
MANA
RESEARCH CENTER FOR
MATERIALS
NANOARCHITECTONICS
Nano Revolution for the Future
MANA

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

What is Nanoarchitectonics?

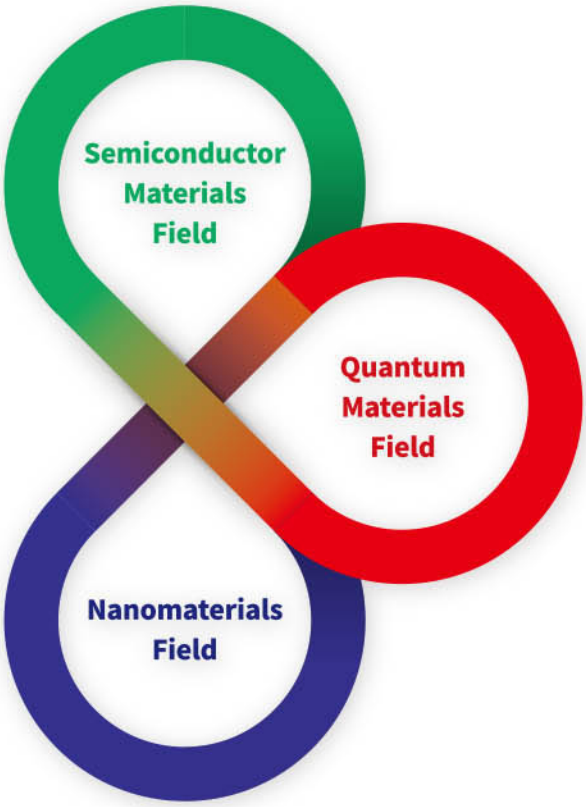
HP QR

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 over the past 15 years, and is now introduced in many media, including academic journals and general books.

Fields of MANA



At MANA, there are three main research fields: the "Semiconductor Materials Field", the "Quantum Materials Field" and the "Nanomaterials Field".

The Semiconductor Materials Field will explore new semiconductor materials and develop new semiconductor processes in anticipation of future technology node generations.

The Quantum Materials Field will explore new phenomena and aim to manifest functions through diverse system nanotechnologies, thereby establishing a foundational research infrastructure for quantum research.

The Nanomaterials Field focuses on the creation of materials at the nanoscale with a highly sophisticated control through chemical processes, driving the emergence of groundbreaking functionalities.

Contents

A Message from the Director

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, and supramolecular materials. In recent years, we have further expanded our research scope to include high-performance thermoelectric materials and the creation of quantum materials. Furthermore, we have newly embarked on fundamental research aimed at developing next-generation semiconductors, based on nanotechnology cultivated under the concept of Nanoarchitectronics.

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 researches 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.
In fiscal year 2025, MANA launched "Semiconductor Materials" as a new research field, expanding its core focus alongside the existing areas of "Quantum Materials" and "Nanomaterials." We remain committed to pioneering innovative research in these three fields, creating new value, and contributing to a sustainable and prosperous future for society through the concept of "Nanoarchitectonics."
We sincerely appreciate your continued support and interest in our activities.

Director of MANA Takashi Tanguchi

VISION

Toward a Better Global Future :

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

MISSION

1 ▸ **Develop groundbreaking new materials and realize**
" The New Paradigm of Nanotechnology "

2 ▸ **Construct a worldwide network to accelerate**
" Global Circulation for World Top-Level Researchers "

3 ▸ **Provide a creative environment to foster**
" Young Scientists who Challenge Innovative Research "

This is MANA

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.

Research Support System

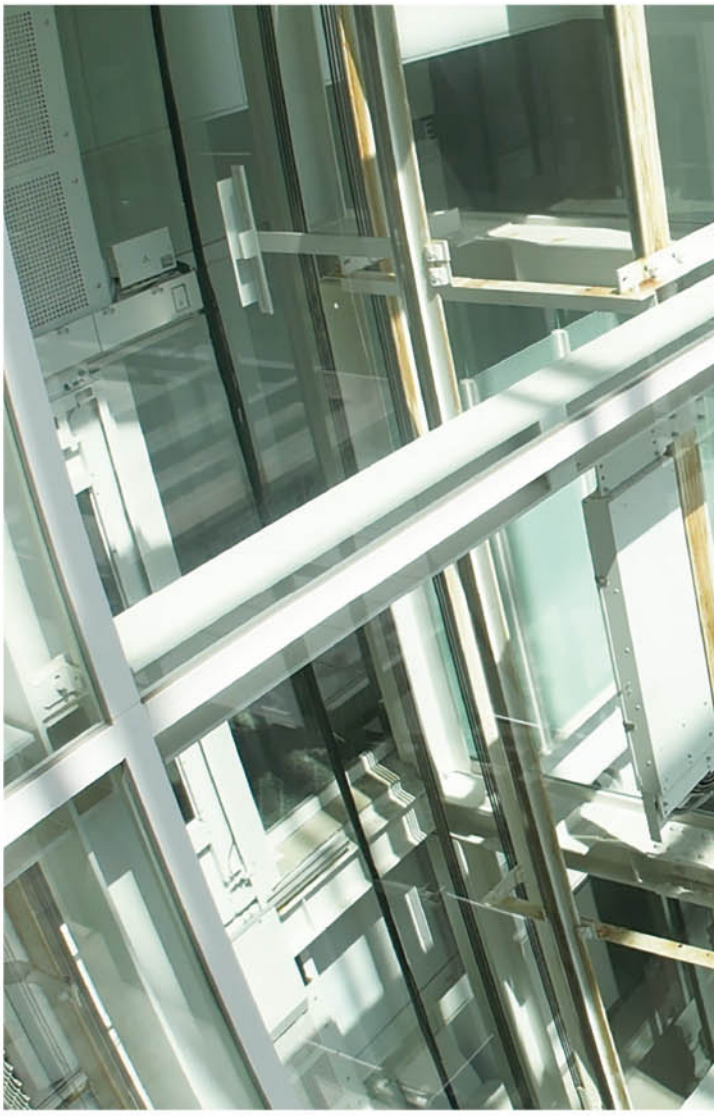
MANA brings together outstanding researchers from around the world. To support this diverse community in focusing on their research, MANA promotes internationalization by ensuring that English is used as the common language by all staff, including administrative personnel. In addition, MANA fosters international 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.

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 scientists also benefit from regular seminars hosted by MANA researchers and visiting scientists. 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.

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.

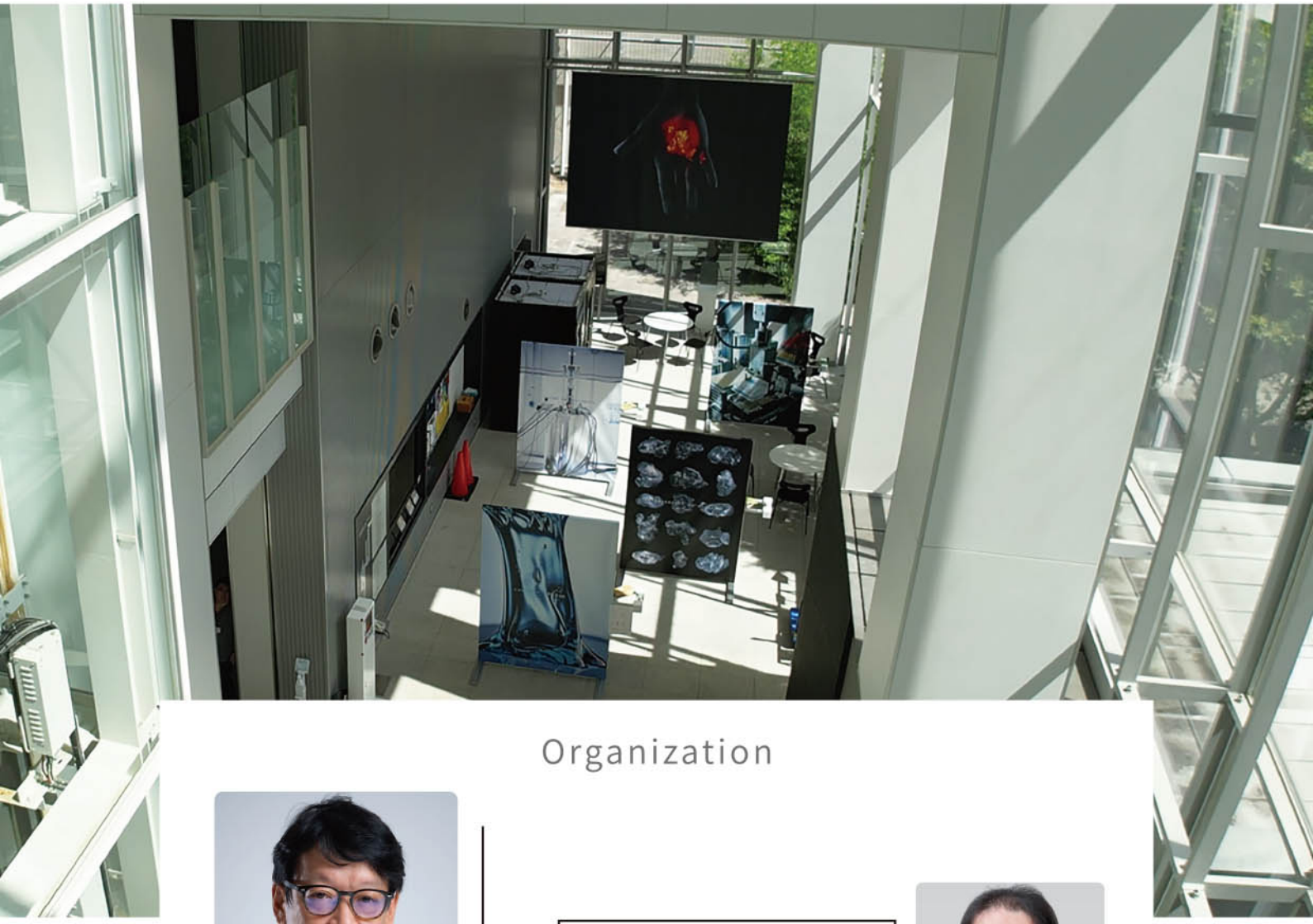


World Premier International Research Center Initiative

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.

Challenges in Building Top-world Institutes

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



Organization

Takashi TANIGUCHI
Director

Administrative Office

Takefumi NOTOMI
Manager,
Administrative Office

Semiconductor Materials Field

Naoki FUKATA
Deputy Director,
Field Director, Semiconductor Materials Field

Quantum Materials Field

Takashi UCHIHASHI
Deputy Director,
Field Director, Quantum Materials Field

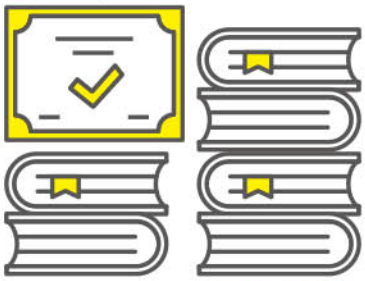
Nanomaterials Field

Takao MORI
Deputy Director,
Field Director, Nanomaterials Field

MANA Figures

Number of Papers

9,228



2007-2024

Internationally Co-Authored Papers 2024

70.7%

As of June 2025

Top 1% Highly Cited Papers

Scopus date base as of June 2025

9.0%

2021-2024

Patent Registrations

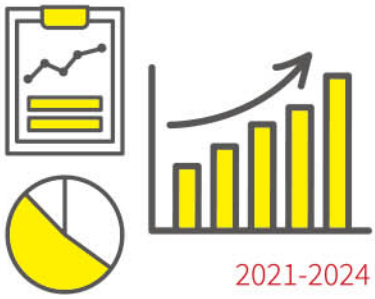
507

As of December 2024

FWCI

Field-weighted Citation Impact

2.03



2021-2024

Memorandums of Understanding (MOUs)

Valid MOUs (10 institutions, 6 countries)

10

As of April 2025

Personnel Composition

As of July 2025

	Group Leaders Team Leaders	Researchers (Permanent)	Postdoctoral Researchers	Junior Researchers, Technical Staff	Administrative Staff	Total
Number	30	62	68	96	25	281
Non-Japanese	2	9	51	34	2	98
Female	1	3	13	42	23	82

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 are 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
research through quantum-architectonics

Our research contributes to quantum technology by introducing a new concept of quantum-architectonics, which aims to integrate and systematize low-dimensional nanomaterials that control the particle-like and wave-like nature of matter and fields. By leveraging nanotechnology for material synthesis, fusion/junction of heterogeneous nanomaterials, and precision engineering for dimensional control, we develop novel quantum materials. Using ultra-low-temperature evaluation techniques, theoretical computation, and information technology, we explore new phenomena and aim to manifest functions through diverse system nanotechnologies, thereby establishing a foundational 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. Furthermore, we are advancing our research in Chemical Nanoarchitectonics, aiming to contribute to the development across a wide range of technological fields.

While collaborative research within each field that leverages the strengths of each group is given, all our groups also actively engage in research that transcends these boundaries. We foster an environment that encourages cross-disciplinary collaboration and integrative research.

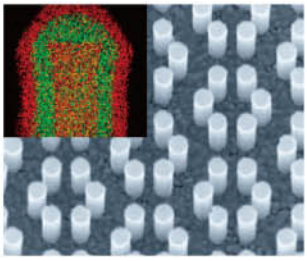
Semiconductor Materials Field

Nanostructured Semiconducting Materials | Group |

Field Director
Group Leader
Naoki FUKATA

KEYWORDS: Low-dimensional nanostructures | Semiconductors | Nanofabrication | Electronic devices

Development of new functional semiconductor nanomaterials and devices



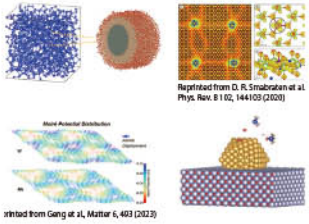
Semiconductor nanomaterials, known for their unique properties not found in bulk materials, hold the potential for new device applications. Our goal is to bring forth new properties and superior functionalities in semiconductor materials.

Quantum Materials Simulation | Group |

Group Leader
Tsuyoshi MIYAZAKI

KEYWORDS: First-principles calculation | Large system | Nano complex | Machine-learning

First-principles simulations of complex nano systems



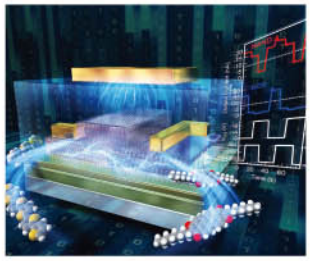
Based on large-scale first-principles simulations, we clarify and predict the structures, properties, and functions of complex nano materials, surfaces and interfaces at the atomic level.

Semiconductor Functional device | Group |

Group Leader
Yutaka WAKAYAMA

KEYWORDS: Non-Neumann computing | Logic gate | 2D layers | Multivalued logics | Molecular electronics

Innovative electronic devices with semiconductor nanomaterials



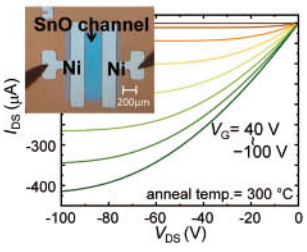
Centered on semiconductor nanomaterials such as 2D layers and molecular semiconductors, we design novel device architectures to develop innovative operation mechanism and ultra-low power devices.

Thin Film Electronics | Group |

Group Leader
Kazuhito TSUKAGOSHI

KEYWORDS: Functional thin film | Atomic scale deposition | Development of nanodevice fabrication | Electric devices

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.

Neuromorphic Devices | Group |

Group Leader
Takashi TSUCHIYA

KEYWORDS: Neuromorphic devices | Reservoir computing | Brain-inspired computing | In-material computing

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

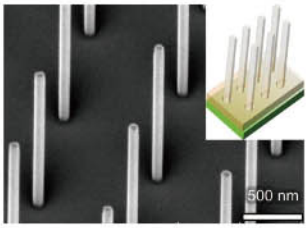
We develop neuromorphic devices that utilize the spatiotemporal dynamics of various information carriers, such as ions, molecules, and spin in materials, as computational resources. This approach contributes to realizing low-power and high-performance AI electronics, a significant step forward to Society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

Semiconductor Nano-integration | Group |

Group Leader
Shinjiro HARA

KEYWORDS: Semiconductors | Nanomaterials | Semiconductor devices | Heterogeneous materials integration

New integration technology for semiconductor nanomaterials and devices



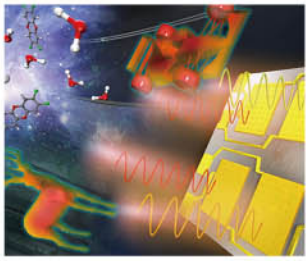
For semiconductor device application in the next generation, our goal is to develop novel semiconductor nanomaterials integration technologies by "the Best of Both Worlds", Top-down and Bottom-up Approaches.

Photonics Nano Engineering | Group |

Group Leader
Tadaaki NAGAO

KEYWORDS: Spectroscopically Controlled Thermal Emission | Infrared Sensing | Optical Authentication

Controlling and utilizing light and thermal radiation at the nano interface



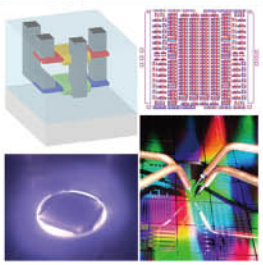
Light can be confined and manipulated in nano-scale spaces. Based on the discovery and elucidation of optical phenomena occurring at the interfaces of nano-materials, we thrust research in nano-material science aimed at utilizing infrared and solar radiation.

Semiconductor Device | Group |

Group Leader
Takuji HOSOI

KEYWORDS: Semiconductor | Transistor | Dielectrics | Interface engineering | LSI | Power devices

Material × Interface × Process — Shaping Future Semiconductor Devices



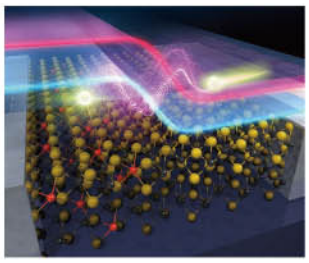
Understanding and controlling interface properties, beyond the materials themselves, is essential for next-generation semiconductor devices. We pursue innovative devices through materials and process engineering.

2D Semiconductor | Group |

Group Leader
Yasumitsu MIYATA

KEYWORDS: 2D materials | Transition metal dichalcogenides | Electronic devices

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



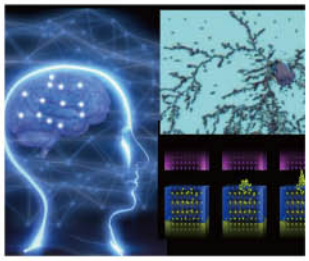
We aim to apply atomically thin 2D materials to future information devices by focusing on high quality crystal growth, transport control, and transistor device design and analysis.

Ionic Devices | Group |

Group Leader
Kazuya TERABE

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

Hardware-oriented AI technology utilizing ion transport



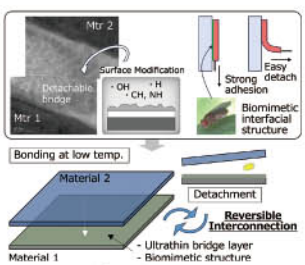
In order to further advance our information society, there is an urgent need to create high-performance/high-function devices based on entirely new concepts. We aim to bring about devices/circuits/systems (especially AI-related) through the fusion of ionics and electronics.

Smart Interface | Team |

Team Leader
Akitsu SHIGETOU

KEYWORDS: Interconnection | Surface/interface | Reversible bonding

Interfacial nano-micro structure design for reversible interconnection



We are developing a low temperature solid-state reversible interconnection technology by tuning micro-nano interfacial structures via semiconductor fabrication and biomimetic approaches, aiming at low-loss and high-functionality quantum system integration.

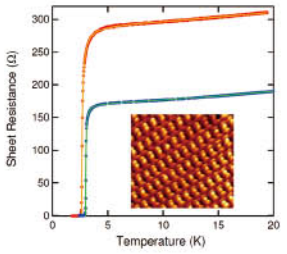
Quantum Materials Field

Surface Quantum Phase Materials | Group |

Field Director
Group Leader
Takashi UCHIHASHI

KEYWORDS: Surface and Interface | Quantum physics | Low-dimensional materials

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



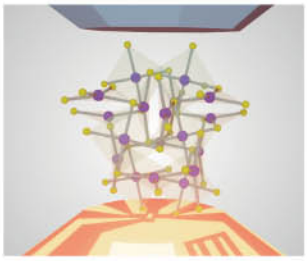
The surfaces and interfaces of materials are critical places where quantum functionalities manifest themselves. We design and create new surface quantum materials at the atomic/molecular level, and reveal unexpected physical properties and functionalities.

Frontier Superconducting Materials | Group |

Group Leader
Yoshihiko TAKANO

KEYWORDS: Superconductivity | Functional materials | High pressure | Materials Informatics

Development of novel functional materials utilizing AI and MI



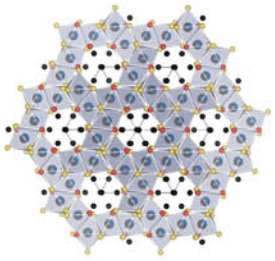
Our aim is to develop cutting-edge functional materials such as superconductors. We explore the candidate materials obtained through AI and MI techniques by synthesizing and evaluating their properties under extremely high-pressure conditions. Our ultimate goal is to discover room-temperature superconductors—one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

Quantum Solid State Materials | Group |

Group Leader
Kazunari YAMAURA

KEYWORDS: Spin properties | Materials discovery | Computational science | Quantum materials

Exploring Quantum Phenomena through the Design and Synthesis of Novel Materials



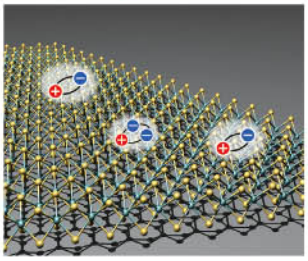
We are developing materials that harness quantum properties to achieve novel functions and enhanced performance. Our goal is to create new materials that will support high-performance and sustainable technologies.

2D Quantum Materials | Group |

Group Leader
Ryo KITAURA

KEYWORDS: Two-dimensional quantum materials | Semiconductors | Optical properties | Crystal growth

Nano-science involving two-dimensional quantum materials



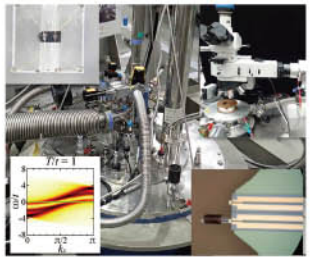
Two-dimensional systems are a treasure trove of new functions and properties. By promoting the creation of new two-dimensional materials and property exploration using advanced measurements, we aim to create a new trend in nano-science.

Quantum Material Properties | Group |

Group Leader
Taichi TERASHIMA

KEYWORDS: Superconductivity | Vortex | Topological | Correlation | Low temperature high magnetic field

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



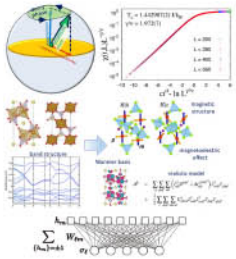
We elucidate the state of the electrons in a material through the measurement of electronic states using ultra-low temperature high magnetic fields and theoretical research. Also, the study of quantum flux occurring in superconductors is an important theme.

Quantum Materials Modeling | Group |

Group Leader
Youhei YAMAJI

KEYWORDS: Quantum many-body simulation | Quantum entanglement structure | Theoretical design of quantum magnets

Understanding the diverse phases of quantum materials and the structure of quantum entanglement



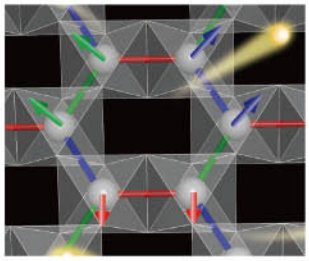
We theoretically analyze and design quantum information carriers that serve as "building materials" for nanoarchitectonics. By understanding the process of generating material phases and quantum entanglement through the condensation of information carriers, we contribute to the research of quantum materials and collaborate with device research.

Quantum Magnetic Materials | Team |

Team Leader
Tomohiro TAKAYAMA

KEYWORDS: Magnetic materials | Materials synthesis | Electronic entropy | Spin-orbit coupling

Exploring materials with novel electronic and magnetic properties



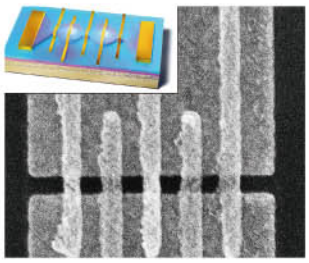
We are exploring new quantum materials displaying novel electronic and magnetic properties which may be exploited as future functional and innovative devices.

Qubit Materials | Group |

Group Leader
Yusuke KOZUKA

KEYWORDS: Atomic layer materials | Oxides | Superconductivity | Quantum dots | Topological superconductivity

Materials for solid-state quantum systems and hardware



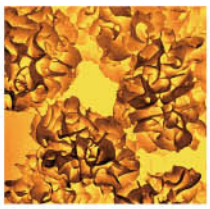
We aim to enhance solid-state qubits and hardware through materials research, utilizing techniques such as thin film fabrication, structural analysis, and electrical measurements.

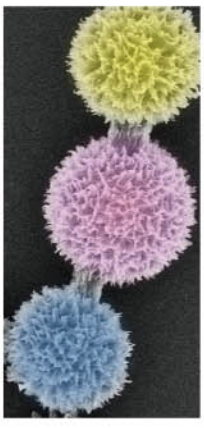
MANA

Photo Library



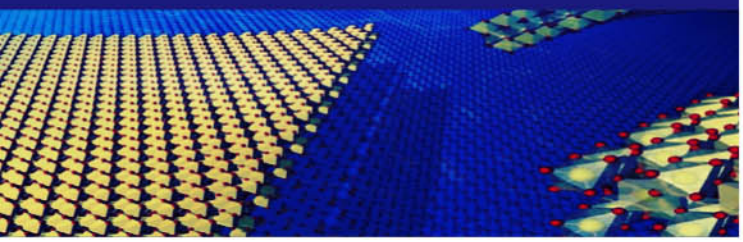






Nanomaterials Field



Thermal Energy Materials | Group |

Field Director
Group Leader
Takao MORI

KEYWORDS: Energy-related devices | Thermoelectrics | Thermal energy control | Heat transport

Development of high-performance thermal energy control materials and devices

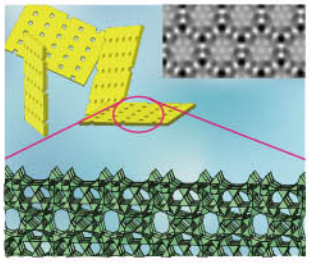
We develop novel thermal energy control materials & devices and thermal management technologies, through advanced control of electronic transport & states, and heat transport.

Soft Chemistry | Group |

Fellow
Group Leader
Takayoshi SASAKI

KEYWORDS: Nanomeshes | Nanosheets | Exfoliation | Design of Hierachical Nanostructure

Creating Nanomeshes and Developing Advanced Functions through Their Integration



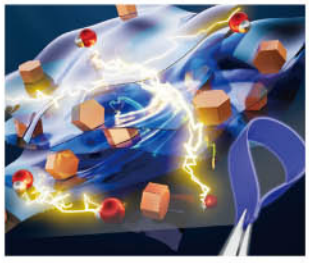
We aim to create nanomeshes having regular open channels as a new class of two-dimensional materials and develop new materials useful in applications towards batteries and catalysts via precisely assembling them into tailored nanostructures.

Functional Nanomaterials | Group |

Group Leader
Renzhi MA

KEYWORDS: Nanosheets | Nanotubes | Catalysts | Membranes | Nanoelectronics

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.

Layered Nanochemistry | Group |

Group Leader
Yusuke IDE

KEYWORDS: Layered material | Clay mineral | Porous material | Adsorption | Catalysis | Sunscreen

Development of Eco-friendly and High-performance Nanomaterials

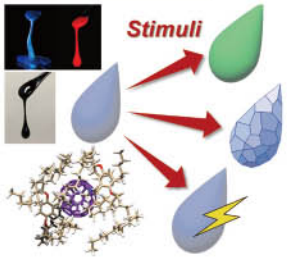
We develop new materials and new functionalization methods for low-dimensional nanomaterials, such as layered inorganic compounds, and aim to develop materials that can replace existing consumer goods and industrial products, or for realizing a hydrogen society.

Frontier Molecules | Group |

Group Leader
Takashi NAKANISHI

KEYWORDS: π-Conjugated Molecules | Sensors | Stimuli-response | Liquid Materials

Development of Novel Functional Molecular Materials with Unique Stimuli-responsivenes



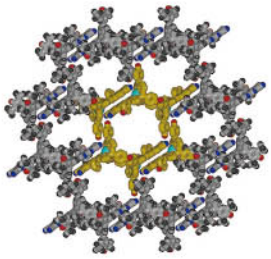
We aim to construct molecular systems that exhibit sensor and energy harvesting functions. It is achieved by creating novel π-conjugated molecules and dimensionally regulated molecules/polymers that respond uniquely and sensitively to external stimuli (molecules, light, heat, vibration, pressure, etc.).

Functional Chromophores | Group |

Group Leader
Jonathan HILL

KEYWORDS: Functional chromophores | Porphyrins | Pyrazinacenes

Towards new functional chromophore materials



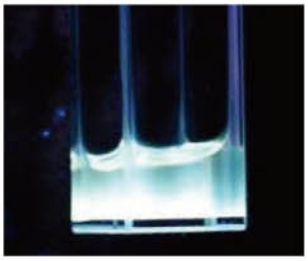
Photofunctional chromophores with 3D nanomolecular structures have unique optical and supramolecular properties. This group designs and synthesizes new photofunctional chromophore molecules for the functionalization of self-assembled materials.

Nanoparticle | Group |

Group Leader
Naoto SHIRAHATA

KEYWORDS: Colloidal Semiconductor Nanocrystals | Optoelectronics | Nanomedicine

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



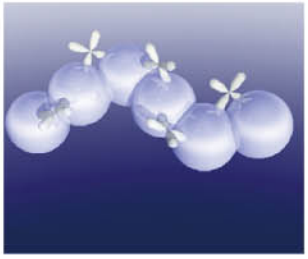
We develop new materials that absorb and emit specific light by controlling the energy structure of crystals composed of environmentally friendly elements. We aim to contribute to next-generation optoelectronics and nanomedicine.

ElectroActive Materials | Team |

Distinguished Fellow
Team Leader
Hideo HOSONO

KEYWORDS: New electronic functions | Material exploration | Material design | Semiconductors | Catalysts

Designing and Exploring New Electronic Functions with Original Ideas



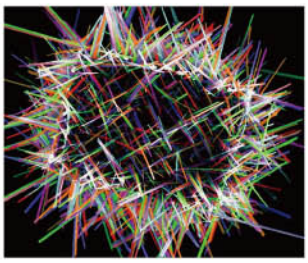
We aim to explore functionalities that are primarily exhibited by electrons, using our original ideas and approaches. The targeted outputs are diverse, ranging from semiconductors, superconductors, and catalysts to luminescence and magnetism. We focus on areas bridging physics and chemistry.

Supermolecules | Group |

Group Leader
Katsuhiko ARIGA

KEYWORDS: Supermolecule | Interface | Nanocarbon | Organic semiconductor device | Cell control

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



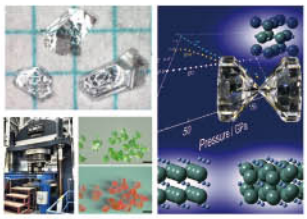
We create materials architected with supermolecules and materials assemblies at interfaces with free tunning of their shapes and electronic states, to develop world-surprising systems and devices for energy/environmental/bio-functional revolutions.

High-Pressure Structural Controls | Group |

Group Leader
Hitoshi YUSA

KEYWORDS: High-pressure technology | Material structure controls | Diamond/BN impurity controls

Material Structural Controls and Syntheses using High-Pressure Technology



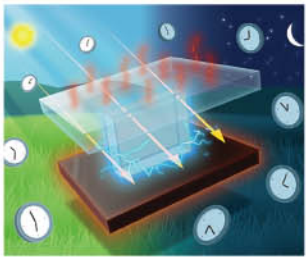
We develop synthetic and observation techniques using ultra-high-pressure technology, with a focus on researching diamond, BN-related materials, phosphors, dielectrics, hydrides, and other materials.

Optical Nanostructure | Team |

Team Leader
Satoshi ISHII

KEYWORDS: Thermal radiation | Nanophotonics | Spectroscopy | Polariton

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.

Independent Researcher

Takuya IWASAKI

Concurrent appointment with
Qubit Materials Group

Mizuki TENJIMBAYASHI

Concurrent appointment with
Frontier Molecules Group

Takayuki HARADA

Concurrent appointment with
ElectroActive Materials Team

Independent Researcher: Young researchers producing remarkable research achievements

At MANA, young researchers with outstanding achievements excel in the role of Independent Researchers. As the title suggests, the system of Independent Researcher has a role that grants young scientists full autonomy over their research, fostering leadership and originality.
MANA provides strong support to those appointed to this role, offering an environment where they can freely pursue original research projects, engage in interdisciplinary collaboration, and take advantage of opportunities to spend extended periods at overseas research institutions.
On the other hand, this system expects Independent Researcher to proactively approach companies and government institutions to secure external research funding and manage their own budgets. Through this approach and its top-tier research environment, MANA cultivates research leaders for the global stage.

Independent Authority over Research

As the name suggests, Independent Researcher is a position that grants full autonomy over research activities. In Japan, it is uncommon for researchers in their 30s or early 40s to be given such a high level of independence. This system allows them to define their own research themes and take the initiative in pursuing them.

Independent Research Budget

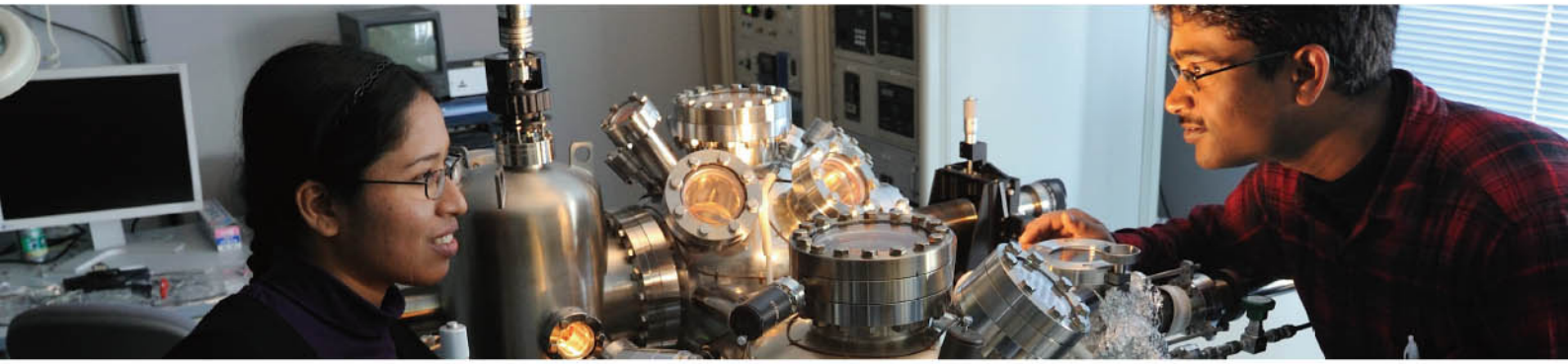
Independent Researcher at MANA is expected to proactively secure funding by independently approaching corporations and governmental institutions. This framework fosters true research autonomy enabling the pursuit of original ideas in a free and self-directed environment. To support this activity, MANA provides access to a global network of leading researchers and partner institutions, helping Independent Researcher build valuable connections and collaborations.

Independent Action

The Independent Researcher at MANA has a unique opportunity to interact directly with world-leading scientists—getting to know them personally and gaining firsthand insights. For emerging researchers, such encounters can be deeply inspiring. With the freedom to pursue their work independently, they can also choose to conduct research abroad, for as long as necessary. To succeed on the global stage, it is essential to actively engage with diverse cultures and discipline broadening one's perspective and fostering growth as both a scientist and an individual.

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 institutins 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

Internship Program
Providing opportunities to engage in cutting-edge research

International Cooperative Graduate Program (ICGP)
Supporting students in earning degrees through collaboration with graduate schools worldwide

NIMS Junior Researcher
Employing outstanding graduate students to advance research

Work in MANA

NIMS offers various of 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.

MANA Recruitment information

NIMS Recruitment information

International Center for Young Scientist (ICYS)

Outreach Activities at MANA

MANA communicates its latest research in an easy-to-understand manner. We are working to bring material development in Nanoarchitectonics closer to daily life through global wire distribution via English web media, communication through official social media channels, and the organization of events.

MANA official SNS

Researchers

Semiconductor Materials Field

Nanostructured Semiconducting Materials Group

Naoki FUKATA
| Group Leader |

Wipakorn JEVASUWAN
| Senior Researcher |

Ryo MATSUMURA
| Senior Researcher |

Quantum Materials Simulation Group

Tsuyoshi MIYAZAKI
| Group Leader |

Jun NARA
| Principal Researcher |

Ayako NAKATA
| Principal Researcher |

Semiconductor Functional Device Group

Yutaka WAKAYAMA
| Group Leader |

Ryoma HAYAKAWA
| Principal Researcher |

Thin Film Electronics Group

Kazuhito TSUKAGOSHI
| Group Leader |

Seiichi KATO
| Senior Researcher |

Takashi ONAYA
| Researcher |

Toshihide NABATAME
| Specially Appointed Researcher |

Neuromorphic Devices Group

Takashi TSUCHIYA
| Group Leader |

Yoshitaka SHINGAYA
| Senior Researcher |

Ryo IGUCHI
| Senior Researcher |

Semiconductor Nano-integration Group

Shinjiro HARA
| Group Leader |

2D Semiconductor Group

Yasumitsu MIYATA
| Group Leader |

Ryotaro SAKAKIBARA
| Researcher |

Photonics Nano-Engineering Group

Tadaaki NAGAO
| Group Leader |

Wataru HAYAMI
| Principal Researcher |

Keisuke WATANABE
| Researcher |

Ionic Devices Group

Kazuya TERABE
| Group Leader |

Tohru TSURUOKA
| Chief Researcher |

Wataru NAMIKI
| Researcher |

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Takuji HOSOI
| Group Leader |

Smart Interface Team

Akitsu SHIGETOU
| Team Leader |

Nanomaterials Field

Thermal Energy Materials Group

Takao MORI
| Group Leader |

Masahiro GOTO
| Chief Researcher |

Naohito TSUJII
| Principal Researcher |

Makoto TACHIBANA
| Principal Researcher |

Isao OHKUBO
| Principal Researcher |

Naoki SATO
| Researcher |

Yutaka IWASAKI
| Researcher |

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Takayoshi SASAKI
| Group Leader |

Yasuo EBINA
| Principal Researcher |

Nobuyuki SAKAI
| Principal Researcher |

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| Group Leader |

Daiming TANG
| Principal Researcher |

Takaaki TANIGUCHI
| Principal Researcher |

Layered Nanochemistry Group

Yusuke IDE
| Group Leader |

Frontier Molecules Group

Takashi NAKANISHI
| Group Leader |

Shinsuke ISHIHARA
| Principal Researcher |

Michio MATSUMOTO
| Researcher |

Kazuhiko NAGURA
| Researcher |

Functional Chromophores Group

Jonathan HILL
| Group Leader |

Anirban BANDYOPADHYAY
| Principal Researcher |

Joel HENZIE
| Principal Researcher |

Jan LABUTA
| Senior Researcher |

Quantum Materials Field

Surface Quantum Phase Materials Group

Takashi UCHIHASHI | Group Leader |
Takahide YAMAGUCHI | Principal Researcher |
Ryuichi ARAFUNE | Principal Researcher |
Katsumi NAGAOKA | Senior Researcher |

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Yoshihiko TAKANO | Group Leader |
Hiroya SAKURAI | Principal Researcher |
Kensei TERASHIMA | Principal Researcher |
Ryo MATSUMOTO | Senior Researcher |

Quantum Solid State Materials Group

Kazunari YAMAURA | Group Leader |
Masashi HASE | Chief Researcher |
Alexei BELIK | Chief Researcher |
Masamichi NISHINO | Principal Researcher |
Yoshihiro TSUJIMOTO | Principal Researcher |

2D Quantum Materials Group

Ryo KITAURA | Group Leader |
Toshikaze KARIYADO | Senior Researcher |
Daichi KOZAWA | Senior Researcher |

Quantum Material Properties Group

Taichi TERASHIMA | Group Leader |
Masanori KOHNO | Chief Researcher |
Minoru TACHIKI | Principal Researcher |
Hiroyuki YAMASE | Principal Researcher |
Shuuichi OOI | Senior Researcher |
Takako KONOIKE | Senior Researcher |

Quantum Materials Modeling Group

Youhei YAMAJI | Group Leader |
Yoshihiko NONOMURA | Principal Researcher |
Akihiro TANAKA | Principal Researcher |
Igor SOLOVYEV | Principal Researcher |

Qubit Materials Group

Yusuke KOZUKA | Group Leader |
Cross Appointment
Tomohiro OTSUKA | NIMS Invited Researcher |
Shuichi IWAKIRI | Senior Researcher |
Hiroshi OIKE | Senior Researcher |

Quantum Magnetic Materials Team

Tomohiro TAKAYAMA | Team Leader |
Hidenori TAKAGI | NIMS Invited Researcher |

Supermolecules Group

Katsuhiko ARIGA | Group Leader |
Cross Appointment
Junichi TAKEYA | NIMS Invited Researcher |
Cross Appointment
Yusuke YAMAUCHI | NIMS Invited Researcher |
Lok Kumar SHRESTHA | Chief Researcher |
Yu YAMASHITA | Senior Researcher |

Nanoparticle Group

Naoto SHIRAHATA | Group Leader |
Hong-Tao SUN | Principal Researcher |

High-Pressure Structural Controls Group

Hitoshi YUSA | Group Leader |
Satoshi NAKANO | Principal Researcher |
Masashi MIYAKAWA | Senior Researcher |
Takashi TANIGUCHI | Fellow |

ElectroActive Materials Team

Hideo HOSONO | Team Leader |
Satoru MATSUISHI | Principal Researcher |

Optical Nanostructure Team

Satoshi ISHII | Team Leader |

Independent Researcher

Takuya IWASAKI | Concurrent Appointment | Qubit Materials Group
Mizuki TENJIMBAYASHI | Concurrent Appointment | Frontier Molecules Group
Takayuki HARADA | Concurrent Appointment | ElectroActive Materials Team

Nano Revolution
for the Future

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World Premier International
Research Center Initiative

National Institute for
Materials Science

| MA•NA•NO•ART |
Cover photo：Phospholipid Nano-flower
(A SEM image of mesoporous phospholipid particles)
Artist：Kohsaku KAWAKAMI
Jonathan P. HILL

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