



# MANA

INTERNATIONAL CENTER FOR  
MATERIALS NANOARCHITECTONICS

# 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 "**

## A Message from the Director



**Takashi Taniguchi**

The International Center for Materials Nanoarchitectonics (WPI-MANA) has been promoting bottom-up basic research on Nanoarchitectonics, a unique technology for creating nanomaterials in nanotechnology and materials research. The purpose of this project is to discover new materials and new functions, disseminate excellent basic research results, and create seeds for innovation in a variety of fields by realizing "Material Nanoarchitectonics". This concept is used to create new materials by using precision synthesis, integration, linking, and compositing of nanoscale components under interfacial control to achieve advanced functions. We have produced many original results based on nanosheets, atomic switches, and metallic nanoporous materials, and we have also recently developed novel applications such as high-performance thermoelectric materials, neuromorphic devices, and topological photonic materials. Furthermore, we are focusing on fundamental research for the creation of quantum materials that will make full use of the nanotechnology resulting from Nanoarchitectonics.

As one of the first five WPI research centers established by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in 2007 under the World Premier International Research Center (WPI) Program, WPI-MANA aims to become a nanotechnology hub with an international research environment. As a leading international research center in the field of nanotechnology and materials science, we have been

engaged in challenging research activities for more than a decade, building a broad research network through collaboration with world-class laboratories located in MANA satellites, and through joint research with many overseas universities and research institutions. In addition, we have established a system where many researchers and students from all over the world gather to conduct research. This is reflected in the fact that more than 400 researchers who have experienced research life at MANA are now active as MANA alumni around the world.

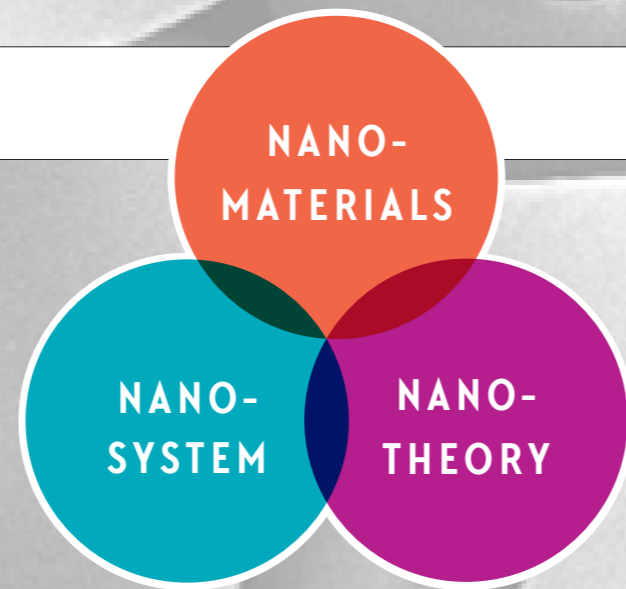
While emphasizing the three points of originality of research, international perspectives, and mutual understanding and collaboration that lead to innovation, we also realize that beyond essential basic research activities, any results should be returned to society for its improvement. "Achievements" are not limited to solving the most recent problems, but also include fundamental findings and discoveries that lead to breakthroughs in research, and for this reason I believe it is important to nurture research from a long-term perspective, and also to properly train young researchers. We will continue our efforts to further deepen our understanding of "Nanoarchitectonics" and to develop new themes in quantum materials research based on this concept. I would like to request the warm support of all concerned.

*Takashi Taniguchi*

## What is "Nanoarchitectonics"?

Nanoarchitectonics (nanoarchitecture) 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.

Nano is one billionth of a meter, or the size of an atom or molecule, and materials behave in a completely different way from microtechnology (one millionth of a meter), which has contributed to the microfabrication of semiconductors. 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 Future with Nanoarchitectonics



# FIELDS OF MANA

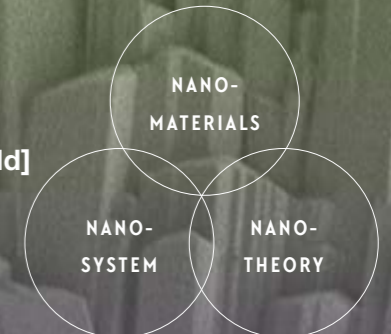
At MANA, there are three fields of nanoarchitectonics that are indispensable.

[Nano-Materials Field for making nano-components]

[Nano-System Field for combining nano-components]

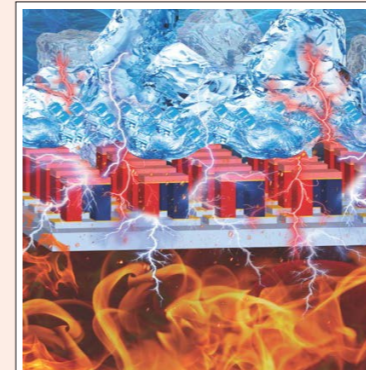
[Nano-Theory Field to predict the movement of the nano world]

Cross-disciplinary cooperation and fusion research between researchers from the three fields is commonplace.



## NANO-MATERIALS

"Nano-Materials" creates new materials by sophisticated control of compositions and eliciting novel functions and structures at the nano level.



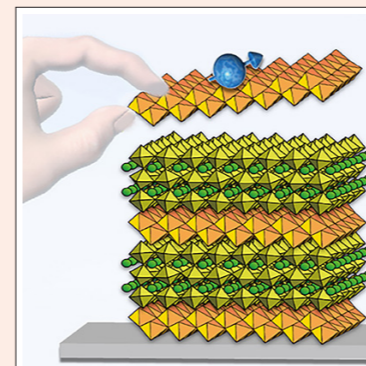
### Thermal Energy Materials Group

Field Coordinator, MANA PI, Group Leader: Takao Mori

#### Novel thermoelectric materials and enhanced control over thermal energy

To realize the 200-year dream of wide-spread thermoelectric power generation, we develop new principle high-performance thermoelectric materials. To realize advanced thermal management, we strive for fundamental elucidation, evaluation, and novel control over thermal transport.

[KEYWORDS] Thermoelectric, Thermal Transport, IoT Energy Harvesting, Phonon Engineering, Magnetism-Enhanced Thermoelectrics



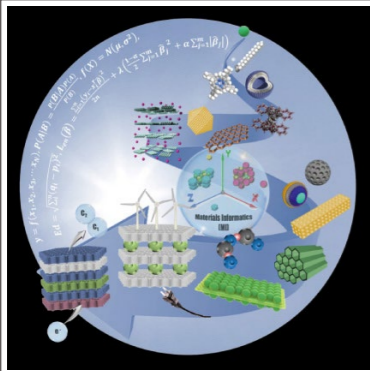
### Soft Chemistry Group

MANA PI, Group Leader, Takayoshi Sasaki

#### Design of new functional materials by organizing 2D nanosheets

Layered metal oxides are delaminated colloidal single layers and resulting nanosheets are assembled via solution processes into a range of nano- to mesoarchitectures, expecting development of advanced functionalities including energy storage.

[KEYWORDS] Exfoliation, 2D Nanosheets, Layer-by-Layer Assembly, Superlattice Heterostructures, Energy Conversion and Storage



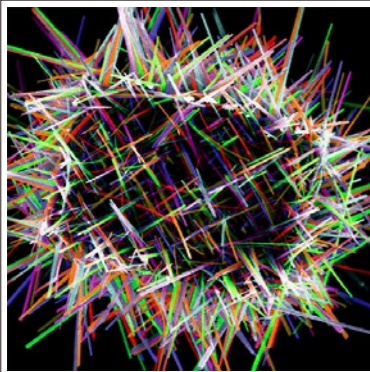
## Mesoscale Materials Chemistry Group

MANA PI, Group Leader: Yusuke Yamauchi

### Inorganic total synthetic chemistry / Conductive porous materials

We create novel inorganic nanosolids containing internal nanospaces, and develop several methodologies for their effective integration with the aim of exploiting functions obtained based on the synergistic fusion of various supramolecular, photonic, and magnetic behaviors occurring in nanospace.

[KEYWORDS] Inorganic Synthetic Chemistry, Inorganic Material Chemistry, Self-Organization, Hybrid Materials



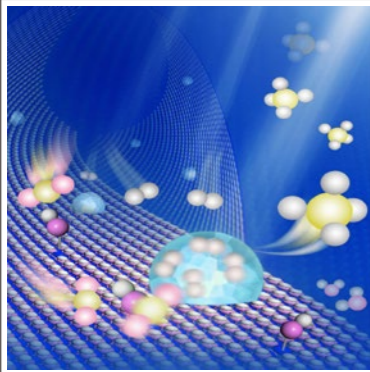
## Supermolecules Group

MANA PI, Group Leader: Katsuhiko Ariga

### World greatest research by supramolecular chemistry and surface science

Supermolecules are formed through non-covalent interactions between molecules. They can exhibit novel functions that are not available from their individual components. Our research emphasizes applications including sensors, drug delivery, energy, and environment.

[KEYWORDS] Supramolecular Chemistry, Surface Science, Self-Organization, Molecular Machine, Nanocarbon



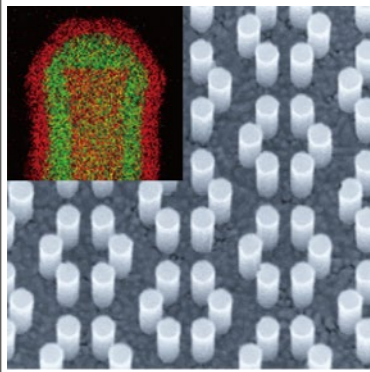
## Photocatalytic Materials Group

MANA PI, Group Leader: Jinhua Ye

### Realization of artificial photosynthesis

Inspired by the basic mechanism in nature photosynthesis, we are challenging the realization of highly efficient artificial photosynthesis, by rational design and engineering of the electronic structure and surface/interface structure of nano metal / inorganic / organic materials.

[KEYWORDS] Photocatalysis, Solar Energy Conversion, Nano Metal/Semiconductor, CO<sub>2</sub> Reduction, Solar Fuel Production



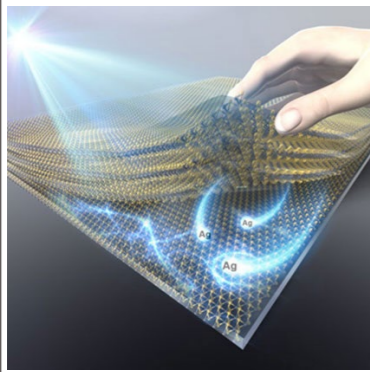
## Nanostructured Semiconducting Materials Group

MANA PI, Group Leader: Naoki Fukata

### New functions in semiconductor nanomaterials and device applications

We aim to develop semiconductor nanomaterials and devices that exhibit novel and superior characteristics not found in bulk materials by functionalizing the structure of semiconductor materials and adding new functions.

[KEYWORDS] Nanowires, Semiconductors, Electronic and Energy Related Devices



## Functional Nanomaterials Group

Group Leader: Renzhi Ma

### Creation of New Nanomaterials for Novel Functions

We are creating new nanomaterials (nanosheets, nanotubes, etc.) with a wide variety of compositions and structures. We aim to develop novel functions in versatile areas such as (photo)electronics, energy storage and conversion, etc.

[KEYWORDS] Nanosheets, Nanotubes, Energy Storage and Conversion, Catalysts, Nanoelectronics



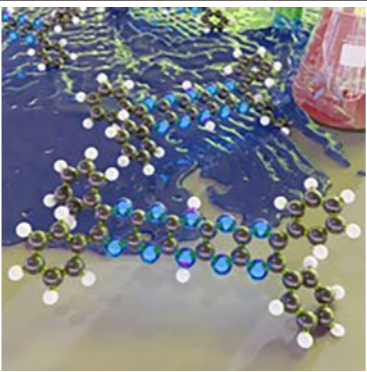
## Frontier Molecules Group

Group Leader: Takashi Nakanishi

### Stimuli-responsive novel molecular systems and their sensor applications

Our research focuses on a development of novel functional molecular soft materials towards sensor and power generating systems, that can response to light, heat, gaseous molecules, or micro vibration.

[KEYWORDS] Novel Molecular Design, Functional Molecular “Liquids”, Sensors, Molecular Sequences,  $\pi$ -Conjugated Giant Molecules



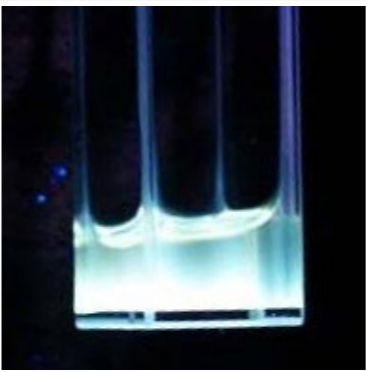
## Functional Chromophores Group

Group Leader: Jonathan Hill

### New functional chromophores for sensing and self-assembly

Our work is concerned with molecular design and the synthesis of novel functional materials for sensing, catalysis and their optical properties. We study the optical interactions of new chromophore molecules while in solution or contained in self-assembled structures.

[KEYWORDS] Sensing, Catalysis, Chirality, Chromophore, Self-Assembly



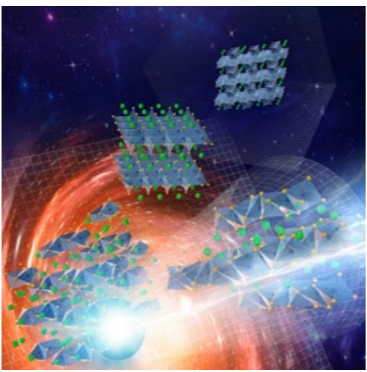
## Nanoparticle Group

Group Leader: Naoto Shirahata

### Colloidal Synthesis of Nontoxic Nanocrystals for Next-Generation Photonics

We develop new materials via chemical approaches which absorb and emit the light with wavelength-selectivity by controlling the energy structure of crystals composed of environmentally friendly elements to contribute to the next-generation photonics and optical medicine.

[KEYWORDS] Colloidal Nanocrystals, Optoelectronics, Nanobiomedicine



## Quantum Solid State Materials Group

Group Leader: Kazunari Yamaura

### Search for new oxide-based materials with high functionality

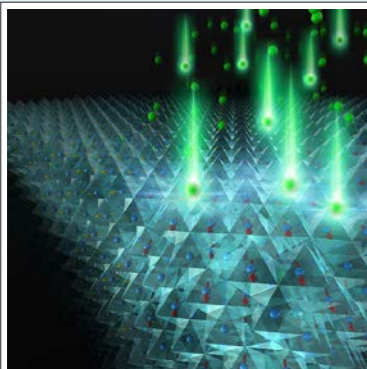
Contribute to quantum materials research by promoting high-pressure synthesis, crystal growth, precise structural analysis, and fundamental properties measurement of new materials with qualitatively different ferroelectricity, excellent quantum functionality, and so on.

[KEYWORDS] Polar Metals, Chiral Dielectrics, Transition Metal Oxides, Mixed Anions, High-Pressure-Crystal Growth



# NANO-SYSTEM

"Nano-System" creates unique functions by interacting controlled nanostructures and fabricates various advanced devices in artificial intelligence, quantum, energy and environment fields.



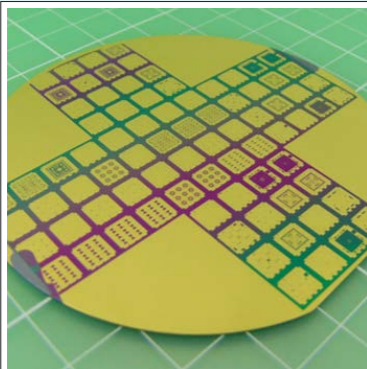
## Nanoionic Devices Group

Field Coordinator, MANA PI, Group Leader: Kazuya Terabe

### Creation of nanoionic devices for brain-type computer

Interesting characteristics and functions can be obtained by controlling the ion transport in solids. We aim to create nanoionics devices using these properties and to apply them to brain-type computer devices.

**[KEYWORDS]** Artificial Synapse, Atomic Switch, Decision-Making Device, Neuromorphic System, Artificial Intelligence Hardware



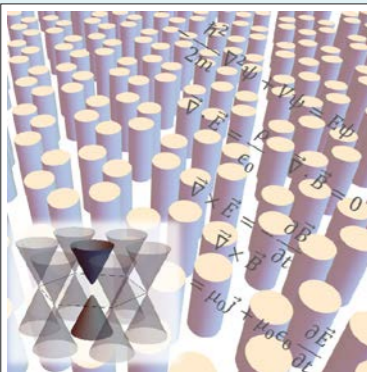
## Thin Film Electronics Group

MANA PI, Group Leader: Kazuhito Tsukagoshi

### Nanoelectronics based on Atomically-thin and Molecular scale 2D films

We develop novel functions by forming ultra-thin films such as two-dimensional crystals with nanomaterials and molecules, and by forming junctions with stacked structures. The goal is to create functional elements by using nanofilms and microfabrication.

**[KEYWORDS]** Atomically-Thin Film, Molecular Scale Thin Film, 2D Materials, Electric Properties, Electronics



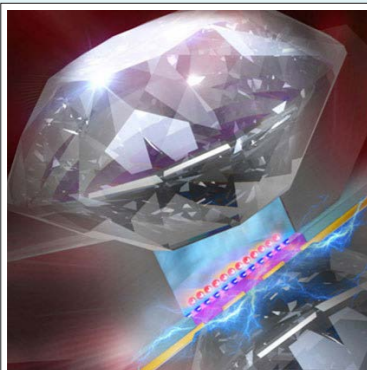
## Nano-System Theoretical Physics Group

MANA PI, Group Leader: Xiao Hu

### Exploration of material topology for innovative quantum functionality

We are engaging in theoretical study on novel band topology of materials and wave systems, and aiming to achieve novel topological quantum features and innovative quantum functionality by exploiting advanced nanotechnology.

**[KEYWORDS]** Topology of Matter, Topological Photonic Crystal, 2D Materials, Material Design, Majorana Quasiparticle



## Nano Frontier Superconducting Materials Group

MANA PI, Group Leader: Yoshihiko Takano

### Discovery of new superconductors and functional materials using materials informatics

Exploiting materials data and machine learning approach, we explore materials that might not be accessible by researchers' conventional ideas. We aim to discover emerging functionality in materials, such as room temperature superconductivity, by our original diamond anvil cells.

**[KEYWORDS]** Superconductivity, Magnetism, High Pressure, Materials Informatics, Machine Learning

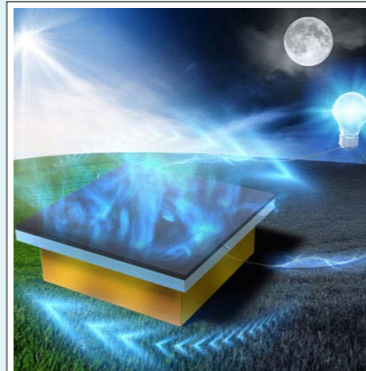
## Photonics Nano-Engineering Group

MANA PI, Group Leader: Tadaaki Nagao

### Creation of spectrally-controlled smart infrared sensors and radiative heat converter devices

We are developing ubiquitous devices that utilizes solar and thermal radiation for harvesting energy from our environment as well as recognizing and distinguishing the things around us.

**[KEYWORDS]** Infrared Plasmonics, Perceptive Device, Spectrally-Controlled Infrared Heaters, Radiative Cooling, Solar Heat Harvesters



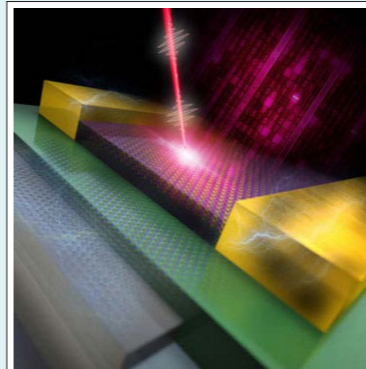
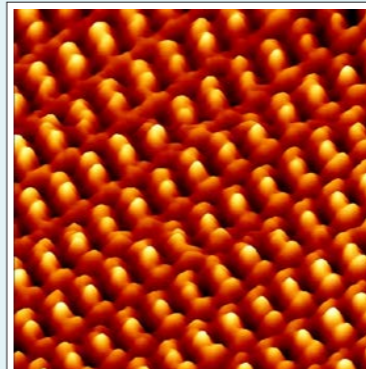
## Surface Quantum Phase Materials Group

Group Leader: Takashi Uchihashi

### Surface/Interface-based quantum materials and their functionalities

The surfaces and interfaces of materials are important playgrounds for realizing quantum functionalities. We aim at designing and creating new quantum materials at surfaces and interfaces from the atomic levels to explore their unknown material properties and functionalities.

**[KEYWORDS]** Surface, Superconductivity, Quantum Transport, Scanning Tunneling Microscopy



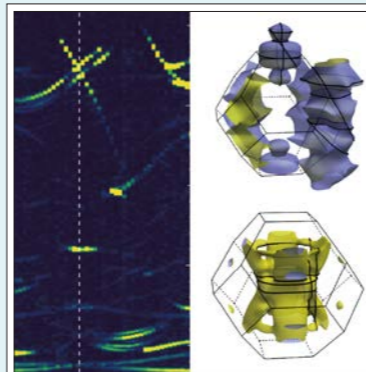
## Quantum Device Engineering Group

Group Leader: Yutaka Wakayama

### Exploration for novel quantum functional devices

We have been exploring novel functional electronic devices by bridging fundamental quantum properties and practical device engineering to control spin, electrons, and valley currents by assembling low-dimensional nanomaterials for breakthrough in nanoelectronics.

**[KEYWORDS]** Tunneling Device, Molecular Electronics, Multivalued Logic Circuits, Spin-Valleytronics



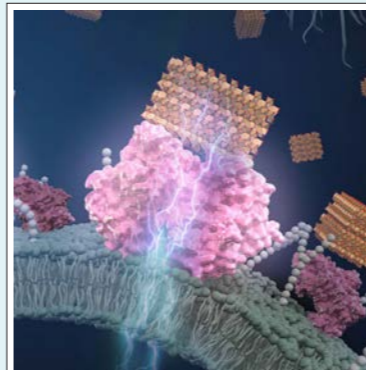
## Quantum Material-Properties Group

Group Leader: Taichi Terashima

### Novel electronic properties in superconductors and topological materials

We investigate electronic properties in superconductors and topological materials through low-temperature high-magnetic-field measurements as well as through theoretical studies. We are also interested in quantum vortices in superconductors.

**[KEYWORDS]** Superconductivity, Vortex, Topological, Strong Correlation, Low Temperature and High Magnetic Fields



## Electrochemical Nanobiotechnology Group

Group Leader: Akihiro Okamoto

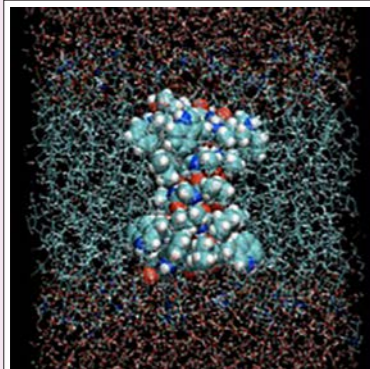
### Understanding and control of cells via transmembrane nano electric wires

We aim to understand biological phenomena from the perspective of energy through the development of nanomaterials that enable in vivo monitoring and controlling internal electrical information and cellular activity and functions by extracellular electrode.

**[KEYWORDS]** Interfacial Electron Transfer, Outer-Membrane Cytochrome, Metallic Nano Particle, Bacteria Sensor, Metal Corrosion

# NANO-THEORY

"Nano-Theory" understands phenomena in the nanospace region, predicts new phenomena and creates novel nanostructured materials.



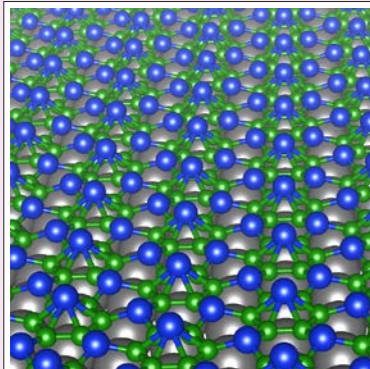
## First-Principles Simulation Group

Field Coordinator, MANA PI, Group Leader: Tsuyoshi Miyazaki

### Materials Design by First-Principles Simulations and Materials Informatics

We analyze and design the new and exotic properties of nano-scale materials by large-scale first-principles electronic structure simulations and materials informatics.

[KEYWORDS] First-Principles Calculations, Density Functional Theory (DFT), Large-Scale Simulation Methods, Machine Learning Methods, Materials Search by AI



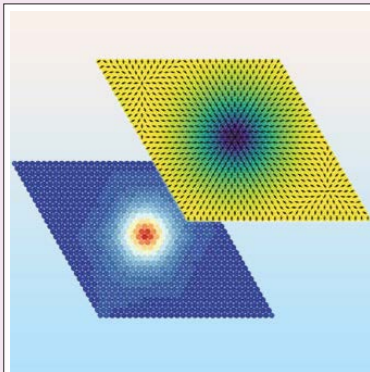
## Computational Nanoscience Group

Group Leader: Masao Arai

### Theoretical and computational investigation of nanomaterials

Artificially created or self-organized low dimensional system may exhibit exotic properties. With theoretical or computational methods, we study low-dimensional nanomaterials.

[KEYWORDS] First-Principles Calculations, Low Dimensional System, Artificial Structure



## Emergent Materials Property Theory Group

Group Leader: Akihiro Tanaka

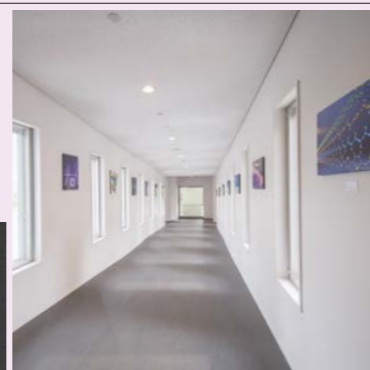
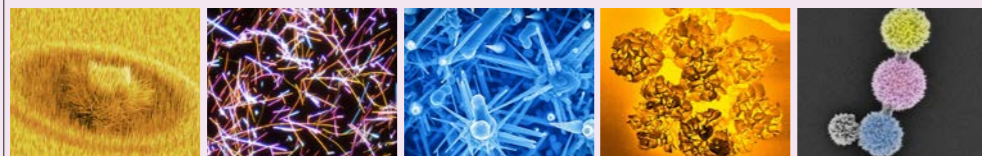
### Theoretical investigation of novel quantum functions in materials

Electrons and spins within materials are often subject to fictitious, intrinsic electromagnetic and / or gravitational fields. We explore their consequences, focusing on novel quantum functions.

[KEYWORDS] Topological Materials, Quantum Magnets, First Principle Calculations, Statistical Mechanical Modelling, Berry Phase Effects

## MA·NA·NO·ART

It is a work of art processed from the data obtained by MANA researchers during their experiments. We hope that the beautiful artwork will inspire creativity and new ideas. The work is displayed in the building, and the most popular pieces are used as posters and brochure covers.



## A WIDE VARIETY OF RESEARCHERS

These are the researchers who are leading the world with their unique and remarkable results on novel themes.

NIMS Fellow

### Takashi Taniguchi

#### Materials Synthesis Under High Pressure, High Quality Single Crystals

Impurity control under high pressure and synthesis of functional materials



Independent Scientist

### Gaku Imamura

#### Sensor, Machine Learning

Development of an Olfactory Sensor System



Independent Scientist

### Liwen Sang

#### GaN, Interface Engineering

Interface engineering in III-V nitride semiconductors toward high-efficiency devices



Independent Scientist

### Takayuki Harada

#### Thin Film, Electrical Transport

Research on thin-film heterostructures and their functional applications



Independent Scientist

### Michio Matsumoto

#### Multi-Dimensional Polymers, Atom-, Molecular-Arrangement

Multidimensional polymer synthesis – Connect atoms of Avogadro's number in a precise order, create unique materials functions



NIMS Distinguished Fellow

### Hideo Hosono

#### Electro-Active Materials

Creation of novel conceptional materials based on controlled electrons and their application (TFT, Catalyst)



Managing Researcher

### Tomonobu Nakayama

#### Multiple-Probe SPM, Neuromorphic Materials

Property characterization of nanomaterials, Development of neuromorphic materials through integration of nanofunctionalities



Independent Scientist

### Takuya Iwasaki

#### 2D Material, Quantum Device

Development of future electronic devices and information processing technology using 2D material stacking structures



Independent Scientist

### Mizuki Tenjimbayashi

#### Wetting, Soft Matter

Wetting Dynamics for Functional Materials and Surfaces



Independent Scientist

### Gen Hayase

#### Aerogels, Organic-Inorganic Hybrids

Fabrication of high-strength nanocomposite aerogel for thermal insulation



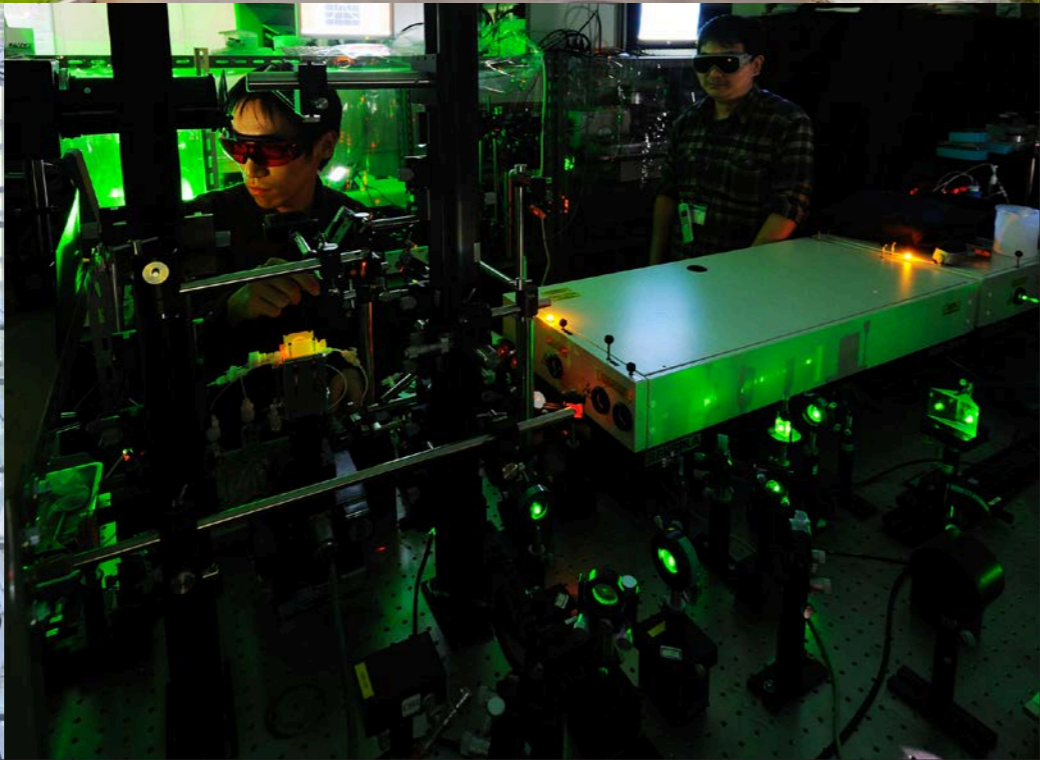
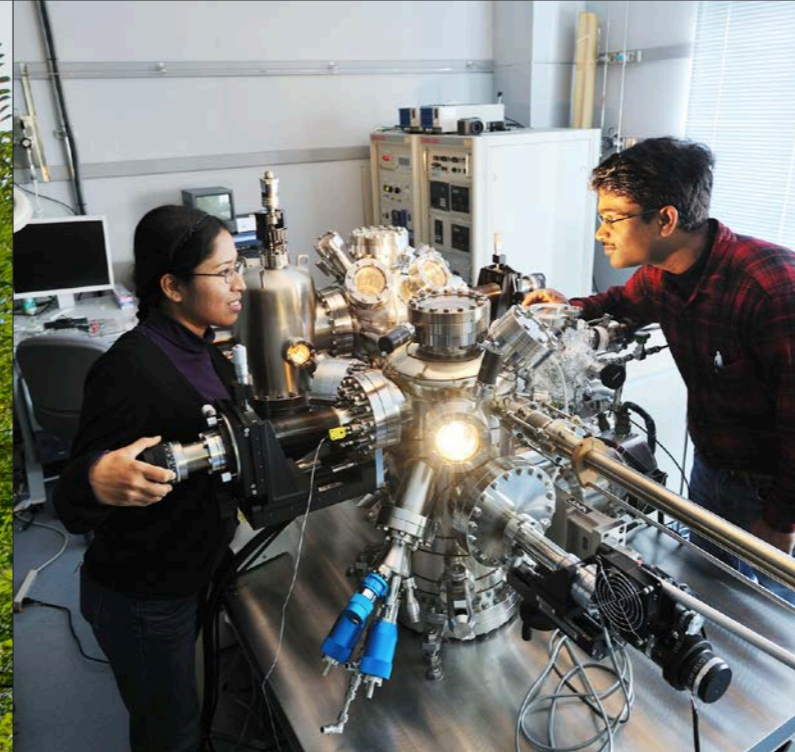
ICYS-WPI-MANA Research Fellow

### Adrian Diaz-Alvarez

#### Neuromorphic, Nanowires, Brainlike Information Processing

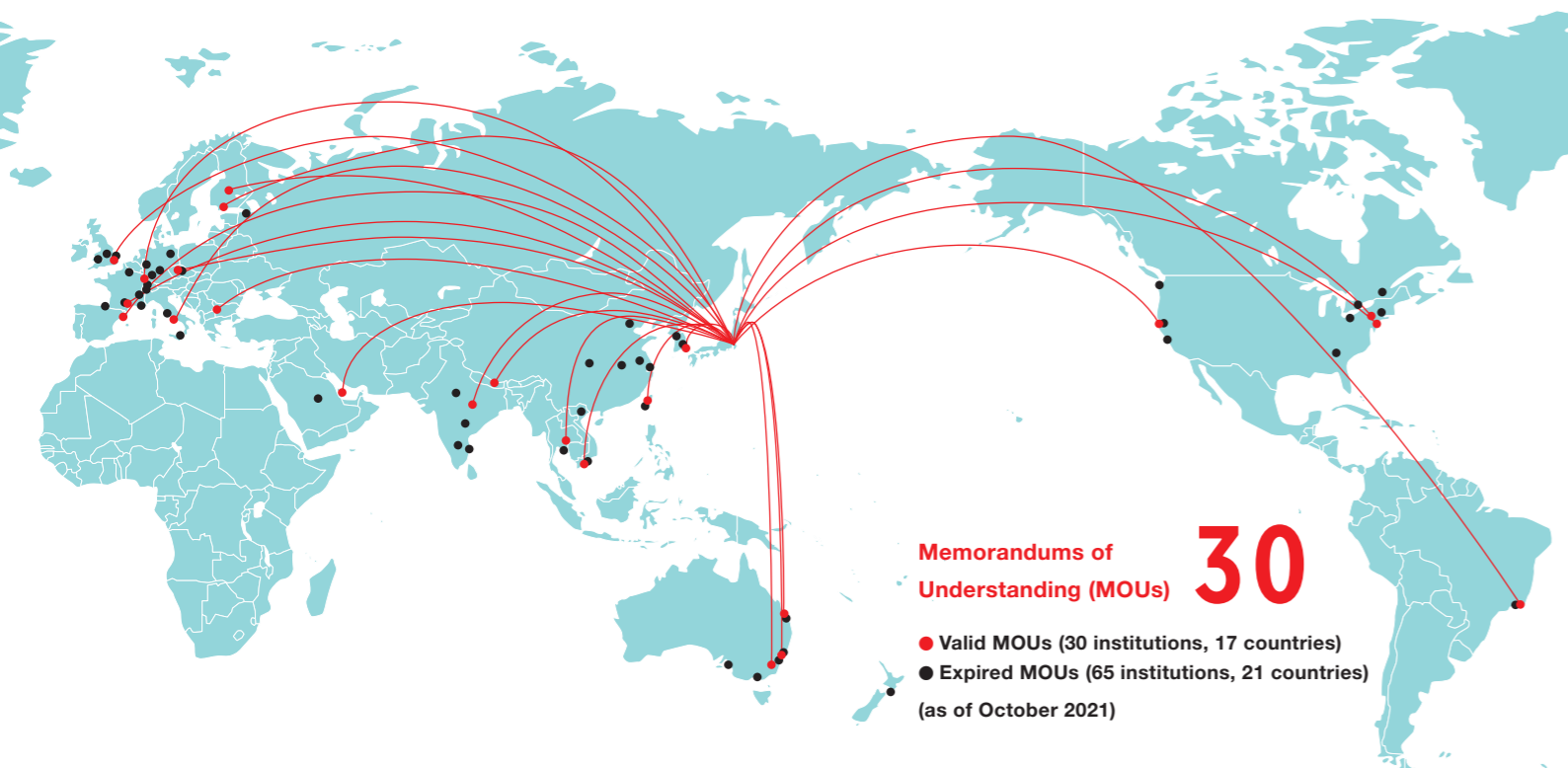
Brain-like interactions in Neuromorphic Nanowire Networks





# GLOBALISATION

## Foreign Partner Institutions



## MANA Figures

5,898

/ 2007-2020

Number of  
Papers



Patent Registrations

861

/ 2007-2020

4.0%

Highly Cited Papers: Top 1%  
/ 2016-2020

Average Journal Impact Factor

8.97

/ 2020

69.1%

/ 2020

Internationally Co-Authored Papers

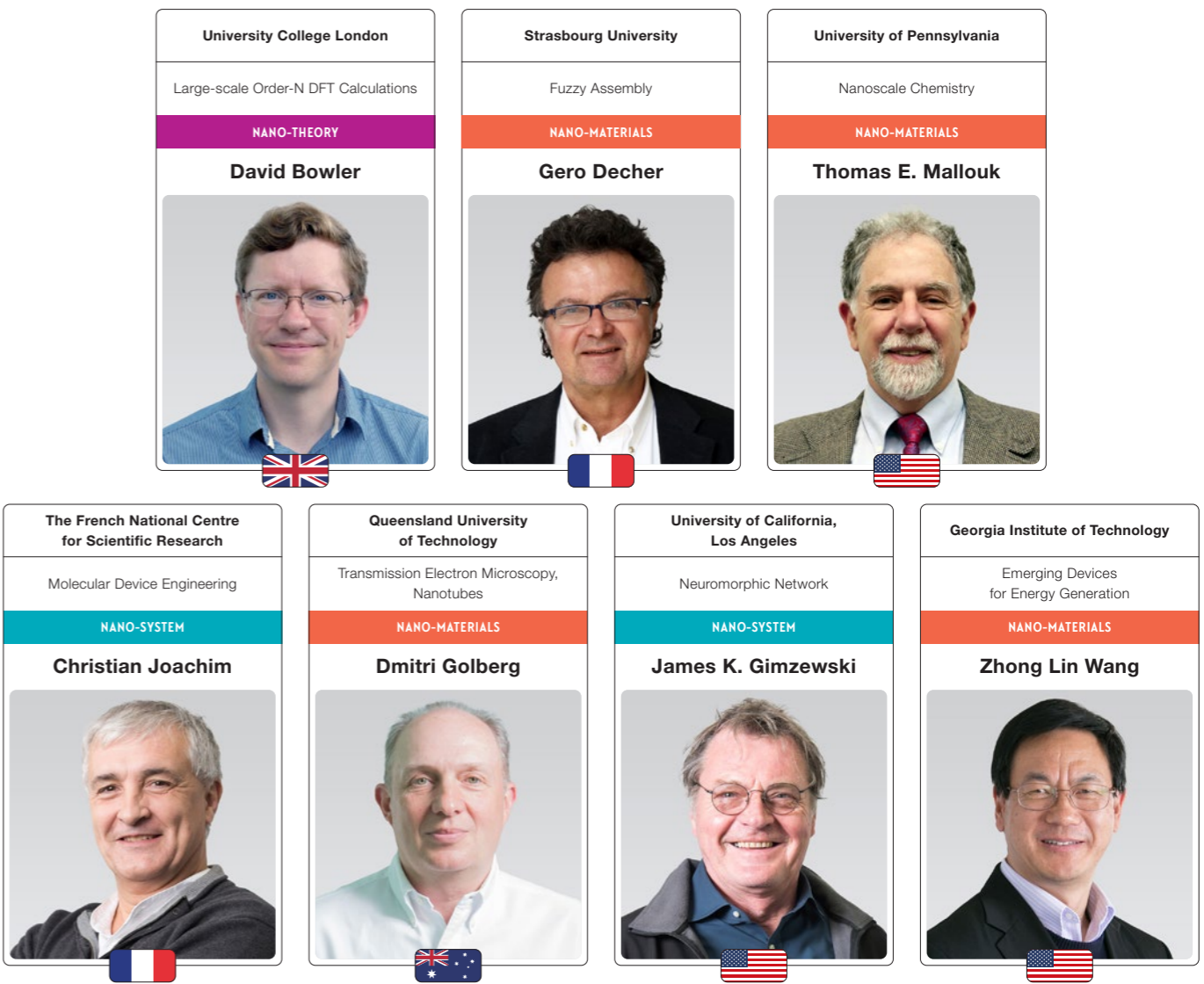
### Personnel Composition

	Number	Non-Japanese	Female
PIs	22	8	1
Group Leaders	11	2	0
Faculty Scientists	66	11	5
Postdoctoral Researchers	67	41	6
Junior Researchers	37	29	8
Administrative and Technical Staff	64	2	52
Total	267	93	72

(as of October 2021)

## MANA Satellite Network

MANA introduced the "Satellite" system to implement the internationalization of our research environment. We invited prominent researchers as Satellite PIs, and established MANA satellites at each research institute to strongly support world-class research of MANA. These satellites also provide young researchers at MANA an international research training ground, with satellite PIs working as their mentors.



## World Premier International Research Center Initiative

MANA is an international research center established within NIMS with the support of the World Premier International Research Center Initiative (WPI), a project initiated by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) in 2007. After 10 years of support by the program, MANA became the "WPI Academy" to make great strides as the world's leading nanotechnology materials base.



# RESEARCHERS

## Research Groups


### Nano-Materials

Thermal Energy Materials						Mesoscale Materials Chemistry				
										
T. Mori Group Leader	M. Goto Chief Researcher	Y. Michiue Chief Researcher	I. Ohkubo Principal Researcher	N. Tsujii Principal Researcher	M. Tachibana Senior Researcher	Y. Yamauchi Group Leader	Y. Ide Principal Researcher/ Acting Leader	J. Henzie Principal Researcher	M. Eguchi Senior Researcher	
Soft Chemistry					Supermolecules			Nanoparticle		
										
T. Sasaki Group Leader	Y. Ebina Principal Researcher	S. Tominaka Principal Researcher	N. Sakai Senior Researcher	M. Osada NIMS Visiting Researcher	K. Ariga Group Leader	J. Takeya MANA Principal Investigator	L. K. Shrestha Principal Researcher	N. Shirahata Group Leader	H. T. Sun Principal Researcher	
Photocatalytic Materials			Nanostructured Semiconducting Materials			Functional Nanomaterials				
										
J. Ye Group Leader	M. Oshikiri Principal Researcher	T. Kako Senior Researcher	N. Fukata Group Leader	W. Jevasuwan Senior Researcher	R. Matsumura Researcher	R. Ma Group Leader	D. Tang Senior Researcher	T. Taniguchi Senior Researcher		
Frontier Molecules				Functional Chromophores			Quantum solid state materials			
										
T. Nakanishi Group Leader	S. Ishihara Principal Researcher	K. Tashiro Principal Researcher	K. Nagura Researcher	J. Hill Group Leader	A. Bandyopadhyay Principal Researcher	J. Labuta Senior Researcher	K. Yamaura Group Leader	A. Belik Chief Researcher	Y. Tsujimoto Senior Researcher	


### Nano-System

Nanoionic Devices				Quantum Material-Properties					
									
K. Terabe Group Leader	T. Tsuruoka Chief Researcher	M. Sakurai Principal Researcher	T. Tsuchiya Principal Researcher	T. Terashima Group Leader	M. Kohno Chief Researcher	M. Tachiki Principal Researcher	H. Yamase Principal Researcher	T. Konoike Senior Researcher	S. Ooi Senior Researcher
Surface Quantum Phase Materials				Quantum Device Engineering				Photonics Nano-Engineering	
									
T. Uchihashi Group Leader	T. Yamaguchi Principal Researcher	R. Arafune Senior Researcher	K. Nagaoka Senior Researcher	Y. Wakayama Group Leader	S. Nakaharai Principal Researcher	R. Hayakawa Senior Researcher	Y. Shingaya Senior Researcher	T. Nagao Group Leader	S. Ishii Principal Researcher
Thin Film Electronics			Nano-System Theoretical Physics		Nano Frontier Superconducting Materials		Electrochemical Nanobiotechnology		
									
K. Tsukagoshi Group Leader	T. Nabatame Chief Researcher	S. Kato Senior Researcher	X. Hu Group Leader	T. Kariyado Senior Researcher	Y. Takano Group Leader	K. Terashima Senior Researcher	A. Okamoto Group Leader	X. Deng Researcher	


### Nano-Theory




**T. Miyazaki**  
Group Leader




**J. Nara**  
Principal Researcher




**A. Nakata**  
Senior Researcher




**R. Tamura**  
Senior Researcher




**M. Arai**  
Group Leader




**W. Hayami**  
Principal Researcher




**J. Inoue**  
Principal Researcher




**K. Kobayashi**  
Principal Researcher




**S. Suehara**  
Principal Researcher



**A. Tanaka**  
Group Leader





**Y. Nonomura**  
Principal Researcher



**I. Solov'yev**  
Principal Researcher







### Electro-Active Materials Team

	
H. Hosono NIMS Distinguished Fellow	H. Mizoguchi Special Researcher


### NIMS Fellow


T. Taniguchi

### Independent Scientists

				
T. Harada	G. Hayase	G. Imamura	T. Iwasaki	M. Matsumoto
				
L. Sang	M. Tenjimbayashi			

### ICYS-WPI-MANA Research Fellow


A. Diaz-Alvarez

● Cross Appointment ★ Satellite PI

## MANA Principal Investigators (PIs)

### Nano-Materials

			
T. Mori Field Coordinator	T. Sasaki	Y. Yamauchi	K. Ariga
			
J. Ye	N. Fukata	J. Takeya	Z. L. Wang Satellite PI
			
G. Decher Satellite PI	T. Mallouk Satellite PI	D. Golberg Satellite PI	

### Nano-System

			
K. Terabe Field Coordinator	T. Nakayama	K. Tsukagoshi	X. Hu
			
Y. Takano	T. Nagao	J. Gimzewski Satellite PI	C. Joachim Satellite PI

### Nano-Theory

		
T. Miyazaki Field Coordinator	Y. Tateyama	D. Bowler Satellite PI

### NIMS Distinguished Fellow


H. Hosono

### NIMS Fellow


T. Taniguchi

# THIS IS MANA

## Provide a Creative Environment to Foster

NIMS deals with the operation of international graduate programs. We strive to deliver a support structure to foster students, through collaborations with the world's top level universities in Japan and across the world. This initiative seeks to enhance the academic level and the environment of NIMS, encompassing an aspiration towards thereby contributing to further development of the materials science and industry in Japan.



### NIMS Joint Graduate School Program

Academic degree program that develops students into specialists under supervision of NIMS researchers

### NIMS Graduate Research Assistantship (NIMS Junior)

Support program that allows students to focus on research

### NIMS Internship

Provide undergraduate and graduate students with technical experience of cutting-edge research activities in the field of materials and science

### International Cooperative Graduate Program

Graduate students from globally renowned graduate schools are accepted to NIMS for training under a tie-up with NIMS

## Environment

MANA is located in the center of Tsukuba Science City, where many national research and educational institutions are concentrated. We are adjacent to JAXA (Japan Aerospace Exploration Agency) and AIST (National Institute of Advanced Industrial Science and Technology).

## Full Support in English

MANA achieves internationalization at all levels by using English as the common language. Administrative staff, fluent in English, assist foreign researchers so that they can focus on their own research.

## Namiki Foundry

We offers the most advanced core technology facilities in NIMS. We have English-speaking engineering staff.

## Melting Pot Café

There are spaces throughout the building where multinational researchers from a variety of backgrounds can meet. This is where the next seeds of innovation are born.

## Seminars & Symposia

Young scientists benefit from international collaboration, such as seminars and international symposia. Seminars are frequently given by MANA researchers and visiting outstanding scientists. At the annual MANA International Symposium, young researchers and world-leading scientists engage in lively discussions.

## Outreach Activities at MANA

The MANA Outreach team disseminates information regarding MANA's latest research activity and outcomes to a wide audience both domestically and internationally. Our PR resources are based on the regular publication of brochures and magazines, the worldwide diffusion of owned media through news wire services, activity reports using social networking services, and onsite/online event planning. We endeavor to promote nanoarchitectonics-based materials science to a general audience in order that its impact on our daily lives will be recognized by the public.



BROCHURE



CONVERGENCE

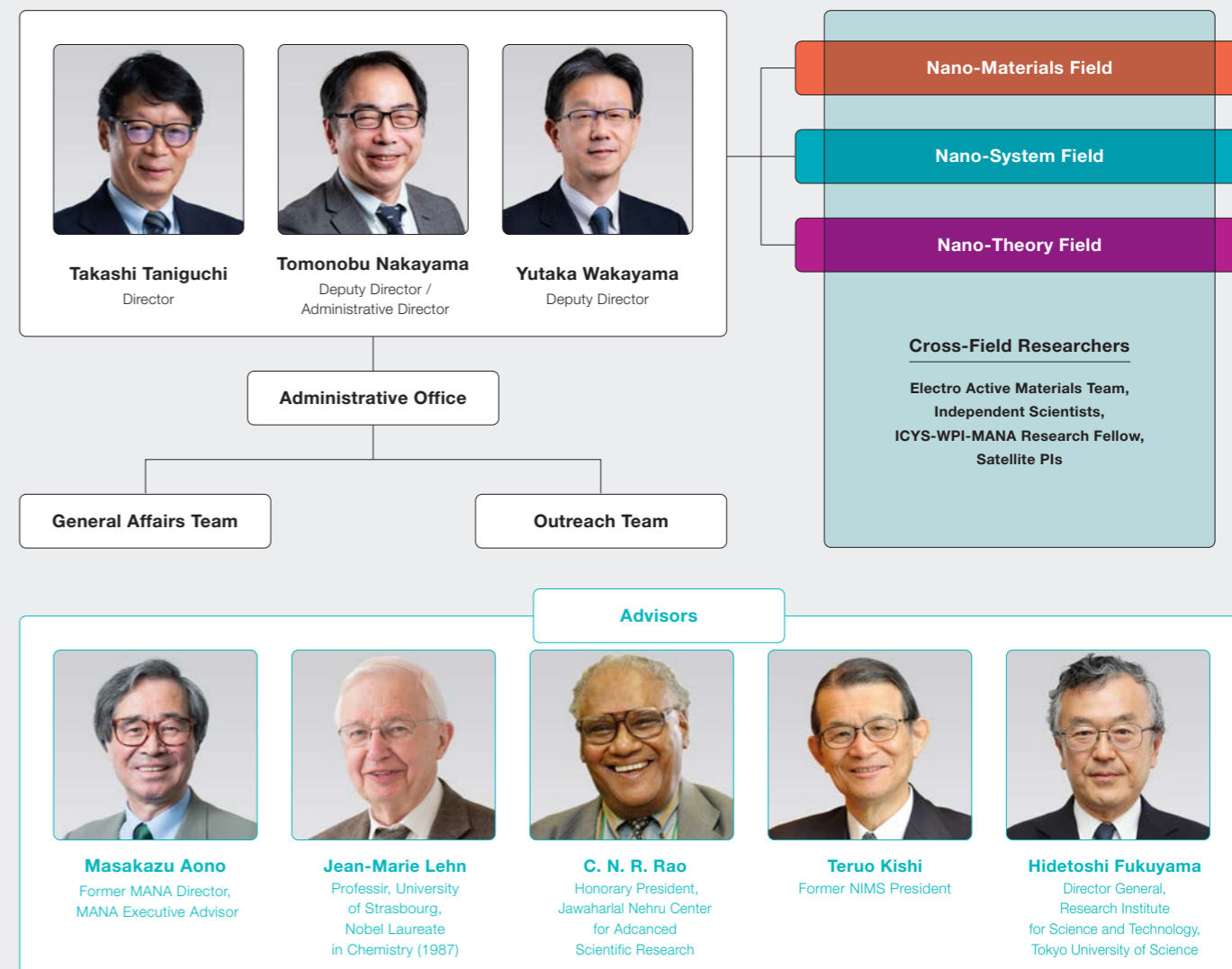


E-BULLETIN



SNS

## Organization



Advisors, including Nobel Laureates and prominent researchers, draw on their extensive experience to provide valuable advice to MANA scientists.

## To Join MANA

### Ways to Perform Research at MANA

MANA looks for scientists who conduct fundamental research with high originality. We update the recruitment information through MANA website: MANA Postdoctoral Fellows, Independent Scientists and various research posts.



### International Center for Young Scientists (ICYS)

NIMS has an ICYS program to support and nurture young researchers who produce results that can become innovations. It provides an independent budget and a free research environment for outstanding young postdoctoral researchers from around the world.



**International Center for  
Materials Nanoarchitectonics (WPI-MANA)**



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World Premier International Research Center Initiative



National Institute for Materials Science

