Nano Revolution for the Future

MANA

RESEARCH CENTER FOR MATERIALS NANOARCHITECTONICS

Research Center for
Materials Nanoarchitectonics

Research Center for Materials Nanoarchitectonics (MANA) aspires to be a world-leading research center in nanotechnology and materials science.

What is “Nanoarchitectonics”?

“Nanoarchitectonics” is a concept that aims to create innovative new materials by combining “nano-parts” made of atoms and molecules to discover new and unexpected phenomena.

The term “nano” denotes one billionth of a meter, the world at the atomic and molecular scale. It differs significantly from the realm of microtechnology (one millionth of a meter) that has contributed to advancements like semiconductor micromachining, as materials exhibit entirely different behaviors at the nanoscale. By taking advantage of this property, we can construct new materials that function by linking nanostructures together. This new concept of nanotechnology is what we call “Nanoarchitectonics.”

The concept of “Nanoarchitectonics,” which was born at MANA, has grown to be accepted worldwide, and is now introduced in many media, including academic journals and general books.

A Message from the Director

Director of MANA

Takashi TANIGUCHI

The Research Center for Materials Nanoarchitectonics (MANA) has been advancing bottom-up fundamental research based on “Nanoarchitectonics,” a unique concept for creating functional nanomaterials in nanotechnology and materials science. The aim of this approach is to discover novel materials and functions, disseminate outstanding basic research results, and generate seeds for innovation across a wide range of disciplines through the realization of “Materials Nanoarchitectonics.” This concept involves creating new materials by precisely synthesizing, integrating, linking, and assembling nanoscale components under interfacial control to achieve advanced functionality. MANA has produced numerous distinctive outcomes through research on nanosheets, neuromorphic devices, nanophotonic thermal control devices, supramolecular materials, and high-performance thermoelectric materials.

In recent years, we have also embarked on fundamental research to establish the scientific foundation for next-generation semiconductor development, alongside expanding our efforts into areas such as the creation of quantum materials.

MANA also has the distinction of being one of the first five research centers established under the World Premier International Research Center Initiative (WPI), launched by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in 2007. MANA continues to pursue its goal of becoming a global hub for nanotechnology research. For over a decade, we have actively pursued ambitious and interdisciplinary research while cultivating a broad global network through collaborations and joint research with leading universities and research institutions around the world. We have also organized a welcoming system and research environments that attract researchers and students from around the world. To date, more than 400 international researchers have spent part of their research careers at MANA and now contribute globally as members of the MANA alumni network.

While placing strong emphasis on three key principles — originality in research, international perspectives, and mutual understanding and collaboration that drive innovation — we also recognize the importance of returning the outcomes of fundamental bottom-up research to society.

We define “achievements” not only as solving immediate problems but also fostering long-term research efforts and nurturing young researchers, as these may lead to fundamental scientific breakthroughs in the future.

We will further deepen our pursuit of “Nanoarchitectonics,” and in 2026, we will continue our efforts to create new value and translate research outcomes into societal benefits by advancing MANA’s three core research fields: nanotechnology, quantum materials, and semiconductor materials.

We sincerely appreciate your continued support and interest in our activities.

Takashi Taniguchi

VISION

Toward a Better Global Future:

Pioneering a new paradigm in materials development on the basis of "Nanoarchitectonics"

MISSION

1 ▸ Develop New Paradigm of Nanotechnology

Based on the new concept of “Nanoarchitectonics,” further the development of world-class new materials research

2 ▸ Promote Global Circulation of World-class Researchers

Establish a network to boost the internationalization of top-level researchers

3 ▸ Foster Young Researchers

Foster young researchers as they take on bold new challenges

RESEARCH AT MANA

Research Foundry

NIMS offers state-of-the-art research facilities, supported by skilled and experienced technical staff who provide reliable support in English for international researchers.

Seminars and Symposia

MANA actively promotes international collaboration through seminars and symposia held within NIMS and with external partners. The monthly “MANA Seminars,” featuring guest speakers from outside NIMS, provide opportunities to share the latest research and encourage researcher interaction. Young researchers also benefit from regular seminars hosted by MANA researchers and visiting researchers. The annual MANA International Symposium invites distinguished researchers from around the world, providing a platform for high-level research presentations and academic exchange. MANA also supports participation in international symposia and workshops, helping researchers build a global research network.

Research Support System

MANA brings together outstanding researchers from around the world. To support this diverse community in focusing on their research, MANA promotes internationalization by ensuring that English is used as the common language by all staff, including administrative staff. In addition, MANA fosters international collaboration through unique programs such as the Short-Term Invitation Program and the Dispatch Program, which facilitate joint research with academic and research institutions worldwide beyond MANA.

Innovation Lounge

Our building offers a variety of spaces where researchers from diverse nationalities and backgrounds come together. These meeting points serve as hubs for next-generation innovation, nurturing unique ideas and fostering a vibrant research community.

Organization

Takashi TANIGUCHI
Director

Semiconductor Materials Field

Naoki FUKATA
Deputy Director,
Field Director,
Semiconductor Materials Field

Quantum Materials Field

Takashi UCHIHASHI
Deputy Director,
Field Director,
Quantum Materials Field
WPI Administrative Director

Nanomaterials Field

Takao MORI
Deputy Director,
Field Director,
Nanomaterials Field

Administrative Office

Takefumi NOTOMI
Manager,
Administrative Office

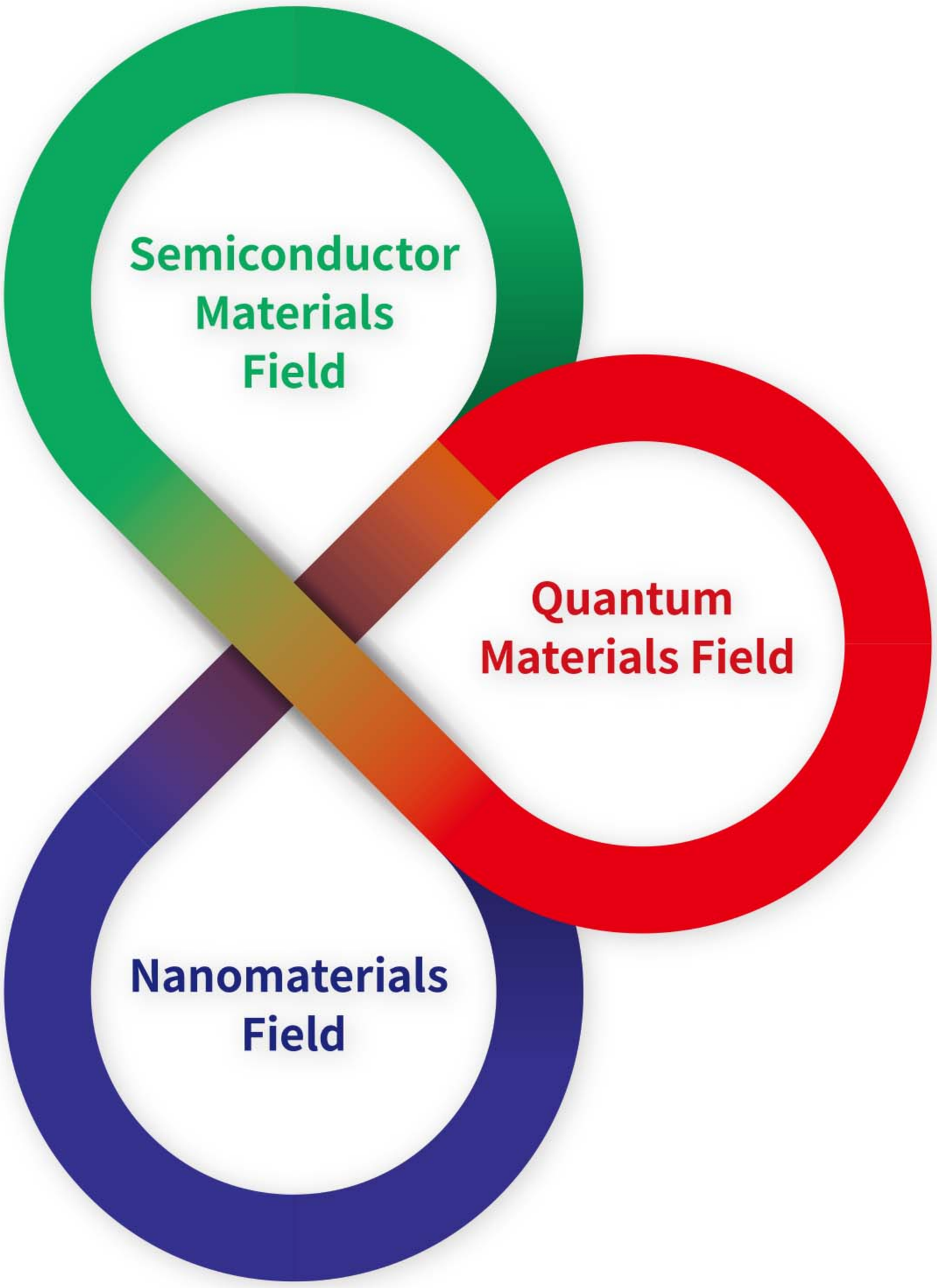
World Premier International Research Center Initiative (WPI)

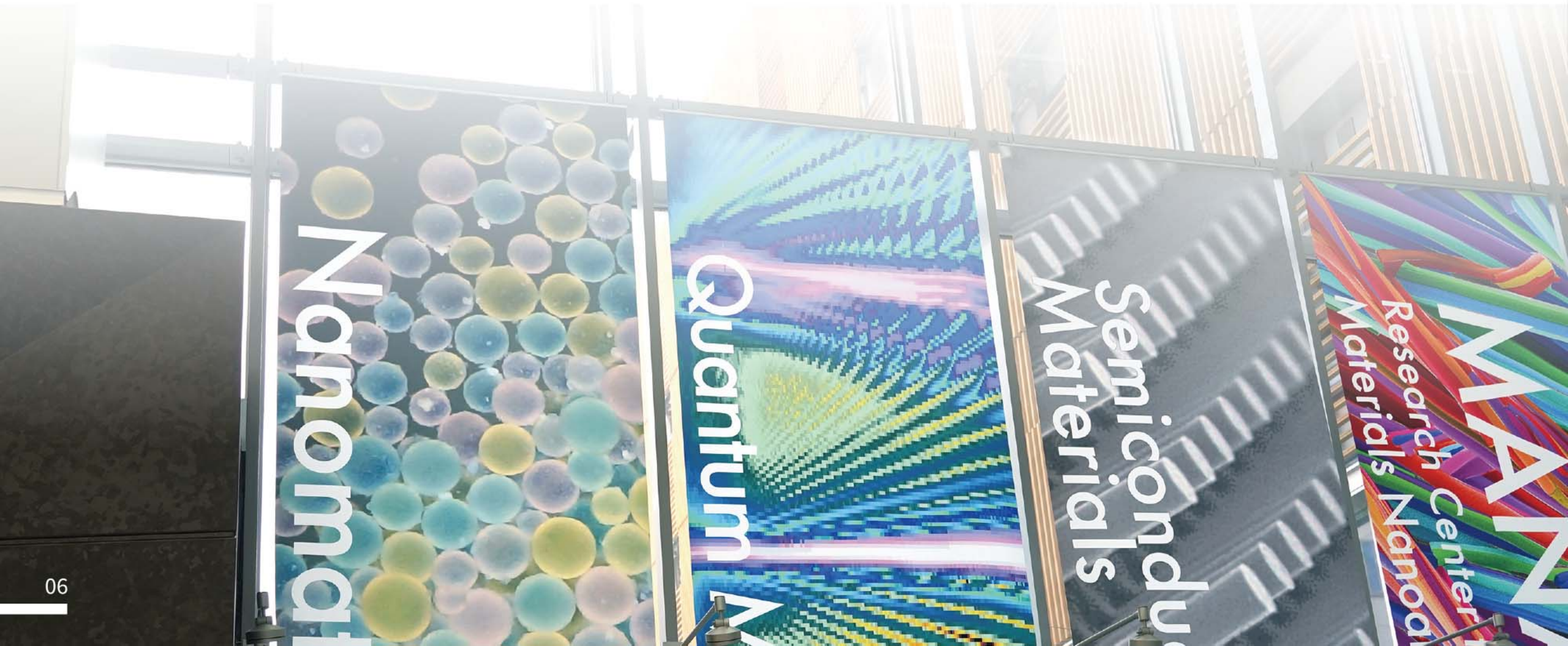
MANA is an international research center established at NIMS, supported by the World Premier International Research Center Initiative (WPI), initiated by the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) in 2007.
After a decade supported by the program, MANA has evolved into the “WPI Academy,” marking significant progress as the world’s leading center for nanotechnology materials research.

WPI MISSION

- Leading-edge research
- Fusion research
- System reform
- Globalization
- Social value of basic research
- Nurturing the next generation

Fields of MANA





Semiconductor Materials Field

Semiconductor research based on new materials, new structures,and new principles

Semiconductors are indispensable devices in the current IoT society, represented by electronic devices, social infrastructure, and AI. Research and development of semiconductors is actively promoted in countries around the world. To demonstrate our superiority in the field of next-generation semiconductor research, MANA will explore new semiconductor materials and develop new semiconductor processes in anticipation of future technology node generations. The active use of new materials and processes will lead to the construction of new device structures and the development of devices that operate on new principles, thereby contributing to fundamental research for next-generation semiconductor research.

Quantum Materials Field

Contributing to quantum technology through quantum-architectonics

Our research contributes to quantum technology by introducing the new concept of quantum-architectonics, which aims to control the particle-like and wave-like nature of matter and fields by integrating and systematizing low-dimensional nanomaterials. We develop novel quantum materials through nanotechnology-based synthesis, fusion of heterogeneous nanomaterials, and precision engineering for dimensional control. We also explore new phenomena using ultra-low-temperature evaluation techniques, theoretical computation, and information technology, and provide functionalities through diverse system-nanotechnologies, thereby establishing a fundamental research infrastructure for quantum research.

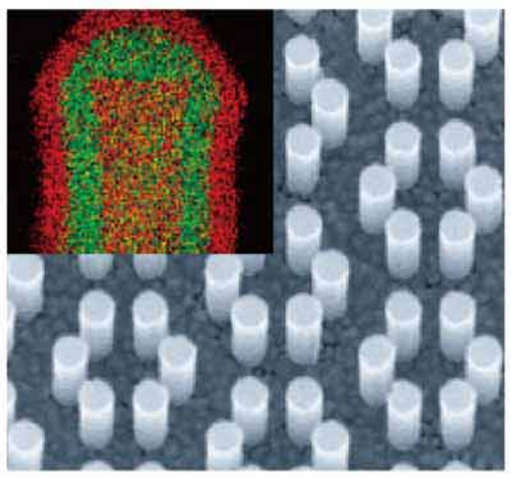
Nanomaterials Field

Creating new materials and eliciting novel functions by sophisticated control of compositions and structures at the nano level

We are pursuing research across a wide range of material systems, with the aim of discovering novel properties and phenomena that emerge from the nanometer size and shape, and significantly enhancing their functions. We develop and possess cutting-edge evaluation equipment, performing in-situ analysis of individual nanomaterials and nanostructured materials. We are further advancing our research in “Chemical Nanoarchitectonics,” aiming to contribute to development across a wide range of technological fields.

Semiconductor Materials Field

Group・Team



Nanostructured Semiconducting Materials Group

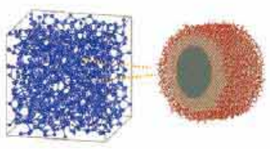
| Field Director | Group Leader | Naoki FUKATA

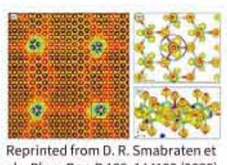
Development of new functional semiconductor nanomaterials and devices

Semiconductor nanomaterials, known for their unique properties not found in bulk materials, hold the potential for new device applications. Our goal is to bring forth new properties and superior functionalities in semiconductor materials.

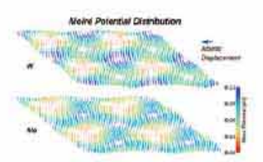
KEYWORDS

- *Low-dimensional nanostructures*
- *Semiconductors*
- *Nanofabrication*
- *Electronic devices*





Reprinted from D. R. Smabraten et al., Phys. Rev. B 102, 144103 (2020)



Reprinted from Geng et al., Matter 6, 493 (2023)

Quantum Materials Simulation Group

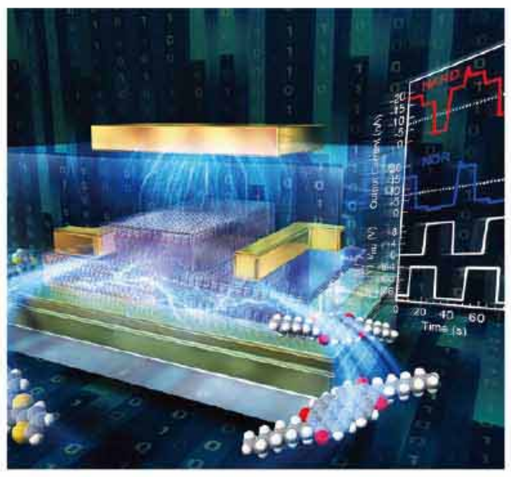
| Group Leader | Tsuyoshi MIYAZAKI

First-principles simulations of complex nano systems

Based on large-scale first-principles simulations, we clarify and predict the structures, properties, and functions of complex nano materials, surfaces and interfaces at the atomic level.

KEYWORDS

- *First-principles calculation*
- *Large system*
- *Nano complex*
- *Machine-learning*



Semiconductor Functional device Group

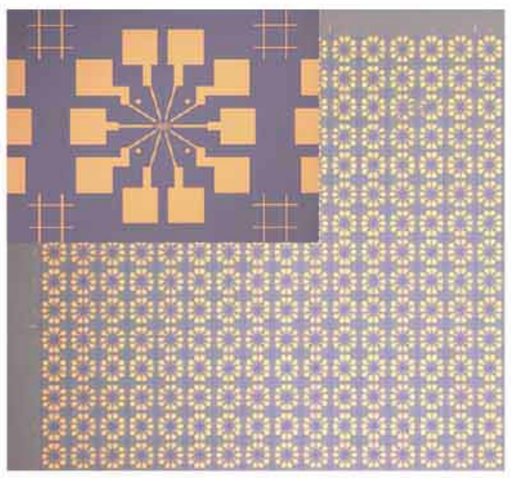
| Group Leader | Yutaka WAKAYAMA

Innovative electronic devices with semiconductor nanomaterials

Centered on semiconductor nanomaterials such as 2D layers and molecular semiconductors, we design novel device architectures to develop innovative operation mechanism and ultra-low power devices.

KEYWORDS

- *Non-Neumann computing*
- *Logic gate*
- *2D layers*
- *Multivalued logics*
- *Molecular electronics*



Thin Film Electronics Group

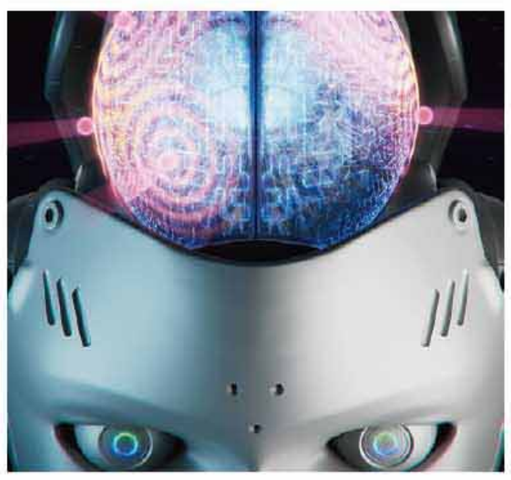
| Group Leader | Kazuhito TSUKAGOSHI

Materials and fabrication of thin films for electron devices

We are researching semiconductor, ferroelectric, and insulating film materials and deposition technologies for next-generation electronics applications. We are attempting to fabricate and evaluate microstructured devices and to construct them with precision control at the nanoscale.

KEYWORDS

- *Functional thin film*
- *Atomic scale deposition*
- *Development of nanodevice fabrication*
- *Electric devices*



Neuromorphic Devices Group

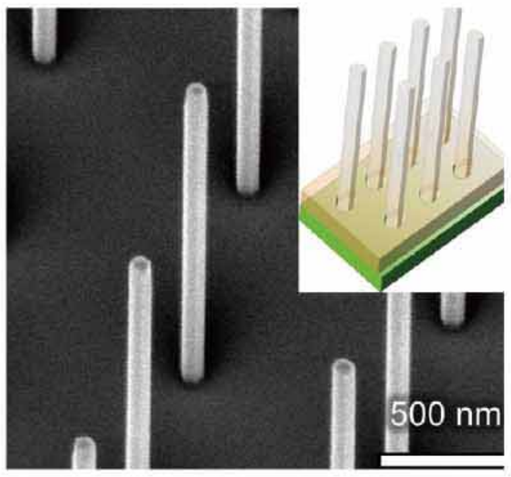
| Group Leader | Takashi TSUCHIYA

Innovative AI electronics that solve energy problems through the functionality of materials

We develop neuromorphic devices that utilize the spatiotemporal dynamics of various information carriers, such as ions, molecules, and spin in materials, as computational resources. This approach contributes to realizing low-power and high-performance AI electronics, a significant step forward to Society 5.0.

KEYWORDS

- *Neuromorphic devices*
- *Reservoir computing*
- *Brain-inspired computing*
- *In-material computing*



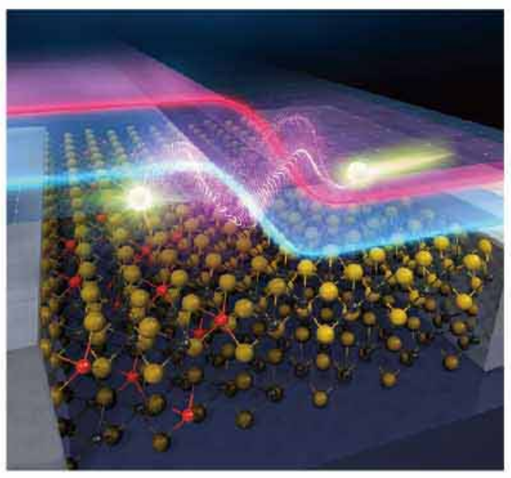
Semiconductor Nano-integration Group

KEYWORDS
- *Semiconductors*
- *Nanomaterials*
- *Semiconductor devices*
- *Heterogeneous materials integration*

| Group Leader | Shinjiro HARA

New integration technology for semiconductor nanomaterials and devices

For semiconductor device application in the next generation, our goal is to develop novel semiconductor nanomaterials integration technologies by “the Best of Both Worlds”, Top-down and Bottom-up Approaches.



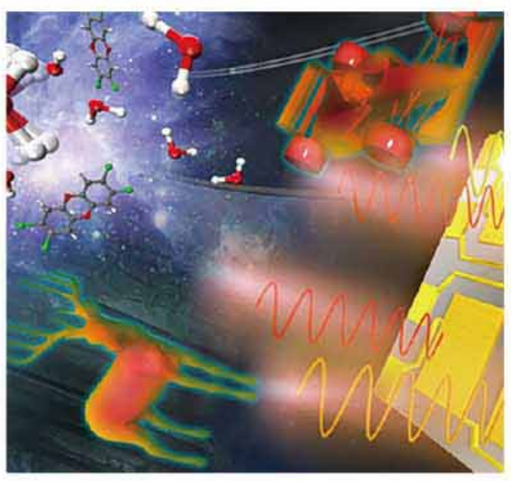
2D Semiconductor Group

KEYWORDS
- *2D materials*
- *Transition metal dichalcogenides*
- *Electronic devices*

| Group Leader | Yasumitsu MIYATA

Crystal growth, physical properties, and device applications of 2D semiconductors

We aim to apply atomically thin 2D materials to future information devices by focusing on high quality crystal growth, transport control, and transistor device design and analysis.



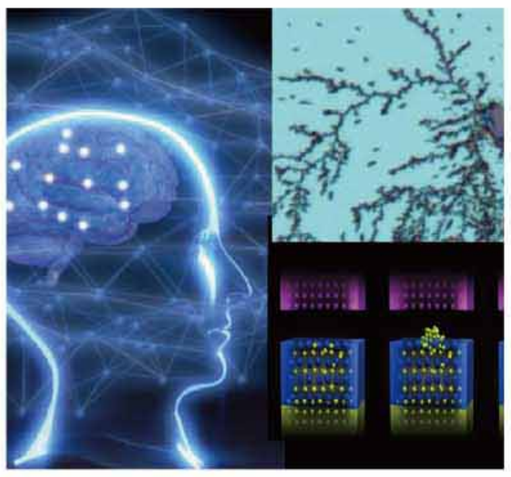
Photonics Nano Engineering Group

KEYWORDS
- *Spectroscopically Controlled Thermal Emission*
- *Infrared Sensing*
- *Optical Authentication*

| Group Leader | Tadaaki NAGAO

Controlling and utilizing light and thermal radiation at the nano interface

Light can be confined and manipulated in nano-scale spaces. Based on the discovery and elucidation of optical phenomena occurring at the interfaces of nano-materials, we thrust research in nano-material science aimed at utilizing infrared and solar radiation.



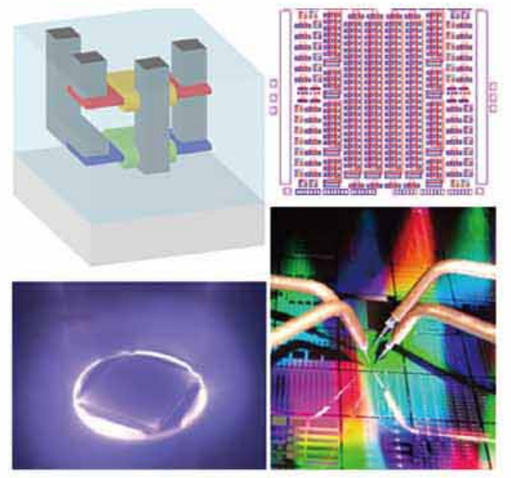
Ionic Devices Group

KEYWORDS
- *New computing ionics device*
- *Neuromorphic engineering*
- *Brain-inspired artificial intelligence*

| Group Leader | Kazuya TERABE

Hardware-oriented AI technology utilizing ion transport

In order to further advance our information society, there is an urgent need to create high-performance/high-function devices based on entirely new concepts. We aim to bring about devices/circuits/systems (especially AI-related) through the fusion of ionics and electronics.



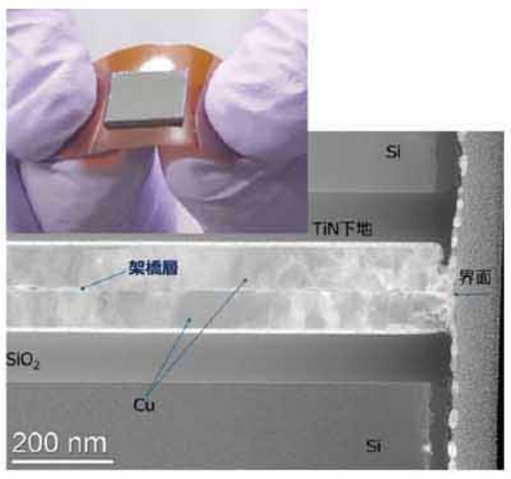
Semiconductor Device Group

KEYWORDS
- *Semiconductor*
- *Transistor*
- *Dielectrics*
- *Interface engineering*
- *LSI*
- *Power devices*

| Group Leader | Takuji HOSOI

Material × Interface × Process — Shaping Future Semiconductor Devices

Understanding and controlling interface properties, beyond the materials themselves, is essential for next-generation semiconductor devices. We pursue innovative devices through materials and process engineering.



Smart Interface Team

KEYWORDS
- *Surface*
- *Interface*
- *Bonding*
- *Debonding*
- *Packaging*
- *Low temperature*
- *Non-vacuum*

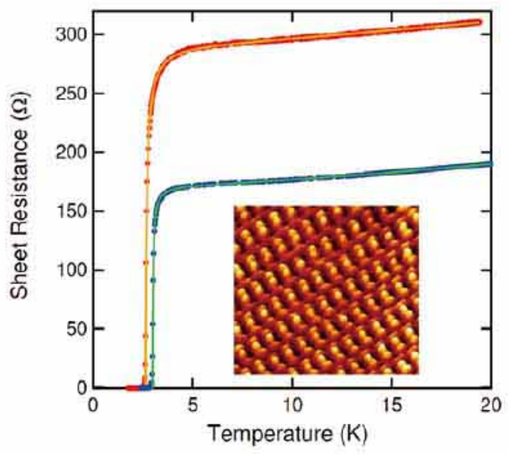
| Team Leader | Akitsu SHIGETOU

Reversible Interconnection at Low Temperature without Vacuum

Integrating low-temperature atmospheric bonding with easy debonding is vital for next-gen packaging. We developed a photo-radical process to control nano-surface structures, enabling precise adhesion and separation.

Quantum Materials Field

Group・Team



Surface Quantum Phase Materials Group

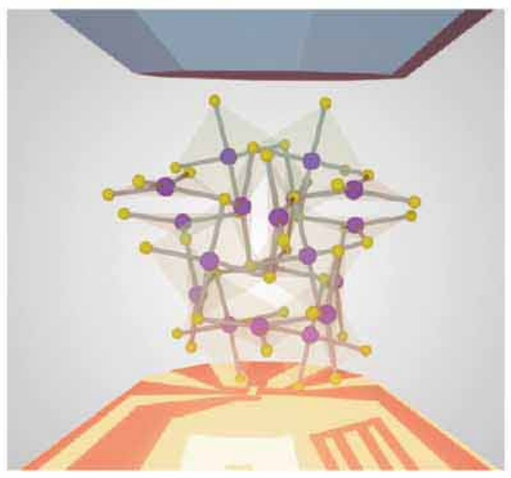
KEYWORDS

- *Surface and Interface*
- *Quantum physics*
- *Low-dimensional materials*

| Field Director | Group Leader | Takashi UCHIHASHI

Designing and creating two-dimensional materials at the atomic/molecular level

The surfaces and interfaces of materials are critical places where quantum functionalities manifest themselves. We design and create new surface quantum materials at the atomic/molecular level, and reveal unexpected physical properties and functionalities.



Frontier Superconducting Materials Group

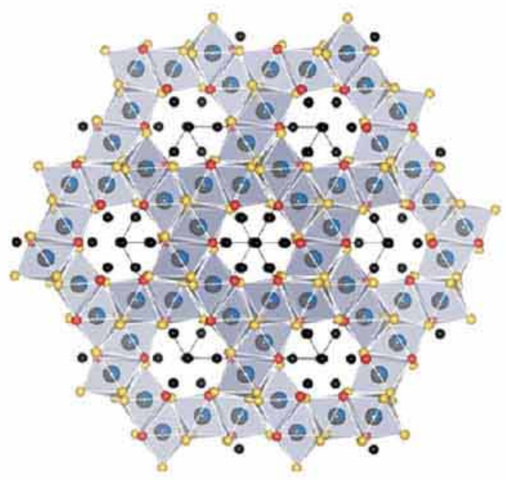
KEYWORDS

- *Superconductivity*
- *Functional materials*
- *High pressure*
- *Materials Informatics*

| Group Leader | Yoshihiko TAKANO

Development of novel functional materials utilizing AI and MI

Our aim is to develop cutting-edge functional materials such as superconductors. We explore the candidate materials obtained through AI and MI techniques by synthesizing and evaluating their properties under extremely high-pressure conditions. Our ultimate goal is to discover room-temperature superconductors—one of the longstanding dreams of mankind.



Quantum Solid State Materials Group

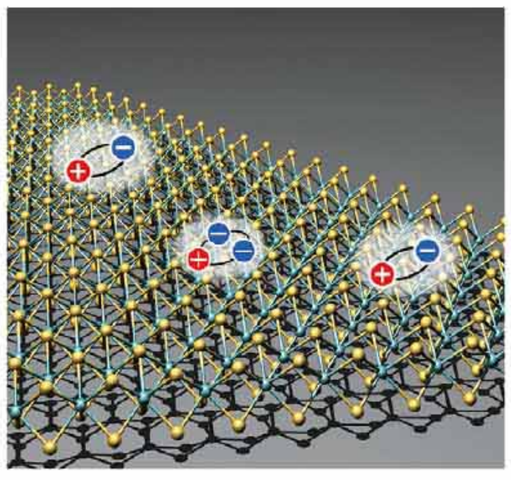
KEYWORDS

- *Spin properties*
- *Materials discovery*
- *Computational science*
- *Quantum materials*

| Group Leader | Kazunari YAMAURA

Exploring Quantum Phenomena through the Design and Synthesis of Novel Materials

We are developing materials that harness quantum properties to achieve novel functions and enhanced performance. Our goal is to create new materials that will support high-performance and sustainable technologies.



2D Quantum Materials Group

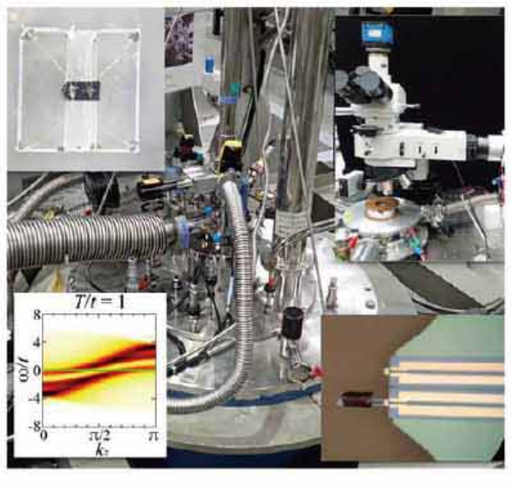
KEYWORDS

- *Two-dimensional quantum materials*
- *Semiconductors*
- *Optical properties*
- *Crystal growth*

| Group Leader | Ryo KITAURA

Nano-science involving two-dimensional quantum materials

Two-dimensional systems are a treasure trove of new functions and properties. By promoting the creation of new two-dimensional materials and property exploration using advanced measurements, we aim to create a new trend in nano-science.



Quantum Material Properties Group

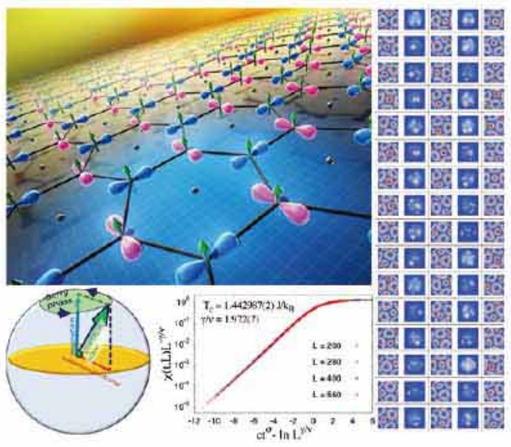
KEYWORDS

- *Superconductivity*
- *Vortex*
- *Topological*
- *Correlation*
- *Low temperature high magnetic field*

| Group Leader | Taichi TERASHIMA

Research on the electronic states and properties of superconductors and topological materials

We elucidate the state of the electrons in a material through the measurement of electronic states using ultra-low temperature high magnetic fields and theoretical research. Also, the study of quantum flux occurring in superconductors is an important theme.



Quantum Materials Modeling Group

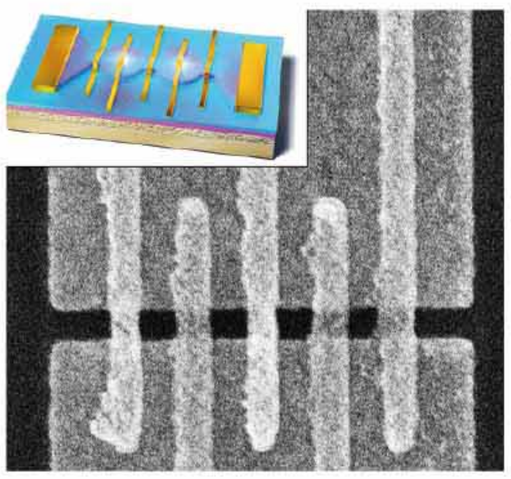
| Group Leader | Youhei YAMAJI

Understanding the phases and quantum entanglement of quantum materials

We analyze and design information carriers as building blocks for nanoarchitectonics, linking their emergence from material phases and entanglement to quantum materials research.

KEYWORDS

- Quantum materials
- Magnetism
- Entanglement
- Theory
- Simulation
- Machine learning



Qubit Materials Group

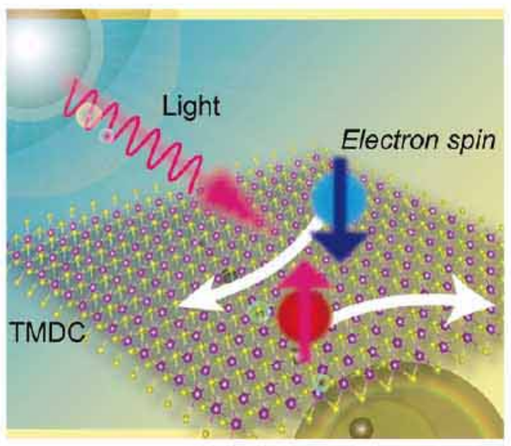
| Group Leader | Yusuke KOZUKA

Materials for solid-state quantum systems and hardware

We aim to enhance solid-state qubits and hardware through materials research, utilizing techniques such as thin film fabrication, structural analysis, and electrical measurements.

KEYWORDS

- Atomic layer materials
- Oxides
- Superconductivity
- Quantum dots
- Topological superconductivity



Quantum Materials Design Group

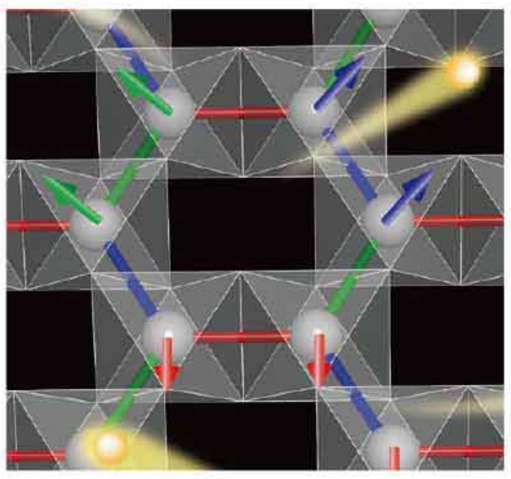
| Group Leader | Katsunori WAKABAYASHI

Design of Functionalities in Quantum Materials

Electronic states and functionalities of quantum materials and semiconductors are explored through theoretical and computational approaches to establish design principles and link fundamental physics with device applications.

KEYWORDS

- Quantum materials design
- Topology
- 2D materials
- Semiconductor device
- Electronic properties
- Theory



Quantum Magnetic Materials Team

| Team Leader | Tomohiro TAKAYAMA

Exploring materials with novel electronic and magnetic properties

We are exploring new quantum materials displaying novel electronic and magnetic properties which may be exploited as future functional and innovative devices.

KEYWORDS

- Magnetic materials
- Materials synthesis
- Electronic entropy
- Spin-orbit coupling

MANA Photo Library

Nanomaterials Field

Group•Team

Thermal Energy Materials Group

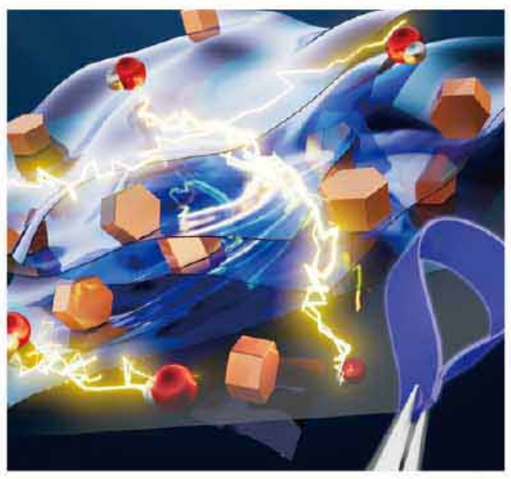
| Field Director | Group Leader | Takao MORI

Development of high-performance thermal energy control materials and devices

We develop novel thermal energy control materials & devices and thermal management technologies, through advanced control of electronic transport & states, and heat transport.

KEYWORDS

- *Energy-related devices*
- *Thermoelectrics*
- *Thermal energy control*
- *Heat transport*



Functional Nanomaterials Group

| Group Leader | Renzhi MA

Synthesis and Function Exploration of Novel Nanomaterials

We design and synthesize new nanomaterials (nanosheets, nanotubes, etc.) that have a rich diversity in composition and structure. We aim to reveal new functions in optoelectronics and energy conversion/storage, etc.

KEYWORDS

- *Nanosheets*
- *Nanotubes*
- *Catalysts*
- *Membranes*
- *Nanoelectronics*

Layered Nanochemistry Group

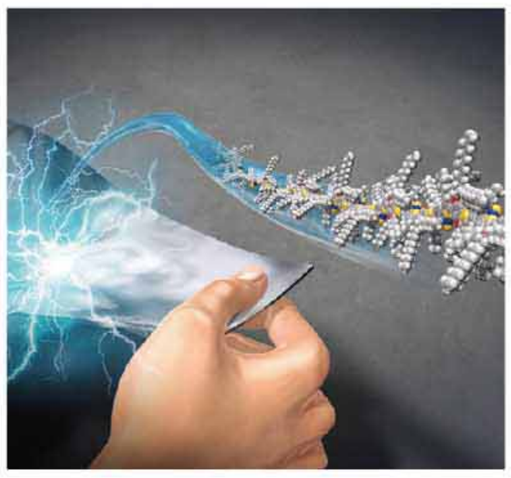
| Group Leader | Yusuke IDE

Development of Eco-friendly and High-performance Nanomaterials

We develop new materials and new functionalization methods for low-dimensional nanomaterials, such as layered inorganic compounds, and aim to develop materials that can replace existing consumer goods and industrial products, or for realizing a hydrogen society.

KEYWORDS

- *Layered material*
- *Clay mineral*
- *Porous material*
- *Adsorption*
- *Catalysis*
- *Sunscreen*



Frontier Molecules Group

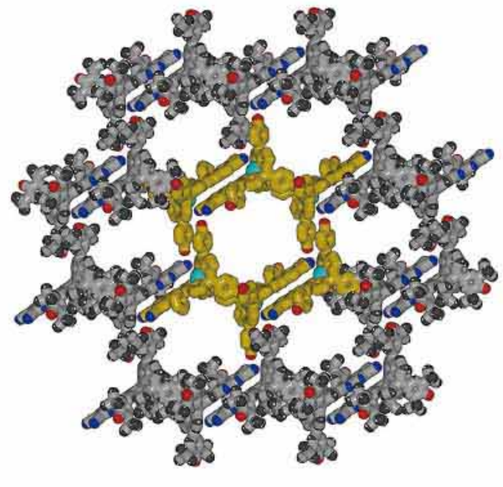
| Group Leader | Takashi NAKANISHI

Development of Novel Functional Molecular Materials with Unique Stimuli-responsiveness

We aim to construct molecular systems that exhibit sensor and energy harvesting functions. It is achieved by creating novel π-conjugated molecules and dimensionally regulated molecules/polymers that respond uniquely and sensitively to external stimuli (molecules, light, heat, vibration, pressure, etc.).

KEYWORDS

- *π-Conjugated Molecules*
- *Sensors*
- *Stimuli-response*
- *Liquid Materials*
- *Softelectronics*



Functional Chromophores Group

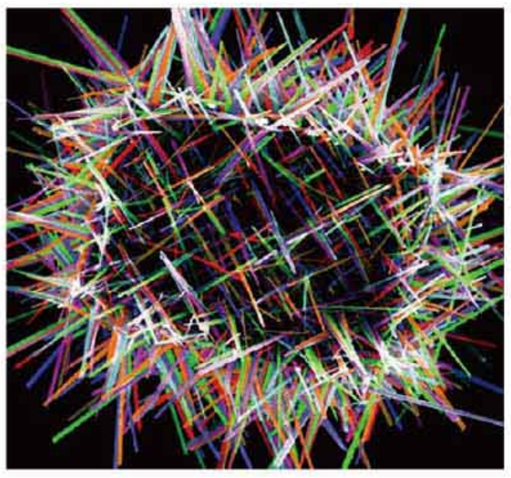
| Group Leader | Jonathan HILL

Towards new functional chromophore materials

Photofunctional chromophores with 3D nanomolecular structures have unique optical and supramolecular properties. This group designs and synthesizes new photofunctional chromophore molecules for the functionalization of self-assembled materials.

KEYWORDS

- *Functional chromophores*
- *Porphyrins*
- *Pyrazinacenes*



Supermolecules Group

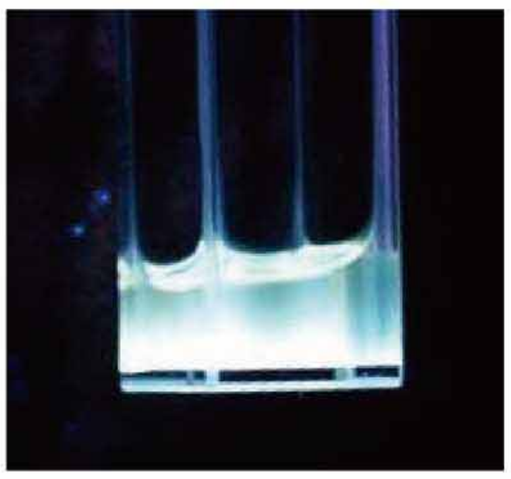
| Group Leader | Katsuhiko ARIGA

The world's masterpiece materials revolutionized by interfacial science and supramolecular chemistry

We create materials architected with supermolecules and materials assemblies at interfaces with free tunning of their shapes and electronic states, to develop world-surprising systems and devices for energy/environmental/bio-functional revolutions.

KEYWORDS

- *Supermolecule*
- *Interface*
- *Nanocarbon*
- *Organic semiconductor device*
- *Cell control*



Nanoparticle Group

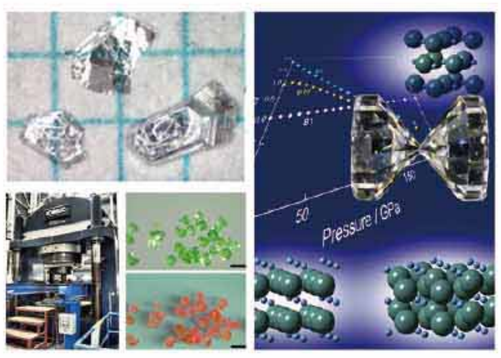
| Group Leader | Naoto SHIRAHATA

Creation of Eco-friendly Nanoparticles Aimed at Next-generation Photonics

We develop new materials that absorb and emit specific light by controlling the energy structure of crystals composed of environmentally friendly elements. We aim to contribute to next-generation optoelectronics and nanomedicine.

KEYWORDS

- *Colloidal Semiconductor Nanocrystals*
- *Optoelectronics*
- *Nanomedicine*



High-Pressure Materials Synthesis Group

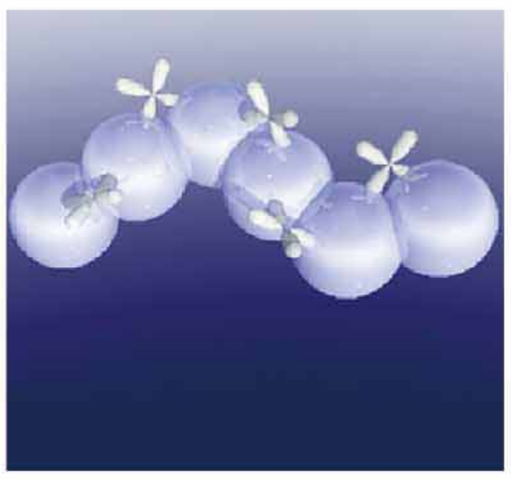
| Group Leader | Norimasa NISHIYAMA

Material Structural Controls and Syntheses using High-Pressure Technology

We develop synthetic and observation techniques using ultra-high-pressure technology, with a focus on researching diamond, BN-related materials, phosphors, dielectrics, hydrides, and other materials.

KEYWORDS

- *High-pressure technology*
- *Diamond/BN impurity controls*
- *New materials synthesis*
- *Supur hard and tough materials*



ElectroActive Materials Team

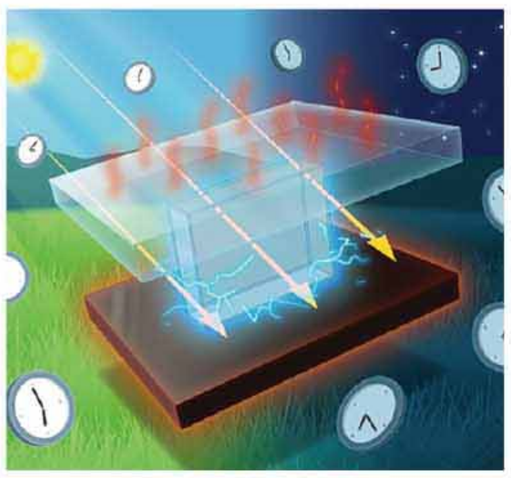
| Distinguished Fellow | Team Leader | Hideo HOSONO

Designing and Exploring New Electronic Functions with Original Ideas

We aim to explore functionalities that are primarily exhibited by electrons, using our original ideas and approaches. The targeted outputs are diverse, ranging from semiconductors, superconductors, and catalysts to luminescence and magnetism. We focus on areas bridging physics and chemistry.

KEYWORDS

- *New electronic functions*
- *Material exploration*
- *Material design*
- *Semiconductors*
- *Catalysts*



Optical Nanostructure Team

| Team Leader | Satoshi ISHII

Thermal Control and Functionalization using Optical Nanostructures

Thermal radiation and photothermal conversion depend on optical nanostructures. By arbitrary controlling thermal radiation spectra and developing new optical thermal property measurement methods through optical nanostructures, we contribute to thermal control research.

KEYWORDS

- *Thermal radiation*
- *Nanophotonics*
- *Spectroscopy*
- *Polariton*

Independent Researcher

Independent Researcher Program for Fostering Future Research Leaders

Mizuki TENJIMBAYASHI

Concurrent appointment,
Frontier Molecules Group

Independent Authority over Research | **Independent Research Budget** | **Independent Action**

To cultivate the next generation of research leaders, the program grants Independent Researchers genuine research independence, including the authority to lead their own research. It also provides an environment and comprehensive support to allow them to pursue independent research with maximum freedom.

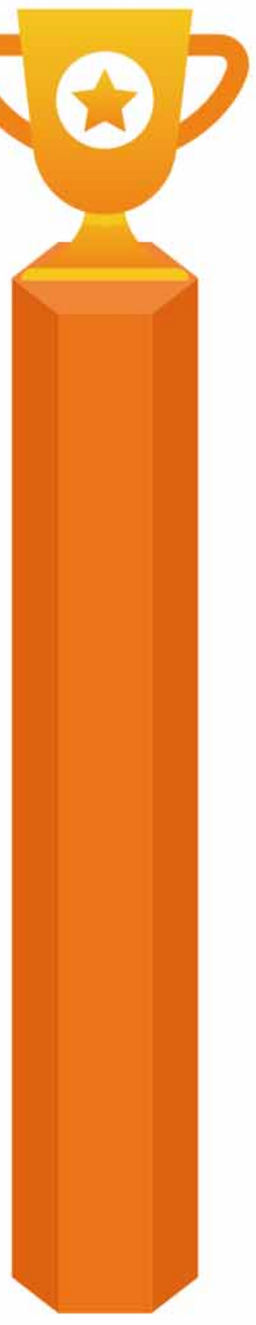
MANA Figures

10,002 Number of Papers
2007-2025
As of June 2026

Top 1% Highly Cited Papers
7.0%
2022-2025
As of June 2026

Source: SciVal(calculated based on Scopus data)

Patent Registrations
454
As of December 2025



Internationally Co-Authored Papers 2025
73.6%
As of June 2026

1.82
FWCI Field-weighted Citation Impact
2022-2025

Source: SciVal (calculated based on Scopus data)

As of June 2026

Memorandums of Understanding (MOUs)

Valid MOUs
(7 institutions, 5 countries)

As of June 2026

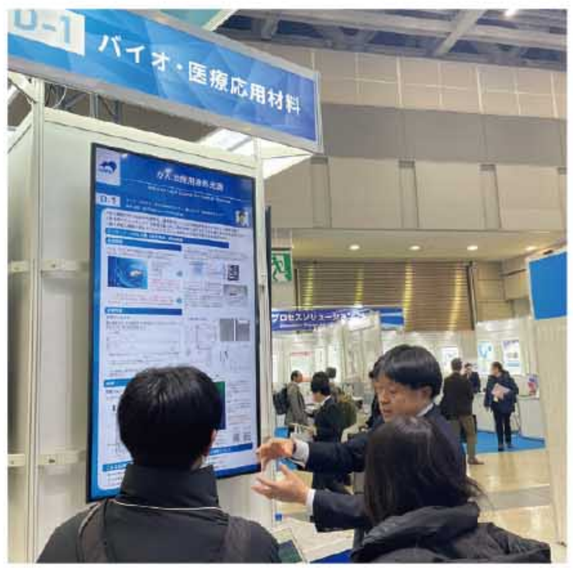
Personnel Composition As of April 1, 2026

	Group Leaders & Team Leaders	Researchers (Permanent)	Researchers (Fixed Term)	Junior Researchers	Technical Staff	Administrative Staff	Total
Number	**29**	**66**	**73**	**53**	**30**	**24**	**275**
Non-Japanese	**2**	**10**	**55**	**24**	**3**	**0**	**94**
Female	**1**	**3**	**16**	**13**	**21**	**23**	**77**

For Businesses Considering Collaboration or Use of Our Research Results

NIMS actively collaborates with universities, research institutions, and private companies in Japan and around the world to promote the dissemination and practical application of cutting-edge research outcomes. Through the provision of technologies and research resources, as well as joint research initiatives, NIMS provides multifaceted support for research and development and the creation of new business opportunities.

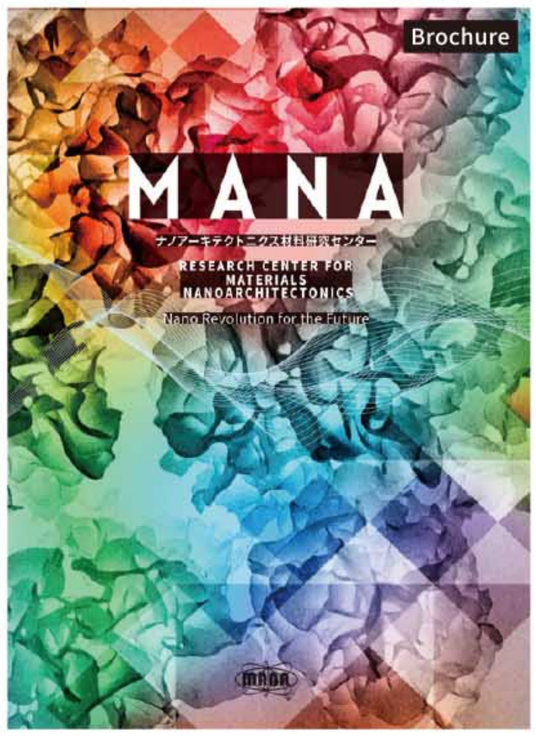
Event exhibition

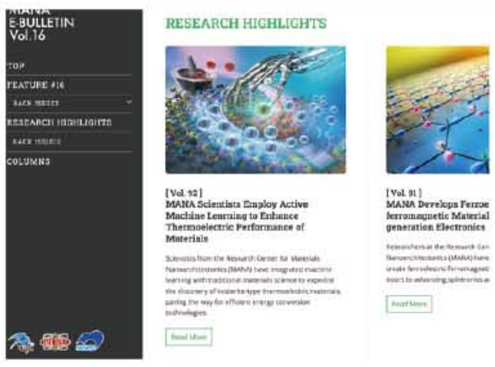


Outreach Activities at MANA

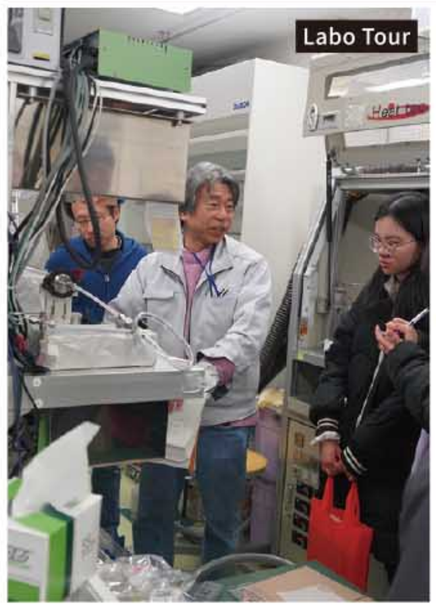
We actively promote our research achievements and research environment through a wide range of outreach activities, including hosting international symposia and academic conferences, as well as exhibiting at science symposia. In addition, through our English-language website and global newswire distribution, together with our official social media channels, we share the latest research achievements and research activities with audiences both in Japan and around the world.

Publishing of Research Results





Academic & International Exchange



External Events

MANA official SNS

To Join MANA

MANA seeks innovative minds in the field of fundamental research

Your Journey from Degree to Researcher

NIMS offers a wide range of educational and research programs tailored to various career stages, ranging from technical college and undergraduate students to those in doctoral programs. MANA researchers also participate in these programs as university faculty, providing students with direct guidance in MANA's cutting-edge research environment. After completing these programs, graduates go on to pursue careers at research institutions and companies both in Japan and abroad, or continue their research within MANA.

NIMS Graduate Program

NIMS Joint Graduate School Program

Conducted by NIMS researchers serving as university faculty

International Cooperative Graduate Program (ICGP)

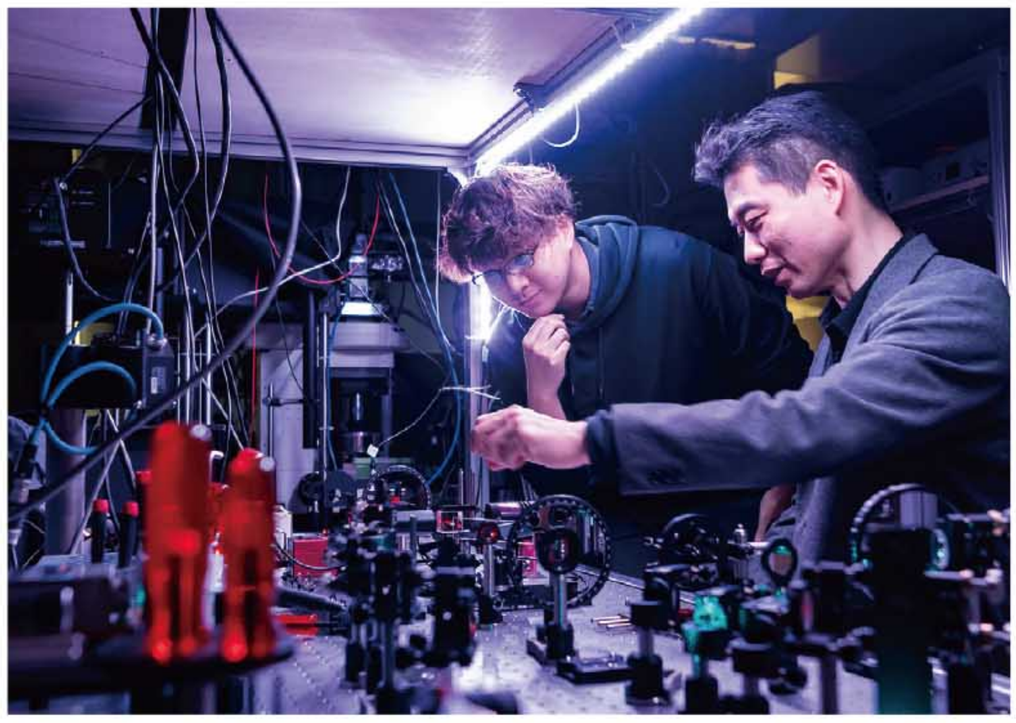
Supporting students in earning degrees through collaboration with graduate schools worldwide

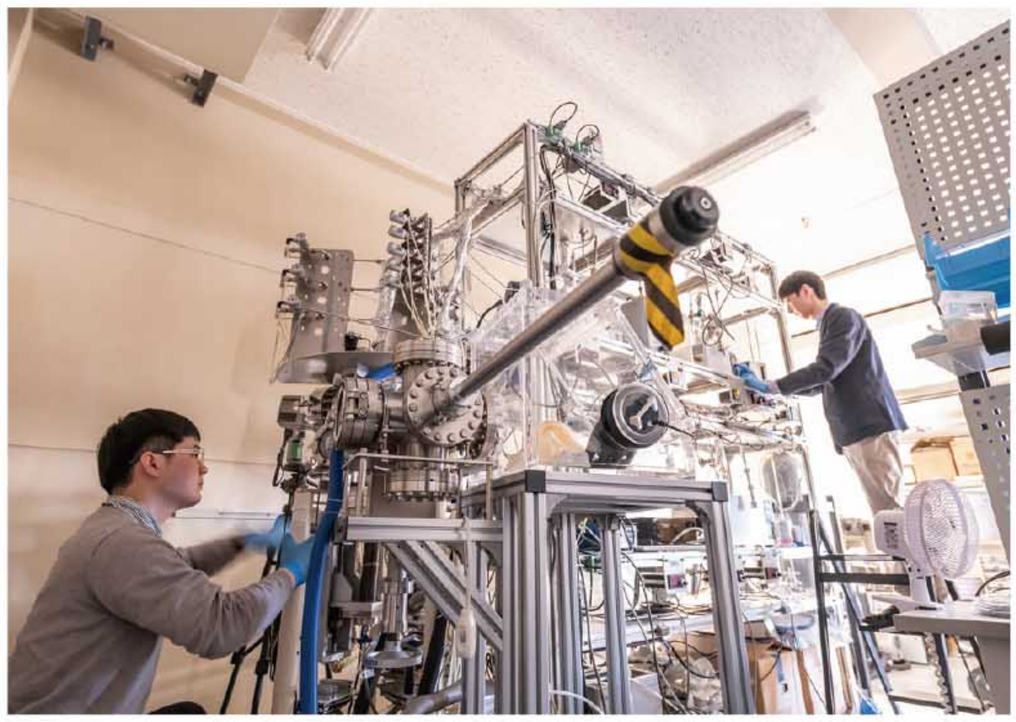
Internship Program

Providing opportunities to engage in cutting-edge research

NIMS Junior Researcher

Employing outstanding graduate students to advance research





Work at MANA

NIMS offers various positions that can leverage diverse areas of expertise, including opportunities for postdoctoral researchers and engineers, as well as programs through the International Center for Young Scientists (ICYS), which supports and nurtures early-career researchers aiming to drive innovation. All personnel working at MANA are hired based on NIMS's recruitment standards and are provided with competitive compensation, benefits, and supportive working conditions.

NIMS Recruitment information

International Center for Young Scientist (ICYS)

Researchers | Semiconductor Materials Field

— As of July 2026

Nanostructured Semiconducting Materials Group

Group Leader
Naoki FUKATA

Principal Researcher
Wipakorn JEVASUWAN

Senior Researcher
Ryo MATSUMURA

Semiconductor Functional Device group

Group Leader
Yutaka WAKAYAMA

Principal Researcher
Ryoma HAYAKAWA

Neuromorphic Devices Group

Group Leader
Takashi TSUCHIYA

Senior Researcher
Yoshitaka SHINGAYA

Senior Researcher
Ryo IGUCHI

2D Semiconductor Group

Group Leader
Yasumitsu MIYATA

Researcher
Ryotaro SAKAKIBARA

Ionic Devices Group

Group Leader
Kazuya TERABE

Chief Researcher
Tohru TSURUOKA

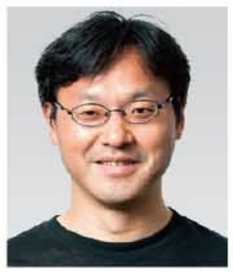
Researcher
Wataru NAMIKI

Smart Interface Team

Team Leader
Akitsu SHIGETOU

Quantum Materials Simulation Group

Group Leader
Tsuyoshi MIYAZAKI



Principal Researcher
Jun NARA

Principal Researcher
Ayako NAKATA

Senior Researcher
Anh Khoa Augustin LU

Thin Film Electronics Group

Group Leader
Kazuhito TSUKAGOSHI

Senior Researcher
Seiichi KATO

Researcher
Takashi ONAYA

Specially Appointed Researcher
Toshihide NABATAME

Semiconductor Nano-integration Group

Group Leader
Shinjiro HARA

Photonics Nano-Engineering Group

Group Leader
Tadaaki NAGAO

Principal Researcher
Wataru HAYAMI

Researcher
Keisuke WATANABE

Semiconductor Device Group

Group Leader
Takuji HOSOI

Researchers | Quantum Materials Field

— As of July 2026

Surface Quantum Phase Materials Group


Group Leader
Takashi UCHIHASHI


Principal Researcher
Keisuke SAGISAKA


Principal Researcher
Takahide YAMAGUCHI


Principal Researcher
Ryuichi ARAFUNE


Senior Researcher
Katsumi NAGAOKA


Senior Researcher
Shunsuke YOSHIZAWA

Frontier Superconducting Materials Group


Group Leader
Yoshihiko TAKANO


Principal Researcher
Hiroya SAKURAI


Principal Researcher
Kensei TERASHIMA


Senior Researcher
Ryo MATSUMOTO

Quantum Solid State Materials Group


Group Leader
Kazunari YAMAURA


Chief Researcher
Masashi HASE


Chief Researcher
Alexei BELIK


Principal Researcher
Masamichi NISHINO


Principal Researcher
Yoshihiro TSUJIMOTO

2D Quantum Materials Group


Group Leader
Ryo KITAURA


Senior Researcher
Daichi KOZAWA

Quantum Material Properties Group


Group Leader
Taichi TERASHIMA


Chief Researcher
Masanori KOHNO


Principal Researcher
Minoru TACHIKI


Principal Researcher
Hiroyuki YAMASE


Principal Researcher
Shuuichi OOI


Senior Researcher
Takako KONOIKE

Quantum Materials Modeling Group


Group Leader
Youhei YAMAJI


Principal Researcher
Yoshihiko NONOMURA

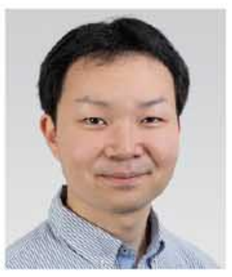

Principal Researcher
Akihiro TANAKA


Principal Researcher
Igor SOLOVYEV

Qubit Materials Group


Group Leader
Yusuke KOZUKA

Invited Researcher
Tomohiro OTSUKA


Senior Researcher
Shuichi IWAKIRI


Senior Researcher
Hiroshi OIKE


Senior Researcher
Takuya IWASAKI

Quantum Materials Design Group


Group Leader
Katsunori WAKABAYASHI


Senior Researcher
Toshikaze KARIYADO

Quantum Magnetic Materials Team


Team Leader
Tomohiro TAKAYAMA


Fellow
Hidenori TAKAGI

Researchers | Nanomaterials Field

— As of July 2026

Thermal Energy Materials Group

Group Leader
Takao MORI

Chief Researcher
Masahiro GOTO

Principal Researcher
Naohito TSUJII

Principal Researcher
Isao OHKUBO

Principal Researcher
Makoto TACHIBANA

Researcher
Naoki SATO

Researcher
Yutaka IWASAKI

Functional Nanomaterials Group

Group Leader
Renzhi MA

Principal Researcher
Yasuo EBINA

Principal Researcher
Nobuyuki SAKAI

Principal Researcher
Daiming TANG

Principal Researcher
Takaaki TANIGUCHI

Layered Nanochemistry Group

Group Leader
Yusuke IDE

Frontier Molecules Group

Group Leader
Takashi NAKANISHI

Principal Researcher
Shinsuke ISHIHARA

Researcher
Michio MATSUMOTO

Researcher
Kazuhiko NAGURA

Functional Chromophores Group

Group Leader
Jonathan HILL

Principal Researcher
Anirban BANDYOPADHYAY

Principal Researcher
Joel HENZIE

Senior Researcher
Jan LABUTA

Supermolecules Group

Group Leader
Katsuhiko ARIGA

Invited Researcher
Junichi TAKEYA

Chief Researcher
Lok Kumar SHRESTHA

Senior Researcher
Yu YAMASHITA

Nanoparticle Group

Group Leader
Naoto SHIRAHATA

Principal Researcher
Hong-Tao SUN

High-Pressure Materials Synthesis Group

Group Leader
Norimasa NISHIYAMA

Chief Researcher
Hitoshi YUSA

Principal Researcher
Satoshi NAKANO

Senior Researcher
Masashi MIYAKAWA

Fellow
Takashi TANIGUCHI

Independent Researcher

Concurrent Appointment
Frontier Molecules Group
Mizuki TENJIMBAYASHI

ElectroActive Materials Team

Team Leader
Hideo HOSONO

Principal Researcher
Satoru MATSUISHI

Principal Researcher
Takayuki HARADA

Optical Nanostructure Team

Team Leader
Satoshi ISHII

Engineer

Senior Engineer
Tetsuya Kawashima

Nano Revolution
for the Future

Research Center for
Materials Nanoarchitectonics

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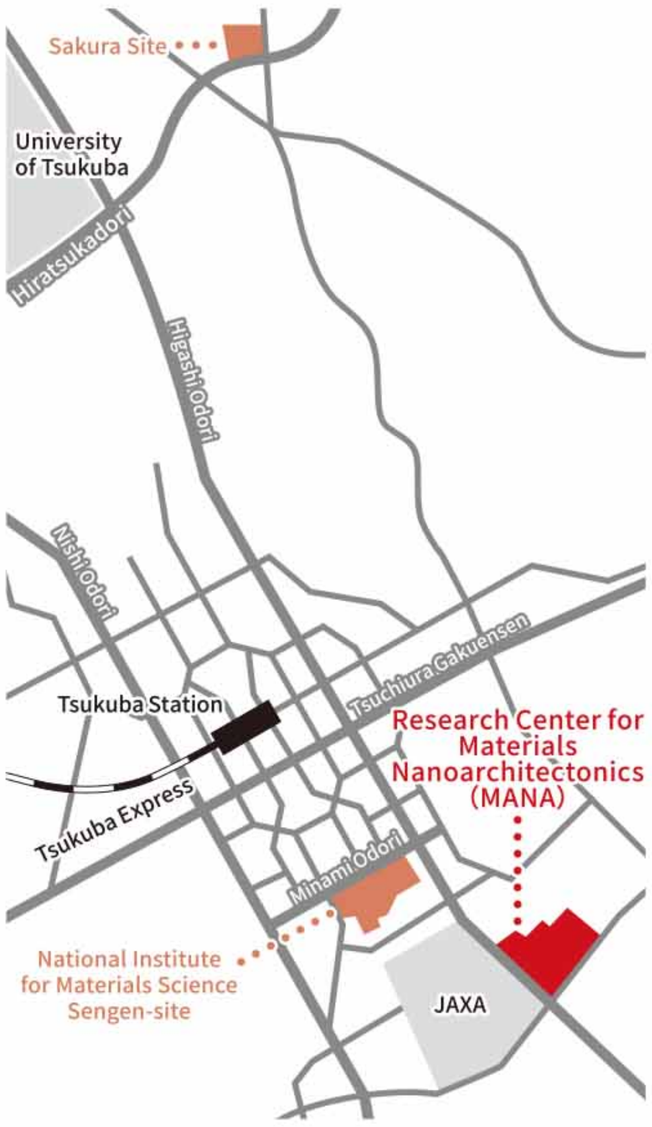

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