined by open application.

Last year marked the 8th year since the establishment of the center, we were forced to take preventive measures against the Covid-19 infection, and held on-line Real Exchange meetings and Associate Membership activities, and sponsored the symposiums for Multi-Material Consortium and the Soft-Material Consortium which were established in the wake of past Real Exchange meetings.

In spite of the situations of "with Corona" continuing, we will carry out various activities, mainly online, aiming to greatly contribute to the industrial recovery of the Tohoku area and the strengthening of Japan's global competitiveness.

MaSC would like to express its appreciation for your continued support.



From Tohoku to the world

Collaboration with industry to create the advanced materials for the future

-From Tohoku to the world-

Tohoku University Material Solutions Center (MaSC) is a cooperative base between academics and industries with the help of government, which aims to promote the development of new-functional materials for industrial use and to boost up the local economy in Tohoku region.

MaSC has been set up in a joint effort of Tohoku University and its four institutes:

Institute for Materials Research (IMR), Institute of Fluid Science (IFS), Research Institute of Electrical Communication (RIEC) and Institute of Multidisciplinary Research for Advanced Materials (IMRAM).

The construction fees are partly supported by the Ministry of Economy, Trade and Industry.

Main topics of the MaSC project are the following three industrial fields:

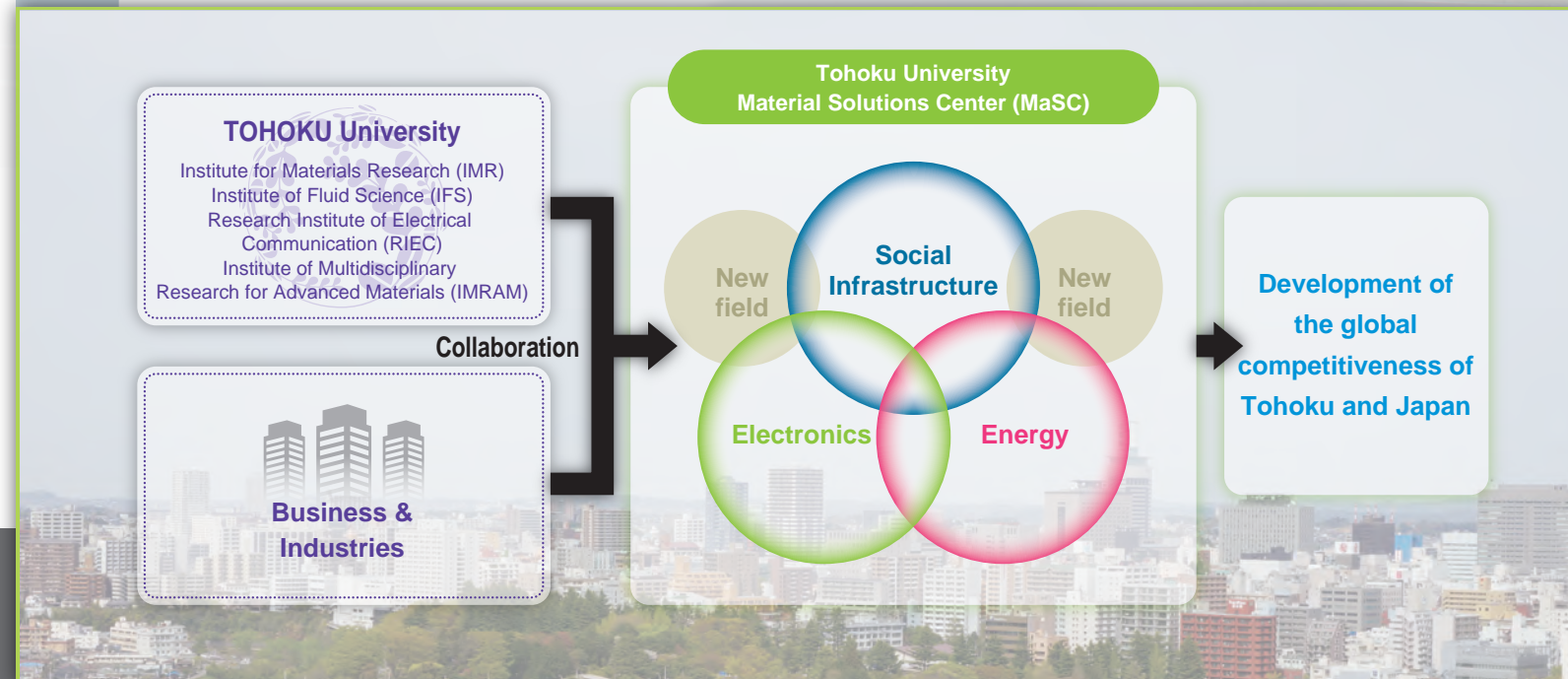
Social Infrastructure (materials for automobiles, aerospace, and life-science)

Electronics (materials for power devices and electronic devices)

Energy (materials for solar batteries, hydrogen energy, and batteries)

They provide this role from the nano-scale to the macro-scale on technical bases such as metal nano-control technology, ultra-hybrid material technology, and next-generation device creation technology, which are innovative material process technologies.

We trust that bringing up this center will help towards the reconstruction of the economy in Tohoku area after the earthquake and tsunamis in 2011, and that the technologies and new businesses will start here from the innovative results in MaSC to create jobs and lead to a strengthening of Japan's competitive power internationally in the area of materials.



Development of Innovative Manufacturing Processes for Quantum Dot Arrays and Nano-energy Devices

Project Leader

Jun Ishimoto

Professor

Multiphase Flow Energy Laboratory, Innovative Energy Research Center, Institute of Fluid Science

SO

EL

EN



Development of Advanced Smart Fluids & Soft Matters and the Device Applications

Project Leader

Masami Nakano

Specially Appointed Professor

New Industry Creation Hatchery Center (NICHe) , Tohoku University

SO

EL

EN



Development of Electron Beam Melting Based Additive Manufacturing Technology and New Materials

Project Leader

Akihiko Chiba

Professor

Deformation Processing, Institute for Materials Research

SO

EL

EN



Tohoku University/National Chiao Tung University International Joint Laboratory = Worldwide Top-notch Joint Researches for Constructing a Technology Infrastructure for a Sustainable and Smart Society

Project Leader

Seiji Samukawa

Specially Appointed Professor

Institute of Fluid Science

SO

EL

EN



Supercritical Nanomaterials Technology

Project Leader

Tadafumi Adschiri

Professor

Institute of Multidisciplinary Research for Advanced Materials

SO

EL

EN



Development of Technology for Functional Condensed Matter Applications

Project Leader

Shigeru Suzuki

Professor

Micro System Integration Center

SO

EL

EN



Advanced Imaging and Modeling Center for Soft-materials (Tohoku AIMcS) Advanced Electron Microscopy Project

Project Leader

Masami Terauchi

Professor

Institute of Multidisciplinary Research for Advanced Materials

SO

EL

EN



Development of Printed Batteries for IoT Devices

Project Leader

Hiroshi Yabu

Junior PI (Associate Prof.)

WPI-AIMR, Tohoku University CSO, AZUL Energy, Inc.

SO

EL

EN



Fusion Research Laboratory of Tribology

Project Leader

Kazue Kurihara

Professor

New Industry Creation Hatchery Center (NICHe) , Tohoku University

SO

EL

EN



Food and Secondary Battery related Fine Powder Manufacturing Project

Project Leader

Yuji Takakuwa

Professor

Micro System Integration Center

SO

EL

EN



Development of Novel Recycling Technology for Magnesium Alloy Fuel Cell by Renewable Energy

Project Leader

Hiroyuki Shibata

Professor

Materials Separation Processing, Institute of Multidisciplinary Research for Advanced Materials

SO

EL

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The France-Japan Joint Laboratory: ELyTMax,CNRS-Université de Lyon-Tohoku University,International Joint Unit

Project Leader

Motoko Kotani

Professor

Tohoku University Executive Vice President for Reserch, Director of Organization for Advanced Studies(OAS)

SO

EL

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Development of Multi-material Additive Manufacturing Technology

Project Leader

Tomonaga Okabe

Professor

Department of Aerospace Engineering, Graduate School of Engineering/Multi-Physics Design Laboratory, Institute of Fluid Science

SO

EL

EN



Research and Development of Additive Manufacturing Technologies

Project Leader

Akihiko Chiba

Professor

Deformation Processing, Institute for Materials Research

SO

EL

EN



Development of Fundamental Technologies for Metal Additive Manufacturing Technology

Project Leader

Akihiko Chiba

Professor

Deformation Processing, Institute for Materials Research

SO

EL

EN



Tohoku University Core Facility Center

Project Leader

Motoko Kotani

Executive Vice President for Research Director of the Tohoku University Core Facility Center

SO

EL

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Development of Novel Scintillation Crystals for Next Generation

Project Leader

Akira Yoshikawa

Professor

Institute for Materials Research

SO

EL

EN



Development of Hydrogen Energy System

Project Leader

Tatsuoki Kono

Specially Appointed Professor

Collaborative Research Center on Energy Materials, Institute for Materials Research, Tohoku University

SO

EL

EN



Ultra-low Loss Magnetic Materials for Innovative Power Electronics

Project Leader

Satoshi Okamoto

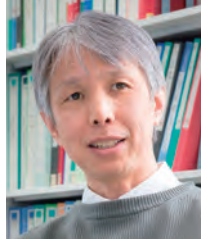
Professor

Institute of Multidisciplinary Research for Advanced Materials (IMRAM), Tohoku University

SO

EL

EN



Organizational Collaboration of the "Industry-Academia Partnerships for the Co-Creation of a Future Vision,"

Project Leader

Takuro Ueda

Tohoku University Executive Vice President (for Industry- University Collaboration)

SO

EL

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Startup Incubation Center

Project Leader

Takuro Ueda

Tohoku University Executive Vice President
(for Industry- University Collaboration)
General Director, Startup Incubation Center



AZUL Energy Inc.

President & CEO

Koju Ito



SO EL EN

3 DC Inc.

CEO

Takuma Kuroda



SO EL EN

Matsuo Industries Co., Ltd.

Operating officer

Yuji Sekitomi



SO EL EN

Research & Development on new materials and devices that will impact society in the fields of “Social infrastructure materials”, “Electronic materials” and “Energy materials” with 28 research projects selected through public offering from both in and outside the university.

SO Social infrastructure EL Electronics EN Energy

Shared Equipment

High performance equipment for material analysis is served for shared use on the first floor, such as “structural analysis systems”, “physical property analysis system”, “composition analysis systems” and “micromachining system”.

These equipments have unique optional features.

Members of the MaSC can use these systems to analyze their materials and to achieve speedy implementation of their findings.

Equipment list



Multipurpose X-ray Diffraction System

SmartLab 3G/VariMax DW with IP



Scanning Electron Microscope System and Cross Section Polisher

JSM-7800F & IB-09020CP



NIR Spectrometer

NX-FLIM-T03



Scanning X-ray Photoelectron Spectroscopy

PHI 5000 VersaProbe II



Field Emission Electron Probe Microanalyzer with SXES

JXA-8530F+SXES



Focused Ion Beam/Scanning Electron Microscope Dual-beam System

Helios NanoLab™ 600i

Seismic isolator equipped

The center building is base isolated with seismic isolators made of laminated rubber and dampers. The areas that have seismic isolators installed are called “base-isolated layers”. These areas are designed to absorb the heavy shock during an earthquake to keep the “base-isolated layers” stable without serious vibrations.

